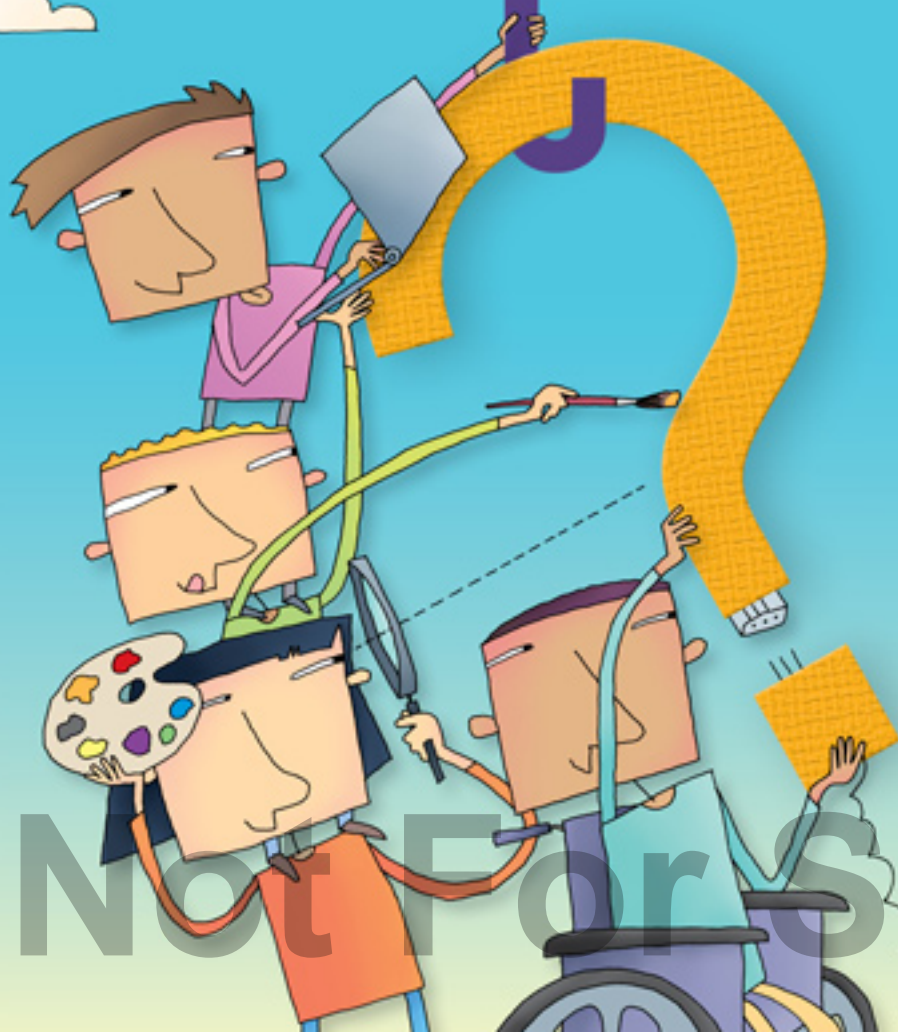


# Inquire

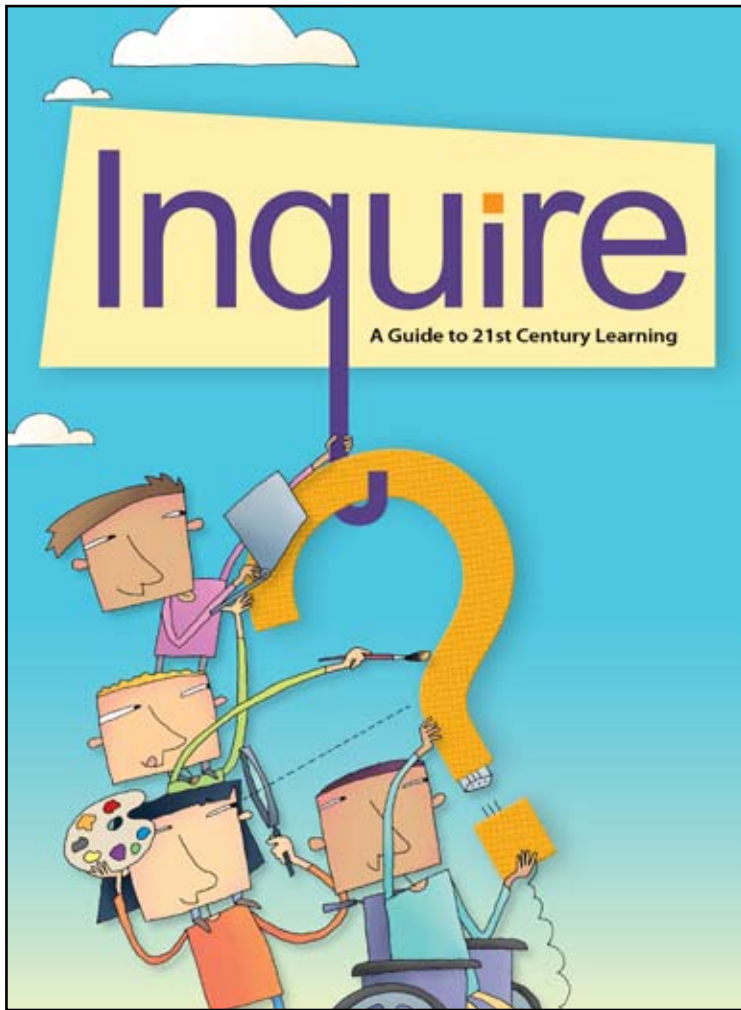
A Guide to 21st Century Learning

Sampler



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Written and Compiled by  
**Robert King, Christopher Erickson, and Janae Sebranek**

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### The *Inquire* Team

Steven J. Augustyn	Lois Krenzke	Cindy Smith
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Tim Kemper	Jason C. Reynolds	Jeanne Yost

A special thanks goes to Cindy Smith, project-based instructor at Karcher Middle School in Burlington, Wisconsin. In addition to providing guidance and feedback on *Inquire*, Mrs. Smith graciously allowed the team to field-test the material in her class. Her insights and those of her 32 seventh- and eighth-grade students greatly improved *Inquire*. To them, we say “Thank you!”

### *Inquire* on the Web

This book is just the beginning! Log on to [thoughtfullearning.com](http://thoughtfullearning.com) to find dozens of downloadable templates and forms, additional models and projects, links to great resources, and much, much more.

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## About *Inquire*

*Inquire* is your personal learning guide. It will help you become a better thinker, problem solver, speaker, team player, planner, and researcher in all of your classes. This guide is divided into three parts.

### Part I: Building 21st Century Skills

The first part helps you develop the skills you need to succeed in school, in life, and later in the world of work. It covers everything from critical thinking and building strong arguments to using social media and studying for tests.

### Part II: Using the Inquiry Process

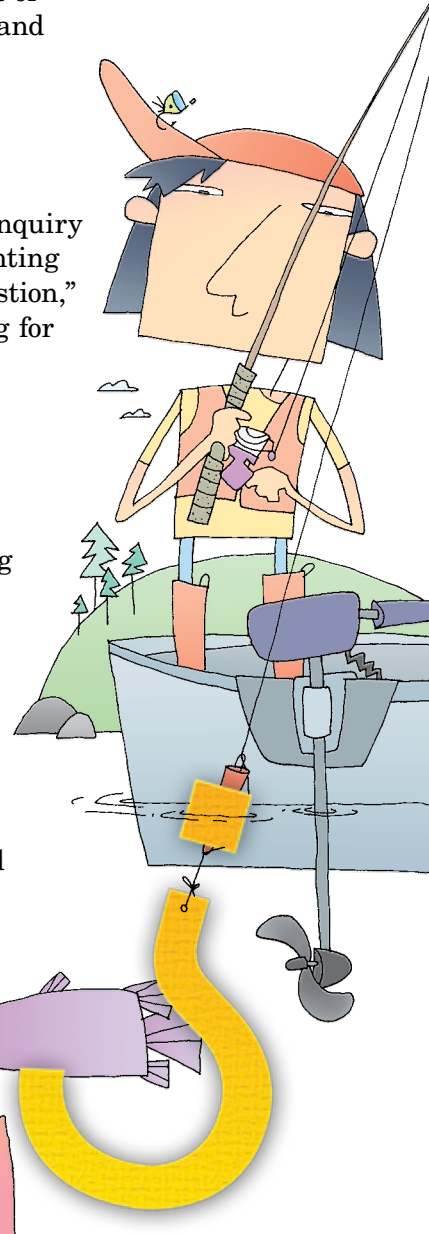
The second part provides an overview of the inquiry process, including conducting research and presenting what you have learned. To inquire means “to question,” and the process of asking questions and searching for answers leads to authentic learning.

### Part III: Developing Projects

The third part helps you create all sorts of exciting and meaningful projects—from writing news reports to creating podcasts, from developing brochures to building scale models.

### Electronic Aids

The **e-book version** of *Inquire* contains links to make it easy to search for information from part to part. And the *Inquire* Web site contains downloadable planning sheets, additional models, activities, and projects to try! (Go to [thoughtfullearning.com](http://thoughtfullearning.com).)



## Using *Inquire*

The special design of *Inquire* makes it easy to find information from part to part and within each part. With practice, you will know the best way to turn to the guidelines, models, and tips that you need.

**The table of contents** lists the chapters in *Inquire* and main headings in each one.

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	Analyzing
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	Creating
	Creative-Thinking Activities

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- 
1. **Question** What question are you trying to answer or to describe?
2. **Search** your report What question that you want to know the answer to?
3. **Focusing**: Draw conclusions What method or experiment.
4. **Shaping**: Arrange the facts What observations.
5. **Create** the first draft of your report
6. **Start** your report with a question What reason you are
7. **Follow** with the main part of your report? What your report?
8. **End** with the conclusion What confusing or unclear.
9. **Edit** your revised writing What parts that don't belong to the topic.
10. **Record** sentence or parts that are out of order.
11. **Replace** general nouns and verbs with specific ones.
12. **Check** your writing for accuracy. What your writing for accuracy.
13. **Present** the final copy of your lab report on a blog or Web site or use it to lead classmates through the same procedure.

**Cross-references** show you where to go within *Inquire* for related information about a topic.

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**Web references** indicate that more resources (planning sheets, activities, projects) are available at the *Inquire* Web site.

## Giving Credit

You should always follow the guideline that you use in your research so, you avoid plagiarism in your work. The MLA teacher for your class has established an easy system for research work. The examples come from the [thoughtfullearning.com/p290](http://thoughtfullearning.com/p290)

■ If you mention a source, you must include the page number where the information is found. This is called the **locator**.

- If no author is provided for a source, use a shortened form of the title and the page number, if it is given. (The following example is for a television show, so no page number is included.)

Farmers who can prove their livestock losses are caused by wolf attacks receive compensation from the state for their losses, but many farmers are frustrated by time delays for receiving the compensation ("Wolves").

- List on the works-cited page all of the sources of information that you credit in your work. This page comes at the end of your paper.

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## Why *Inquire*?

What do artists, engineers, scientists, doctors, and students like you have in common? All of you have to ask questions, conduct research, communicate, and collaborate to do your best work. In fact, skills like these are at the core of real learning.

## A Guide to 21st Century Skills

*Inquire* will help you learn about and practice all of the key learning skills. Here are the main skills covered in the first part of the book:

- Critical and creative thinking
- Collaborating and communicating
- Problem solving and building arguments
- Understanding and using media
- Studying and taking tests

## A Guide to the Inquiry Process and Projects

*Inquire* also helps you use the inquiry process to solve problems and develop great projects. Here are some of the inquiry-based skills and projects covered in the next two parts of the book:

- Asking questions and planning research
- Creating and presenting projects
- Developing writing and Web projects
- Building audio-visual and graphic projects
- Preparing community and performing projects

## A Guide for All of Your Classes

You can use *Inquire* in all of your classes, in your extracurricular activities, and in life itself. *Inquire* will help you succeed right now and prepare you to learn and succeed for years to come!

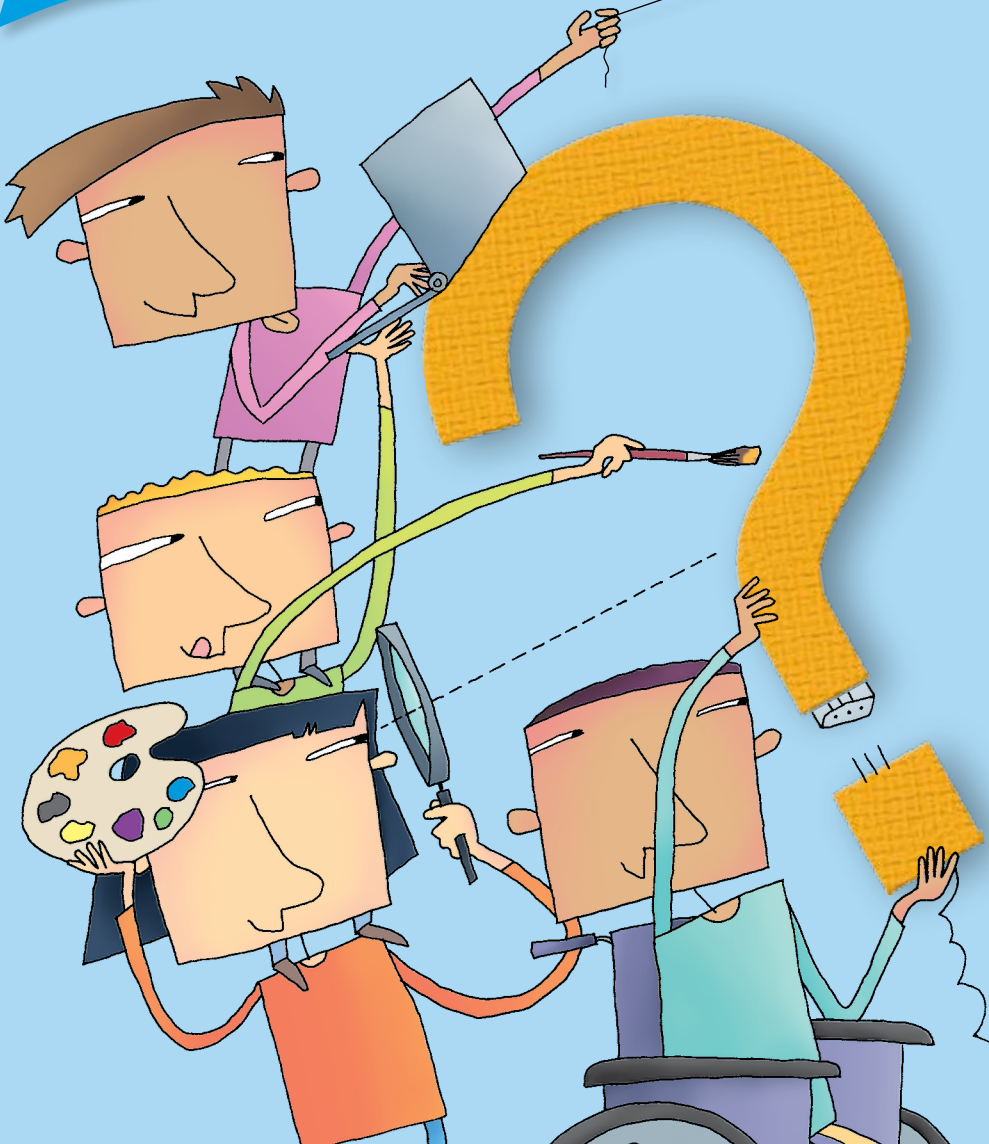


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## Part I: Building 21st Century Skills



## **Part I: Building 21st Century Skills**

This section covers all of the important 21st century skills—and more. If you follow the strategies in each chapter, you will become a better thinker and learner now and for years to come. These skills will also help you use the inquiry process and create great projects in Parts II and III.

### **Chapters in This Section**

1. Overview of 21st Century Skills
2. Critical Thinking
3. Creative Thinking
4. Problem Solving
5. Communicating
6. Collaborating
7. Building Arguments
8. Understanding Media
9. Using Social Media
10. Reading to Learn
11. Improving Vocabulary
12. Following Basic Conventions
13. Improving Study Skills
14. Succeeding in School
15. Succeeding in the Workplace

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## Chapter 1

# Overview of 21st Century Skills

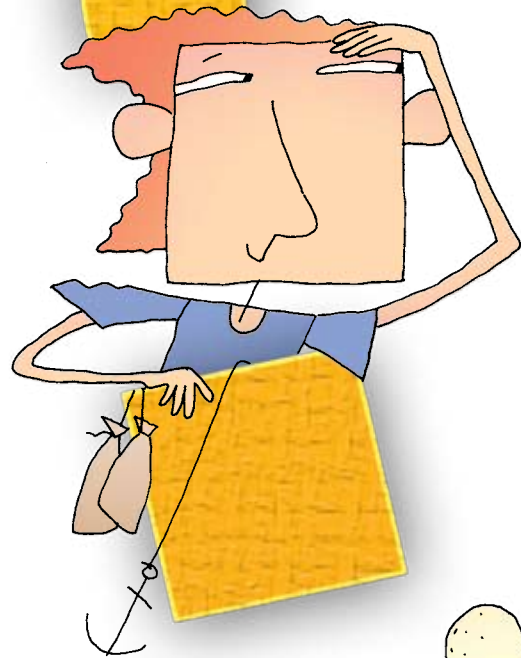
Take a thin strip of paper, lay it flat, and you've made a straight line. Then connect the ends, and you've made a circle—simple enough.

Next, take that same strip of paper, twist it once, and then connect the ends. You've made a new shape, called a Mobius (mō-bē-ūs) strip, which forms a continuous curve with only one surface. An ant crawling along this strip could cover every part of it without crossing an edge.

We want you to think of learning as a continuous curve, a process that never stops. It's like looking out over a vast landscape. There is always more ground to cover, and more to learn.

### You will learn . . .

- Critical and Creative Thinking
- Problem Solving and Inquiry
- Communicating and Collaborating
- Building Arguments
- Using Information and Media
- Succeeding in School and the Workplace



## Becoming a Better Learner

You are riding the great wave of technology right along with everyone else, including your teachers. This wave is determining the way you learn, socialize, and live. And since it is getting bigger and stronger, you must build a new set of skills, often called “21st century skills,” to help you control and enjoy the ride. These skills include . . .

- **Critical and creative thinking**
- **Problem solving and inquiry**
- **Communicating and collaborating**
- **Building arguments**

But you need to strengthen your basic reading and study skills, too, including the following:

- **Using information and media**
- **Reading and vocabulary**
- **Note taking**
- **Managing your time**
- **Preparing for tests**

**One thing is certain:  
In today's world,  
everyone must be a  
strong learner, now  
and in the future.**

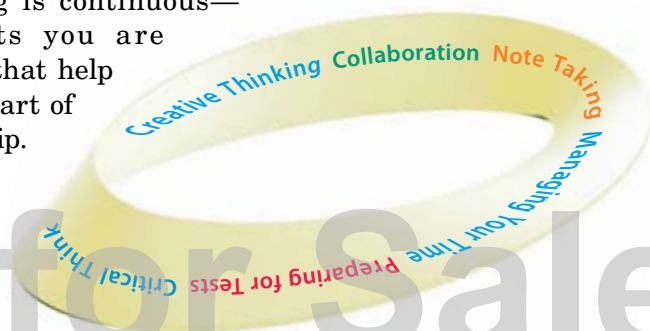
### Your Turn

Which of these skills do you already use, and which are completely new to you? Which ones do you really need to work on? Jot down your thoughts in a short paragraph or two.

## Learning in Context

The best way to learn these skills is in context, while you are involved in a project or a unit of study. Knowing about creative thinking, for example, won't do you much good until you put your creativity to use.

**Remember:** Learning is not a straight line, starting here and stopping there. Instead, learning is continuous—involving the subjects you are studying and the skills that help you learn. They are all part of your personal Möbius strip.



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# Learning Skills

The next five pages review the skills that have become especially important in today's world, starting with critical and creative thinking. Each of these skills is also covered in its own chapter.

## Critical and Creative Thinking

You think creatively to gather new possibilities, and you think critically to examine ideas and discard the ones that don't work. Just as breathing requires inhaling and exhaling, thinking requires inspiration and examination.

**Critical thinking** is looking closely at something and using reason to explore it. When you think critically, you do the following:

- identify
- reason
- diagram
- measure
- rate
- organize

**Creative thinking** is reaching out to capture new ideas and possibilities. When you think creatively, you do the following:

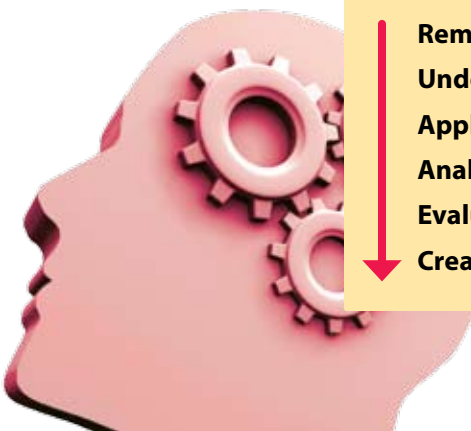
- wonder
- imagine
- brainstorm
- connect
- reimagine
- invent

### Your Turn

Freewrite for 5 minutes about critical and creative thinking. Which type of thinking is like breathing in, and which type is like breathing out? Why?

## Deepening Your Thinking

To be a really effective thinker, you need to deepen your thinking. A researcher named Benjamin Bloom identified ever-deeper levels of critical and creative thinking.



**Remembering** is recalling facts.

**Understanding** is knowing what facts mean.

**Applying** is using your knowledge.

**Analyzing** is breaking something apart.

**Evaluating** is judging the worth of something.

**Creating** is making something new.

## Problem Solving and Inquiry

When you face a problem or challenge, you need your best critical and creative thinking skills. To solve a complicated problem, you may need to work through a series of steps called the inquiry process. You'll learn much more about problem solving and inquiry later in this book, but here is a quick overview.

### Problem-Solving Steps

#### 1 Questioning

- **Questioning** involves identifying the problem, analyzing its causes and effects, brainstorming ways to solve it, and evaluating your ideas.

#### 2 Planning

- **Planning** involves choosing a solution, setting goals and objectives, and deciding what time, tools, and talent you will use to solve the problem.

#### 3 Researching

- **Researching** means gathering the information and resources that you need to be able to make your solution a reality.

#### 4 Creating

- **Creating** is putting your solution together, making something new, and applying it to fix the problem.

#### 5 Improving

- **Improving** means evaluating what you have created, seeing what works and what could work better, and then making changes to make it better.

#### 6 Presenting

- **Presenting** is implementing the solution, putting it into practice with the hope of solving the problem.

### Your Turn

Think of a problem you face and imagine using the process above to solve it. Start by identifying the problem, analyzing its causes, and brainstorming solutions. What would you do then?

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## Communicating

You are part of a communications revolution, and you have technology to thank for it. Everyone is talking and texting and blogging. Let's look at some of the electronic communication opportunities for a typical student on a typical day.

### A Day in the Life of a Student

Nahla woke up and started her day with a text message to her friend.

In social studies, she e-mailed a student in another school to exchange ideas.

In English class, Nahla wrote a book review and posted it on the classroom blog.

Later, in the evening, she checked her RSS feed for ideas for a current-events paper.

Then she chatted with friends on an instant messenger before going to bed.



### What You Need to Know

In today's world, becoming a skilled communicator is very important. And each new digital advance seems to make communicating that much more important. You may be fine with communicating socially (texting), but what about communicating in formal school settings? Can you write strong essays and make oral presentations? Can you compose clear e-mails and express yourself in class discussions? In this digital age, you need strong writing and speaking skills.

### A Closer Look

Writer William Zinsser says, "Writing and learning and thinking are all the same process." We'd like to add "speaking" to the list. Every type of communication helps you to think and learn as you share your ideas with others.

### Your Turn

In a brief paragraph, list the kinds of writing and speaking you do in school. (Consider all of your communicating experiences.)



## Collaborating

LeBron James and Drew Brees are star athletes, and their individual skills may amaze you. But when stars like these are interviewed, they say they couldn't have achieved success without their teammates.

Collaborating, which means “working together as a team,” helps all kinds of people do all kinds of great things. If you have been part of a strong team, you already know about the value of collaborating.

### Playing as a Team

A team succeeds on the strength of each of its members. A strong team member . . .

- knows how to listen,
- contributes as needed,
- shares the stage,
- offers compliments,
- gives constructive criticism,
- avoids put-downs,
- helps reach decisions, and
- works toward the team goal.

**“Coming together is a beginning. Keeping together is progress. Working together is success.”**

—Henry Ford

### What You Need to Know

Developing effective group skills will help you in school, especially since learning is becoming more and more collaborative. You will be a member of many learning teams, asking and answering important questions and working on interesting projects. Group work, by the way, is common in almost all careers and professions.

### In Focus

Brittany Bergquist, with the assistance of her classmates and teacher, helped soldiers in our armed services pay their cell phone bills for calls to their families. They started with bake sales to pay for one soldier's bill; then the phone company canceled the bill after hearing about the sale. Next, Brittany's team earned money by collecting and recycling old cell phones. Before long, “Cell Phones for Soldiers” was born, providing free phone time for soldiers.

*Lesson:* Look for opportunities to collaborate and make a difference.

### Your Turn

In a brief paragraph, answer this question: What has been your best experience with a team or group? (Consider what the group accomplished, your role in the group, and the roles of other group members.)

## Building Arguments

Your best thinking and communicating skills come together when you build an argument. An argument is a line of reasoning that provides strong evidence to prove a specific point. You can use the 7 C's to build an argument.

### The 7 C's of Argumentation

1. **Consider the situation.** Begin by thinking about your topic, your audience, and your purpose. Then create a beginning position statement.
2. **Clarify your thinking.** Look at both sides of the issue. In addition to gathering support for your own position, consider what the opposition thinks.
3. **Construct a claim.** Go back to your position statement and see if you still agree. Then rewrite the statement, giving not just a position but also a reason.
4. **Collect evidence.** Research the topic in depth, looking for facts, statistics, examples, quotations, and other details to support your position.
5. **Counter or concede objections.** Think about the arguments of the opposition, and come up with ways to answer the arguments.
6. **Convince your audience.** Build your argument, appealing to the audience's sense of fairness and logic.
7. **Conclude your argument.** Draw together your best thoughts in a memorable way and call the audience to take action.

### Your Turn

Think of an argument you recently made, whether supporting an idea or opposing it. Which of these 7 C's did you use? Was your argument convincing?

# Literacy Skills

In this information age, your ability to find and evaluate information is crucial. Literacy skills will help you succeed in school and in life.

## Using Information and Media

You are surrounded by information: Web sites, commercials, magazine articles, contests, TV shows, games . . . Managing information is a modern survival skill. You have to know what to pay attention to, what information is accurate and unbiased, and how you can find what you need.

And you aren't just a consumer of information. You also produce it. You can create multimedia presentations, videos, live news shows, podcasts, and many other types of media. Just as you evaluate the information that you receive, you need to evaluate the information that you send out.

### Your Turn

On a scale of 1, meaning "not experienced," to 10, meaning "very experienced," how would you rate your online searching skills? Explain your rating in a brief paragraph.

## Digital Learning and Sharing

The Internet is the ultimate learning tool. A skilled online learner . . .

- finds appropriate information on the Internet,
- evaluates the information for accuracy and reliability,
- understands all of the digital tools available to him or her,
- takes risks and tries to use these tools, and
- knows how to judge different media choices.

**"Information is the seed for an idea and only grows when it's watered."**

—Heinz V. Bergen

### In Focus

Joe Heineman and Johanna Hearnon-Heineman have become vertical farmers, meaning that they farm in an old city building. Believe it or not, they grow butter lettuce and tilapia (fish) in their farm. They are a green business and got their start by doing research on the Internet. *Lesson:* Gathering and using information creatively is an important lifelong skill.

## Reading and Vocabulary

Reading is a *gateway skill* because it opens up so many learning opportunities. As you read more skillfully, your vocabulary will naturally grow, which, in turn, will improve your ability to think and to communicate.

### Reading to Learn / Learning to Read

Reading every day will help you develop your talents and interests to their fullest. An effective reader . . .

- reads for enjoyment and reads to learn,
- understands the value of different types of reading material,
- uses study-reading strategies,
- writes and speaks about reading material, and
- uses vocabulary-building strategies.

### In Focus

Reading opens doors. Lois Lowry, author of *The Giver*, learned to read when she was three. And her mother continued to read out loud to her long after she could read on her own. Lowry's introduction to reading at such an early age prepared her for the writing career she pursued later in life. *Lesson:* Make reading an important part of your life, and it will benefit you in more ways than you can imagine.

### Your Turn

Share with a partner or small group of students the title of a favorite novel, nonfiction book, or article you have read recently. Explain your choice.



## Succeeding in School

Effective learners take control of their learning. They actively engage in class by

- valuing all learning opportunities,
- managing time wisely,
- taking clear notes,
- summarizing important information, and
- using effective test-taking strategies.

Unless you have a positive attitude about learning, you are unlikely to do well. So be determined to be a strong student in all of your classes. You will learn a lot—and have fun doing it.

### Your Turn

On a scale of 1, meaning “ineffective,” to 10, meaning “very effective,” rate your study skills. Explain your rating in a brief paragraph.

## Succeeding in the Workplace

Of course, all of these traditional and 21st century skills are also meant to help you succeed in your career. As you will see in a later chapter, success in the workplace is a matter of respect.

### You need to respect your . . .

- **organization**, understanding the company’s goals and working to achieve them.
- **boss**, knowing what this person expects and following her or his directions.
- **coworkers**, treating them well and working together with them.
- **customers**, providing them the best products and services you can.
- **self**, dressing appropriately, conducting yourself professionally, and taking pride in what you do.
- **job**, following the schedule, arriving on time, and working hard.
- **career**, proving your value and taking on new challenges.

### Your Turn

Imagine your dream job. What would it be? Freewrite for 5 minutes about the job and describe how respect will help you excel.

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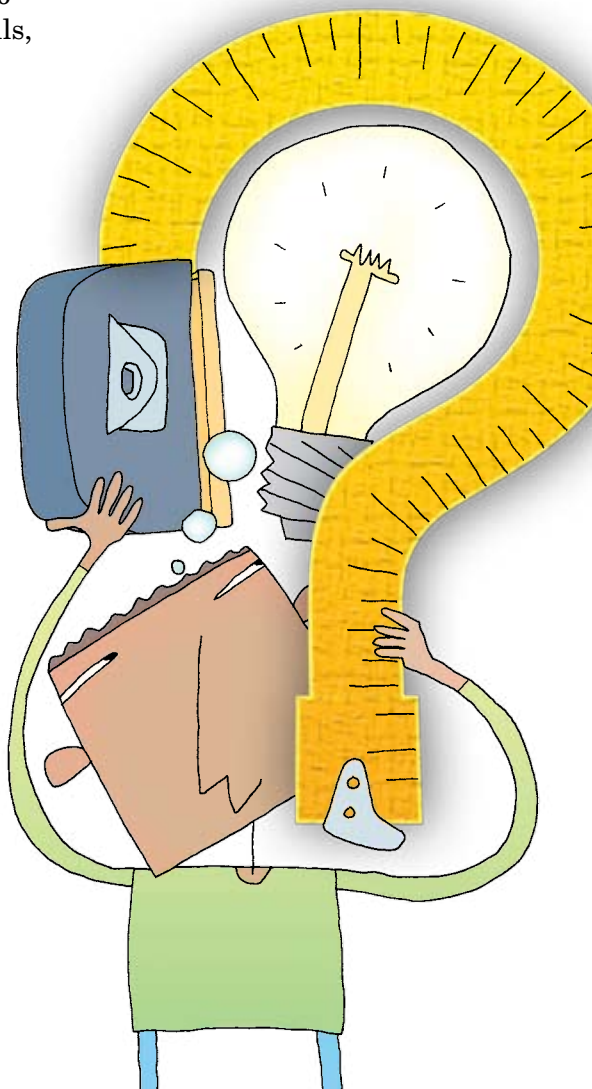
## Chapter 2 Critical Thinking

Critical thinking is careful thinking, measured and exact—the kind of thinking that someone like Albert Einstein did. And your brain is wired to think critically, too. Every day you must remember, analyze, and evaluate information both in and out of school.

This chapter will show you how to strengthen your critical-thinking skills, preparing you not only to accomplish everyday tasks but also to take on complicated assignments. As Albert Einstein once said, “The whole of science is nothing more than a refinement of everyday thinking.”

### You will learn . . .

- Critical-Thinking Strategies
- Remembering
- Understanding
- Applying
- Analyzing
- Evaluating
- Creating



# Understanding Critical Thinking

Critical thinking involves looking very closely at something and using reason to thoroughly understand it. On the next few pages, you'll find a series of strategies that will help you think critically. With these critical-thinking strategies, you can learn just about anything and solve almost any problem.

## A Critical State of Mind

When you have a problem to solve or an important question to answer, you'll be at your critical best if you work in the following ways.

- Be patient.** Many problems or questions can be complex. If solutions or answers don't come to you immediately, keep thinking.
- Be open.** Be open to surprises—enjoy them, value them. Ask “Why?” and “What if?” just like little brothers and sisters do.
- Be focused.** Make it your goal to concentrate on your task (*finding a solution, answering a question*). Try to block out distractions.
- Be observant.** Find evidence to support your decisions. Adjust your thinking if a new idea changes your point of view.
- Be critical.** Ask yourself questions such as, “Is this information up to date?” “Does it match up with the thoughts of others?” “Can I trust this person's ideas?”
- Be flexible.** Understand that you can't neatly answer every question or resolve every problem. Some problems, for example, may have two reasonable solutions that are quite different.

### Your Turn

Review the list above. Which habits of critical thinking do you naturally have? Which habits do you need to learn?



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## Critical-Thinking Strategies

A researcher named Benjamin Bloom created a list of thinking skills, moving from simpler, surface thinking to deeper thinking. The newest version of this list is shown below. On the following pages, you'll learn critical-thinking strategies to use in many situations to think more deeply.

### Bloom's Thinking Skills

#### **Remembering**

is recalling basic information.

You'll learn strategies for identifying and remembering the key details about a topic (pages 16–17).

#### **Understanding**

is knowing what the information means.

You'll learn strategies for thinking deductively and inductively about a topic (pages 18–19).

#### **Applying**

is putting the information to use.

You'll learn strategies for planning a project and setting goals (pages 20–21).

#### **Analyzing**

is looking at the parts of something and figuring out how they fit together.

You'll learn strategies for comparing, contrasting, classifying, and sequencing ideas, as well as exploring causes and effects (pages 22–23).

#### **Evaluating**

is determining the value or worth of something.

You'll learn strategies for rating something and using a rubric to evaluate it (pages 24–25).

#### **Creating**

is putting ideas together in new ways to make something.

You'll learn strategies for creating a three-part structure and organizing ideas (pages 26–28).

# Remembering

Critical thinking begins with remembering the basic information about a topic. To discover the basic information about a topic, ask yourself the questions in each category below.

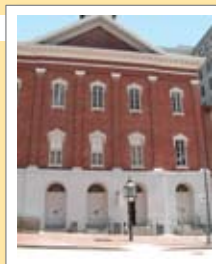
## Person

Name? *Marie Curie*  
 Life Span? *1867-1934*  
 Nationality? *French/Polish*  
 Occupation? *Physicist and chemist*  
 Accomplishments? *Discovered polonium*  
*Discovered radium*



## Place

Name? *Ford's Theater*  
 Location? *511 Tenth Street, NW*  
*Washington, D.C.*  
 Importance? *Theater where Lincoln was*  
*assassinated by Booth*  
 Description? *This fully renovated 19th-century theater is run by the*  
*national parks service. It includes a museum about*  
*Lincoln and the Civil War.*



## Thing

Name? *Abacus*  
 Color? *Black/brown*  
 Shape? *Rectangular*  
 Size? *Small*  
 Material? *Wood*  
 Age? *Old*  
 Use? *Calculation*



## Your Turn

Identify a person, place, or thing that you are studying by answering the questions listed above about it. Come up with other questions you could answer about the topic. Then answer them.

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## Idea

Name? *Justice*

Definition? *Providing what is due to all*

Synonyms? *Fairness, correctness*

Antonyms? *Discrimination, unfairness*

Example? *Equal opportunity employment*

Quotation? *"Injustice anywhere is a threat to justice everywhere." —Dr. Martin Luther King, Jr.*



## Event

Name? *Westward expansion*

Who? *European settlers*

What? *Headed west*

Where? *On the Oregon Trail*

When? *From the 1830s to the 1890s*

Why? *To homestead*

How? *They rode in wagon trains*



## Your Turn

Choose a person, a place, a thing, an idea, or an event that you are currently studying, and write down answers for each question about the topic. Then give your list of questions and answers to a partner and have the person quiz you aloud about the topic. Here's an example:

### Questions and Answers

Name? *March on Washington*

Who? *Martin Luther King, Jr.*

What? *Gave his "I Have a Dream" speech*

Where? *At the Lincoln Memorial in Washington, D.C.*

When? *August 28, 1963*

Why? *To push for civil rights*

How? *By speaking persuasively to an audience*

### Partner Quiz Questions

*What is the event named?*

*Who was the key participant?*

*What did the person do?*

*Where did it take place?*

*When did it take place?*

*Why did it happen?*

*How did he do it?*



# Understanding

When you understand something, you know what it means. You've puzzled it out using your reasoning skills. You can reason in two different directions—deductively or inductively.

## Reasoning Deductively

When you reason deductively, you begin with a general idea and work toward specific details. Most paragraphs and essays are written this way, starting with a topic sentence or thesis statement and then providing details that support the statement. The following paragraph uses a deductive pattern.

### Deductive Paragraph

Main point or thesis

If you want to improve the quality of the air that you breathe, start by looking inside your own home. Daily, we use home products without realizing that they are air polluters. Products such as air fresheners, cooking gas, and cleaning fluids pollute the air. Then people themselves pollute the inside air. We all emit bioeffluents, or contaminants such as perspiration and carbon dioxide. However, the biggest reason why in-home air is so polluted is the lack of air circulation. As we try to make our houses airtight, we trap air inside the house. We then recirculate this air behind airtight windows and doors until it becomes stale, dust filled, and unclear. The most *immediate way* to fight this type of pollution is simple: open a window.

Supporting details

### Your Turn

In a textbook, search for a paragraph that is arranged deductively. What is the topic sentence of the paragraph? What details support the sentence? Explain how this organization affects your understanding of the paragraph's main point.



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## Reasoning Inductively

When you reason inductively, you start with the specific details and work your way toward a general conclusion. Often when you are researching a project, you will work inductively—first gathering lots of information before sorting through it all to decide what it means. (See page 59.) The following paragraph is organized inductively.

### Inductive Paragraph

Specific  
examples

Schools are expected to provide one and sometimes two meals to each and every student. They are expected to provide counseling for any student who needs advice and guidance. They are expected to provide health care for those individuals who require medical attention. They are expected to provide programs to meet the special needs of students. They are expected to provide a variety of extracurricular activities. And, above all else, they are expected to provide quality instruction for all. Clearly, schools in the 21st century are asked to do many things to meet the needs of their students.

General  
conclusion

### Your Turn

Write an inductive paragraph describing the place you are in right now. Use this formula to build the paragraph.

1. Write a sentence that describes a touch sensation in this location.
2. Write a sentence that describes something you can hear.
3. Write a sentence that describes something you can smell.
4. Write a sentence that describes something you can see.
5. Write a sentence that names the location.



# Applying

Critical thinking deepens when you take some of your ideas and apply them. When you apply an idea, you connect it to a real situation and use it in a purposeful way. The 5 W's and H can help you apply an idea.

## Applying Ideas

Name: Josiah Clark Date: April 7

Idea: There should be a Web site that tracks misinformation in political advertising.

Who could use this idea? Voters could use it mostly, but also candidates could refer to it if there's false information.

What would it be used for? Voters would check it to find out the facts being addressed in politics.

Where would it be used? People could check the site from anywhere. They could also report misinformation to it.

When would it be used? It would be used mostly during political campaigns.

Why would it be used? It would point out misinformation and would keep politicians honest.

How could it be used? The site would post any political inaccuracies each week and then list facts from reliable sources.

## Your Turn

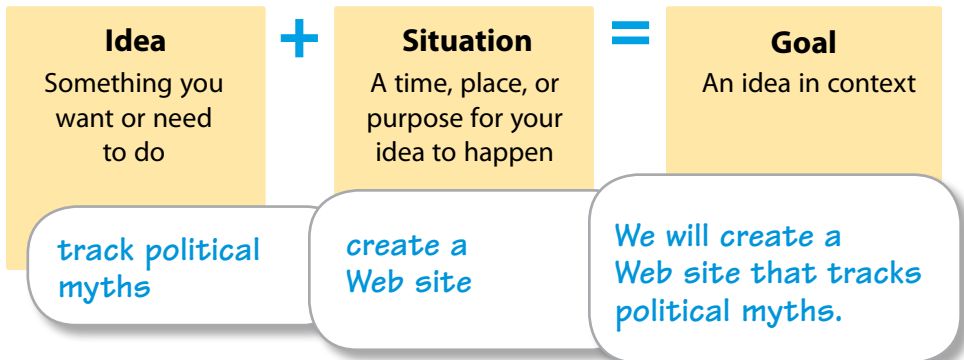
Choose an idea that you have recently thought of in one of your classes or activities. Answer the 5 W's and H about the idea, imagining ways to apply your idea to a situation.



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## Creating a Goal

After finding ways to apply an idea, you should take the next step and come up with goals and objectives for making your idea a reality. This page shows you how. A goal matches your idea with an opportunity or a situation. Use the following formula to form your goal:



### Your Turn

Use the formula above to create a goal by connecting an idea to an opportunity.

## Defining Objectives

After setting your overall goal, you can create subgoals, or objectives, by answering the 5 W's and H.

### Objectives

- Who?** *My friends in civics class and I*  
**What?** *Make a Web site to track political misinformation*  
**Where?** *We can host it on Mrs. Jenkin's class site.*  
**When?** *We'll build it over the next two weeks, and we'll keep it going throughout the election.*  
**Why?** *To show what is true and false in political ads*  
**How?** *We'll watch ads, check out their claims, and report inaccuracies.*

### Your Turn

Answer the 5 W's and H to create objectives to accomplish your goal.



# Analyzing

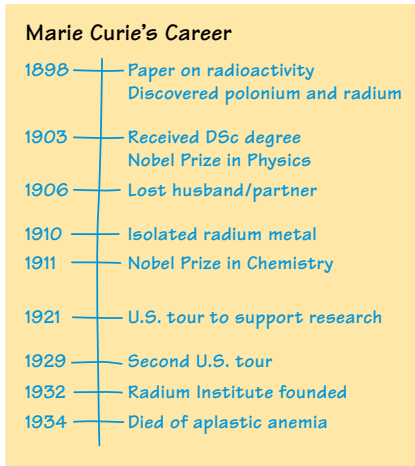
Analyzing a topic means separating it into parts and looking closely at those parts. Analysis also involves exploring how the parts fit and work together. Here are four graphic organizers that help you analyze a topic.

## Creating a Time Line

A time line helps you sequence events, putting them in time order. When you create a time line, follow these steps:

1. Research the topic and note important dates and events.
2. Arrange the events in the order that they occurred.
3. List the date on one side and the event on the other.

### Time Line: Track Time Order

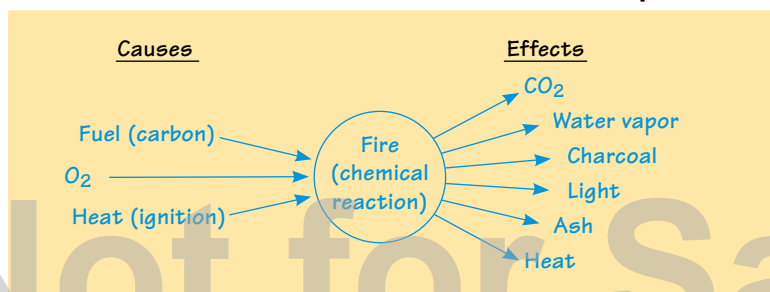


## Creating a Cause-Effect Chart

A cause-effect chart helps you analyze the conditions that led up to a specific topic or event and the conditions that resulted from it. When you create a cause-effect chart, follow these steps:

1. Research your topic, noting causes and effects.
2. Draw a cause-effect chart.
3. Include the topic name. ("Fire" is the topic below.)
4. Label the left side "Causes" and the right side "Effects."
5. List causes and effects.

### Cause-Effect Chart: Track Causal Relationships

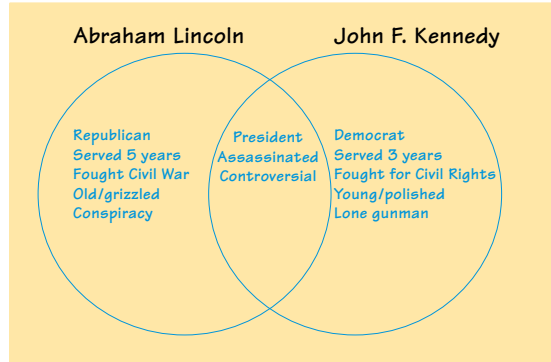


## Creating a Venn Diagram

A Venn diagram helps you analyze the similarities and differences between two topics. When you create a Venn diagram, follow these steps:

1. Research two topics that have some similarities and some differences.
2. Draw two overlapping circles.
3. Label one circle for one topic and the other circle for the other topic.
4. Write similarities between the topics in the overlapping space.
5. Write the differences in the parts that do not overlap.

### Venn Diagram: Compare and Contrast

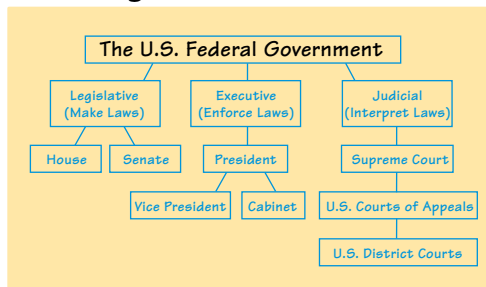


## Creating a Line Diagram

A line diagram helps you analyze the parts of a structure, a group, or an organization. When you create a line diagram, follow these steps:

1. Research your topic, noting the parts of it and how each connects to the whole or to each other.
2. Write the topic name at the top of the page.
3. List the major parts in boxes in the first row.
4. List subparts in the next row, sub-subparts in the next, and so on. (Each new part adds more specific detail.)
5. Connect the parts to show their relationship.

### Line Diagram: Show the Parts



### Your Turn

Think of a topic you are currently studying. Analyze the topic by creating a time line, cause-effect chart, Venn diagram, or line diagram.

# Evaluating

“Evaluating” means placing a value on something, telling whether it is useful, helpful, meaningful—or not. Here are two strategies for evaluating.

## Using a Rating Scale

A rating scale lets you quantify the quality of something. First, you define what you are rating and what scale you are using. Then you give your rating and explain it.

### Book Rating Scale

Poor	Fair	Good	Excellent
★	★★	★★★	★★★★

*The Outsiders* by S. E. Hinton ★★★★★ I give this novel four stars because it has great characters like Ponyboy, the plot is exciting, and it feels tragic. At first when I found out it was about a Greaser gang in the 1950s, I thought it would be out of date, but this book is still really great.

### Survey Rating Scale

12. How often do you use your virtual locker?

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

Explain: Most of our work is done on paper and handed in that way. The virtual locker helps with longer writing assignments, though.

### Richter Scale (Earthquakes)

Micro	Minor	Light	Moderate	Strong	Major	Great	Epic
1.0	2.0-3.0	4.0	5.0	6.0	7.0-8.0	9.0	10.0

The Haiti earthquake of 2010 measured 7.0 on the Richter scale and killed 230,000 people. The Sumatra earthquake of 2007 registered 8.5 on the Richter scale and (with the resulting tsunami) killed more than 230,000 people.

### Your Turn

Create a rating scale to evaluate an event or a topic you are studying. Give the concept a rating, and then explain the reason for your rating.

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## Using a Rubric

A rubric allows you to evaluate a number of traits at once. This rubric is based on the goals and objectives for a student project.

**Name:** Sharissa Smith

**Project:** Pharaoh's Burial Chamber

Goal:	Evaluation	Beat	Met	Didn't	Score
We will build a diorama that shows the burial chamber of a pharaoh.	The diorama looks terrific, with hieroglyphics, too!	60	40	20	60
<b>Objectives:</b>					
1 My table partners and I will build it.	Most of the work was done by Ryan and me.	10	6	2	2
2 We'll make a diorama of a burial chamber.		10	6	2	10
3 We'll do most of the work at home.		10	6	2	6
4 We'll schedule two work sessions for the next two weekends.	The two sessions had just Ryan and me.	10	6	2	2
5 We'll show how the chamber was arranged.		10	6	2	6
6 We'll use cardboard, construction paper, clay, pipe cleaners, and paint.	Instead of clay, we used Sculpy and baked it!	10	6	2	10

**TOTAL:** 96

### Your Turn

Assess a project you've done recently. Write down the goal and objectives, and assess how well each was achieved. Then rate the project and total the score. (Go to [thoughtfullearning.com/p25](http://thoughtfullearning.com/p25).)

# Creating

“Creating” means putting ideas together in a new way. You need to organize parts in a logical way to create an overall structure.

## Organizing Ideas

Here are the basic organizational styles.

Organizational Style	Transition Words	Graphic Organizer
<b>Time Order:</b> Placing details in the order that they happen (chronological order)	after, as soon as, before, during, finally, first, later, meanwhile, next, second, soon, then, third	Time Line (See page 22.)
<b>Place Order:</b> Placing details in the order that they appear in space (order of location)	above, along, among, around, behind, beneath, by, inside, near, off, onto, throughout, under	Diagram (See pages 378–379.)
<b>Categories:</b> Placing details according to the groups or parts of a topic (classification)	another type, on the one hand, on the other hand, a second variety, one kind, the final version	Line Diagram (See page 23.)
<b>Cause-Effect:</b> Examining the causes of a topic and then looking at the effects	as a result, as a by-product, because, due to the fact that, since, therefore	Cause-Effect Chart (See page 22.)
<b>Logical Order</b> <b>Deductive:</b> Reasoning from general to specific <b>Inductive:</b> Reasoning from specific to general	also, and, another, as well, besides, for example, for instance, for this reason, in addition, in conclusion, likewise, next, therefore	Outline (See page 272.)
<b>Comparison-Contrast</b> <b>Similarities-Differences:</b> Treating all similarities and then all differences <b>Subject-by-Subject:</b> Treating one subject and then the other subject <b>Point-by-Point:</b> Looking at one point for both subjects before going to the next	<b>Comparing:</b> again, along with, also, as, both, likewise, just as, in the same way, like, similarly, too <b>Contrasting:</b> although, but, by contrast, or, even though, however, on the one hand, on the other hand, otherwise, still, yet	Venn Diagram (See page 23.)

### Your Turn

Think of a topic that you are currently studying. If you were to write an essay about the topic, which style of organization would you choose? Why?

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## Creating a Three-Part Structure

Things that are meant to be experienced over time have a three-part structure. Paragraphs, essays, novels, e-mails, phone calls, meals, concerts, holidays, expeditions—all have this structure. (See page 295.)

### Beginning

Successful beginnings often . . .

- greet the person.
- introduce other people or ideas.
- provide background information and ground rules.
- focus on a specific topic for a specific purpose.

### Middle

Successful middle parts often . . .

- give details and ideas that support the topic and purpose.
- lead the person through an important process.
- provide an experience that the person seeks.
- provide a product or service that the person needs.
- connect people to ideas and to each other.

### Ending

Successful endings often . . .

- recap the ideas in the middle.
- revisit the topic and purpose from the beginning.
- highlight a specific important idea.
- provide a final memorable thought or experience.
- encourage the person to take action.

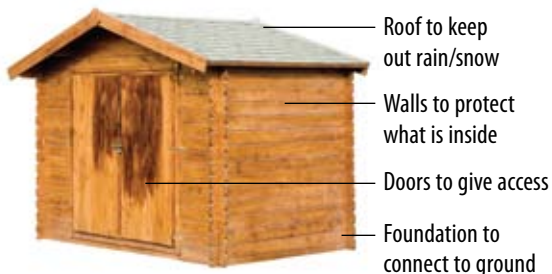
### Your Turn

List things that are experienced over time. Choose one thing from the list and write down what happens in the beginning, middle, and ending of the experience. How does it match up to the ideas shown above?

## Creating Other Structures

Some things are not experienced over time. They have a different structure depending on their function. Note the following structures.

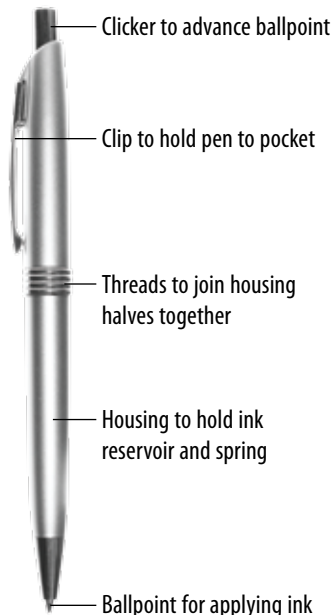
### Building Structure



### Tool Structure



### Pen Structure



### Vehicle Structure



### Your Turn

Name the parts and function of two other structures. (See pages 422–436.)

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## Critical-Thinking Activities

The activities listed below will help you work on your critical-thinking skills and become a more thoughtful learner.

### Writing to Think

Write in a notebook about the subjects you are studying. When your thoughts run dry, turn your last point into a question and answer it.

What are “significant figures?” When I do a math problem in science, I’m supposed to show only the significant figures. But my calculator shows five or six numbers after the decimal point. Why are they insignificant? Is it because the original numbers weren’t that specific? I guess it is all about keeping track of how precise information is.

**Our best advice:** Write regularly about your learning in order to make personal connections with new ideas.

#### Your Turn

For a week, write about your work in one class. Explore your thoughts after each class period. At the end of the week, assess how well it helped you connect with the material.

### Asking *Why?* and *So What?* and *Who Says?*

Researcher Michael W. Smith suggests that you ask these three questions—*Why?* *So what?* and *Who says?*—about subjects that you are studying in your classes. Doing so will help you think critically about your course work.

**Our best advice:** Write these three questions at the top of each page in your notebook when you take notes. This will remind you to try to answer these questions when you encounter new concepts and subjects.

#### Your Turn

Use this strategy for a week in one of your classes. Make sure that you answer the three questions for each set of notes you take. Evaluate the helpfulness of this strategy at the end of the week.

## Debating the Issue

Make it a point to debate important issues. A debate is a discussion in which you and your classmates defend opposing points of view about the issues. As each side argues for a particular point of view, a lot of good thinking will occur.

To conduct a debate, write down a proposed change. Then assign one person or team to argue for the proposal and another team to argue against it.

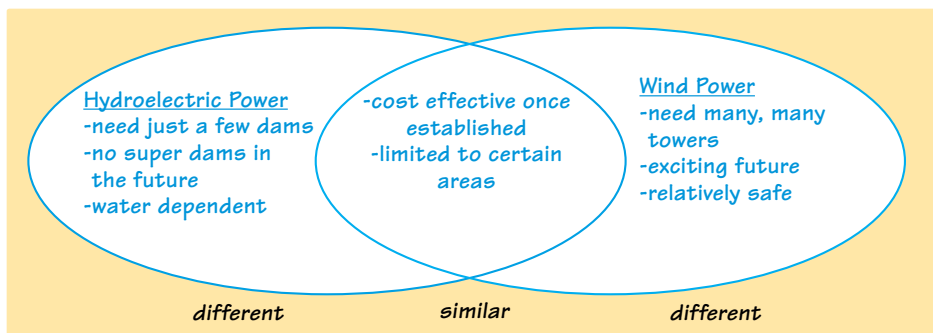
Proposal: School start time should be moved back by 1 hour.

### Your Turn

Stage a debate. Brainstorm changes that could make life at your school better. Choose one change and write it as a proposal. Then assign one person (or team) to argue the “pro” position, and the other to argue the “con” position. (For more, see pages 103–118, 450–451.)

## Thinking Graphically

Using graphic organizers is an effective way to gather and organize your best thoughts about topics you are studying. This Venn diagram compares and contrasts two alternative sources of power.



**Our best advice:** Use graphic organizers as thinking and learning tools, especially when you are studying challenging ideas and information.

### Your Turn

Create your own Venn diagram, showing the similarities and differences between two things.

## Chapter 13

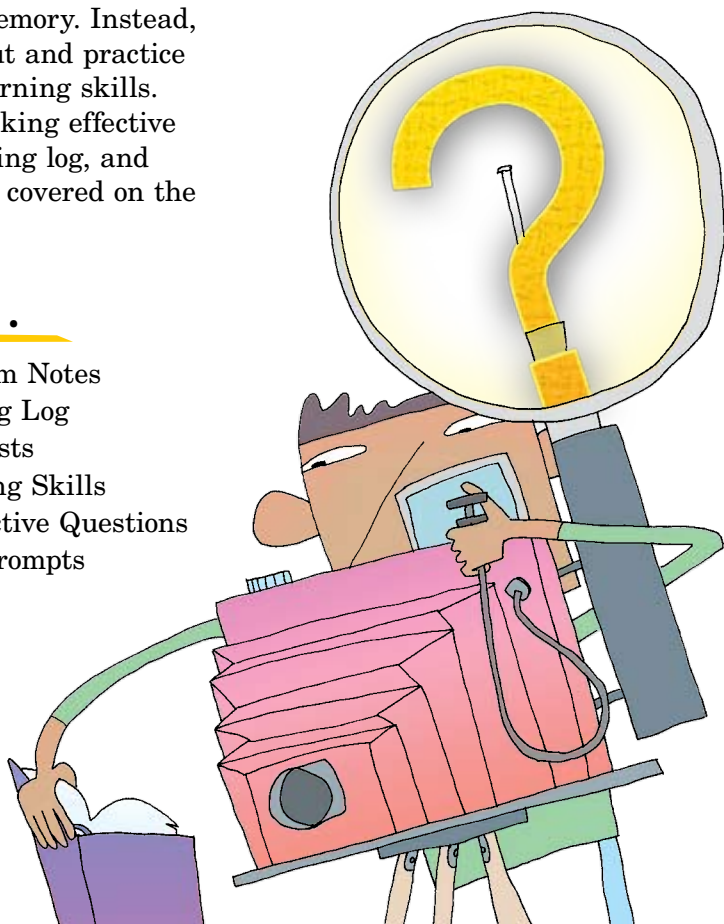
# Improving Study Skills

You may have heard that some people have photographic memories. These people can apparently remember almost everything they read or learn. Wouldn't that be great! Well, according to most experts, having a photographic memory is probably more myth than reality. If some form of this ability does exist, very few people have it.

To be an effective learner, you can't rely on luck or your memory. Instead, you need to learn about and practice effective study and learning skills. These skills include taking effective notes, keeping a learning log, and studying for tests—all covered on the pages that follow.

### **You will learn . . .**

- Taking Classroom Notes
- Using a Learning Log
- Preparing for Tests
- Using Test-Taking Skills
- Answering Objective Questions
- Responding to Prompts



# Taking Classroom Notes

Your teachers regularly introduce you to new concepts and subjects. To understand these ideas and put them to good use, you need to practice effective note taking. Use the information below as a guide.

- **Use an effective note-taking format.** A format is a plan or method of organization.
- **Label your notes** at the top of the page with the topic and date. Also number the pages to keep information in good order.
- **Record important information** that your teacher puts on the board.
- **Practice good listening skills** during discussions and lectures. Be alert for clues that important information is coming up—“There are four types of . . .” or “Please remember that . . .”
- **Number information** that is presented in steps.
- **Pay special attention to new vocabulary words.** Guess on the spelling, if you’re not sure. Circle words as a reminder to check the spellings and definitions later.
- **Write down key words or phrases.** If you try to write complete sentences, you may not be able to keep up. Also try to use your own words as much as possible.
- **Use pictures, abbreviations, and your personal shorthand** to help you record important information. (Use + for “and,” *u* for “you,” and so on.)
- **Review your notes after class** and continue to review them from time to time. During your review, highlight or mark important facts and details.

## In Focus

If you don’t take complete notes, by the end of class, you may have forgotten as much as half of the information presented. After a few weeks, you may have forgotten 80 percent or even more!

## Your Turn

On a scale of 1, meaning “ineffective,” to 10, meaning “very effective,” rate your note-taking skills. Are your notes organized? Are they clear? Do they help you to complete assignments and study the material? Explain your rating in a brief paragraph.



## Sample Note Page

Keep your notes in a notebook or a binder. Use two-thirds of the page for your actual notes and the rest of the page for comments, questions, definitions, and extra information.

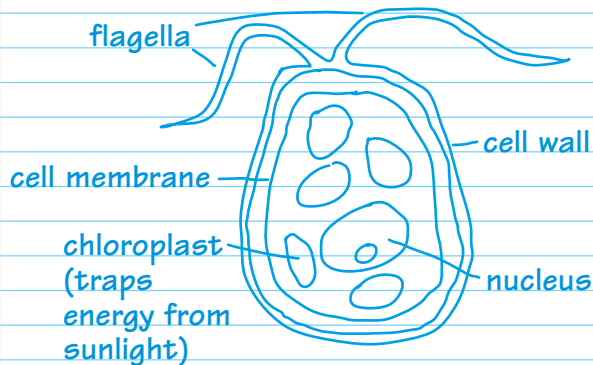
Algae

Nov. 3

p. 14

- + plant-like, single-celled organisms (protists)
- + includes a nucleus
- + don't belong to animal, plant, or fungi kingdom
- + often live in water
- + get energy from sunlight
  - contain chlorophyll to collect the sun's energy and release oxygen (photosynthesis)
  - organisms that use photosynthesis are important source of food

What is a nucleus?



Find out what each part does.

- + types of algae
  - diatom (have chloroplasts)
  - volvox (seaweed)

single cell

multi-celled

Are there only two types?

## Using a Learning Log

Taking good notes helps you *remember* important concepts covered in class, while keeping a learning log helps you *understand* the information better. A learning log is a special part of your class notebook reserved for writing about your course work.

- **Label and date your entries** to keep track of your writing.
- **Keep a regular writing schedule**, but write more often or for a longer time when you are studying something challenging.
- **Freely explore your thoughts and feelings.** Try writing nonstop for 3 to 5 minutes at a time.
  - Make connections in your writing: How do new ideas relate to what you already know?
  - Question what you are learning.
  - Argue for or against ideas or beliefs discussed in class.
  - Pay special attention to ideas that confuse you. Writing about them will help you understand them better.
- **Review your writing** to see how it has helped you better understand the material and concepts covered in class.

## Specific Learning-Log Strategies

Here are four ways to write in your learning log.

- **Predicting** In your writing, predict what you think will happen next because of the new ideas or concepts you have learned about.
- **Summing Up** Summarize what was covered in a lesson or class. Consider its importance, value, and meaning.
- **Question of the Day** Try to answer a question such as “What if?” or “Why?” about a subject you are studying.
- **Dialoguing** Create a conversation between you and another person about a subject you are studying.

### Your Turn

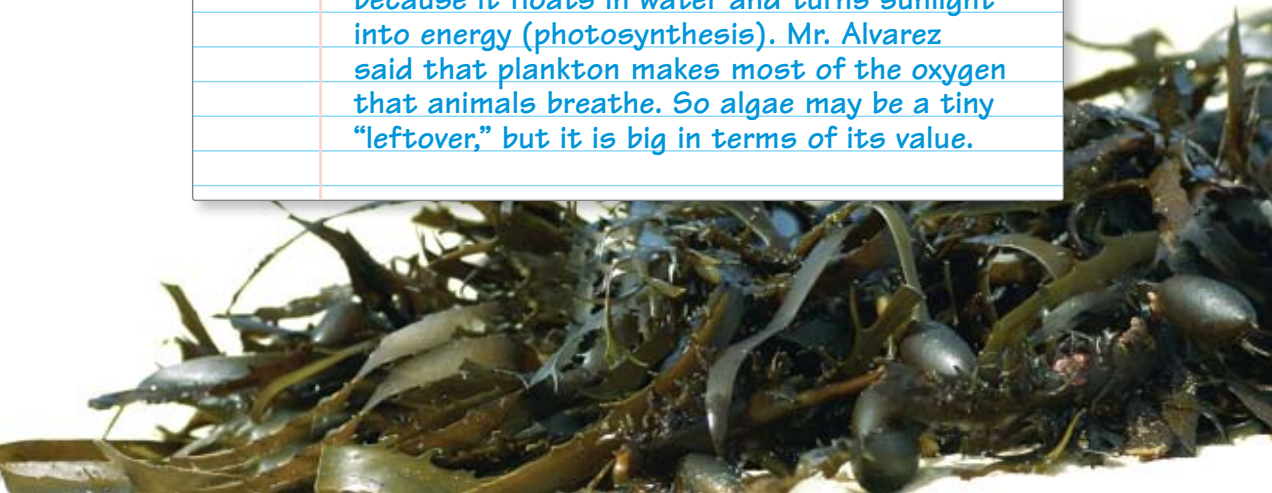
Write a learning-log entry about something that you have learned so far in this book. Be sure to review the guidelines above before you get started.

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## Learning-Log Entry

A student wrote the entry below after a class discussion on algae. In her writing, she explored her thoughts and feelings about the subject.

	Algae	Nov. 4	p. 8
	<p>It's hard to think of something that is alive but not part of the animal, plant, or fungi kingdoms. How can that be? From the slides we saw, I'd call them plants, at least some of them. Seaweed is a type of algae, and it sure looks like a plant to me. Mr. Alvarez called them leftovers because they don't fit anywhere.</p>		
	<p>Algae may be way down on the food chain, but it is still important because it is a food source and provides energy. Plants do that, too. Hmm.</p>		
	<p>One slide showed that algae contains chlorophyll, and I know all about that. My mom makes me eat celery because it contains chlorophyll. She heard from my sister that chlorophyll is healthy, so we eat a lot of green food. Thanks, Sasha.</p>		
	<p>Algae, or at least some of it, is plankton because it floats in water and turns sunlight into energy (photosynthesis). Mr. Alvarez said that plankton makes most of the oxygen that animals breathe. So algae may be a tiny "leftover," but it is big in terms of its value.</p>		





# Preparing for Tests

Everyone has different feelings about tests. Suzanne Farrell, a famous ballerina, says that she loved tests because they were another form of competition. Bruce Jenner, a gold-medal track star, still has nightmares about them. No matter how you feel about tests, they are a fact of school life. The next few pages will show you how to prepare for them.

## Getting Started

**Know what topics** or information the test will cover.

**Know what form** the test will take (*multiple choice, short answer, true/false, essay*).

## Getting Organized

**Make a list** of everything that will be covered on the test.

**Organize your notes** and handouts accordingly.

**Gather any notes** that you may have missed.

**Note the pages in your textbook** that you need to review.

## Getting to Work

**Skim all of the material** to get the big picture.

**Write down questions** that you may want to ask your teacher.

**Continue to review** the material.

**Use study aids** such as diagrams or flash cards.

**Explain things out loud** if that helps you remember.

**Study the material** with a classmate or family member.

### In Focus

To remember a list of important terms, think of a special word or sentence based on the terms. For example, the word **homes** is spelled with the first letter of each of the Great Lakes—**H**uron, **O**ntario, **M**ichigan, **E**rie, and **S**uperior. (See pages 34–35.)

## Using Test-Taking Skills

Make a plan for taking each of your tests. The suggestions below can help.

### Before . . .

**Come prepared** with the right materials.

**Listen carefully** to your teacher's directions.

### During . . .

**Skim the test** to see what you have to do.

**Begin the test**, following the directions for each section.

**Watch for key words**—*always, only, all, never*—in the questions.

**Answer the questions you are sure of**; then move on to the ones that you are not sure of.

**Check with your teacher** if you have any questions about the directions you have been given.

### After . . .

**Double-check your work** before turning in your test.

### Your Turn

Write down one or two problems that you have had with tests. Then write down two or three of the strategies mentioned above that you will try for your next test. Share your thoughts with your classmates.



## Answering Objective Questions

Objective (factual) questions on tests ask for specific responses—true or false, matching, multiple choice, or fill in the blank. The information that follows will help you answer objective questions.

### True or False

On this type of test, you must decide if a statement is either true or false.

- **Read each statement carefully.** If any part is untrue, then the entire statement is false.
- **Watch for key words** such as *all*, *every*, *always*, and *never*. Not many things are always true or never true.

False Every earthquake occurs along the borders of tectonic plates.  
(Some earthquakes occur within tectonic plates.)

- **Also watch for words that mean “not.”** Be sure you understand how the word is used in the statement.

False You can't have a major earthquake if patches of rock move a few meters.  
(A meter of shift can cause a major earthquake.)

### Matching

For matching questions, connect a word or phrase in one list to a word or phrase in a second list.

- **Read the directions carefully** so you know if answer choices can be used more than once, or if some may not be used at all.
- **Scan both lists before answering.**

- |                                |                                     |
|--------------------------------|-------------------------------------|
| 1. <u>b</u> normal faults      | a. the patch of rock moves up       |
| 2. <u>a</u> reverse faults     | b. the patch of rock moves down     |
| 3. <u>c</u> strike-slip faults | c. the patch of rock moves sideways |

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## Multiple Choice

For multiple-choice questions, decide which of several answers is correct.

- **Watch for special answers** that may tell you all or none of the responses are correct.

Which of the following is true about energy from earthquakes?

- a. It travels in one direction.
- b. It travels up.
- c. It travels in waves.
- d. none of the above

- **Watch for words such as *except***, which can completely change the question.

These are recognized movements along fault lines **except for** . . .

- a. The rocks may slide along constantly.
- b. The rocks may snag.
- c. The rocks may melt from intense heat.
- d. The rocks may bend from stress.

## Fill in the Blank

For fill-in-the-blank questions, write the missing words in sentences or paragraphs.

- **Watch for the number of blanks.** Each one stands for one word or answer.

The energy produced by an earthquake travels as seismic  
waves.

The best known fault is the San Andreas fault  
in California.

- **Watch for an article preceding the blank.** The article *an* tells you the word that follows should begin with a vowel sound. The article *a* tells you the word should begin with a consonant sound.

Stress along **a** plate can cause rocks to break apart.

## Responding to Prompts

Some tests ask you to respond to a prompt (or answer an essay question) by writing a paragraph or short essay in a limited amount of time.

A prompt includes three parts that will guide your writing. It will (1) give background information about a topic, (2) tell you what form of writing to use, and (3) name the purpose of your writing. Here's a sample prompt.

### Sample Prompt

We've studied earthquakes in chapter 4 and watched a documentary about them. In an expository paragraph, describe the occurrence of an earthquake. Consider *why*, *how*, and *where* they usually occur.

### Your Turn

Name the three parts of this writing prompt.

## Purpose Words

To know what to do in your response, you need to identify the purpose word in the prompt. In the prompt above, you are asked to *describe* something. Here is a list of common purpose words.

**Compare:** Show how two things are alike and different.

**Contrast:** Show how things are different.

**Define:** Tell what a word or subject means, what category it belongs to, or what it is used for.

**Describe:** Identify what something or someone looks like, sounds like, feels like, and so on.

**Evaluate:** Give your viewpoint about the value of something.

**Explain:** Show how something works or how something happened.

**Persuade:** Convince the reader to agree with your viewpoint or opinion.

**Prove:** Show that something is true or false, strong or weak, and so on.

**Summarize:** Present the main points in a clear, concise form.

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## Planning and Writing a Response

Even in a test situation, when time is short, responding to a prompt requires planning:

- **Follow all of the directions supplied by your teacher.** (Notice how much time you have to write your answer.)
- **Consider the parts of the prompt.** You need to know the topic, the form, and the purpose of your writing. (See the previous page.)
- **Write a topic sentence** or a thesis statement for your response, depending on whether you are writing a paragraph or a brief essay. Here is an example topic sentence for a response to the prompt on the previous page.

*An earthquake is the sudden shaking of the ground along a fault.*

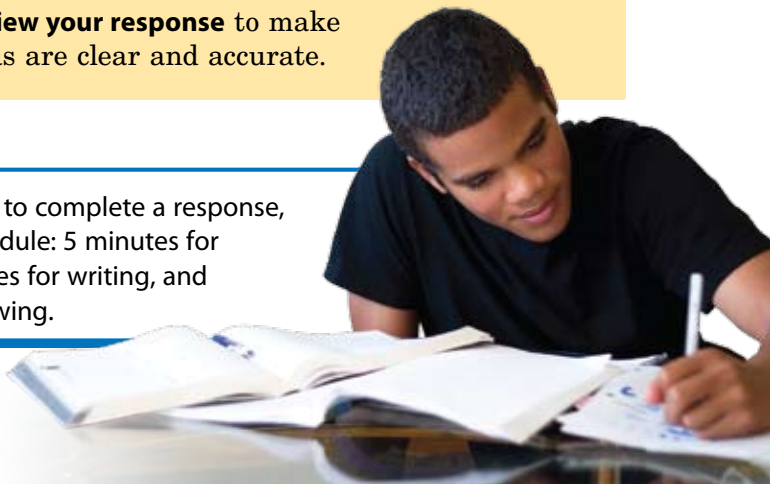
- **Make a quick list of supporting ideas.**

- faults along tectonic plates*
- pieces of rocks in plates stick or snag*
- the stress builds and creates sudden movement*
- size depends on stress and distance of movement*
- Pacific Rim susceptible*

- **Write your response**, starting with your topic sentence. Then include the ideas from your quick list. Add details as needed. End with a closing sentence.
- **Reserve time to review your response** to make sure that your ideas are clear and accurate.

### Focus

If you have 40 minutes to complete a response, consider this time schedule: 5 minutes for planning, 25–30 minutes for writing, and 5–10 minutes for reviewing.



## Sample Response

The following response satisfies the prompt's three-part requirement by addressing the topic (how earthquakes occur), using the right form (an expository paragraph), and fulfilling the purpose (describing).

### Prompt

We studied earthquakes in chapter 4 and watched a documentary about them. In an expository paragraph, describe the occurrence of an earthquake. Consider *why*, *how*, and *where* they usually occur.

### Response

Topic  
sentence

An earthquake is the sudden shaking of the ground along a fault. Faults are usually found along the boundaries of tectonic plates, so that is where most earthquakes happen. Sometimes, though, earthquakes will also occur within tectonic plates. The earth's crust is made up of many tectonic plates, which are large and small patches of rock that fit together like a puzzle.

Body  
(supporting)  
sentences

When the pieces of rock within these plates stick or snag along a fault, they create stress. As this stress increases, the rocks can move because they are brittle. If this movement is sudden, an earthquake can occur. The size of an earthquake depends on the amount of stress that occurs and the distance that the pieces of rock move along the fault. People living along the plates that outline the Pacific Rim experience most of the world's earthquakes. Unfortunately, parts of the Pacific Rim, including California, are densely populated.

Closing  
sentence

### Your Turn

Plan and write a response to a prompt supplied by your teacher.





## Study-Skills Activities

Use these activities to practice different study skills and become comfortable using them.

### Comparing Notes

In the introduction to this chapter, you were reminded that you can't always rely on your memory to keep the information you are given in class. You need to take effective notes to keep track of the new material that you are introduced to.

**Our best advice:** Become a regular note taker, using an effective method such as the one shown on page 197. Keep your notes in a class notebook rather than on individual sheets of paper, and record your notes neatly so that you can review them later on.

#### Your Turn

Team up with a partner for this activity. Select one page from a textbook that each of you will read and take notes on. Afterward, compare notes to see what each of you included.

### Following a Lecture or Presentation

Taking notes during a lecture or presentation requires careful listening. And remember that your teacher won't necessarily write every important fact and detail on the board during the lecture.

**Our best advice:** Practice good listening skills during lectures, presentations, and discussions. Also become skilled at knowing which facts and details to write down in the simplest way. (See page 196.)

#### Your Turn

Your teacher will lecture for two or three minutes about a topic, perhaps writing a few things on the board. Take notes as he or she goes along. Then your teacher will stop, erase the board, and choose you or one of your classmates to come to the front of the class and repeat the lecture you've just heard. If you are chosen, use your notes as a guide.

## Logging On

The more you use new information, the better. Taking notes is a good first step, and writing about the new information in a learning log is an effective next step. In a learning log, you explore your thoughts and feelings about the new information.

**Our best advice:** Set aside part of your classroom notebook for learning-log entries. Then write in it about your course work for 5 to 10 minutes, every day or every other day. React to the notes you took or to ideas that were discussed in class.

### Your Turn

Write learning-log entries about one of your classes for a week. Explore your thoughts about new information, class discussions, class work, and assignments. Consider what you learned, what questions you have, and what interests you the most. (See pages 198–199.)

## Working with Prompts

Responding to a prompt may be the most challenging part of any test you take. Instead of answering a true/false or multiple-choice question, you must share your thoughts in a piece of writing. This requires an understanding of (1) the subject, (2) the form of the response, and (3) the purpose.

**Our best advice:** Practice responding to prompts until you are comfortable with this type of writing. To do this, write your own prompts, or questions, about a subject you are studying. Then respond to them within a limited amount of time. (See page 205.)

### Your Turn

Select three purpose words from the list on page 204. For each word, write a prompt, or question, about something you are studying in one of your classes. Remember to include the three main parts in each prompt. Exchange prompts with a classmate and practice writing responses.

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## Part II: Using the Inquiry Process



## **Part II: Using the Inquiry Process**

This section leads you through the steps in the inquiry process, from questioning to creating to presenting. As you learn about this process, you will apply many of the skills that you learned in Part I. You will also use the inquiry process to complete the great projects in Part III.

### **Chapters in This Section**

- 16. Learning About the Inquiry Process
- 17. Questioning
- 18. Planning
- 19. Conducting Basic Research
- 20. Conducting Advanced Research
- 21. Creating
- 22. Improving
- 23. Presenting

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## Chapter 16

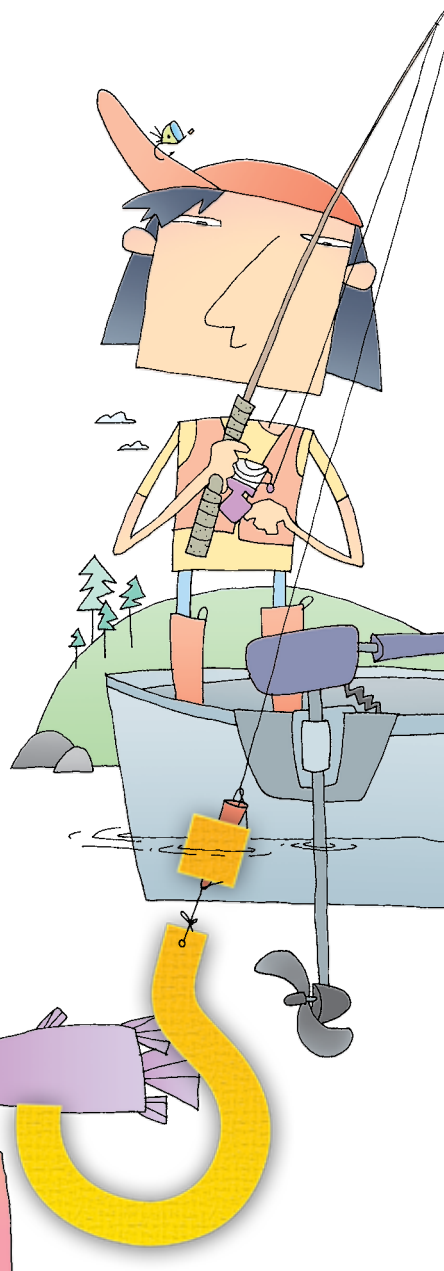
# Learning About the Inquiry Process

To inquire means “to ask questions.” And we all know that a question ends with a question mark. So where did the question mark come from? No one is quite sure, but it is powerful. This mark signals a question, which may begin a search, and eventually land an answer . . . or bring to mind another question or two.

That’s what the process of inquiry is all about—being hooked by a question and needing to find the answer. This process can help you learn whatever you need to know, and this chapter will show you how it works.

### You will learn . . .

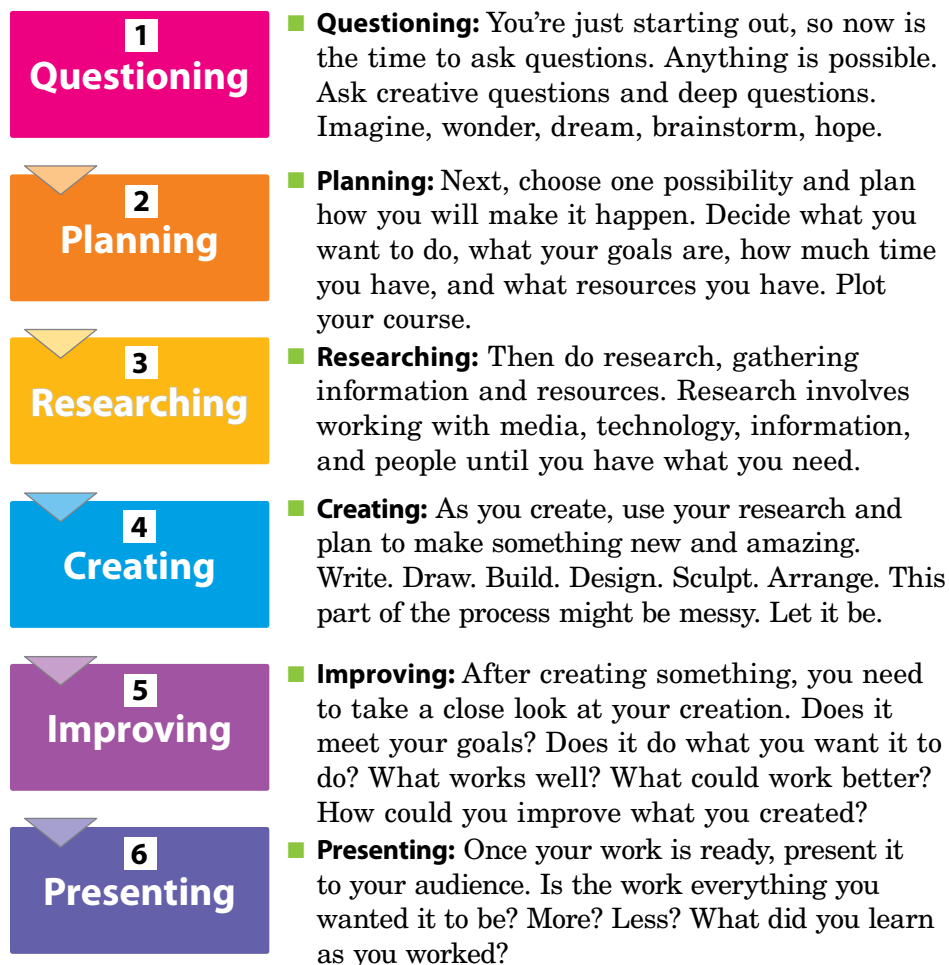
- Questioning
- Planning
- Researching
- Creating
- Improving
- Presenting



# Understanding Inquiry

Inquiry is a process. You can't do everything all at once. At the beginning, you need to ask questions and explore. Then you plan what you want to do and research it, gathering the materials you need. Afterward, you create something, following your plan. When you've completed your creation, you check it against your goals to see how you can improve on what you have accomplished. In the end, you present your work to the wide world.

Here's a visual to help you understand the inquiry process:



## Your Turn

Which part of this process interests you most? Which part sounds most challenging?

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## 1. Questioning

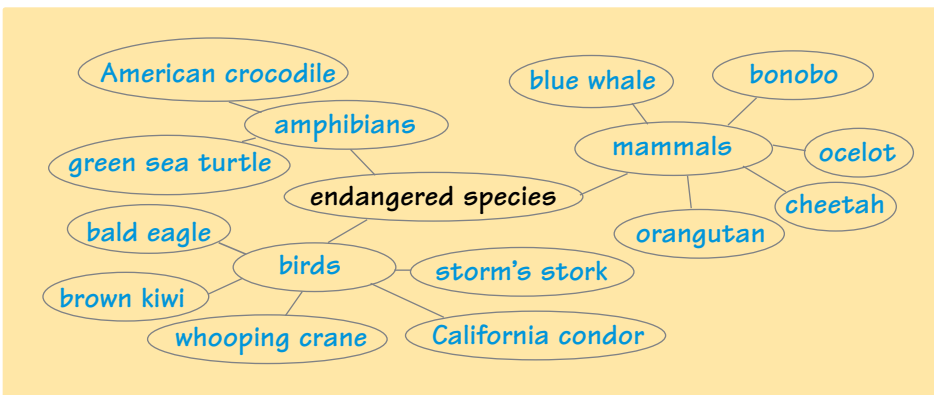
Inquiry begins by asking about the situation. The situation might be a school assignment, or your own backyard project. The basic questions you ask yourself are the same. (See also page 245.)

### 5 W's and H

<b>Who</b> is involved?	<u>My science classmates and I</u>
<b>What</b> is my goal?	<u>To help an endangered species</u>
<b>Where</b> is the situation?	<u>In science class, in the school, and in my community</u>
<b>When</b> is the situation?	<u>Over the next three weeks</u>
<b>Why</b> am I doing this?	<u>It's an assignment with our endangered species unit.</u>
<b>How</b> should I do it?	<u>We could maybe have a fund-raiser for a charity.</u>

### Brainstorm

Once you have analyzed the situation, it's time to dream big. Let your brain—and the brains of your classmates and friends—storm up ideas. One way to do so is to use a cluster. Write your goal in the middle of a piece of paper or the middle of a board and then write ideas all around it, connecting them. Let your mind run wild. (See also page 247.)



### Your Turn

Analyze the situation you are in by answering the 5 W's and H about it. Then create a cluster like the one above.



## 2. Planning

After you've dreamed big—thinking about all the possibilities—it's time to plan exactly what you will do. Planning means outlining your goals and objectives and listing the tasks you'll need to accomplish. You should think about time, teams, and tools. A planning sheet can help.

### Planning Sheet

**Goal:** I want to hold a fund-raiser to help save whooping cranes.

**Objectives:** *Who?* I will run it, and I hope others will help out.

*What?* Will raise money to save whooping cranes.

*Where* In class, in the school, and in the community.

*When?* In the next three weeks.

*Why?* Whooping cranes are endangered.

*How?* We could sell something or have an event?

#### Tasks:

Start .....

1. Find other people to help and get an advisor.

2. Research charities and fund-raising ideas.

3. Decide on an idea and divide up the work.

4. Gather all the materials we need and get support.

5. Hold the fund-raiser.

6. Send in the money.

7. \_\_\_\_\_

8. \_\_\_\_\_

Finish .....

#### Time:

Oct. 1

Oct. 1

Oct. 4

Oct. 5

Oct. 6-21

by Oct. 22

\_\_\_\_\_

\_\_\_\_\_

by Oct. 29

#### Team:

I'll get Lupe, Jo, and Mike to help. They seem excited by the idea.

#### Tools:

We'll use the Internet to look for good charities for whooping cranes.

We'll also search for fund-raising ideas. We'll have to decide on

supplies when we have a clearer plan.

### Your Turn

Go to [thoughtfullearning.com/p238](http://thoughtfullearning.com/p238) to download your own planning sheet and complete it. (See also page 261.)

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### 3. Researching

Each project you work on will require you to do some research (see pages 263–292). And any research you do must involve a good system for note taking. In the following example, Dave kept a two-column notebook. On the left, he wrote ideas for fund-raisers, and on the right, he wrote comments.

#### Your Turn

Make a list of possibilities for a project of your own.

#### Fund-Raising Ideas

- \_\_\_\_\_ Just ask people to donate
- \_\_\_\_\_ Walk-a-thon
- \_\_\_\_\_ Bake sale
- \_\_\_\_\_ Sell flowers
- ☒ Sell T-shirts
- ☒ Flamingoes in yards
- \_\_\_\_\_ Raking yards
- \_\_\_\_\_ Benefit concert
- ☒ Benefit dance
- \_\_\_\_\_ Chicken dinner

*My sister designed a T-shirt for her jazz choir. We could design and sell T-shirts to help save whooping cranes.*

*There's a company that rents lawn flamingoes for a fund-raiser. People pay to have their friends "flamingoed"—filling the front lawn with pink flamingoes. That's kind of like sending the cranes.*

*Lupe's brother is a DJ. He would donate his time for free!*



## 4. Creating

After you do your research and gather all the materials and knowledge you need, it's time to develop your project. This stage is the most fun, but also the most challenging. At this point, many of your ideas will become realities, but other ideas won't work, and you'll have to try something else. Don't get discouraged. That's part of the process! Enjoy the messiness of it, and enjoy the victories. (See pages 293–300.)

Here's the cool  
T-shirt design we  
came up with.



Whoop it up  
to save the  
cranes!

Come to the 2011 Whooping Crane  
**Benefit Dance**  
All profits go to Operation Migration



Saturday, January 3, 7:00 p.m.  
Brayford Gymnasium  
Students \$5

We made this  
poster to promote  
the dance. Lupe's  
brother wasn't free  
to DJ until January.

The flamingo idea was too expensive, but we've got  
two other fund-raisers that work together.

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## 5. Improving

When you've finished your project, it's time to evaluate it. Start by going back to your goals to see if you met all of them.

**Rubric Sheet**

Goal:	Evaluation	Rating			Score
I want to hold a fund-raiser to save whooping cranes.	We actually have 2 fund-raisers going!	Beat 60	Met <b>40</b>	Didn't 20	60
<b>Objectives:</b>					
1 I will run it with others from the class.	Mrs. Smith is our advisor.	Beat <b>10</b>	Met 6	Didn't 2	6
2 Will raise money to save whooping cranes.	\$135 so far	Beat 10	Met <b>6</b>	Didn't 2	6
3 In class, in the school, and in the community.	We need more community support.	Beat 10	Met 6	Didn't <b>2</b>	2
4 In the next three weeks.	The dance will be in January.	Beat 10	Met 6	Didn't <b>2</b>	2
5 Whooping cranes are endangered.	We've really raised awareness!	Beat <b>10</b>	Met 6	Didn't 2	10
6 We could sell something or have an event?	We're having both.	Beat <b>10</b>	Met 6	Didn't 2	10
		Total:			96

### Your Turn

Go to [thoughtfullearning.com/p244](http://thoughtfullearning.com/p244) and download a rubric sheet. Use it to evaluate a project you have worked on. (See also page 303.) Then make improvements.

## 6. Presenting

When you are finally satisfied with your work, it's time to present it to the world. If you've been working on a writing project, you might post it to a class blog, present it to your class, or just read it out loud to family or friends. Dave, Lupe, Jo, and Mike continued selling "Save the Cranes" T-shirts right up through the holidays ("Makes a great present!") and at the benefit dance in January. They raised not just funds, but also awareness.



## Inquiry Process in Review

If someone asked you what Dave and his friends did, you'd say they ran fund-raisers. But they were also using the inquiry process and building 21st century skills. This process and these skills work for big projects like running a fund-raiser, and also for everyday tasks like making a grocery list.

### The Process of Inquiry

- question
- plan
- research
- create
- improve
- present

### 21st Century Skills

- creative thinking
- critical thinking
- communicating
- collaborating
- reading/studying
- using technology

### Your Turn

Think of a time when you used the inquiry process, whether in or out of school. What did you do? What part was most challenging? What part was most fun? Were you happy with the results?

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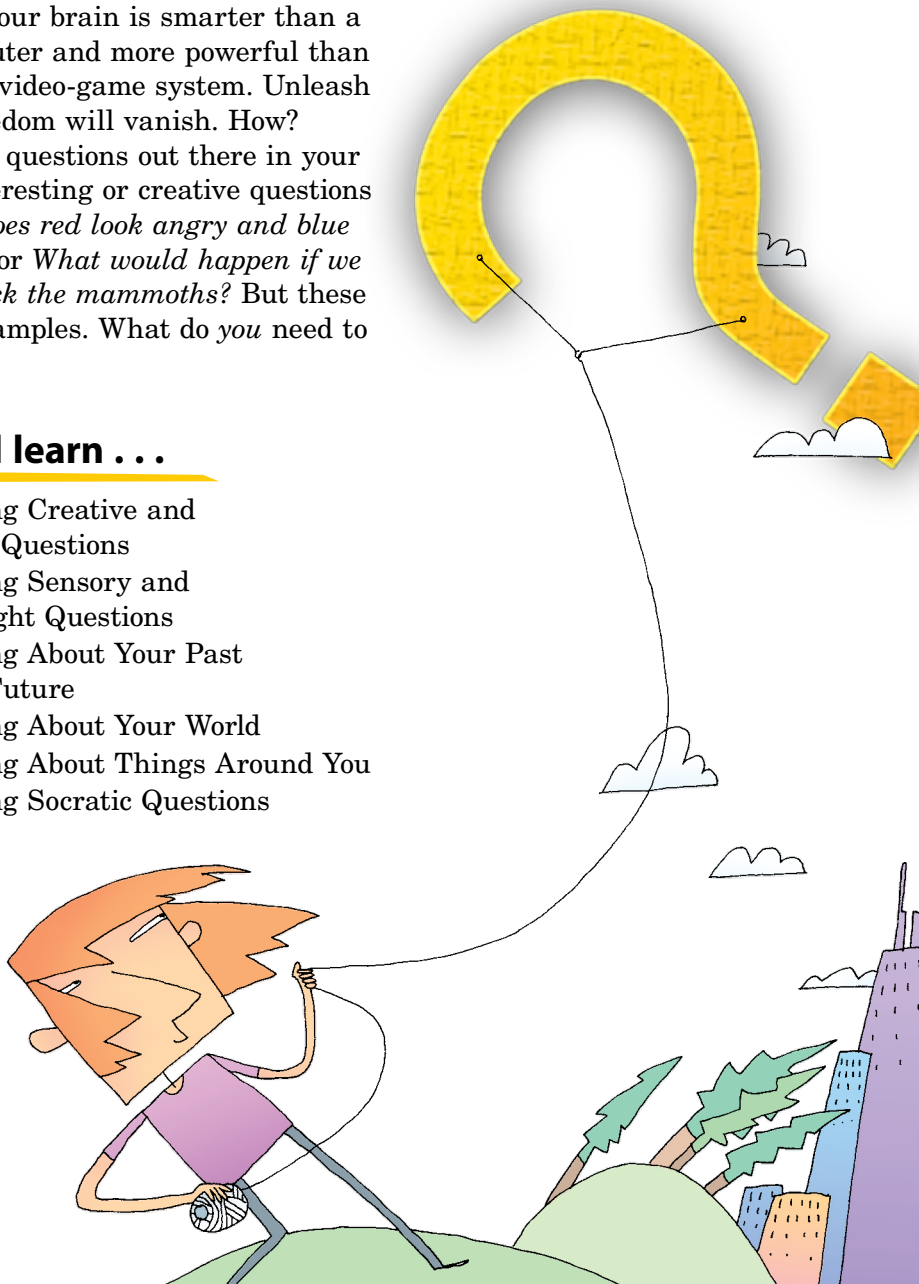
## Chapter 17 Questioning

Sometimes you may say that you're bored. But in reality, you never have to be bored. Your brain is smarter than a supercomputer and more powerful than an X-Box® video-game system. Unleash it, and boredom will vanish. How?

Float a few questions out there in your world—interesting or creative questions like *Why does red look angry and blue look calm?* or *What would happen if we brought back the mammoths?* But these are just examples. What do *you* need to know?

### You will learn . . .

- Asking Creative and Deep Questions
- Asking Sensory and Thought Questions
- Asking About Your Past and Future
- Asking About Your World
- Asking About Things Around You
- Asking Socratic Questions



## Asking Creative Questions

You've probably heard that there's no such thing as a stupid question. That's true. Here, for example is a question that might sound stupid:

*"How do you spell *h*?"*

The answer seems obvious: "You spell *h* with an *h*." But there's another possible answer: "You spell *h* this way—A-I-T-C-H." And why doesn't the word *h* prominently feature the letter *h*, the same way that the word *dee* features the letter *d*? In fact, some people in England and Australia pronounce the letter *h* as *haitch*.

Do you see how creative questions lead you in interesting directions? Here are some more creative questions.

Why were the dinosaurs so big?  
 Why does money have value?  
 Can mosquitoes feel fear?  
 Why do people get old?  
 Is every electron the same?  
 Why did the Founding Fathers wear wigs?  
 Why do we call it Germany instead of Deutschland?  
 How does a water strider get a drink of water?  
 Do single-celled organisms need sleep?  
 Where is the Internet? Who runs it?  
 What happened to the mammoths?  
 How many personalities are there?  
 What makes funny jokes funny?  
 Why don't oil and water mix?  
 Could time move backward or sideways?  
 How do sunflowers know where the sun is?  
 Why was history so violent? Are we less violent now?  
 What is the purpose of music?  
 What is empty space made of?

### Your Turn

Spend 5 minutes writing creative questions of your own.

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## Asking Deep Questions

Questions aren't all created equal. A researcher named Benjamin Bloom created a scale to show different kinds of questions. Here is the revised version of his scale. The farther down you go, the deeper the questions become. (See also pages 15 and 33.)

Levels of Thinking	One Student's Questions
<b>To remember</b> , ask about facts. <b>What</b> happened? <b>Who</b> was involved? <b>Where</b> did it take place? <b>When</b> did it happen?	<b>The Cold War</b> <i>What happened in the Cold War?</i> <i>Who was involved in the Cold War?</i> <i>Where was the Iron Curtain?</i> <i>When did the war start and finish?</i>
<b>To understand</b> , ask about meaning. <b>Why</b> did it happen? <b>What</b> does it mean? <b>How</b> does it connect to other things?	<b>The Berlin Wall</b> <i>Why did the Soviets build the wall?</i> <i>What did the wall mean for Berlin?</i> <i>How did the wall affect other countries?</i>
<b>To apply</b> , ask how to use ideas. <b>What</b> can I do with this idea? <b>How</b> could I use it?	<b>Espionage</b> <i>What code-breaking skill can I use?</i> <i>What modern codes could I break?</i>
<b>To analyze</b> , ask about the parts. <b>What</b> are the parts? <b>How</b> do they fit? <b>Why</b> do they work? <b>What</b> is their purpose?	<b>Intelligence Agencies</b> <i>What were the CIA and KGB?</i> <i>How did they fight each other?</i> <i>Why was the KGB discontinued?</i> <i>What was their goal?</i>
<b>To evaluate</b> , ask about quality. <b>What</b> is the value of this? <b>Does</b> it fulfill its purpose? <b>How</b> could it be better?	<b>The Cold War</b> <i>What good was the Cold War?</i> <i>Did either country reach its goal?</i> <i>What could they have done better?</i>
<b>To create</b> , ask about making something. <b>What</b> new thing can I make? <b>How</b> can I combine two things? <b>How</b> can I use something in a new way?	<b>Propaganda</b> <i>What poster could I make?</i> <i>What words/images could I use?</i> <i>How could I use a real poster in a new way?</i>

### Your Turn

Think of a topic in social studies or science and ask a question about it from each of the six levels above. Note how your thinking deepens.

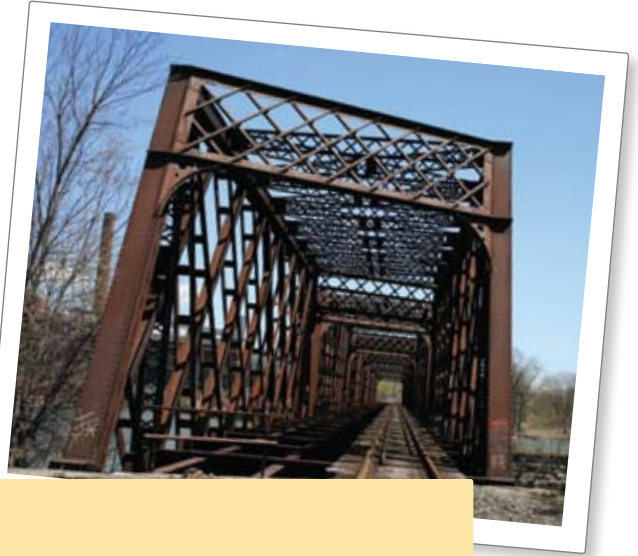
# Asking Sensory Questions

You receive information through your senses, your memories, and your feelings.

## What am I sensing?

As you explore a place, hold an object, or connect with a person, you should ask yourself what is pouring in through your senses. Filling out a sensory chart like the one below can help you heighten each of your senses. Make sure to choose especially descriptive words! Here is a sensory chart about a special place.

### Sensory Chart



#### What do I . . .

see?	old railroad trestle, scraggy trees, chocolate-colored river, turtle island, bent metal ladder, boulders, graffiti, robin egg, fishing line
hear?	water chattering, wind in the leaves, goose honking, squirrel fight, trees creaking, grass crunching, plopping frog, rustling jacket
smell?	river water, warm grass, tar in rail ties, apple blossoms, sweat
taste?	clover bloom, wild mint
touch?	splintery ties, smooth boulder, dry grass, soft petal, rough stick, slick mud, cool air, flat stones

### Your Turn

Make a sensory chart about a favorite location. (Download a template of a sensory chart at [thoughtfullearning.com/p246](http://thoughtfullearning.com/p246).) Try to write down information from all five senses.

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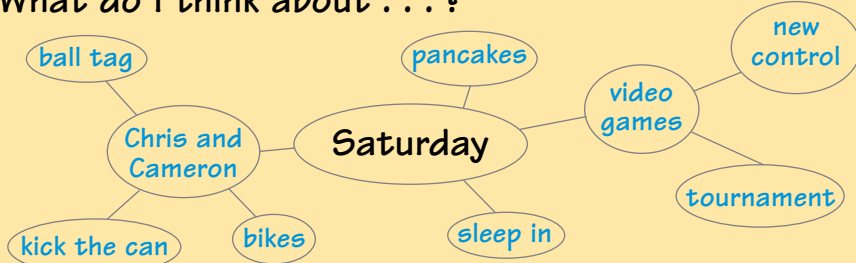
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## Asking Thought Questions

To discover what you think about any topic, you can create a mind map or cluster. A mind map traces your thoughts and helps you connect them.

### Mind Map

What do I think about . . . ?



### Your Turn

Create your own mind map. In the center of a piece of paper, write a word or an idea and circle it. Then, around it, write other ideas and connect them to the first circle or to each other. Keep going until you have written all your thoughts on that topic.

## Freewriting

You can also explore your thoughts by freewriting. Freewriting means writing for five or ten minutes without stopping, letting your thoughts flow freely.

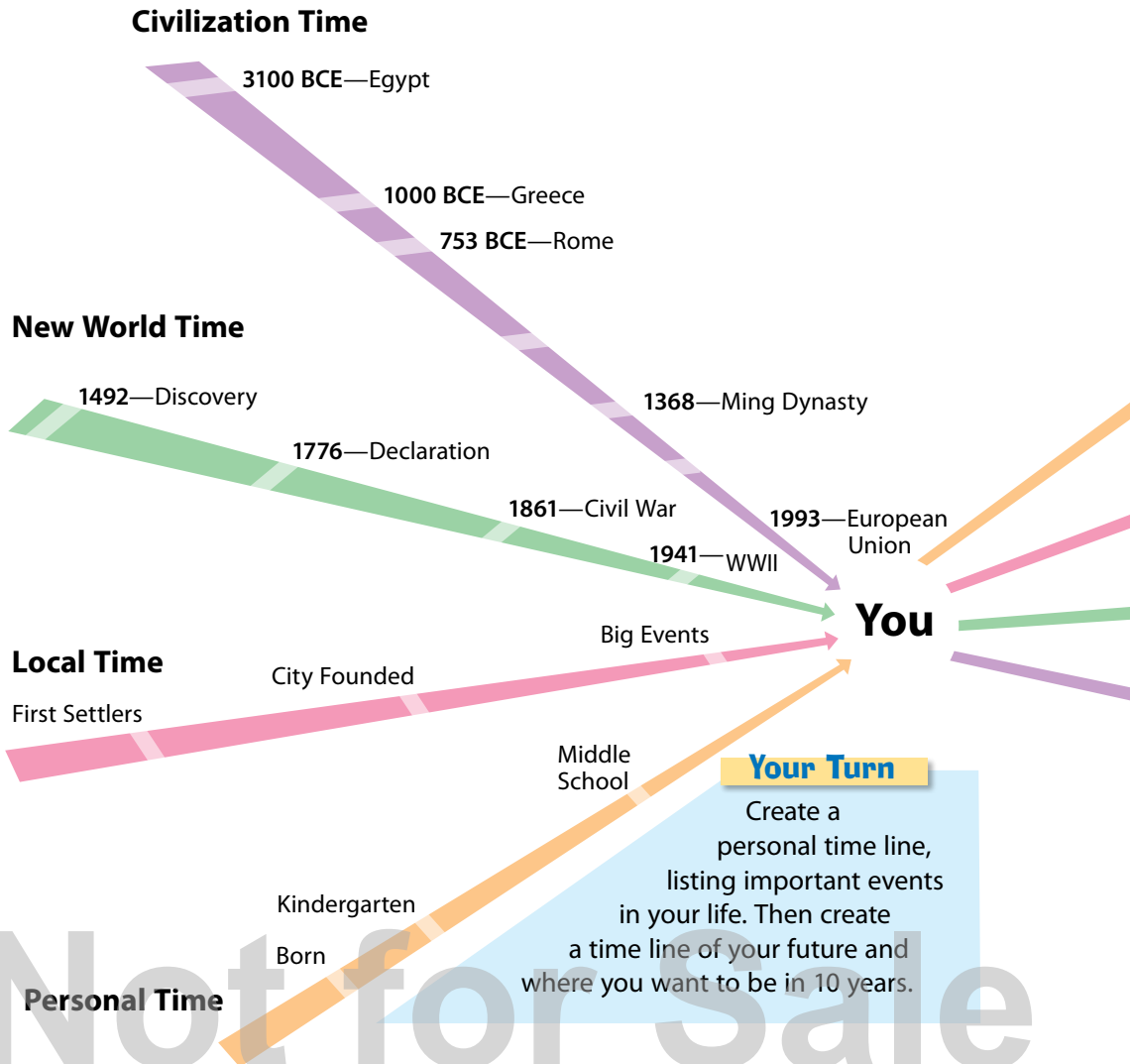
*Saturday is the best day of the week. It's the one day that belongs to you. Instead of having to climb out of bed at the crack of dawn, you get to sleep. They also have marathons on Saturday. I mean TV marathons of the same show. Actually, I don't know why I even mentioned that. I don't like marathons. I can't sit still. Better to play video games. Mom always wants me to get outside. She practically pays my friends Chris and Cameron to come over. I guess it's cheaper than paying for an exercise program. . . .*

### Your Turn

Write for 5 minutes on any topic without stopping.

# Asking About Your Past

Everything that has happened has led up to this moment. You are standing at the pinnacle of history, and of so many histories! In fact, where you are standing right now—*the now*—is the cross-point that decides the future. Ask what events led up to you right now.



## Asking About Your Future

The same time lines that converge on you from the past shoot out from you into the future. What you decide today shapes your personal future and that of your city, your country, and your world. Imagine how your actions can shape those futures.

### Personal Future

Who do you want to be and what do you want to do in

- 10 years?
- 20 years?
- 30 years?
- 40 years?
- 50 years?

### Local Future

What do you want your home and city to be like when you are young, middle aged, and old?

### Country Future

What will happen to your country in the next years and decades?  
What do you want to happen?

### World Future

What will the world look like as you get older? What new wonders will there be? What challenges might we face?

### Your Turn

Read the time line above.  
Then write answers to the questions under one of the futures.

# Asking About Your World

Our earth is an amazing, one-of-a-kind planet in the universe. It's the home world of millions of species of plants and animals. It has mountains that are six miles high and oceans that are six miles deep, deserts at 120° F and ice caps at -80° F, shifting plates and a molten core. Gaze for a while at the map of our world on the next page, and then ask yourself questions about our world.

Name: Alisha Simpson

1. Where do you live? Minneapolis, Minnesota, U.S.A.
2. Where do you wish you lived? The United Kingdom  
Why? I love British books and shows and British accents.
3. Where would you like to go for vacation? Canada  
Why? I want to see glaciers and moose.
4. Where would you not like to go for a vacation? Burma  
Why? I would be afraid to fly over the Pacific.
5. What country name do you like the best? Paupua New Guinea  
Why? It is fun to say.
6. What place intrigues you most? Brazil  
Why? Because of the Amazon River and the rain forest
7. What place scares you most? The Sahara Desert  
Why? It's as big as the United States.
8. What country would you like to lead? Australia  
Why? It's big, but it doesn't have a lot of problems.

## Your Turn

Answer the questions above about your world. (Download a template from [thoughtfullearning.com/p250](http://thoughtfullearning.com/p250).) Poll someone else in your class or online, asking these same questions. What answer surprises you most? How is your view of the world different from the other person's view?

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# Asking About Things Around You

## What is this like?

Ask questions that create similes and metaphors. A simile compares two things using *like* or *as*. A metaphor compares two things by saying one *is* the other. (See also page 36.)

**Simile Question:** How is a temper like a volcano?

**Metaphor Question:** How is a temper a volcano?

Okay, those are simple. Tempers and volcanoes both erupt when they get hot. But try a tougher one.

**Simile Question:** How is a cell like the solar system?

**Metaphor Question:** How is a cell the solar system?

In both, the center makes all of the other parts move.

## Your Turn

Pose your simile and metaphor questions and then answer them.

**Simile Question:** How is a \_\_\_\_\_ like a \_\_\_\_\_?

**Metaphor Question:** How is a \_\_\_\_\_ a \_\_\_\_\_?

## Who is this like?

Imagine that nonliving things come to life. (This is called *personification*.) Suddenly, everything around you—your chair, your shoes, your pencil—would seem strange and a little scary. Ask personification questions to imagine how nonliving things are like living things. (See also page 37.)

**Personification Question:** Who is this TV like, and why?

This TV is like my little brother because it is entertaining but loud.

## Your Turn

Ask at least two personification questions by using the formula below. Then answer the questions.

**Personification Question:** Who is this \_\_\_\_\_ like, and why?

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## How can I use SCAMPER?

A researcher named Bob Eberle came up with a set of great questions you can ask to deepen your thinking about any topic. He called these **SCAMPER**, taking the first letter from each type of question:

Question Type	Questions to Ask
<b>Substitute</b>	What else can I use instead? Who else can be involved instead? What other ingredients, materials, or power sources can I use? Where else could I do this?
<b>Combine</b>	How could I put two or more things together? How could I get two or more results from this? How can I appeal to more people about this?
<b>Adapt</b>	What changes would improve this? How could this better fit in the situation? What from the past could I copy?
<b>Magnify</b>	How can I make this bigger and more powerful? How can I increase performance or appeal? How can I slow this down or speed it up?
<b>Put to Other Uses</b>	What else could I do with this? Who else would be interested in this? Where else could I apply this?
<b>Eliminate</b>	How can I make this smaller and more precise? How can I decrease cost? How can I streamline this?
<b>Rearrange</b>	What other layout or order could I use? How can I look at this from a completely different perspective? How can I solve a different part of the problem? How can I reverse cause and effect?

### Your Turn

Think of a project you are working on at school or at home. Answer one question for each letter in SCAMPER. What new possibilities come to mind? (Download a SCAMPER sheet from [thoughtfullearning.com/p253](http://thoughtfullearning.com/p253).)

# Asking Socratic Questions

The ancient Greek philosopher Socrates (SAW-cru-tees) did not lecture. Instead, he taught his pupils by asking them questions that made them sharpen and deepen their thinking. You can use the same questions in conversation to deepen thinking.

## Socratic Questions

**Clarifying questions** ask the person to say exactly what is meant.

- Could you rephrase that, please?
- Could you provide an example?

**Assumption questions** ask the person to explore underlying ideas.

- Are you assuming that \_\_\_\_\_?
- Could you explain why/how \_\_\_\_\_?

**Reasoning questions** ask the person to trace the logic of an idea.

- What is the main cause of \_\_\_\_\_?
- What evidence shows that \_\_\_\_\_?

**Perspective questions** ask the person to consider other points of view.

- How would another person see the issue?
- How is \_\_\_\_\_ like and different from \_\_\_\_\_?

**Consequence questions** ask the person to consider what might happen.

- What could result from that idea?
- What is the value of \_\_\_\_\_ and why?

**Recursive questions** ask the person to think about the original question.

- Why are you asking this question?
- Why do you think I am asking this?

### Your Turn

Pair with a partner and discuss a topic you are currently studying. One of you should play Socrates, asking questions from the list above while the other answers. Then switch roles. How do these questions deepen your thinking?

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## Chapter 20

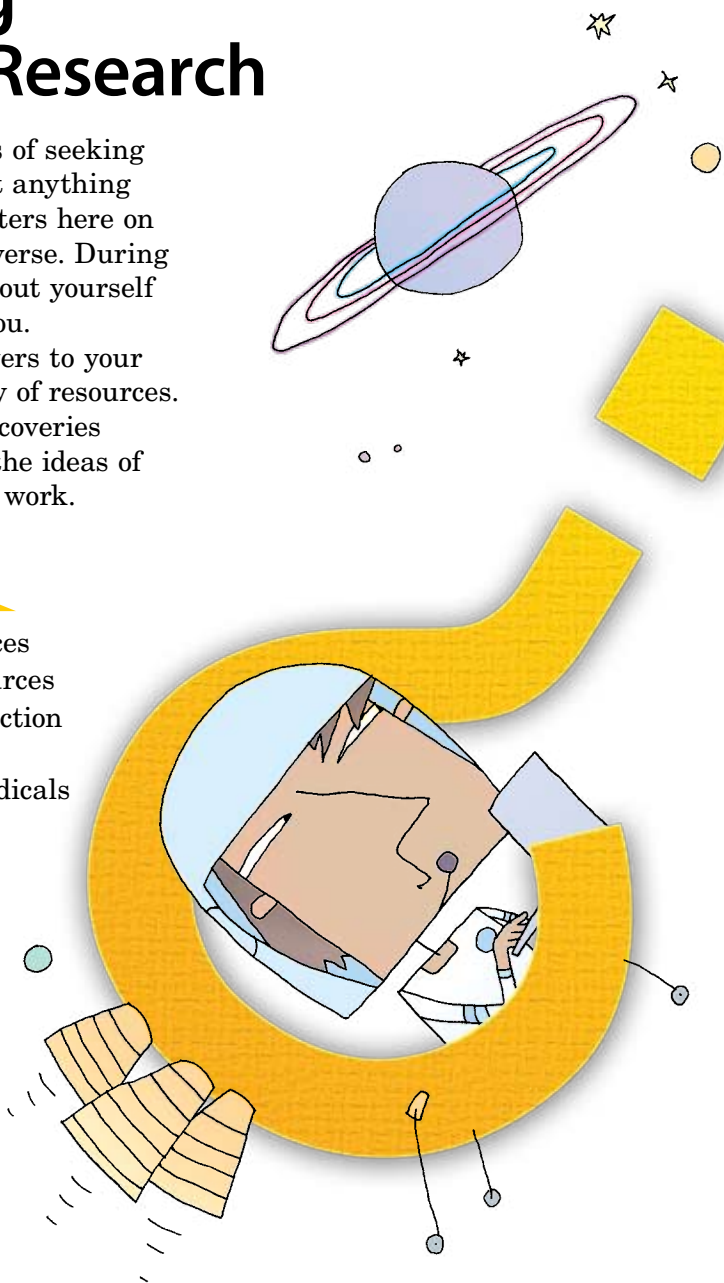
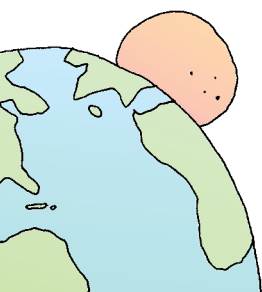
# Conducting Advanced Research

Research is the process of seeking answers to questions about anything and everything—from matters here on earth to secrets of the universe. During the process, you'll learn about yourself and what truly interests you.

As you search for answers to your questions, explore a variety of resources. And always share your discoveries honestly, giving credit for the ideas of others that appear in your work.

### **You will learn . . .**

- Using Primary Sources
- Using Secondary Sources
- Understanding Nonfiction Books
- Understanding Periodicals
- Using the Internet
- Avoiding Plagiarism
- Using MLA Citation
- Evaluating Sources




# Using Primary Sources

Whenever you begin a research project, your teacher may require that you consult primary sources of information along with secondary sources such as books and magazines. You are using a primary source of information when you collect information firsthand. Let's say you want to learn about the best way to train a dog. Observing dog training in action or actually participating in the training is a primary source of information.

Or let's say you are curious about the use of wind power in your area. Interviewing someone who sets up wind generators is a primary source of information, so is visiting a site with wind generators in action. Here are some of the primary sources available to you.

## Types of Primary Sources

- Observing someone or something in action
- Experiencing something yourself
- Reading original letters, diaries, or documents
- Visiting a place
- Making something
- Attending an exhibit
- Completing an experiment
- Interviewing someone  
(See page 275.)
- Conducting a survey  
(See pages 276–277.)



For millions of primary sources, check out the Library of Congress ([loc.gov](http://loc.gov)) and the World Digital Library ([wdl.org](http://wdl.org)).

## The Value of Primary Sources

Using primary sources gets you actively involved in research and makes the process more meaningful to you. If all of your information comes from books or the Internet, you miss a main point about conducting research—discovering things for yourself. How could you truly learn about training a dog without somehow getting involved in the activity?

### Your Turn

Identify two or three primary sources of information that you could use to investigate the main question or topic that you worked with in the previous chapter. Share your choices with a classmate.

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## Conducting Interviews

Interviewing is an important primary source of information. During an interview, you either (1) talk in person with someone who knows about your topic, (2) communicate with someone by phone, or (3) e-mail the person the questions you would like her or him to answer.

### Before . . .

**Identify a person to interview.** This could be someone you meet in person or someone you contact by phone or on the Net. (Get your parent's permission.)

**Schedule for the interview.** Be sure to set up a specific time and place for the conversation.

**List important questions that you would like to ask.** Arrange them in a sensible way.

### During . . .

**Be polite** throughout the interview.

**Give some background information** about yourself and your research.

**Get the person's permission** before you use any recording devices or take any pictures.

**Listen carefully.**

**Be prepared to reword a question** if the person doesn't understand something. Also be prepared to ask follow-up questions.

**Before you end the interview, review your notes** to make sure that you have the information that you need.

**Ask the person** about other sources of information about the topic.

**Thank the person** for his or her help.

### After . . .

**Send a thank-you note** to the person you interviewed.

**Review your notes.**

**Contact the person**, if necessary, to clear up any confusing points.

**Consider sending the person a copy of your finished work.**

## Using Surveys

A survey is a detailed study used to gather data (statistics, feelings, or experiences) related to a topic you are exploring. You can use the data to help you form your research. The information that follows will help you create and use surveys. (Go to [thoughtfullearning.com/p276](http://thoughtfullearning.com/p276) to find out about software for online surveys.)

- 1. Identify the purpose and audience for your survey:** What do you want to learn, and whom do you want to contact?
- 2. Form the survey according to your purpose.**
  - Write questions that are clear, and ask for the right type of information.
  - Word questions so they are easy to answer.
  - When possible, offer options to circle or underline.
- 3. Consider two types of questions.**
  - Focused questions usually provide options and are easy to answer. (Yes-no, multiple choice, true-false, and fill-in-the-blank questions are examples.)
  - Open questions ask survey takers to write out short answers.
- 4. Arrange the information in a logical way.**
  - Start with a brief explanation explaining who you are or who you represent, the purpose of the survey, how to complete it, and when and where to return it.
  - Number and label all of the information that follows so the survey is easy to understand.
  - Provide enough space for readers to make their responses.
- 5. Give it a test run.**
  - Have a few classmates or friends complete the survey.
  - Revise it as needed.
- 6. Carry out the survey.**
  - Distribute it to the intended group.
  - Collect and evaluate the responses.



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## Sample Survey

## Dog Training Survey

My name is Theresa Brown, and I'm conducting research to learn about dog training. This survey will help me learn about any dog training experiences students at McKinley School may have had. Please answer the questions that follow, and return the survey to me or place it in the box next to room 205 by Friday. Thank you!

1. What is your gender?      **male**      **female**
2. What grade are you in?      **5**      **6**      **7**      **8**      **9**
3. Do you or your family own a dog?      **yes**      **no**  
*Note: If you circled "no," skip to question 8.*
4. If yes, has your dog had any dog training?      **yes**      **no**
5. What types of things has your dog learned?

---



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---

6. How would you rate the effectiveness of the training?  
**no effect**      **very effective**  
**1**      **2**      **3**      **4**      **5**

7. What was your role in the training?

---



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---

8. Have you ever volunteered to work with dogs in the neighborhood, at a kennel, or at a shelter?      **yes**      **no**  
*Note: If you circled "no," turn your survey in.*

9. If yes, did this work involve any dog training?      **yes**      **no**

10. Explain this experience.

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# Using Secondary Sources

Secondary sources are the books and articles that you read for information, or documentaries and video presentations that you watch. Secondary sources provide secondhand information, or the thoughts and feelings of others.

If you were to read a how-to book about basic dog training, you would be using a secondary source. Or if you were to read about benefits of wind power in a science article posted on the Web, you would be referring to a secondary source. Here are some examples of secondary sources available to you:

## Types of Secondary Sources

- Nonfiction books
- General reference books  
(See page 279.)
- Textbooks
- Informational brochures and pamphlets
- Magazine and journal articles (in print or online)
- Television specials and news shows
- Web podcasts and other video presentations
- Speeches by experts



## The Value of Secondary Sources

Secondary sources provide expert explanations and analyses of topics that interest you. These sources should help you better understand topics and decide if your own thinking on the topic is realistic or on target.

What you don't want to do is rely too heavily on secondary sources. The main goal of any research project is to develop your own thoughts and feelings about a topic, not simply to repeat what others have said about it. You must also be careful that the secondary sources you use are up to date and reliable. (See page 292.)

### Your Turn

Identify two or three types of secondary sources that would be of most value to you if you were researching a famous explorer. Share your choices with your classmates.

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## Selecting Reference Books

Your school or city library offers many reference books that may help you conduct your research. Some of the more common ones are listed here. But be sure to ask your librarian to learn about all of the reference books available in your library.

### General Reference Books

- **Encyclopedias** are sets of informational books on just about any topic. They come in print or online versions. Also know that each set contains an index to help you find additional information on a topic. (See pages 280–281.)
- **Atlases** provide maps and other information about different areas. *National Geographic Atlas of the World* is an example.
- **Almanacs** offer charts, graphs, and lists of information about many topics. *The World Almanac and Book of Facts* is an example.

### Specific Reference Books

- **Bartlett's Familiar Quotations** contains thousands of quotations organized from ancient history to the present time.
- **Current Biography** is published monthly and annually. Articles in this resource focus on the stories of interesting individuals.
- **Facts About the Presidents** is a reference book, but there are Web sites that offer similar types of information.
- **Famous First Facts**, available in print or electronically, offers “firsts” in all areas of life.
- The **Junior Authors** series, available in print or electronically, presents biographical information on children’s and young adult authors.
- **Who’s Who in America** gives biographical information on important people in the United States, past and present.

### Your Turn

Identify two or three reference books that would help you learn about the topic or main question that you worked with in the previous chapter.

# Understanding Nonfiction Books

To use nonfiction books effectively, you should understand how they are put together. For example, they usually contain a table of contents in the front and an index in the back to help you find information about specific topics. Here are the basic parts of a typical informational book.

- A **title page** gives the full title of the book, the author's name, the publisher's name, and the city of publication.
- A **copyright page** comes right after the title page. It tells you the year when the copyright was issued. (If the copyright is too old, the information might be outdated.)
- A **preface**, a **foreword**, or an **introduction** usually follows. It explains the purpose of the book.
- There may also be an **acknowledgment page**, listing people who helped with the book. (This information can also be combined with another page, as is shown in the example on the next page.)
- The **table of contents** identifies the page numbers of major divisions of the book (units, chapters, and topics).
- The **body** or main part of the book contains the core information in the text.
- An **appendix** sometimes follows the main text, and it contains extra information such as graphics, maps, lists, and other special information.
- A **glossary**, if it is included, provides an alphabetical listing of special words and terms. Refer to this part if you are unsure of the meaning of a certain word.
- A **bibliography** lists sources that the author used and other sources on the topic.
- The **index** lists in alphabetical order the page location of specific topics covered in the book. It appears at the end of the book.

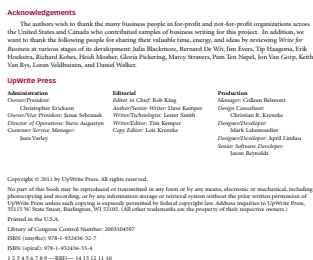
## Your Turn

Find the different parts in a nonfiction book of your choice. Pay careful attention to the type of information contained in each part, but remember that the book may not contain every part described above.

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## Copyright Page

## Preface



## Body

## Table of contents

**Introduction: The Seven Traits of Effective Writing** 1

The seven traits of effective writing 1

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## Appendix

Tips for Speakers: Middle Eastern Languages		
Tip	Translation Error	Correction
Don't use the word <i>amichah</i> (a. <i>amichah</i> , Heb. 1363).	I am not here.	I am busy. a. I am not here. b. I am feeling pain.
Don't use the word <i>gashshah</i> (Heb. 1363).	I am starting the practice.	Warm-up period activity.
Don't use the word <i>magashir</i> (Heb. 1363).	Warm-up rehearsal (of an actor).	This rehearsal is better than my first one.
Don't use the word <i>amichah</i> (a. <i>amichah</i> , Heb. 1363).	This subject is hard.	We had practice for 3:00 p.m.
Don't use the word <i>amichah</i> (a. <i>amichah</i> , Heb. 1363).	We were awoken by 3:00 p.m.	We had practice for 3:00 p.m.
Don't use the word <i>gashshah</i> (Heb. 1363).	They were hard for me.	They were hard, making them for me.
Don't use the word <i>magashir</i> (Heb. 1363).	I am waiting a bit.	I am not a bit.
Don't use the word <i>amichah</i> (a. <i>amichah</i> , Heb. 1363).	I am feeling a little bit.	Make sure for a bit.
Don't use the word <i>gashshah</i> (Heb. 1363).	Make them for me.	My class needs to be over.
Don't use the word <i>magashir</i> (Heb. 1363).	My class needs to be over.	My class needs to be over.
Don't use the word <i>amichah</i> (a. <i>amichah</i> , Heb. 1363).	We are waiting together.	We are waiting together.
Don't use the word <i>gashshah</i> (Heb. 1363).	I am waiting a bit.	The pitcher threw the ball.
Don't use the word <i>magashir</i> (Heb. 1363).	The pitcher threw the ball.	The pitcher threw the ball.

Commitment leads to action

## Index

[illegible]

# Understanding Periodicals

Periodicals are magazines and journals that are published on a regular basis. Magazines are popular periodicals that focus on news, fashion, home improvement, and other areas of interest. Journals are periodicals that focus on a specific area of study (architecture, history) and contain articles written by scholars and experts.

To use periodicals properly, you need to understand their working parts. (Online versions will be arranged and accessed in different ways.)

- The **cover** will identify the title of the periodical. It may also identify the date of the issue and the volume and number of the issue.
- A **masthead** identifies publishing information related to the periodical, including the names of the editors and the location of the editorial offices.
- The **table of contents** lists the location of sections, features, and specific articles in the periodical.
- An **editor's note** or **from-the-editor section** often comes next, and in this part, the editor highlights the articles in the issue.
- **Letters** to the periodical may come next. These letters are submitted by readers in response to articles in earlier issues.
- The **body** or main part of the text contains the articles.
- **Indexes** may be included in some journals. These indexes might identify authors and titles in previous issues of the journal.

## The Value of Using Periodicals

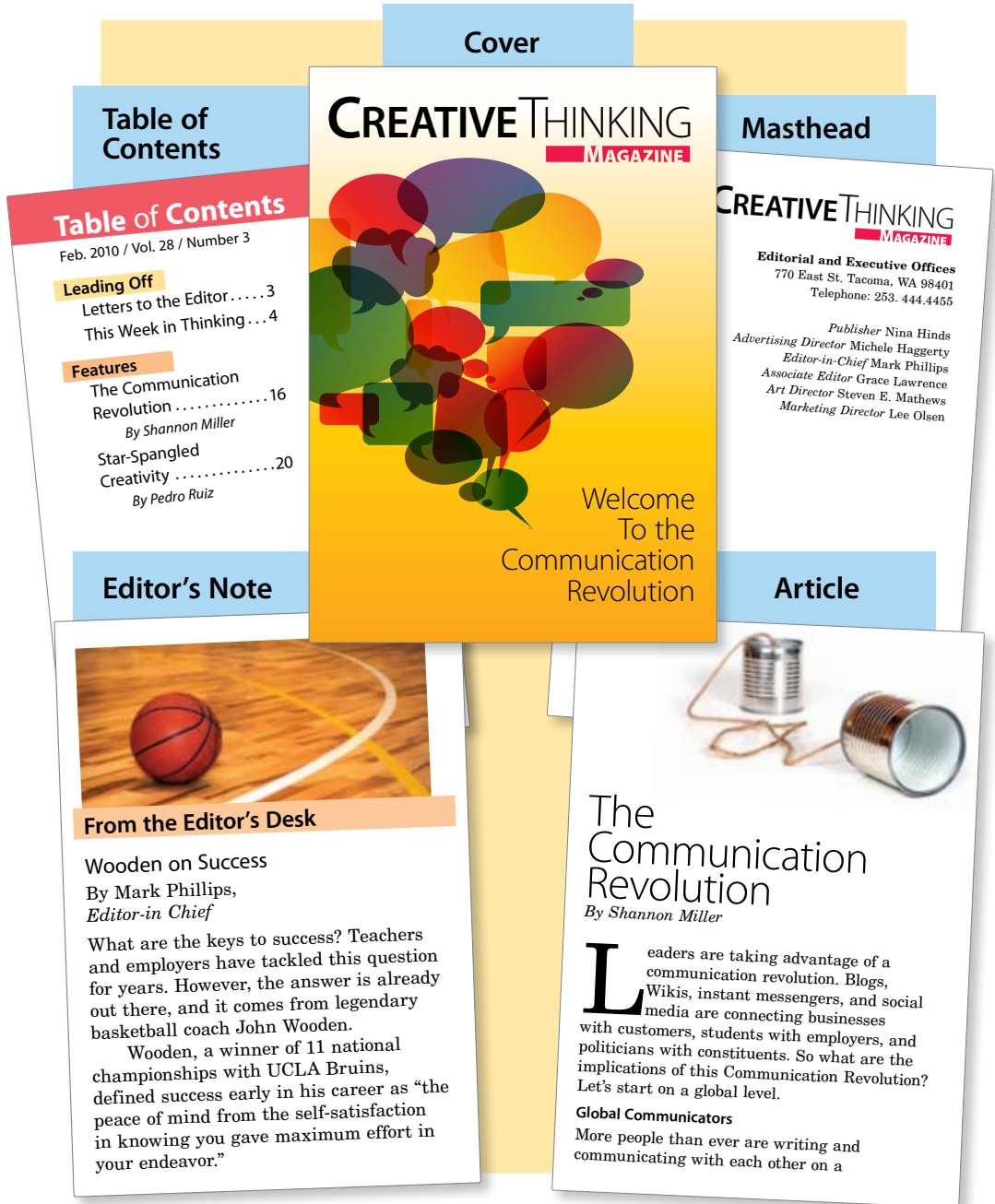
Periodicals provide you with up-to-date information. This is their true value. Most magazines even provide online updates in between issues. However, before you use articles in magazines or journals, be sure that they are reliable sources of information. (See pages 292.)

### Your Turn

Working with a partner, identify the main parts of two periodicals contained in your school library. Share your discoveries with your classmates.

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## Parts of a Periodical



# Using the Internet

The Internet is a truly remarkable information resource. But having almost immediate access to so much information can be overwhelming. The next few pages provide helpful hints for navigating the Net. (See also pages [132–137](#).)

## Navigating Tips

Keep these points in mind as you begin your searching.

- **Expect a long trip:** Finding the best information may take time.
- **Work smart:** Know the basics of Internet searching including how to use keywords. (See below.)
- **Be creative:** If one route or keyword doesn't lead you in the right direction, choose a different one.
- **Check all choices:** For most searches, you will have many options to review.
- **Stay on task:** Avoid the temptation to take side trips while you research your topic.
- **Take notes:** Write down or print out key information.

## A Basic Keyword Guide

The success of your Internet search depends on the quality of the keywords you use. Making simple changes to a keyword can provide you with completely different results.

1. To start, simply type in the topic of your research: *salmon*, *robots*, *falcons*.
2. Add a word, and you will call up pages that contain any of the words: *wild salmon*, *home robots*, *peregrine falcons*.
3. Enclose the phrase in quotation marks, and you will receive just the pages containing that phrase: "*wild salmon*."
4. Use words such as *and* (+) or *not* (-) to narrow or focus your search: *salmon and harvesting*, *salmon not farm-raised*, and so on.

### Your Turn

Conduct a keyword search based on a topic of your choice, perhaps the one you worked with in the previous chapter. Try different combinations to see what you can discover. Afterward, evaluate your search.



## Special Searching Options

Provided below are special options that you can use to conduct your online searches. Check with your teacher, technology resource person, or librarian about these options.

- The **Library of Congress** offers a great variety of online texts and resources.
- **National** and **state governments** provide research sites to help you learn about a variety of topics.
- A service such as **EBSCO** provides a database of newspapers, magazines, and journal articles.
- The **Internet Public Library** serves as a great online resource. As with all libraries, this one offers a lot of great information.
- **Network** with other people via e-mail, a chat room, text-messaging, and so on. Simply ask your questions, and see what others have to offer. (Get your parent's permission first.)
- Try a **metasearch site** to see what you can discover from multiple search engines. To use this feature, type "metasearch" into your basic search engine.
- Use a **directory** to learn about a topic, by starting with a general heading and working your way through more focused headings.

### Your Turn

Experiment with two of these options to see how they work. Then compare the effectiveness of each one. Be sure to ask for help if you're not sure how to get started.

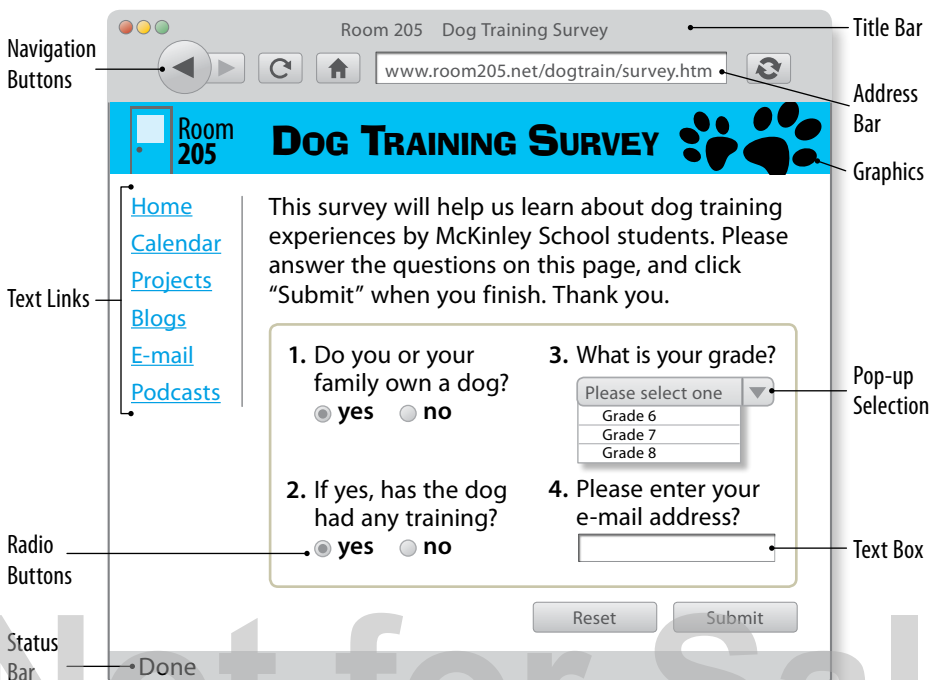


## Parts of a Web Page

When you click on a specific source in your keyword search, a Web page will appear. Web pages may contain the following basic parts.

- A **title bar** usually appears at the top of the page and contains the name of the site or window.
- **Navigation buttons** help you navigate or “get around” the Net.
- An **address bar** is the space in which the Web site address appears.
- **Graphics** add visual interest to a Web page.
- **Text links** identify additional pages on the Web that can be accessed.
- **Radio buttons, pop-up selections, and check boxes** offer users choices.
- A **text box** is an on-screen frame in which you type text.
- A **status bar** appears at the bottom of the window and shows the progress of the loading of the Web pages.

### Sample Web Page



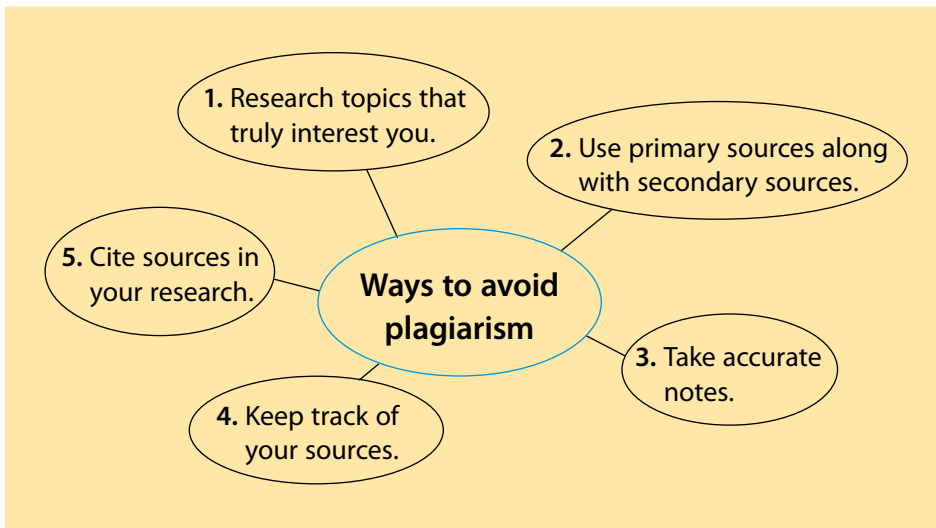
## Avoiding Plagiarism

Neil Armstrong, the first man to step foot on the moon, has been involved in science, engineering, and exploration all his adult life. He sees research as the process of “creating new knowledge.” By “new knowledge,” he means making discoveries and learning things for yourself. You should approach research in the same way. That is why using primary sources of information is so important.

When your research uses primary sources, there’s a good chance that you will avoid plagiarism in your work. Plagiarism is the use of the words and ideas of others as if they were your own. It is, in effect, a form of intellectual theft, and should be avoided.

Use the ideas of others only as support to help explain your own research. And always identify the source of each of these ideas. The graphic that follows identifies how to conduct responsible research and avoid plagiarizing.

### Ways to Avoid Plagiarism



### Your Turn

With the help of a partner, find one or two important facts about plagiarism (other than a definition) on the Internet. Share what you have learned with your classmates.

## What Plagiarism Looks Like

On these two pages, you will find an article about the homeless and different ways the article could be plagiarized. Use this information as a guide to check your own work for plagiarism.

### People in Need

Anna Morales

On a chilly February afternoon, an old man stands on a city sidewalk and leans against a fence. In his hands a sign reads: "Will work for food. Please help!" Imagine, for a moment, the life this man leads. **He probably spends his days alone on the street begging for handouts, and his nights searching for shelter from the cold. He has no job, no friends, and nowhere to turn.**



**Most Americans would like to believe that cases like this are rare. However, the National Coalition for the Homeless estimates that as many as 3 million people in this country share this man's condition. Who are these people we call "the homeless," and what factors have contributed to their plight?**

According to Pastor Joel Warren, the director of the Greater Mission Shelter in San Angela, most of the homeless are unemployed males, and from 40 to 60 percent have alcohol or drug-related problems. Warren notes that the image of the typical homeless person is changing. He says that the average age of the homeless has dropped from fifty-five to thirty in the last ten years. National studies have also shown that this population is changing.

**A recent study by the United States Conference of Mayors found that one-third of the homeless population consists of families with small children, and 22 percent of the homeless have full- or part-time jobs. Statistics seem to show that more and more of the homeless are entire families who have simply become the victims of a bad economy.**

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## Common Types of Plagiarism

What follows are three common types of plagiarism (highlighted in the examples below.) Another type of plagiarism is using a photograph or graphic from another source without giving the proper credit.

### Copying Text

With this type of plagiarism, a writer includes word-for-word sentences from the original source without giving credit.

It's not hard to imagine what life is like for a homeless person. **He probably spends his days alone on the street begging for handouts, and his nights searching for shelter from the cold. He has no job, no friends, and nowhere to turn.** Such a life is becoming all too familiar to many because of the poor economy.

### Forgetting Quotation Marks

With this type of plagiarism, a writer includes the exact words from a source without putting quotation marks before and after this information.

Many people have no connection with a homeless man like the one just described, and it's not a problem that really enters their thinking. In "People in Need," Anna Morales states that **most Americans would like to believe that cases like this are rare. However, the National Coalition for the Homeless estimates that as many as 3 million people share this man's condition.** This lack of connection stems from the location of most homeless men.

### Restating Ideas Without Citing Them

With this type of plagiarism, a writer restates a specific passage from an original article or book without identifying the source.

**The economy has changed the profile of the homeless population. Studies indicate that families with children now make up more than 30 percent of this population. In addition, more and more homeless have part-time or full-time jobs.**

# Giving Credit

You should always give credit for the ideas or words of others that you use in your research papers, reports, and presentations. By doing so, you avoid plagiarizing or using the words of others without crediting them in your work. (See pages [287–289](#).) Be sure to check with your teacher for instructions for giving credit, or follow the guidelines below.

## Using MLA In-Text Citations

The Modern Language Association (MLA) has established an easy system for giving credit in your work. The examples come from the research paper on pages [363–367](#). (Go to [thoughtfullearning.com/p290](http://thoughtfullearning.com/p290).)

- After the words from the source, identify the source of the quotation or information in parentheses. In most cases, that means including the author's last name and the page number where the information originated. Place this information at the end of the quoted or borrowed material, usually at the end of the sentence.

This obstacle is the driving force behind a state recommendation that the U.S. Fish and Wildfire Service delist the gray wolf as an endangered species in the Midwest (Nie 174). The recommendation . . .

- If you mention the author's name in your text, then you only need to include the page number in parentheses.

According to Nie, this obstacle is the driving force behind a state recommendation that the U.S. Fish and Wildfire Service delist the gray wolf as an endangered species in the Midwest (174). The recommendation . . .

- If no author is provided for a source, use a shortened form of the title and the page number, if it is given. (The following example is for a television show, so no page number is included.)

Farmers who can prove their livestock losses are caused by wolf attacks receive compensation from the state for their losses, but many farmers are frustrated by time delays for receiving the compensation ("Wolves").

- List on the works-cited page all of the sources of information that you credit in your work. This page comes at the end of your paper.

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## Creating an MLA Works-Cited Page

According to MLA style, you should create a works-cited page that lists the sources you noted in your paper or presentation. (It should not include sources that you may have read but did not use in your paper or presentation.) Here are the basics for creating this page:

- Include the works-cited page at the end of your paper.
- List the sources alphabetically, starting with authors' last names.
- If no author is given, start with the first word of the title, but not with a short word such as *A*, *An*, or *The*.
- Double-space all of the information on this page.
- If an entry is more than one line, indent each of the additional lines five spaces.

### Citing Basic Sources

What follows is the basic type of information you should include for books, magazines, and online sources. The examples come from the research paper on pages 363–367. (Go to [thoughtfullearning.com/p291](http://thoughtfullearning.com/p291) for more help.)

#### For a book include . . .

Author (last name first.) *Title*. City of publication: Publisher, copyright date. Print.

Nie, Martin A. *Beyond Wolves: The Politics of Wolf Recovery and Management*. Minneapolis: University of Minnesota Press, 2003. Print.

#### For magazines include . . .

Author (last name first). "Title of the article." *Title of the magazine* Day month year: page numbers. Print.

Lehmkuhler, Jess. "Effects of Wolves and Other Predators on Farms in Wisconsin." *Wisconsin Outdoor Journal* 1 May 2007: 15-20. Print.

#### For Web sources include . . .

Author (last name first). "Post title." Site title. Publisher (Host site), Post date or last update. Web. Date used.

Ness, Erik. "To Kill a Wolf." *Grow Magazine*. University of Wisconsin-Madison, Spring 2009. Web. 10 Dec. 2010.

# Evaluating Sources

When you conduct research, you need to make sure that your sources are reliable. Think about the special considerations below.

## Experts and Other Primary Sources

Before deciding to interview an “expert,” learn about the person. Does the person have the credentials (education and experience) to be an expert? Check with your teacher or a parent if you are not sure. And during an interview, try to gauge the quality of the person’s responses. (See page 275 for more.)

## Books and Other Print Materials

When selecting print material, learn about the author. Does she or he have the proper background? Check the material’s publisher and date of publication to make sure that the information comes from a reputable source and isn’t outdated. Then as you read, decide if the information seems fair and balanced. Does it raise any questions? (See page 126 for more.)

## Telecasts and Broadcasts

When referring to TV or radio programs, be aware of the purpose of the program. Documentaries and news reports will be more reliable than TV movies or talk-radio conversations. Also, think about the show’s intended audience and who sponsors the show. Check into the director and producer of the program, and check the information against other sources. (See pages 127–128 for more.)

## Internet Sites

For Internet sites, be sure that the author (if identified) is reliable and respected in the field. Also check the type of site. Government (.gov), education (.edu), and nonprofit (.org) sites often are more reliable than commercial (.com) sites. In addition, determine if the site presents current information and if the information seems reliable and balanced. (See page 137 for more.)

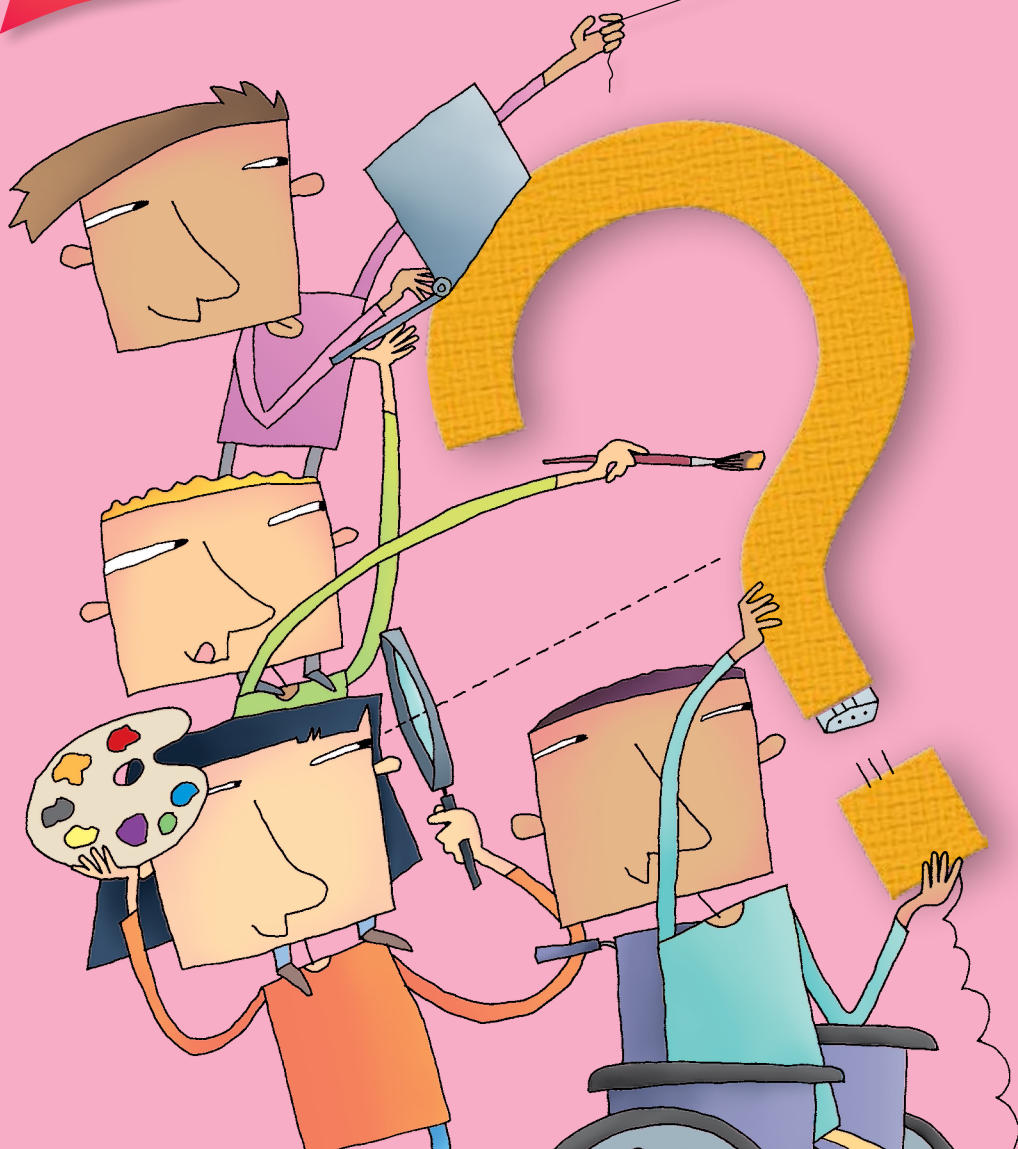
### Your Turn

Team up with a classmate to discuss the following: Why is it important to evaluate sources? What are the two most helpful tips on this page?

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## Part III: Developing Projects



## **Part III: Developing Projects**

This section is overflowing with project ideas using the inquiry process. There are writing projects, graphic projects, Web projects, building projects, and much more. Each specific project includes guidelines, visuals, and examples. Listed below are the types of projects covered in Part III. Remember that these are just starting points. Let inquiry lead you to make these projects your own.

### **Chapters in This Section**

- 24. Basic Writing Projects**
- 25. Advanced Writing Projects**
- 26. Graphing Projects**
- 27. Web Projects**
- 28. Audio-Visual Projects**
- 29. Design Projects**
- 30. Performing Projects**
- 31. Community Projects**

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## Chapter 24 Basic Writing Projects

Writing is a powerful vehicle for success. In school, writing helps you explore your thoughts and become a better learner. Outside of school, good writers and communicators are more likely to land jobs and achieve their career goals.

Being a good writer doesn't mean you have to be the next Shakespeare. Just writing an effective banner is an accomplishment. But you also need to be able to complete the other forms of writing covered in this chapter.

### You will learn . . .

- Writing Paragraphs
- Writing Summaries
- Writing E-Mail
- Creating Instructions
- Writing Narratives
- Writing Poems
- Writing Plays
- Building Essays



# Project Overview

Here is a quick overview of the writing projects in this chapter.

## Paragraph

A paragraph introduces an idea or a topic and supports it with details and reasoning. Here you'll learn the parts of a complete paragraph and how to arrange them. (See pages 320–321.)

### Half Plant, Half Animal

In "A Biological Fusion," Mercedes Matthews introduces a scientific study of the first known animal to produce chlorophyll. Chlorophyll is the green pigment that plants use to get energy from the sun during photosynthesis. The animal's biological name is *Elysia chlorotica*, but a non-scientist would more likely call it a sea slug. Biologist Sidney K. Pierce ran the study of the sea slugs, which live in the marshes and creeks along the Atlantic coast of the United States. His study concluded that the sea slugs picked up the power to produce chlorophyll by stealing genes from the algae they ingest. The manufacturing of chlorophyll allows the slugs to convert light to energy and survive for a long time without eating. An *Elysia chlorotica*, then, can actually be considered part animal, part plant.

### The Science of Speed

Unlike race cars or trains, roller coasters do not rely on powerful engines for speed. Instead, coasters let gravity and momentum do all the work. Gravity is the force that constantly pulls objects of mass toward the ground. When a roller-coaster track slopes down, the passenger cars accelerate forward because gravity pulls the front car downward. When the track tilts up, the cars decelerate because gravity pulls the back car downward. These changes in acceleration are what make roller coasters so thrilling. But gravity is not the only factor in maintaining speed. Another is momentum. On most roller coasters, the first drop is the tallest and is designed this way to pull the cars forward through the rest of the ride, especially needed when the track goes up. Gravity pulls the cars forward through the rest of the ride!



## Summary

Writing a summary means capturing the main point of a reading selection in your own words. (See pages 322–323.)

## E-Mail

E-mail is a popular form of electronic communication. Here you'll find guidelines for writing effective e-mail. (See pages 324–325.)

### Instructions for Calculating the Windchill Factor

Windchill factor is the effect wind speed has on how cold temperatures feel. Wind causes a person's body to cool more rapidly, just as it would at a lower temperature. Here are the steps for calculating the windchill.

**Materials Needed:** thermometer, anemometer, paper, pencil, windchill chart

#### Steps:

1. **Set up equipment.** Place the thermometer outside in a shaded spot away from buildings or other heat sources. Set up the anemometer in an open area away from buildings. **Caution: Avoid prolonged exposure to low temperatures and high winds.**
2. **Take readings.** Every five minutes for half an hour, check the anemometer and write down wind speeds. After the first ten minutes, begin checking the thermometer and writing down Fahrenheit temperatures every five minutes.
3. **Average the readings.** Add the anemometer readings and divide by the number of readings to get an average wind speed. Add the thermometer readings and divide by the

Field Trip Idea

To:

Subject:

Hi, Ms. Baker:

Since we have been studying the history of automobiles in social studies, I suggest we take a field trip to the Virginia Museum of Transportation. I looked at the Web site and saw the museum has a big collection of the old locomotives and automobiles we have been talking about in class.

I know we don't have a lot of money for field trips this year, but guess what? Students get in for free! They even do guided tours at no charge. It would be so cool to see the classic car person.

If you have time, you should check out the museum's Web site. Here is the link:

<http://www.vmt.org/education/school>



## Instructions

Instructions are useful for explaining how to do something or showing how something works. (See pages 326–327.)

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## Narrative

Narratives are stories about real or imagined events that mean something. Here a writer gives a fictionalized account in a diary form. (See pages 328–330.)

### Mercury

This metal is liquid at eighty degrees  
And measures your temperature after a sneeze.  
It isn't an alloy and never would settle  
For being mislabeled "transitional metal."

It's element eighty on charts on the wall  
And powers the battery-pack of your doll.  
It's gleaming and runny and glossy and odd  
And registers heat when it's in a glass rod.

Oh mercury, why be so shiny and slick?  
Oh quicksilver, why do you make people sick?  
Your vapors are toxic; your contact so bad  
That you made the sane hatter of Wonderland mad!

## Play

Playwriting takes a creative mind. Find out how to put your story ideas into play format. (See pages 334–336.)

### In Your Dreams

Dreams are one of life's greatest mysteries. For centuries, people have tried to figure out why we dream and what our dreams mean. Dream interpreters even accompanied military leaders during battles. Today scientists know more about dreams but are still unclear on what causes dreams and why they are so hard to remember.

What scientists do know is that every person dreams every night, even though most people do not remember what they dreamed. In fact, on most nights, people dream several times, with each dream lasting between 5 and 20 minutes. In a lifetime, the average person will spend an equivalent of six years dreaming. Even people who have been blind since birth dream. The only difference is that they dream in sounds, smells, and feelings instead of in images.

Scientists note that within 5 minutes of waking up, people forget half of what they dreamed. Within 10 minutes, they forget 90 percent. Why it is so difficult to recall dreams is debatable. One theory is that people dream information that they don't want to remember, because it



## Poem

Poetry is a great outlet for expressing an idea in an interesting way. (See pages 332–333.)

August 28, 1943, Day 396: Hot. It is scorching hot out here. At home in Los Angeles, I enjoyed the warm weather. Even on those rare summer days when temperatures hit 90, I was able to cool off at the fountains near my house or the crowded public swimming pool on the outskirts of Little Tokyo.

But this Arizona desert heat is different. It is dry and constant and unbearable. I am thirsty all the time, but we have to be careful about how much water we drink. There is no play fountain or swimming pool. The only running water is in the mess hall and hospital.

August 29, 1943, Day 397: I spent the whole day in the barracks today, cooped up, trying to stay cool. Finally,

that blazing  
dropped behind  
cool breezes.

Dad and I  
the sunset. R  
the sky. It m  
think it'll be d  
He just s



### When Washington Met Sally

GEORGE WASHINGTON, first U.S. president  
SALLY RIDE, first woman in space

#### SCENE 1:

**Setting:** Coffee shop, Mount Vernon, VA, present day  
(SALLY RIDE sits at a table and sips coffee from a mug. GEORGE WASHINGTON enters.)

**WASHINGTON:** How do you do, Ms. Ride? (Removes hat)

**SALLY RIDE:** Very well. And you, Mr. President?

**WASHINGTON:** Splendid. (Sitting across from her) That accent of yours . . . Are you a Pennsylvanian?

**SALLY RIDE:** No, Californian.

**WASHINGTON:** (Confused) You don't look Spanish!

**SALLY RIDE:** I'm not. I'm American.

**WASHINGTON:** (Clearly dumbfounded) Don't be preposterous! The Treaty of Paris sets clear borders for the United States. Anything west of the Mississippi belongs to the Spaniards.

**SALLY RIDE:** You clearly have a lot of catching up to do, Mr. President.

**WASHINGTON:** Do I? (Tastes his coffee and shakes his head in disgust.) Then explain to me how you can be both American and Californian.

**SALLY RIDE:** That requires a bit of a history lesson.

## Essay

Essays provide writers with the space to explore a topic in great detail. Guidelines will help you construct complete essays. (See pages 337–340.)

# Inquire

## To Write a Paragraph

1. **Question** the situation for the paragraph.
  - **Subject:** What specific topic will you write about?
  - **Purpose:** Why are you writing—to explain, to describe, to narrate?
  - **Audience:** Who will read this paragraph?
2. **Plan** your paragraph.
  - **Identify your topic.** Make it specific enough to cover in one paragraph.
3. **Research** your topic.
  - **Searching:** Consult primary and secondary sources as needed to learn about your topic. (See pages 274–279.)
  - **Focusing:** Decide on a focus—the part of the topic that you want to emphasize in your paragraph.
 

**Topic:** *Mrs. Brown*      **Focus:** *is a great math teacher*

State the focus in a topic sentence.

**Topic sentence:** *Mrs. Brown makes learning math fun.*
  - **Shaping:** List important details that support or explain your topic. Arrange the details in the most logical order.
4. **Create** the first draft of your paragraph.
  - **Start with your topic sentence.**
  - **Follow with your supporting details.**
  - **End with a sentence that ties everything together.**
5. **Improve** your first draft.
  - **Evaluate** your first draft.
 

**Purpose:** Does the paragraph effectively fulfill your purpose?

**Audience:** Will the paragraph hold the reader's interest?
  - **Revise** your writing.
 

**Rewrite** sentences that are confusing or unclear.

**Add** details to explain your topic more fully.

**Reorder** sentences that are out of place.
  - **Edit** your revised writing.
 

**Replace** general nouns and verbs with specific ones.

**Check** your writing for accuracy.
6. **Present** the final copy of your paragraph to your classmates or to friends or family members.

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## Paragraph

Here is a sample paragraph created by a student for her science class. The writer has included a clear topic sentence, body sentences that share supporting details, and a closing sentence.

The **topic sentence** (underlined) tells the reader what the paragraph is about.

The **body sentences** provide support for the topic sentence.

The **closing sentence** refers again to the main idea and offers a final point.

### The Science of Speed

Unlike race cars or trains, roller coasters do not rely on powerful engines for speed. Instead, coasters let gravity and momentum do all the work. Gravity is the force that constantly pulls objects of mass toward the ground. When a roller-coaster track slopes down, the passenger cars accelerate forward because gravity pulls the front car downward. When the track tilts up, the cars decelerate because gravity pulls the back car downward. These changes in acceleration are what make roller coasters so thrilling. But gravity is not the only factor in maintaining speed. Another is momentum. On most roller coasters, the first drop is the tallest and steepest. Coasters are designed this way to create enough momentum to carry the cars forward through the rest of the track. Momentum is especially needed to make it up hills and through loops, as gravity pulls the cars in the opposite direction. This tug-of-war between gravity and momentum makes for one fun ride!



## Inquire To Write a Summary

1. **Question** the situation for your summary.
  - **Subject:** What specific topic does the reading selection address?
  - **Purpose:** What is the goal of the selection—to inform, to persuade, to tell a story—and how can its contents be summed up?
  - **Audience:** Who reads this type of material?
2. **Plan** your summary.
  - **Identify** the main point of the writing.
3. **Research** your topic.
  - **Searching:** Reread the selection and write down the key points.
  - **Focusing:** Find the focus of your summary—the selection’s main idea.
 

**Topic:** *“Strange Sneezing Situations”*  
by Hannah Holmes

State the focus in a topic sentence.

**Topic sentence:** *In “Strange Sneezing Situations,” Hannah Holmes describes how genetics influence a person’s sneezing habits.*
  - **Shaping:** List the key points of the article in your own words.
4. **Create** the first draft.
  - **Start with your topic sentence.**
  - **Follow with supporting details.** Recount the selection’s most important details in your own words.
  - **End with a sentence that restates the main point** of the topic sentence.
5. **Improve** your first draft.
  - **Evaluate** your first draft.
 

**Purpose:** Does the paragraph effectively sum up the selection?

**Audience:** Would a person reading the summary understand what the reading selection was about?
  - **Revise** your writing.
 

**Add** details to summarize the selection more fully.

**Cut** any unnecessary details.
  - **Edit** your revised writing.
 

**Check** your writing for accuracy.
6. **Present** the final copy of your summary to your classmates or post it on your classroom blog or discussion site.

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## Article and Summary

A summary captures the main points of a reading selection. Here is a science article followed by a student's summary, which includes only the most important details from the article in the student's own words.

### A Biological Fusion

By Mercedes Matthews

Plants are plants and animals are animals. An organism can't be a combination of the two, right? Think again. A new study by biologist Sidney K. Pierce suggests a sea slug living in the marshes and creeks along the U.S. Atlantic coast is part animal, part plant. Biologically known as *Elysia chlorotica*, the sea slug is the first known animal to manufacture chlorophyll, the green pigment in plants that captures energy from sunlight during photosynthesis.

Scientists believe the green, leaf-shaped slugs acquired the ability to make chlorophyll by stealing genes from their main source of food—algae. Instead of digesting algae whole, the slugs retain and save the algae's chloroplasts in their own cells. What makes the *E. chlorotica* even more remarkable is that Pierce proved the species has developed the ability to make chlorophyll without the assistance of the chloroplast reserves stolen from algae. This ability allows the slugs to convert energy from the sun and survive long stretches without any food.

So how did Pierce make this discovery? He used a radioactive tracer that tracked the chemical processes in the slug cells. The results showed that the slugs themselves were making the green chlorophyll pigment, not simply relying on the algae they ingested. For further proof he looked at slugs that hadn't eaten algae for five months and discovered chloroplasts still existed in their bodies. If the chloroplasts came from the algae, they would have been digested long ago. Thus, the slugs were producing their own chlorophyll. An animal with plant parts: What an extraordinary discovery!

### Student Summary

#### Half Plant, Half Animal

In "A Biological Fusion," Mercedes Matthews introduces a scientific study of the first known animal to produce chlorophyll. Chlorophyll is the green pigment that plants use to get energy from the sun during photosynthesis. The animal's biological name is *Elysia chlorotica*, but a non-scientist would more likely call it a sea slug. Biologist Sidney K. Pierce ran the study of the sea slugs, which live in the marshes and creeks along the Atlantic coast of the United States. His study concluded that the sea slugs picked up the power to produce chlorophyll by stealing genes from the algae they ingest. The manufacturing of chlorophyll allows the slugs to convert light to energy and survive for a long time without eating. An *Elysia chlorotica*, then, can actually be considered part animal, part plant.

The **topic sentence** introduces the title, author, and main point.

The **body sentences** give key details.

The **closing sentence** completes the summary.

# Inquire

## To Write an E-Mail

1. **Question** the situation for the e-mail.
  - **Subject:** What is the specific topic of your e-mail message?
  - **Purpose:** Why are you choosing to write an e-mail? What type of response do you hope to get?
  - **Audience:** Who will read your e-mail—a teacher, a classmate, a friend?
2. **Plan** your e-mail.
  - **Be clear** about the purpose of your message.
3. **Research** your topic.
  - **Searching:** Find the correct e-mail address of the receiver.
  - **Focusing:** Decide on your focus—the topic and reason for writing the e-mail.
    - Topic:** *art contest results*      **Reason:** *to say congratulations*
    - Focus:** *You won first prize in the art contest. Way to go!*
  - **Shaping:** List any other important details you want to include.
4. **Create** the first draft of your e-mail.
  - **Complete the e-mail header.** Create a clear subject line that tells the reader what the message is about.
  - **Start the message** by greeting the reader and stating your focus.
  - **Follow with any additional details** you wish to include.
  - **Politely end the message.** If any follow-up information is needed, spell it out. Then provide a polite closing and your name.
5. **Improve** your first draft.
  - **Evaluate** your first draft.
    - Purpose:** Does the e-mail fulfill your purpose for writing?
    - Audience:** Is the language clear and appropriate for the reader?
  - **Revise** your e-mail.
    - Cut** any careless or unnecessary comments.
    - Break up** any lengthy passages into short, double-spaced paragraphs with lists and headings.
  - **Edit** your revised e-mail.
    - Check** your message for spelling and punctuation errors.
6. **Present** the e-mail by sending it to the receiver.

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## E-Mail

Here is an e-mail from a student to his teacher. The student is careful to avoid sloppy errors because he wants to make a good impression. His message is clear and easy to read.

Field Trip Idea

Send Attach Address

To:

Subject:

Hi, Ms. Baker:

Since we have been studying the history of automobiles in social studies, I suggest we take a field trip to the Virginia Museum of Transportation. I looked at the Web site and saw the museum has a big collection of the old locomotives and automobiles we have been talking about in class.

I know we don't have a lot of money for field trips this year, but guess what? Students get in for free! They even do guided tours at no charge. It would be so cool to see the classic cars in person.

If you have time, you should check out the museum's Web site. Here is the link:

<http://www.vmt.org/education/school.html>

Thanks for reading my idea about a field trip to the Museum of Transportation. Hopefully we can make it there someday soon.

Thanks again.

Tony Stanley

The **beginning** states the main point of the message.

The **middle** provides additional details.

The **ending** politely completes the message.



# Inquire

## To Create Instructions

1. **Question** the situation for your instructions.
  - **Subject:** What specific topic will your instructions cover?
  - **Purpose:** Why are you writing these instructions?
  - **Audience:** Who will read your instructions? How much do they know about the subject?
2. **Plan** your instructions by creating a list of steps.
3. **Research** your topic.
  - **Searching:** Consult primary and secondary sources to learn all about your subject. (See pages 274–279.)
  - **Focusing:** Decide on a focus—your topic and main reason for writing the instructions.
 

**Topic:** *greeting a dog*      **Importance:** *make the dog feel safe*  
**Topic sentence:** *Following a few simple steps when greeting a dog will make the dog feel safe and comfortable around you.*
  - **Shaping:** List the steps of the instructions in the correct order. Also list any materials or tools required to complete the task.
4. **Create** the first draft of your instructions.
  - **Start by introducing the process**, explaining its importance, and stating its goal. Then, if necessary, list any materials needed.
  - **Follow by writing numbered, step-by-step instructions.** If possible, add visual aids.
  - **End with a brief description of the final outcome.**
5. **Improve** the first draft.
  - **Evaluate** your first draft.
 

**Audience:** Are your instructions clear and helpful?
  - **Revise** your writing.
 

**Rewrite** steps that are confusing or unclear.  
**Add** steps or visual aids as necessary.  
**Cut** steps that don't belong.  
**Reorder** steps that are out of place.
  - **Edit** your revised writing.
 

**Replace** passive verbs with command verbs (*place* instead of *should be placed*).  
**Check** your writing for accuracy.
6. **Present** your project by printing a copy and posting it where the instructions will be most helpful.

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## Instructions

Here a student explains how to calculate windchill in easy-to-follow steps.

The **beginning** introduces the activity, tells why it is important, and lists the materials.

An important caution is mentioned.

The **middle** presents numbered steps.

The **ending** provides an informative chart.

### Instructions for Calculating the Windchill Factor

Windchill factor is the effect wind speed has on how cold temperatures feel. Wind causes a person's body to cool more rapidly, just as it would at a lower temperature. Here are the steps for calculating the windchill.

**Materials Needed:** thermometer, anemometer, paper, pencil, windchill chart

#### Steps:

- 1. Set up equipment.** Place the thermometer outside in a shaded spot away from buildings or other heat sources. Set up the anemometer in an open area away from buildings. **Caution: Avoid prolonged exposure to low temperatures and high winds.**
- 2. Take readings.** Every five minutes for half an hour, check the anemometer and write down wind speeds. After the first ten minutes, begin checking the thermometer and writing down Fahrenheit temperatures every five minutes.
- 3. Average the readings.** Add the anemometer readings and divide by the number of readings to get an average wind speed. Add the thermometer readings and divide by the number of readings to get an average temperature.
- 4. Check the windchill chart.** Find the average temperature in the top row and the average wind speed in the left column. Trace your finger down the temperature column and across the wind-speed row to find the windchill factor.

#### Windchill Chart

	Temperature (°F)									
	Calm	30	25	20	15	10	5	0	-5	-10
Wind (mph)	5	25	19	13	7	1	-5	-11	-16	-22
	10	21	15	9	3	-4	-10	-16	-22	-28
	15	19	13	6	0	-7	-13	-19	-26	-32
	20	17	11	4	-2	-9	-15	-22	-29	-35
	25	16	9	3	-4	-11	-17	-24	-31	-37
	30	15	8	1	-5	-12	-19	-26	-33	-39
	35	14	7	0	-7	-14	-21	-27	-34	-41
	40	13	6	-1	-8	-15	-22	-29	-36	-43
	45	12	5	-2	-9	-16	-23	-30	-37	-44
	50	12	4	-3	-10	-17	-24	-31	-38	-45

Source: <http://www.weather.gov/om/windchill>

■ Frostbite in 30 minutes ■ Frostbite in 10 minutes

## Inquire To Write a Narrative

1. **Question** the situation for the narrative.
  - **Subject:** Who is the main character? What other characters will be in it?
  - **Purpose:** What conflict will the main character encounter? What is your reason for writing this narrative?
  - **Audience:** Who will read the narrative?
2. **Plan** your narrative. (Go to [thoughtfullearning.com/p328](http://thoughtfullearning.com/p328) for more.)
  - What are the key plot points? How will the narrative begin, develop, and end? (See page 298.)
3. **Research** your narrative.
  - **Searching:** Consult primary and secondary sources as needed to learn about the location, plot, and characters in your narrative.
  - **Focusing:** Decide on what mood you wish to convey in your narrative—tension, doom, excitement, and so on.
  - **Shaping:** Decide on a climax for your narrative. The climax shows the outcome of the central conflict. The main character faces her or his greatest challenge and either succeeds or fails.
4. **Create** the first draft of the narrative.
  - **Start** by grabbing the reader's attention. Good narratives often begin somewhere in the middle of the action.
  - **Follow** with rising action, unfolding and building the conflict.
  - **Lead** up to the climax, the most exiting part.
  - **End** with the resolution, showing how the character is changed by the events in the narrative.
5. **Improve** your first draft
  - **Evaluate** your first draft.
    - Subject:** Is the main character memorable?
    - Purpose:** Is the conflict in the narrative interesting?
  - **Revise** your writing.
    - Rewrite** any dialogue or action that does not fit the personality or voice of the characters.
    - Add** any missing details or background information.
  - **Edit** your revised writing.
    - Replace** any general nouns or verbs with specific ones.
    - Check** your writing for accuracy.
6. **Present** the final copy online or read it out loud to your classmates or another group.



## Narrative (Historical Diary Entries)

The following historical diary entries were created by a student for his social studies class. The writer speaks from the perspective of a young person who is forced to live in a Japanese internment camp during World War II.

In the **beginning**, the writer starts in the middle of the action and gives the reader a sense that not all is right.

The **middle** provides details and observations about the day.

1

August 28, 1943, Day 396: Hot. It is scorching hot out here. At home in Los Angeles, I enjoyed the warm weather. Even on those rare summer days when temperatures hit 90, I was able to cool off at the fountains near my house or the crowded public swimming pool on the outskirts of Little Tokyo.

But this Arizona desert heat is different. It is dry and constant and unbearable. I am thirsty all the time, but we have to be careful about how much water we drink. There is no play fountain or swimming pool. The only running water is in the mess hall and hospital.

August 29, 1943, Day 397: I spent the whole day in the barracks today, cooped up, trying to stay cool. Finally, that blazing sun slid down through the barbed wire and dropped behind the sandy hills. The sky was on fire, but cool breezes began to blow.

Dad and I went out and stood there and looked at the sunset. Red and yellow and purple battled across the sky. It made me think of the war. "When do you think it'll be done, Dad?" I asked. "The war, I mean."

He just shook his head.

August 30, 1943, Day 398: I couldn't stand it anymore. I couldn't stay inside for another minute. I ran outside at the hottest part of the day and just yelled at that blazing sun, "Go away! Leave us alone!"

(Over) →

### August 30 (Continued)

Dad came to the doorway and called out, "Who are you shouting at?"

"The sun!" I shouted, pointing up. "The stupid sun!" It just kept pouring heat down on me. My bare feet were burning on the hot sand. I started hopping from one foot to the other as I shouted at the sun.

Dad laughed. "What are you doing? A rain dance?"

"Ow, ow, ow, ow!" I yelled as I ran back into the barracks.

### August 31, 1943, Day 399: My rain dance worked.

Today, clouds rolled across the sky, blocking the sun. They bunched together until no blue remained. They boiled high into the sky and darkened to gray and then black. Then they burst open, pouring water down.

Back in Los Angeles, we would stay inside when it rained. But here, we went out and stood in it. The rain felt so good—cool and wet and pounding down. Gullies started to run through the camp, and then they were streams, and then rivers. The other camp kids and I ran through the water and made boats out of sticks and laughed. We watched our stick boats float through the fences and keep on going, out into the desert, traveling far away.

The ending looks to the future.

The cool rain gives me hope. I know we will someday leave this place and go back to our homes. I know we will be free.

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## Using Transitions

Transitions are useful in all types of writing. In paragraphs, transitions connect sentences and ideas. In longer writing, transitions can connect one paragraph to the next. Here are some effective transitions to use in your writing.

### To Show Location

above	below	between	inside	next to
around	beside	by	near	over

### To Show Time

after	during	first	meanwhile	second
before	finally	later	next	until

### To Compare Things

also	in the same way
as	like
both	similarly

### To Contrast Things

although	however
but	on the other hand
even though	yet

### To Add Information

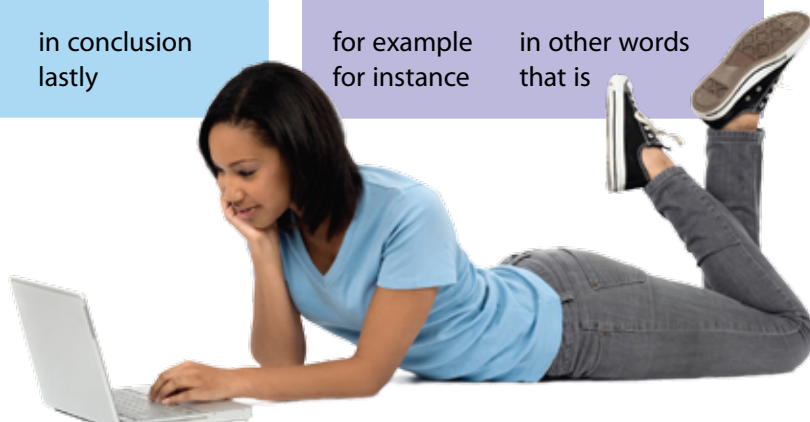
additionally	and	besides	for instance
along with	another	finally	in addition
also	as well	for example	next

### To Conclude or Summarize

as a result	in conclusion
finally	lastly

### To Clarify a Point

for example	in other words
for instance	that is



## Inquire To Write a Poem

1. **Question** the situation and your goal for writing a poem.
  - **Subject:** What will be the poem's focus?
  - **Purpose:** Why are you writing the poem?
  - **Audience:** Who will read the poem?
2. **Plan** your poem, using a free-verse or traditional form.
  - Free-verse poetry doesn't have a strict rhythm and rhyme scheme.
  - Traditional poetry has a specific rhythm and rhyme scheme.
3. **Research** your topic.
  - **Gathering:** Brainstorm details about your topic. Consider making a word cluster around the topic word.
  - **Imaging:** Think in images, trying to capture the topic using the five senses—sights, smells, tastes, sounds, and touch.
  - **Researching:** Study poetic forms and techniques. (To learn much more, go to [thoughtfullearning.com/p332](http://thoughtfullearning.com/p332).)
4. **Create** the first draft of your poem.
  - **Focus** first on ideas and imagery.
  - **Experiment** with the sounds in your poem.
  - **Create** similes (comparing two things using *like* or *as*), metaphors (saying one thing *is* another), and personification (giving objects or animals human characteristics).
  - **Shape** your ideas into the form you have planned to use—free-verse or a traditional form.
5. **Improve** the first draft.
  - **Evaluate** your first draft.  
Does the poem present your topic in a fresh way? Does it achieve your purpose and connect to your audience?
  - **Revise** your poem.  
**Add** sensory details to make your topic clearer.  
**Cut** parts of the poem that are not needed.  
**Rearrange** parts that are out of order.  
**Rewrite** material that isn't working well.
  - **Edit** your poem to make it read smoothly.
6. **Present** your poem during a classroom poetry reading or post it online for others to read.

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## Poem

Poetry is a creative way of capturing your thoughts and feelings about the subjects you are studying. This rhyming poem shares important information about one of the chemical elements, mercury.

### Mercury

The poem consists of three stanzas, with each one four lines in length.

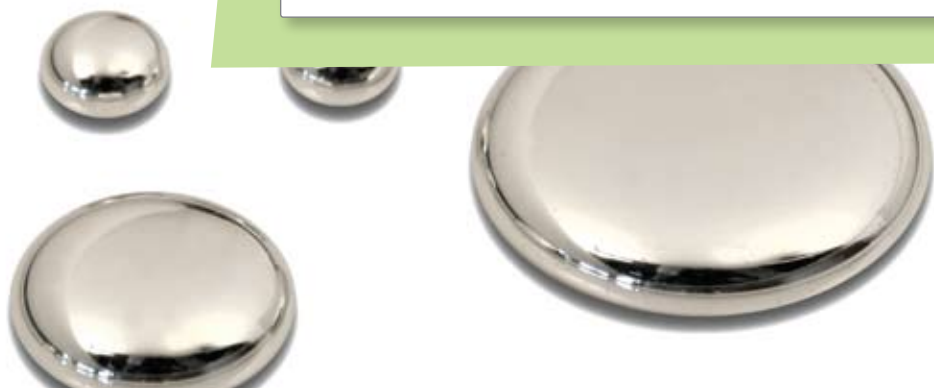
Each quatrain (four-line stanza) follows a similar rhyme scheme (*aabb*).

Each line presents an important detail about the topic.

This metal is liquid at eighty degrees  
And measures your temperature after a sneeze.  
It isn't an alloy and never would settle  
For being mislabeled "transitional metal."

It's element eighty on charts on the wall  
And powers the battery-pack of your doll.  
It's gleaming and runny and glossy and odd  
And registers heat when it's in a glass rod.

Oh mercury, why be so shiny and slick?  
Oh quicksilver, why do you make people sick?  
Your vapors are toxic; your contact so bad  
That you made the sane hatter of Wonderland mad!



## Inquire To Write a Play

1. **Question** the situation for the play.
  - **Subject:** What will the play be about? Who will be featured?
  - **Purpose:** Why are you writing a play? What mood should you create?
  - **Audience:** Who will perform the play? Who will watch it?
2. **Plan** your play by thinking about characters and plot. (Go to [thoughtfullearning.com/p334](http://thoughtfullearning.com/p334) for much more on writing plays.)
3. **Research** your play.
  - **Characters:** List traits about each character, including personality, attitude, and voice. If the characters are real or historical figures, learn as much as you can about them.
  - **Conflict:** Create conflicts based on the characters' goals or differences.
  - **Plot:** Sketch out a plot for your play.
  - **Setting:** Decide on a time and a place for your play's action.
4. **Create** your play.
  - **Beginning:** Set the scene, introduce the characters, and create the conflict.
  - **Rising Action:** Intensify the conflict to a crisis.
  - **Climax:** Have the characters either succeed or fail.
  - **Resolution:** Wrap up the play, showing how the characters changed.
5. **Improve** your play.
  - **Evaluate** the play.  
Are the characters interesting and likable? Is the conflict believable and exciting? Will people like the play?
  - **Revise** your story to create major improvements.
    - Remove** characters, scenes, or details that do not help the play.
    - Rearrange** parts so that they flow in the best way.
    - Rewrite** parts that are unclear or confusing.
    - Add** description, dialogue, and action as needed.
  - **Edit** your play, proofreading and checking it for accuracy.
6. **Present** your play, performing it for its intended audience.

**Note:** Ask your teacher where and when you should present your play. See pages 452–454 and [thoughtfullearning.com/p384](http://thoughtfullearning.com/p384) for more on performing plays.

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## Play Sketch

The following sketch describes a meeting between a historical figure and a modern-day hero.

The **beginning** introduces the characters and sets the scene.

In the **middle**, the dialogue develops the story line in the play.

**Stage directions** in parentheses describe the character's actions.

### When Washington Met Sally

**GEORGE WASHINGTON**, first U.S. president

**SALLY RIDE**, first woman in space

#### SCENE 1:

**Setting:** Coffee shop, Mount Vernon, VA, present day  
(*SALLY RIDE sits at a table and sips coffee from a mug. GEORGE WASHINGTON enters.*)

**WASHINGTON:** How do you do, Ms. Ride? (*Removes hat*)

**SALLY RIDE:** Very well. And you, Mr. President?

**WASHINGTON:** Splendid. (*Sitting across from her*) That accent of yours . . . Are you a Pennsylvanian?

**SALLY RIDE:** No, Californian.

**WASHINGTON:** (*Confused*) You don't look Spanish!

**SALLY RIDE:** I'm not. I'm American.

**WASHINGTON:** (*Clearly dumbfounded*) Don't be preposterous! The Treaty of Paris sets clear borders for the United States. Anything west of the Mississippi belongs to the Spaniards.

**SALLY RIDE:** You clearly have a lot of catching up to do, Mr. President.

**WASHINGTON:** Do I? (*Tastes his coffee and shakes his head in disgust.*) Then explain to me how you can be both American and Californian.

**SALLY RIDE:** That requires a bit of a history lesson.

**WASHINGTON:** I'm all ears.

**SALLY RIDE:** (*Takes deep breath*) Back in 1821, Mexico gained its independence from Spain and briefly took ownership of California. Then in 1846, the United States declared war against Mexico because Mexico failed to recognize the annexation of Texas. That war lasted for three years until American troops seized control of the Mexican capital in the Battle for Mexico City. Are you still with me?

The **conflict** (problem) is heightened as the dialogue continues.

A **scene break** indicates a change in the time and place of the action.

**WASHINGTON:** (*Still confused*) Uh, I think so.

**SALLY RIDE:** Good. Because the Mexican-American War officially ended with the signing of the Treaty of Guadalupe Hidalgo in 1848. As part of the treaty, Mexico conceded California to the United States. And that's how California became the thirty-first state in the Union.

**WASHINGTON:** (*Pauses to think and then bursts out laughing*) Thirty-first state? You're not serious!

**SALLY RIDE:** Yes, well, currently there are fifty states.

**WASHINGTON:** (*Still laughing*) What a wonderful fairy tale! (*Sarcastic*) Do tell me: Who was the president during this Mexican-American fable? Don't tell me it was Jefferson!

**SALLY RIDE:** No, this was long after Jefferson's time in office. It was . . . (*Pauses to think*) You know, I've completely forgotten. Give me a moment to look it up. (*Takes out a cell phone*)

**WASHINGTON:** What in the name of freedom is that shiny device?

**SALLY RIDE:** (*Amused*) It's called a cell phone, Mr. President. I'm just going to Google your question. This place has free wi-fi.

**WASHINGTON:** Why fly what?

**SALLY RIDE:** (*Looks at cell phone*) Ah, here we go. James Polk, our eleventh president, oversaw the Mexican-American War.

**WASHINGTON:** (*Chuckles*) I do say, Ms. Ride, you are quite the storyteller. Let me guess, the next thing you'll tell me is that you've been to outer space?

**SALLY RIDE:** (*Sighs*) How much time do you have?

(*The curtain falls. End of SCENE 1.*)

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## Building Essays

Essays allow you to explore a topic in great detail. An essay has a clear beginning, middle, and ending. The following chart compares the working parts of paragraphs and essays. The chart below takes a closer look at the parts of an essay.

### Paragraph

Topic sentence

Body

Closing sentence

### Essay

Beginning paragraph (with thesis statement)

Middle paragraphs

Ending paragraph

## Basic Structure of Essays

### Beginning

**Build the reader's interest.** Introduce your topic in an interesting way.

**Find a direction.** Briefly explain why the topic is important.

**State your focus.** Write a thesis statement.

### Middle

**Support your thesis.** Supply background information and include important points.

**Structure your paragraphs.** Start each paragraph with a separate main point.

**Add details.** Clarify each main point with supporting details.

### Ending

**Restate the focus.** Remind the reader of the essay's purpose and rephrase the thesis statement.

**Speak to the reader.** Sum up the essay with a final point that speaks directly to the reader.



## Inquire To Write an Essay

1. **Question** the situation for the essay.
  - **Subject:** What specific topic will you write about?
  - **Purpose:** Why are you writing—to explain, to persuade, to describe, to narrate?
  - **Audience:** Who will read this essay? How would you like them to react to your writing?
2. **Plan** your essay.
  - **Pick a topic** and narrow it down from a general to a specific subject.
3. **Research** your topic.
  - **Searching:** Consult primary and secondary sources as needed to learn about your topic. (See pages 274–279.)
  - **Focusing:** Form a thesis statement, expressing a specific thought about the topic of your essay.
 

**Topic:** *dreaming*                      **Thought:** *mysterious to science*  
**Thesis statement:** *Scientists are still unclear on what causes dreams and why they are so hard to remember.*
  - **Shaping:** Arrange important details that support or explain your topic in an outline or other graphic organizer.
4. **Create** the first draft of your essay.
  - **Start with an opening paragraph** that introduces your topic and includes a thesis statement.
  - **Follow with middle paragraphs** that support your thesis.
  - **End with a closing paragraph** that revisits your thesis.
5. **Improve** your first draft.
  - **Evaluate** your first draft.
 

**Purpose:** Does the essay effectively fulfill your purpose?  
**Audience:** Will the essay hold the reader's interest?
  - **Revise** your writing.
 

**Rewrite** any sentences that are confusing or unclear.  
**Add** connecting words or transitions.  
**Cut** any parts that don't fit or aren't necessary.
  - **Edit** your revised writing.
 

**Check** your writing for accuracy.
6. **Present** the final copy of your essay on a personal blog or read it out loud to your classmates.

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## Essay

In the following expository essay, a student explores the strange but all-too-familiar world of dreams.

The **beginning** introduces the topic in an interesting way and includes a thesis statement (underlined).

Both **middle** paragraphs focus on a different part of the topic and support the thesis statement.

The **ending** paragraph revisits the thesis and offers some thought-provoking questions.

### In Your Dreams

Dreams are one of life's greatest mysteries. For centuries, people have tried to figure out why we dream and what our dreams mean. Dream interpreters even accompanied military leaders during battles. Today scientists know more about dreams but are still unclear on what causes dreams and why they are so hard to remember.

What scientists do know is that every person dreams every night, even though most people do not remember what they dreamed. In fact, on most nights, people dream several times, with each dream lasting between 5 and 20 minutes. In a lifetime, the average person will spend an equivalent of six years dreaming. Even people who have been blind since birth dream. The only difference is that they dream in sounds, smells, and feelings instead of in images.

Scientists note that within 5 minutes of waking up, people forget half of what they dreamed. Within 10 minutes, they forget 90 percent. Why it is so difficult to recall dreams is debatable. One theory is that people dream information that they don't want to remember, because it is too painful or scary. Another theory is that dreams are so unique that they don't allow for memory enhancers like association and repetition. Research has yet to prove either theory.

Today people are still fascinated by dreams. Even with all the breakthroughs in brain science, dreams remain a puzzle to scientists. Why can't people remember dreams? What causes nightmares? Do dreams mean anything? These questions may never be answered, but that won't stop people from dreaming.



## Different Types of Essays

There are three main categories of essays: narrative, expository, and persuasive. Each category includes specific types of essays with different purposes.

**Narrative essays tell a story.**

- In a **personal narrative**, a writer tells about something significant that happened in his or her life. Personal narratives often are published as short stories, blog entries, and journals.
- In a **descriptive essay**, a writer uses sensory details to depict a scene, portray a person, or describe an object.
- In an **autobiography**, a writer reflects on the story of her or his life. Autobiographies are sometimes turned into books and movies.

**Expository essays explain something.**

- In a basic **expository essay**, a writer explains something or demonstrates how something works. Most of the articles you read in newspapers and magazines are examples of expository essays.
- In a **cause-effect essay**, a writer examines the causes and effects of an event or occurrence to see how they are connected.
- In a **comparison-contrast essay**, a writer looks at the similarities and differences of two subjects.

**Persuasive essays give an opinion.**

- In a basic **persuasive essay**, a writer provides an opinion and supports it with strong reasoning. The articles in the “Opinion” section of a newspaper are examples of persuasive essays.
- In a **position paper**, a writer takes a stand on an issue and encourages the reader to agree with the position.
- In a **problem-solution essay**, a writer presents a problem and offers solutions for solving it.

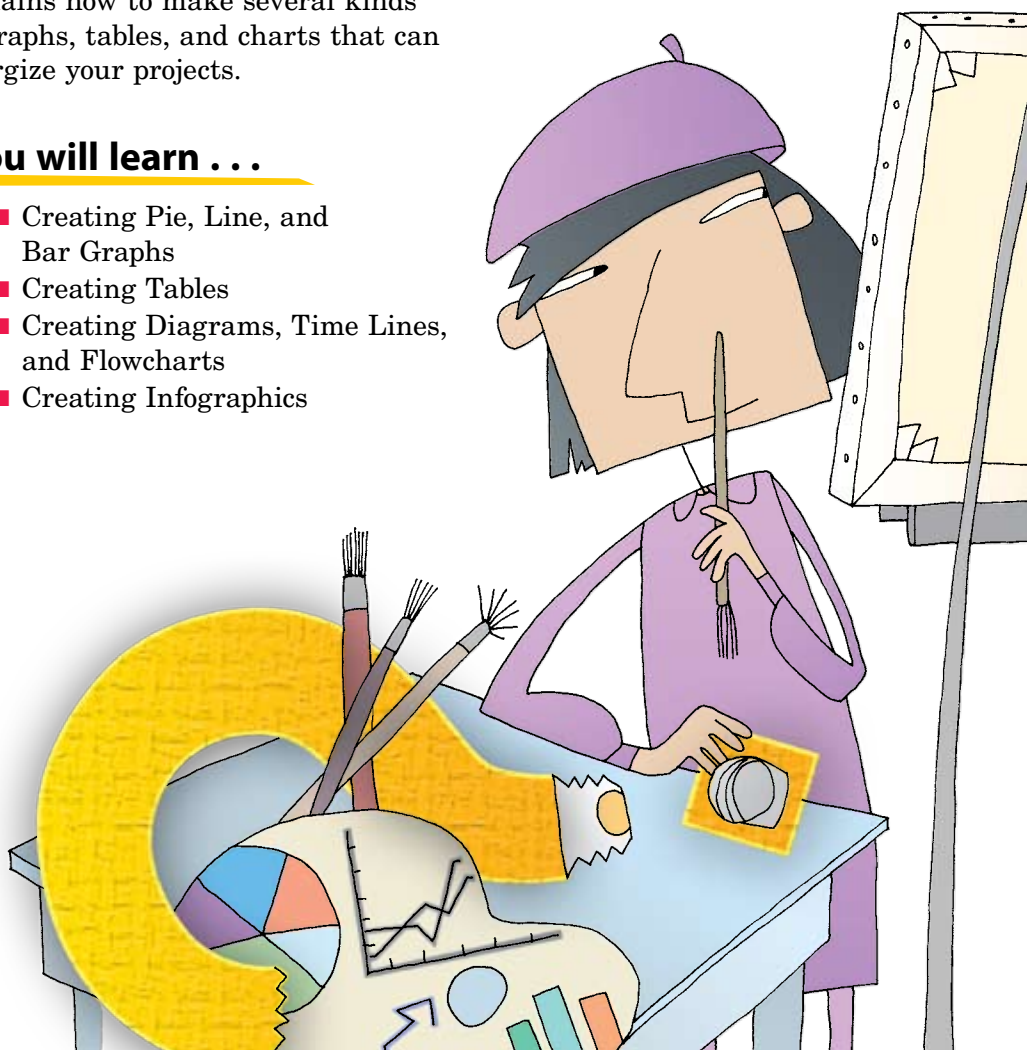
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## Chapter 26 Graphing Projects

Seeing is believing. That's why pictures are such a powerful form of communication. Instead of filling page after page with words and numbers that *tell* what you mean, create graphs that *show* what you mean. This chapter explains how to make several kinds of graphs, tables, and charts that can energize your projects.

### **You will learn . . .**

- Creating Pie, Line, and Bar Graphs
- Creating Tables
- Creating Diagrams, Time Lines, and Flowcharts
- Creating Infographics

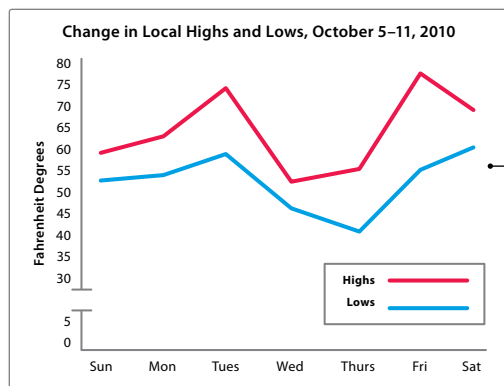
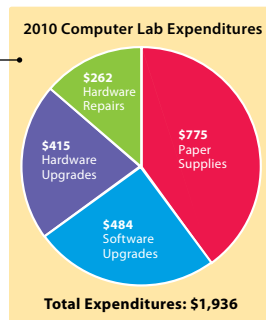


# Project Overview

Here is a quick overview of several ways to present information graphically.

## Pie Graph

A pie graph shows how a whole amount is split up into different segments. Each segment represents a part of the total. (See page 373.)

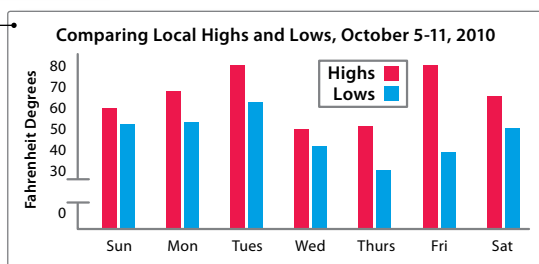


## Line Graph

A line graph shows changes over time. The horizontal axis shows time and the vertical axis shows quantity. A line traces from one quantity to the next. (See page 374.)

## Bar Graph

A bar graph compares amounts. The horizontal axis shows time or groups and the vertical axis shows quantity. Bars reaching to various quantities display the comparison. (See page 375.)



**Planet Facts**

Planet	Distance from Sun (million mi.)	Diameter (mi.)	Type	Surface Temp. (F)	Length of Day	Length of Year
Mercury	36.0	3,032	Rock	-290 to 800°	176 days	87.9 days
Venus	67.24	7,521	Rock	864°	243 days	225 days
Earth	92.96	7,926	Rock	-126.9° to 136°	23.9 hours	365.25 days
Mars	141.6	4,222	Rock	-125° to -23°	24.6 hours	687 days
Jupiter	483.7	88,846	Gas	-234°	9.9 hours	11.86 years
Saturn	885.9	74,898	Gas	-288°	10.7 hours	29.45 years
Uranus	1,783.9	31,764	Gas	-357°	17.2 hours	84.0 years
Neptune	2,771.0	30,776	Gas	-353°	16.1 hours	164.8 years

## Table

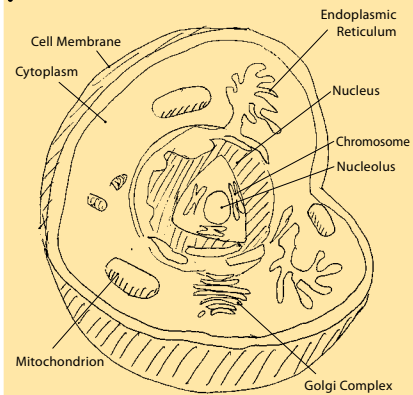
A table arranges raw information in rows and columns. Often subjects are listed down the first column, and traits are listed across the top. (See page 377.)

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## Diagram

A diagram shows a picture and labels the parts of it. The diagram may be a photo, a painting, a drawing, or a cutaway, as shown here. (See page 379.)

Parts of an Animal Cell



Major Civil War Battles of 1862



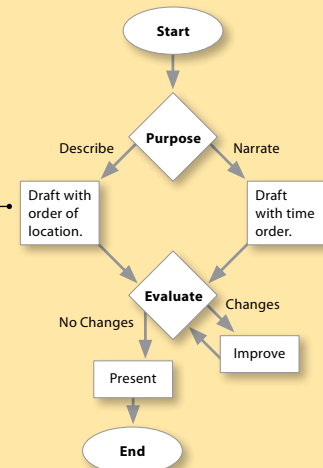
## Time Line

A time line shows events in the order they occurred. (See page 380.)

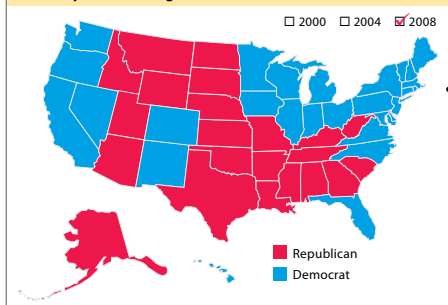
## Flowchart

A flowchart outlines a process. Ovals indicate start and end points, diamonds show decision points, rectangles indicate steps, and arrows show the flow. (See page 381.)

Composing a Personal Essay



State-by-State Voting in Presidential Elections



## Infographic

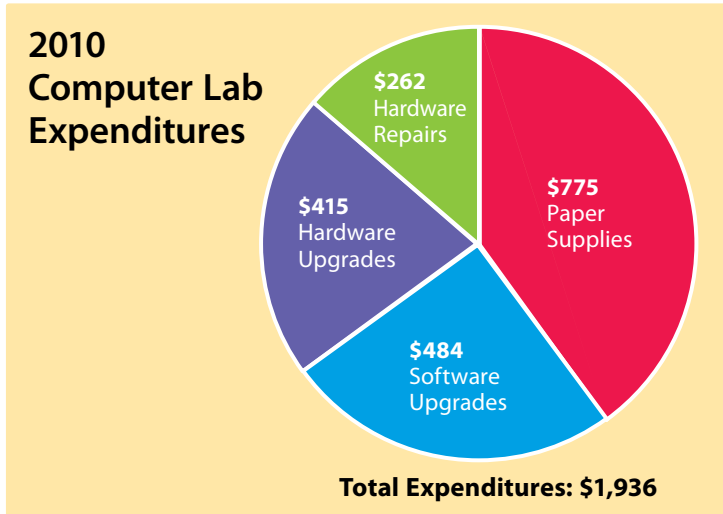
An infographic is an interactive online graphic that can combine elements from other graphics. (See page 383.)

## Inquire To Create a Graph

1. **Question** the overall situation for the graph.
  - **Subject:** What information do I want to present?
  - **Purpose:** Why am I creating the graph? To show parts of a whole (pie graph)? To show changes over time (line graph)? To compare amounts (bar graph)?
  - **Audience:** Who will read the graph? What do they need to know?
2. **Plan** your graph by studying the type you will make. Explore graph-making software or gather supplies (graph paper, ruler, compass, protractor) to create the graph by hand. (Go to [thoughtfullearning.com/p372](http://thoughtfullearning.com/p372) for suggestions.)
3. **Research** your topic.
  - **Gather** raw data from experiments, surveys, reports, or tables.
  - **Organize** the raw data for your graph.
4. **Create** your graph.
  - **Pie graphs** show the parts of a whole. See page 373 for tips on creating pie graphs.
  - **Line graphs** show changes over time. See page 374 for tips on creating line graphs.
  - **Bar graphs** compare amounts. See page 375 for tips on creating bar graphs.
5. **Improve** your graph.
  - **Evaluate** your graph.
    - Does it clearly portray your topic? Is it accurate? Is it attractive?
    - Does it include a title and clear labeling?
    - Does the graphic achieve its purpose? Do readers understand it?
  - **Revise** your graph.
    - Remove** any distracting visuals or unneeded words.
    - Rearrange** parts that may be out of place.
    - Redo** parts that are unclear or confusing.
    - Add** any missing information and label the parts.
  - **Perfect** your graph, making it clean and correct.
    - Ink** the drawn lines.
    - Color** the parts or leave them black and white, as you wish.
6. **Present** your graph online, in a report, or in a presentation. (Go to [thoughtfullearning.com/p372](http://thoughtfullearning.com/p372) for more help creating graphs.)

## Pie Graph

The following pie graph displays the amount of money that a school has spent in one year on its computer lab. The graph tells what part of the whole amount was spent for each type of expense.



### Tips for Pie Graphs

Use a pie graph to divide a whole into parts.

- **Include no more than six slices.** Combine small slivers into a “miscellaneous” slice.
- **Start at the twelve o’clock position** with the largest slice and move clockwise.
- **Add the other slices** in descending order, from largest to smallest.
- **Label each slice horizontally** and provide amounts or percentages.
- **Use the equation below** to calculate the width (in degrees) for each slice.

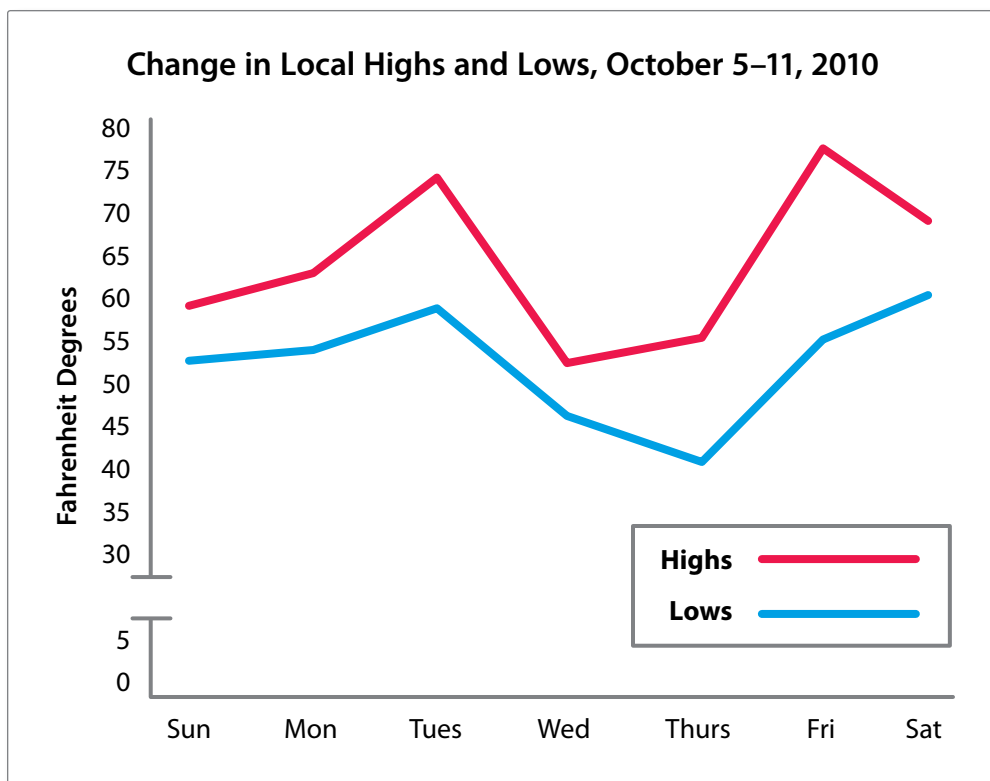
**a.**  $\text{Part quantity} \div \text{whole quantity} \times 100 = \text{percentage}$

**b.**  $\text{Percentage} \times 3.6 = \text{number of degrees}$

Slices	<u>\$1,936</u>	<u>100%</u>	<u>360 degrees</u>
Part 1	\$775	40.03%	144.1 degrees
Part 2	\$484	25.00%	90.0 degrees
Part 3	\$415	21.44%	77.2 degrees
Part 4	\$262	13.53%	48.7 degrees

## Line Graph

In the following line graph, a student records the high and low temperatures in his hometown for a week. Notice how the graph shows changes in temperature over time.



### Tips for Line Graphs

Use a line graph to compare changes in quantity over time.

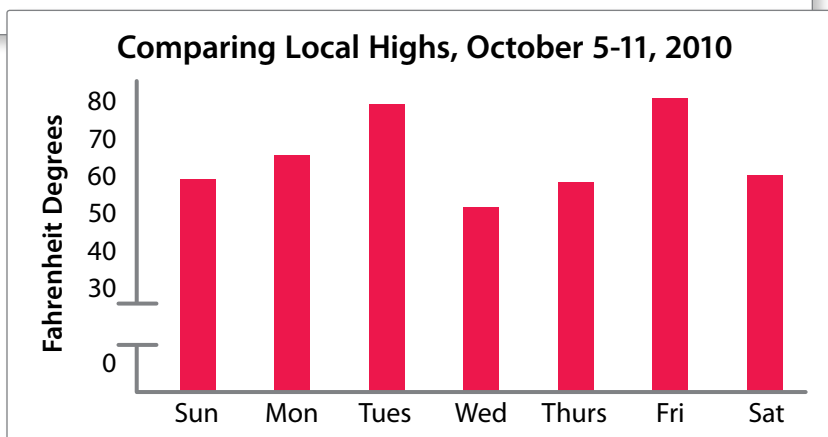
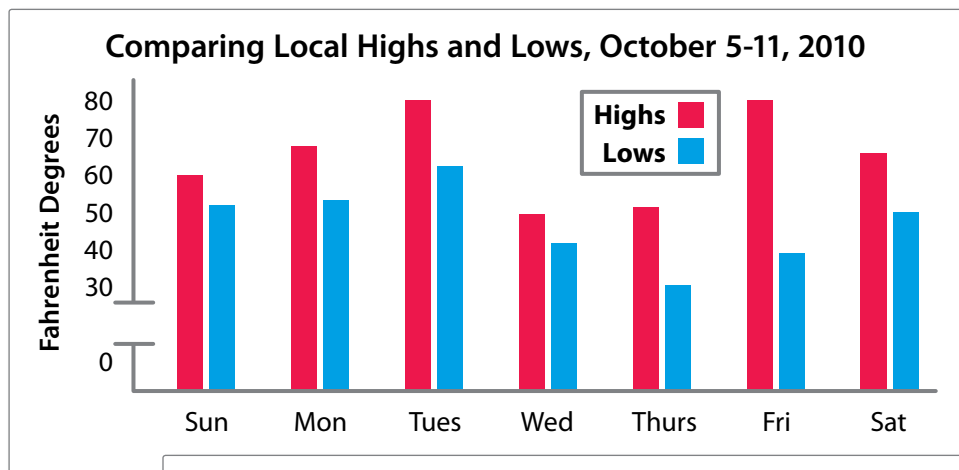
- **Plot time horizontally.** Mark units of time on the  $x$  axis (horizontal).
- **Plot quantity vertically.** Mark units of quantity on the  $y$  axis (vertical), starting at 0. If you need to skip a range to save space, show a break in the vertical axis.
- **Mark a dot** where the quantity and time intersect.
- **Draw lines** to connect the dots.
- **Create a legend** if you are using more than one line.
- **Title the line graph** clearly.

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## Bar Graph

The multiple bar graph below compares high and low temperatures, while the single bar graph compares highs on different days.



### Tips for Bar Graphs

Use a bar graph to compare quantities.

- **Plot time horizontally.** Mark units of time or items to compare on the  $x$  axis.
- **Plot quantity vertically.** Mark units of quantity on the  $y$  axis, starting at 0. If you need to skip a range, show a break.
- **Present your data accurately.** Don't exaggerate or minimize differences.
- **Create consistent bars.** All should be the same width.
- **Use different colors** for different items, and provide a legend.
- **Give your graph an informative title.**

## Inquire To Create a Table

1. **Question** the overall situation for the table.
  - **Subject:** What topics am I dealing with? What traits or amounts do I want to show?
  - **Purpose:** Why am I creating the table? How will it be used? What information is most important?
  - **Audience:** Who will use the table? What information do they need?
2. **Plan** your table, exploring table-making features of your word processor or spreadsheet program. (Go to [thoughtfullearning.com/p376](http://thoughtfullearning.com/p376) for assistance.)
3. **Research** your topic.
  - **Gather** the data that you will present in your table.
  - **Decide** how to use rows and columns to effectively present the data.
4. **Create** your table. (See also “Tips for Tables” on page 377.)
  - **Choose** the number of columns and label them at the top.
  - **Create** the rows, labeling them at the left.
  - **Provide** a title that clearly identifies the table’s content.
5. **Improve** your table.
  - **Evaluate** the table.

Is each column and each row clearly labeled? Is the information in each cell accurate? Does the table include units of measure as needed?

Does the table achieve its purpose? Do readers understand it?
  - **Revise** your table.
    - Remove** any columns or rows that do not provide essential information.
    - Rearrange** columns or rows for a better order.
    - Redo** any part of the table that is unclear or confusing.
    - Add** columns or rows as needed.
  - **Perfect** your table, making it clean and correct.
6. **Present** your table in the best context—perhaps online, in a report, or in a presentation. (Go to [thoughtfullearning.com/p376](http://thoughtfullearning.com/p376) for more information.)

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## Table

The following sample table contains information about the eight planets of our solar system. The information is arranged in rows and columns.

**Planet Facts**

Planet	Distance from Sun (million mi.)	Diameter (mi.)	Type	Surface Temp. (F)	Length of Day	Length of Year
Mercury	36.0	3,032	Rock	-290 to 800°	176 days	87.9 days
Venus	67.24	7,521	Rock	864°	243 days	225 days
Earth	92.96	7,926	Rock	-126.9° to 136°	23.9 hours	365.25 days
Mars	141.6	4,222	Rock	-125° to -23°	24.6 hours	687 days
Jupiter	483.7	88,846	Gas	-234°	9.9 hours	11.86 years
Saturn	885.9	74,898	Gas	-288°	10.7 hours	29.45 years
Uranus	1,783.9	31,764	Gas	-357°	17.2 hours	84.0 years
Neptune	2,771.0	30,776	Gas	-353°	16.1 hours	164.8 years

## Tips for Tables

Use a table to compare lists of data.

- **Make rows and columns.** Label the rows with item names down the left side, and label the columns with the traits at the top. (If the traits outnumber the items you will compare, you can reverse the position of these elements.)
- **Fill in boxes.** Where rows intersect columns, fill in the information that applies to that item and that trait.
- **Provide units of measure.** When numbers are given, provide the units for each or for a whole row or column.
- **Provide a title.** Clearly identify the topic of the table.

## Inquire

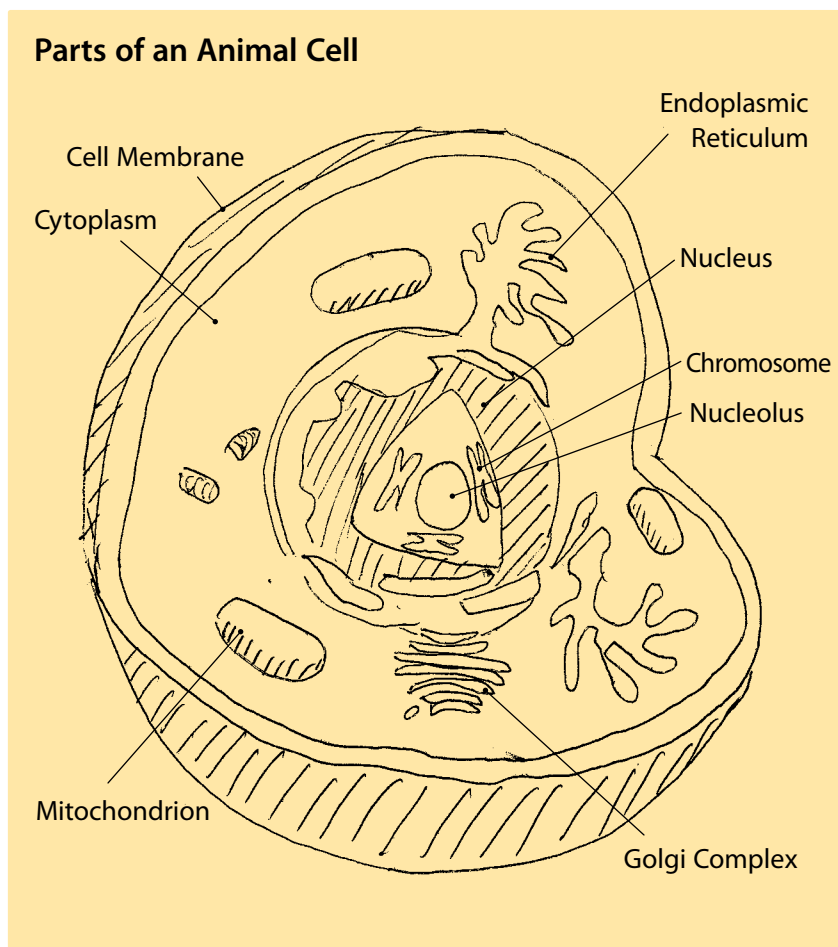
# To Create a Diagram, Time Line, or Flowchart

1. **Question** the overall situation for the graphic.
  - **Subject:** What is the topic of the graphic?
  - **Purpose:** Why am I creating the graphic? To show the parts of something (diagram)? To show a sequence of events (time line)? To show the steps in a process (flowchart)?
  - **Audience:** Who will read the graphic? What information do they need?
2. **Plan** your graphic, deciding whether you'll use software or will create your diagram, time line, or flowchart by hand. (Go to [thoughtfullearning.com/p378](http://thoughtfullearning.com/p378) for more help.)
3. **Research** your topic.
  - **Consult** resources to gather the information you need.
  - **List** the parts of the object, the steps of the process, or the events in the time line.
4. **Create** your graphic.
  - **Diagrams** show the parts of an object. Find or create a picture of the object and label the parts. Include a title. See page 379 for tips on creating diagrams.
  - **Time lines** show a sequence of events. See page 380 for tips on creating time lines.
  - **Flowcharts** show the steps in a process. Use ovals for start and end points, diamonds for decisions, rectangles for steps, and arrows to connect them. See page 381 for tips on creating flowcharts.
5. **Improve** your graphic.
  - **Evaluate** your graphic.  
Does it make the topic clear, achieving its purpose? Is it accurate and attractive? Does it include a title and clear labeling? Do readers understand it?
  - **Revise** your graphic.  
**Remove** any parts that do not communicate clearly.  
**Rearrange** parts that are out of order.  
**Redo** parts that are confusing.
  - **Perfect** your graphic, making it clean and correct.
6. **Present** your graphic in the best context—online, in a report, or in a presentation.

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## Diagram

The following diagram identifies the main parts of an animal cell.



### Tips for Diagrams

Use diagrams to show the parts of complex things.

- **Select a topic** that you need to show in a diagram.
- **Consider types of images**, such as a simple illustration, a cutaway (as shown above), or an “exploded view,” in which the parts are pulled away from each other to show them individually.
- **Draw, photograph, or find** the image that you want to present.
- **Label the parts of the image** and draw lines to each.
- **Provide a descriptive title** for the diagram.

## Time Line

The following time line traces the major battles of the Civil War in 1862.

### Major Civil War Battles of 1862



March	<i>Monitor and Merrimac</i>
April	Shiloh New Orleans
May	
June	Seven Pines (Fair Oaks)
July	The Seven Day's Battles
August	Pope's Campaign
September	Harper's Ferry Antietam
October	
November	
December	Fredericksburg

### Tips for Time Lines

Use time lines to show a sequence of events.

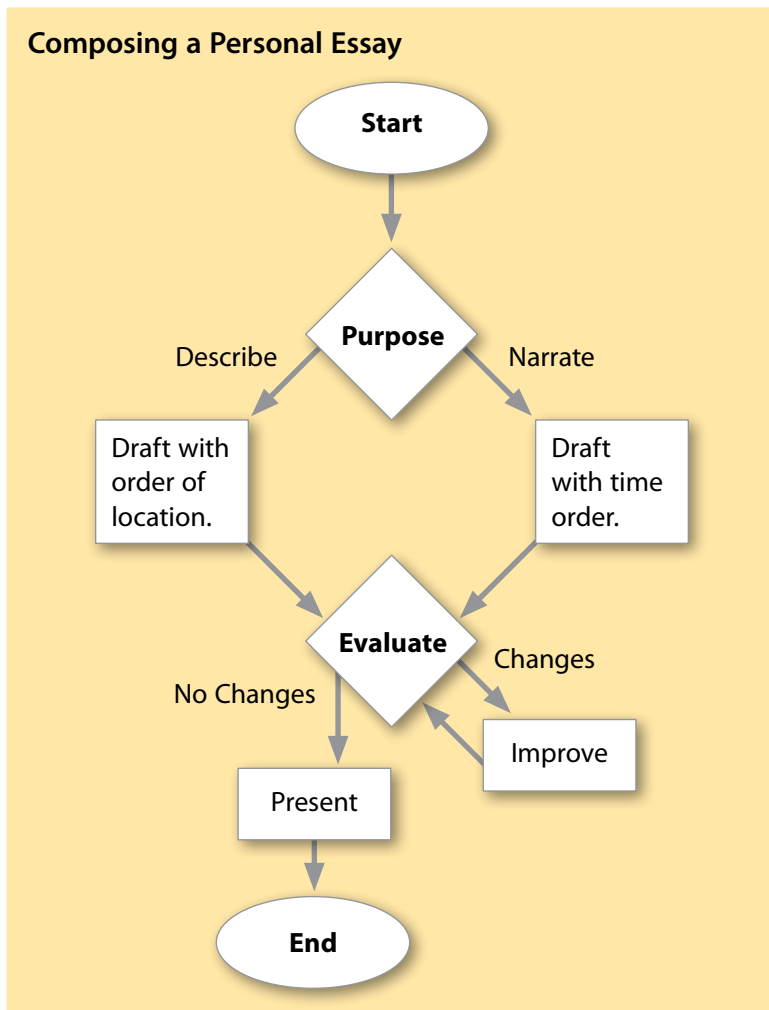
- **Choose the right scale** for your topic—hour by hour, day by day, and so on. Size your project so that it fits easily on one page or screen.
- **Record your information.** Place each event in sequence.
- **Title the time line,** accurately naming its contents.



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## Flowchart

The following flowchart demonstrates the process of drafting, revising, and presenting a personal essay.



### Tips for Flowcharts

Use a flowchart to show a sequence with decision points and alternate routes.

- Use **ovals** to indicate the start and end points.
- Use **diamonds** to indicate decision points.
- Use **rectangles** to indicate steps in the process.
- Use **arrows** to connect the parts.



# Inquire

## To Create an Infographic

1. **Question** the overall situation for the infographic.
  - **Subject:** What is my topic? What specific point do I want to make?
  - **Purpose:** Why am I creating the infographic? To inform, persuade, or both?
  - **Audience:** Who will interact with the infographic? What interactive elements can I provide to engage the audience?
2. **Plan** your infographic, searching the Web for options.
3. **Research** your topic.
  - **Gather** data from reliable print and online sources.
  - **Decide** on the format you will use—map, graph, table, diagram, or other.
4. **Create** your infographic. (See also “Tips for Infographics” on page 383.)
  - **Prepare** the graphic, using the examples earlier in this chapter as a guide.
  - **Add** animation to the graphic if appropriate.
  - **Title** the infographic so users can quickly understand its contents.
  - **Provide** any necessary keys or legends.
5. **Improve** your infographic.
  - **Evaluate** your infographic.
 

Does the infographic present the important information? Is it accurate? Does the infographic use animation?

Does the infographic achieve its purpose? Do readers understand it?
  - **Revise** your infographic.
 

**Remove** any parts or animation features that do not provide essential information.

**Rearrange** parts for a clearer presentation.

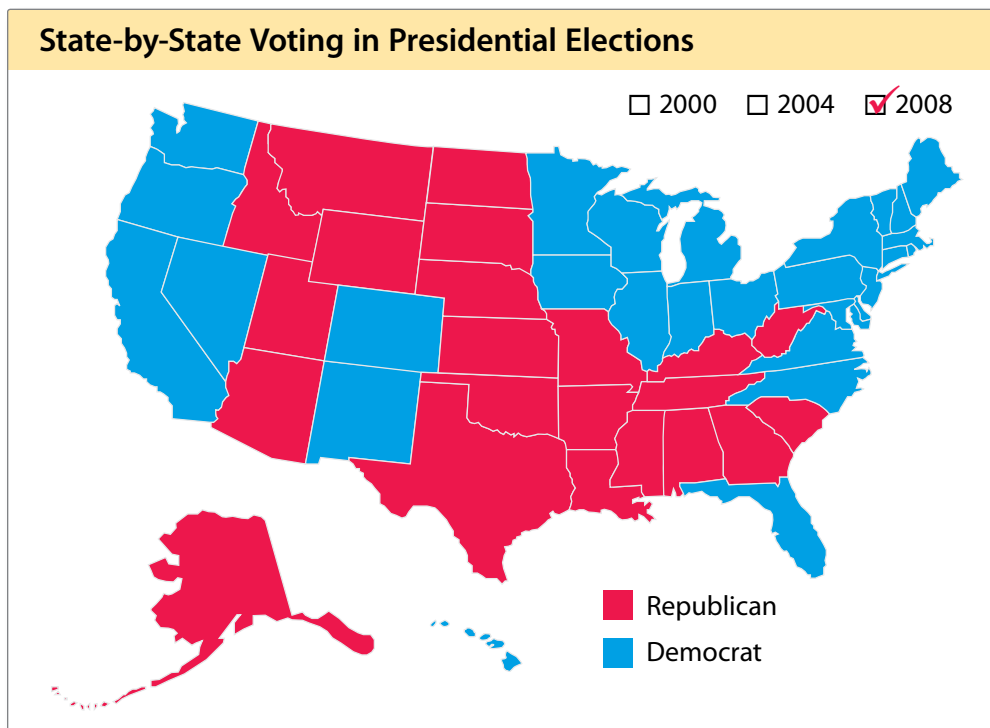
**Redo** parts that aren't working.

**Add** missing information, titles, legends, or animations.
  - **Perfect** your infographic, making it clean and correct.
6. **Present** your infographic online and use social media to attract readers. (Go to [thoughtfullearning.com/p382](http://thoughtfullearning.com/p382) for more on infographics.)

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The following infographic shows how states voted (Republican or Democrat) in three recent presidential elections. In its online form, this infographic is interactive, allowing the user to click the election year to see the states changing color.



## Tips for Infographics

Create infographics online to give users the chance to make selections and interact with the information. Any of the graph types shown on the previous pages could be made into infographics by adding animation and additional layers of information.

- **Choose the graph type** that will best describe your topic.
- **Create versions of the graph** to show changes over time, or connect the graph to others with similar information. For example, the line and bar graphs on pages [374–375](#) could be linked in an infographic to show the same information in three ways.
- **Link the graphs** so that users can click through the different versions.

## Animated Maps

## Melting Ice of the Arctic Sea: 2000–2007



## Word Cloud from Text in This Chapter

