

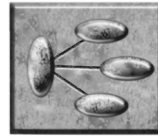
UNIT SIX

Interpreting and Constructing Graphic Organizers and Charts

ACTIVITIES

- 6-1 Topic-List Graphic Organizer
- 6-2 Problem-Solution Graphic Organizer
- 6-3 Series of Events Graphic Organizer
- 6-4 Compare-Contract Graphic Organizer
- 6-5 Question-Answer Graphic Organizer
- 6-6 Cause-Effect Graphic Organizer
- 6-7 Sequence Chart
- 6-8 Five W's Chart
- 6-9 KWL Chart
- 6-10 Selecting a Graphic Organizer or Chart

Topic-List Graphic Organizer



6-1

Graphic organizers and charts are visual representations used to organize information. They help you to understand and remember information. In this unit, you will be learning about nine useful graphic organizers and charts.

A **topic-list graphic organizer** helps you organize information on a topic into its subtopics and details.

Read the following information about the features of the earth.

Our planet earth has many distinguishing features. If you viewed the earth from above, you would immediately notice its mountains. Mountains may look solid and unchanging, but they are being built up and worn away by the weather all the time. The Andes is the longest mountain range. It stretches for more than 4,000 miles along the western side of South America. The Himalayas, located between India and the rest of Asia, has 20 of earth's highest mountains. One of these, Mt. Everest, is the highest mountain on earth.

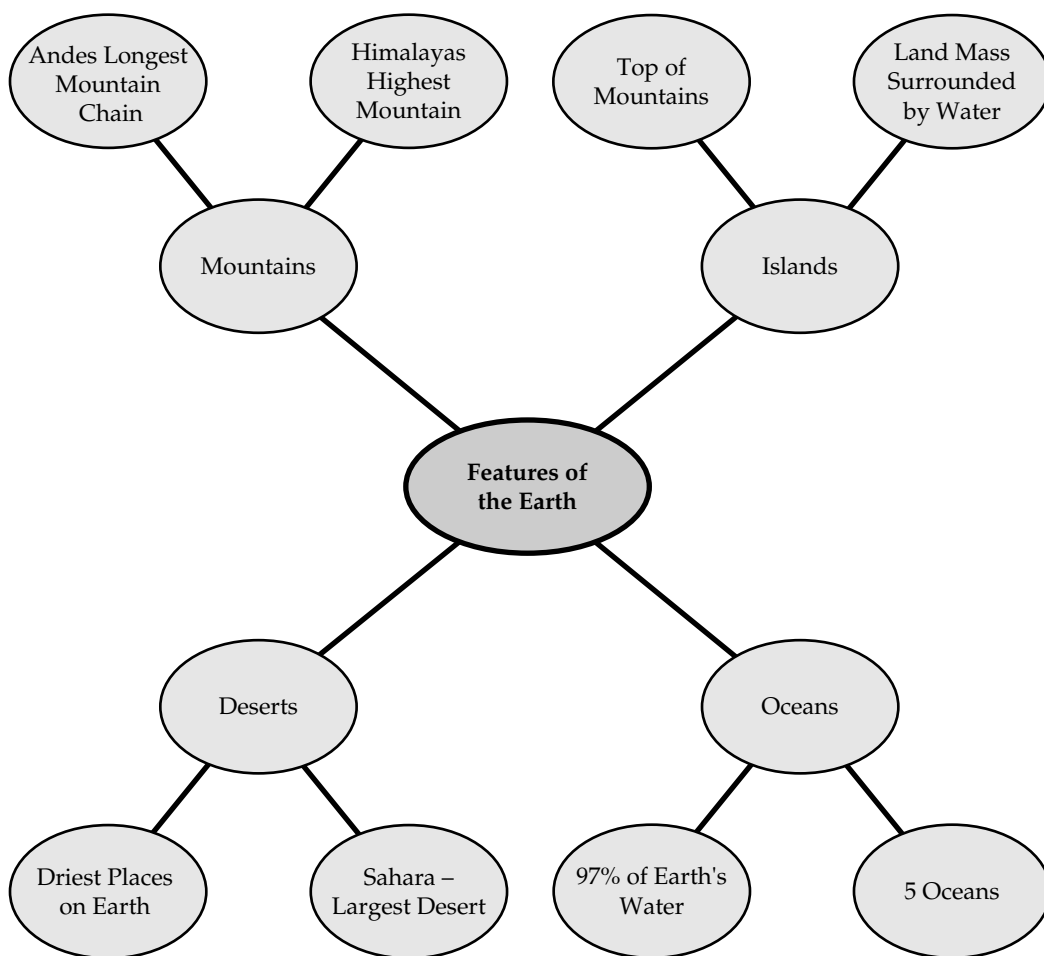
Earth has many islands. Some islands are the tops of undersea mountains. Others were once part of a large land mass but are now surrounded by water. Deserts are the driest places on earth. Most deserts are very hot. The largest desert is the Sahara Desert, which is in part of eleven countries of northern Africa. Whereas deserts are very dry, oceans are very wet. In fact, about 97 percent of all of the earth's water is in the oceans. There are five oceans. They all connect to make one large body of water.

Here are the steps to follow to construct a topic-list graphic organizer.

1. Draw a large oval in the middle of a page. Write the name of the topic in that oval.
2. Determine how many subtopics there are for the topic. Draw a slightly smaller oval for each subtopic arranged around the topic oval. Connect each subtopic oval to the topic oval with a line.
3. Write the name of each subtopic in one of the subtopic ovals.
4. Determine how many details there are for each subtopic.
5. Draw a slightly smaller oval for each detail either above or below the subtopic oval. Connect each detail oval with its subtopic oval with a line.
6. Write each detail in one of the detail ovals.

On the following page is the topic-list graphic organizer a student constructed based on the information provided about the features of the earth.

6-1 Topic-List Graphic Organizer (continued)



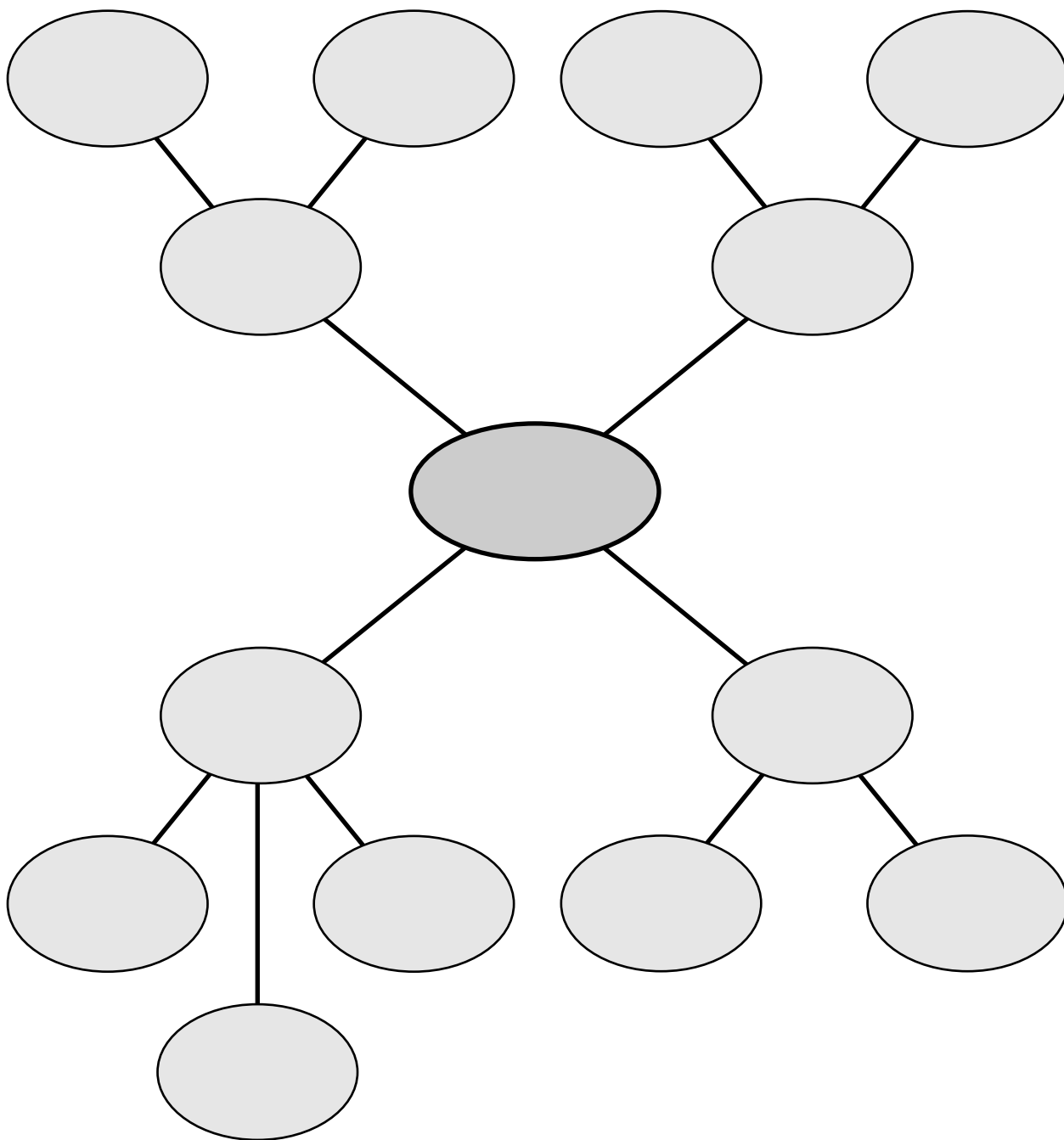
Read the following information about stars. Then complete the topic-list graphic organizer.

Stars

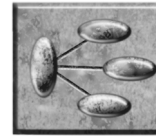
A star is a ball of gas that is so hot it burns and glows. If you look at the sky on a clear night, you will be able to see constellations of stars. The stars in each constellation are named after letters in the Greek alphabet. For thousands of years sailors used the stars to navigate. They were able to tell in which directions they were traveling.

Galaxies are giant groups of stars. Each galaxy consists of millions and even trillions of stars. Most galaxies are one of four shapes: spiral, irregular, oval, and elliptical. Our own galaxy is the Milky Way. It is made up of 100 billion stars. The Milky Way is in the shape of a spiral. Nebulae are seen as fuzzy patches of light as you look at the night sky. They are actually giant clouds of space dust and gas where new stars are born and old stars die. The Great Nebula of Orion can be seen with the naked eye.

6-1 *Topic-List Graphic Organizer (continued)*



Problem-Solution Graphic Organizer

**6-2**

A **problem-solution graphic organizer** helps you see a problem, attempts at its solution, and the solution to the problem or the present status of attempts to solve the problem.

Read the following information about the problem of excessive greenhouse gas emissions.

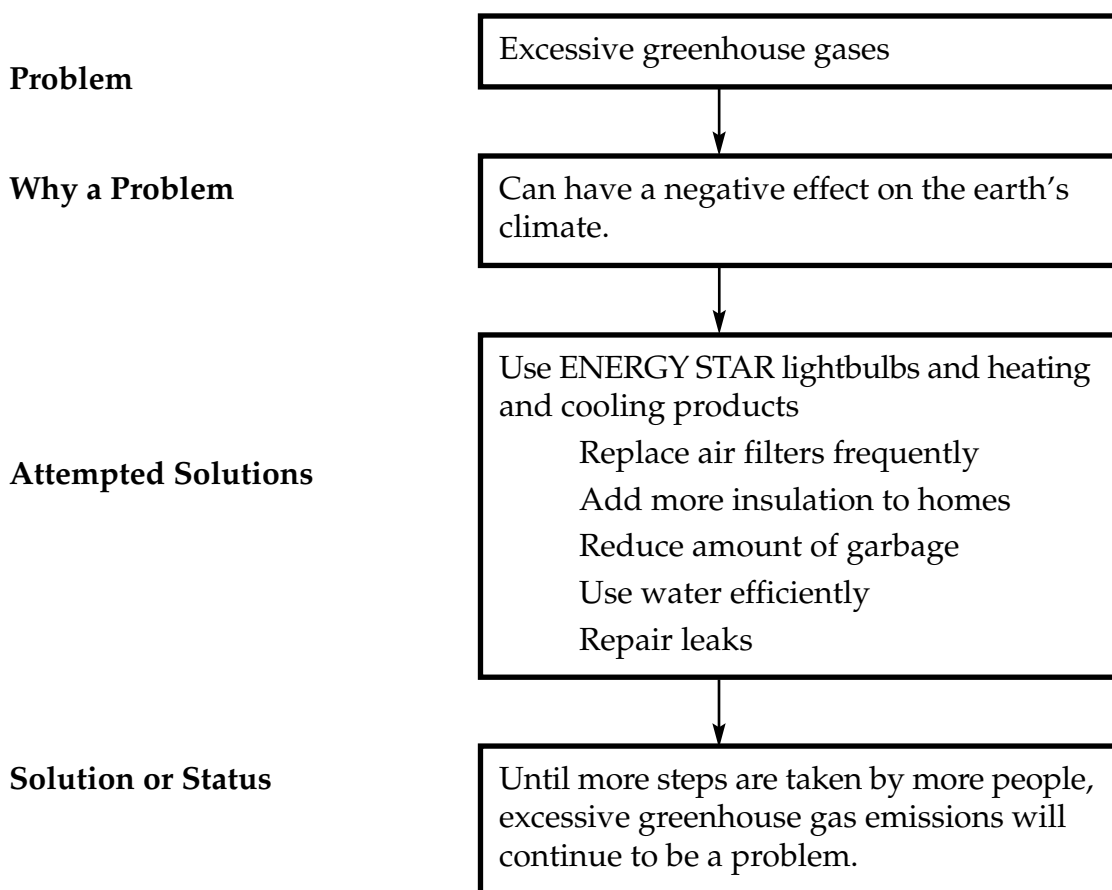
Greenhouse gas emissions are emissions of gases into the atmosphere that affect the temperature and climate of the earth's surface. Scientists are concerned that increased emissions of these gases will have a negative impact on the earth's climate. The effect of excessive greenhouse gases is known as the "greenhouse effect."

Here are some of the things people are doing in their homes to reduce the greenhouse effect. Many people are replacing lightbulbs they use with ENERGY STAR bulbs (bulbs that are energy efficient). If every household changed just five bulbs, greenhouse gases would be greatly reduced. People are also buying ENERGY STAR products they use to heat and cool their homes. Replacing air filters regularly in heating and cooling equipment reduces greenhouse gas emissions. People are also adding more insulation to their homes to reduce the need to run air conditioners and heaters. In their gardens people are composting their yard waste to reduce the amount of garbage that is sent to landfills. Finally, people are taking numerous steps to use water more efficiently. Repairing all faucet leaks reduces water waste.

Here are the steps to follow to construct a problem-solution graphic organizer.

1. Write the problem in a box.
2. Write why it is a problem in a box below the problem box. Connect the two boxes with an arrow from the problem box to the why it is a problem box.
3. List all attempted solutions to the problem in a third box below the why it is a problem box. Connect the two boxes with an arrow from the why it is a problem box to the attempted solutions box.
4. Write the solution to the problem or the current status of attempted solutions in a fourth box below the attempted solutions box. Connect the two boxes with an arrow from the attempted solutions box to the solution or current status of the problem box.

On the next page is the problem-solution graphic organizer a student constructed about the problem of excessive greenhouse gas emissions.

6-2 Problem-Solution Graphic Organizer (continued)

Read the following information about the problem of the spread of bird flu. Then complete the problem-solution graphic organizer on the next page.

The current deadly strain of bird flu (avian flu) was first seen in Hong Kong in 1997. Currently more than 150 million birds are affected. Humans can catch this flu by contact with live, infected birds. Because two out of three people who catch bird flu die, scientists and health professionals are very concerned the flu may spread around the world. As of now, there is no effective vaccine to protect people against bird flu.

To stop a possible spread of bird flu, millions of infected birds have been destroyed. In some places birds are vaccinated. Farms on which infected birds are found are quarantined and disinfected. Wild birds are prevented from interacting with the domestic birds. Many countries ban the import of birds from countries where bird flu has been found.

At this time bird flu has been contained. However, not enough is yet known about bird flu to enable scientists and health professionals to eliminate it.

6-2 Problem-Solution Graphic Organizer (continued)



Problem



Why a Problem

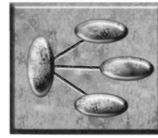


Attempted Solutions



Solution or Status

Series of Events Graphic Organizer

**6-3**

A **series of events graphic organizer** is helpful when you are working with historical information. This type of graphic organizer allows you to show the order in which events occurred along with details about each event.

Read the following passage about “The Early Americas.”

The Early Americas

People first reached North America 15,000 to 20,000 years ago. They did this by crossing a land bridge that joined what today is called Asia with Alaska. The Olmec civilization developed in western Mexico between 1200 and 1400 BC. The Olmecs had a counting system and a calendar. They did not have a writing system. The Mayans built large pyramids in the centers of their cities between 600 BC and AD 250. These pyramids had small temples at the top. The Mayans were wonderful traders who travelled far and wide. From AD 100 to 700, the first great city developed in what is now Mexico. It was one of the largest cities in the world with a population of more than 250,000. The city was named Teotihuacán. Spanish conquerors destroyed this city and built a new city, which today is Mexico City.

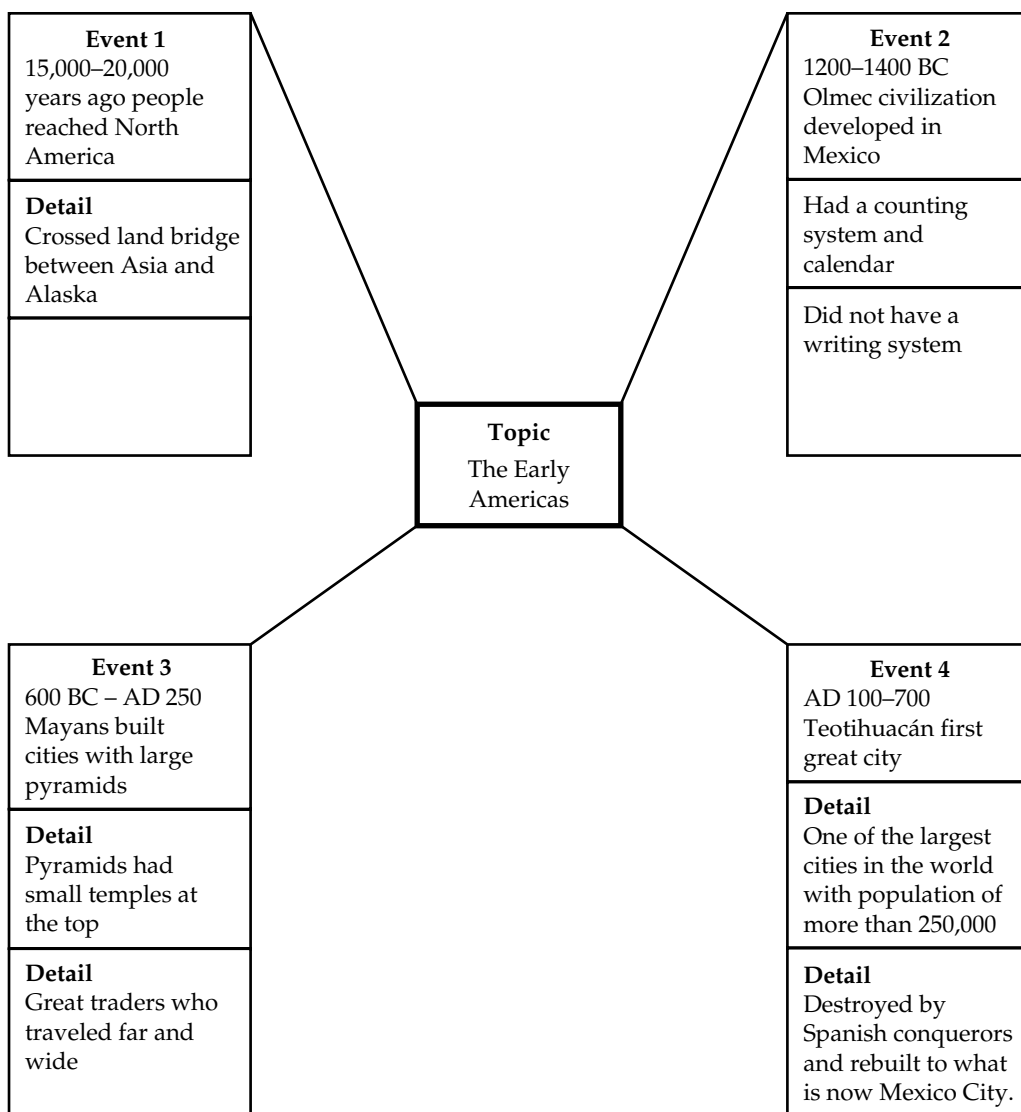
Here are the steps to follow to construct a series of events graphic organizer.

1. Write the topic in a box in the middle of a sheet of paper.
2. Write the first of the events in a box. Label this box Event 1. Include any details about that event in the box. Connect this event box with a line to the topic box.
3. Construct similar boxes for the other events, labeling them Event 2, Event 3, and so on. Connect each of these boxes to the topic box.

6-3 Series of Events Graphic Organizer (continued)



Here is the series of events graphic organizer a student constructed about the Early Americas.



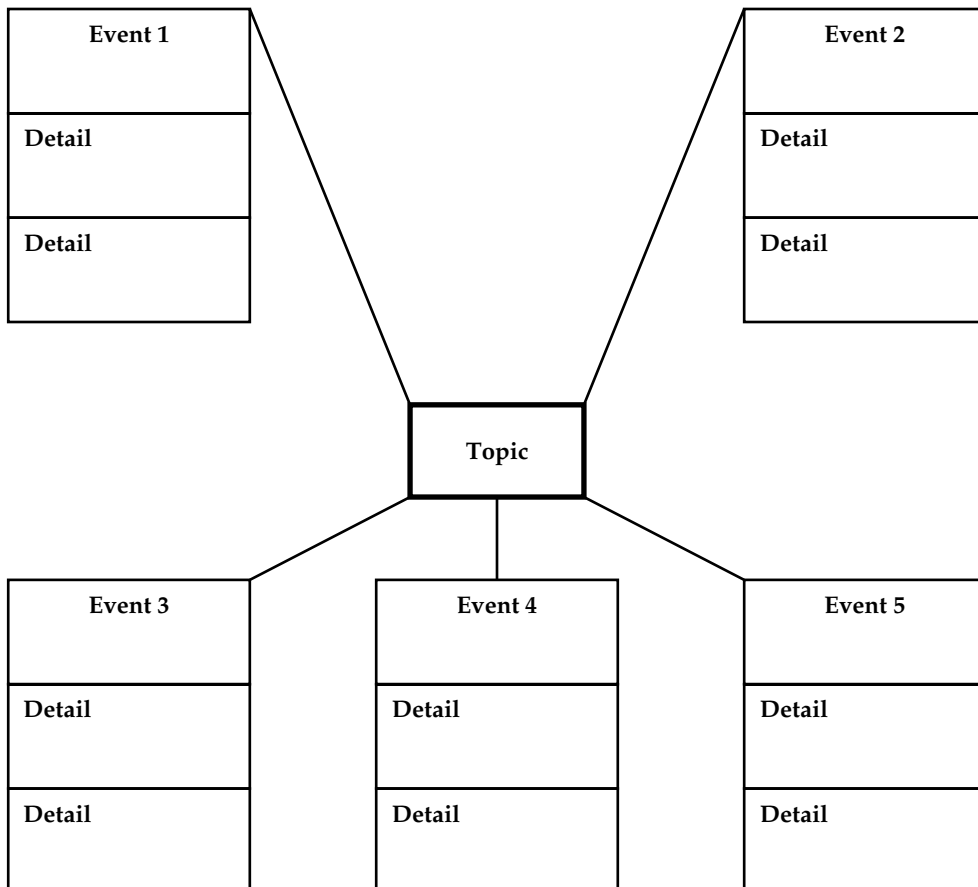
6-3 Series of Events Graphic Organizer (continued)



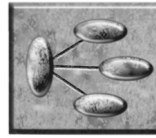
Read the following information about the Industrial Revolution. Then complete the series of events graphic organizer. You may find that you do not need to use all the boxes provided in the blank organizer on the next page.

The Industrial Revolution

The Industrial Revolution began about 1700 with the invention of machines for making cloth. The spinning jenny was one of the most important of these machines. It had to be turned by hand. In 1713, Abraham Darby discovered how to use coke instead of wood charcoal to produce iron. This made the production of huge amounts of iron much cheaper than before. In 1776, a machine for making cloth was invented that was driven by large water wheels. Several years later the world's first big factory was built using this machine. James Watt developed a steam engine to drive machines in the 1780s. As a result, steam replaced water as the main source of power in factories. When Henry Cort discovered how to remove impurities from iron in 1784, iron became the most important part of the Industrial Revolution.



Compare-Contrast Graphic Organizer

**6-4**

A **compare-contrast graphic organizer** is useful for showing how two things are both alike and different.

Read the following passage that compares the views of two candidates for political office.

CANDIDATE A

“Thank you for the opportunity to express my view on important issues. We are all concerned with terrorism. I believe we have to increase our war on terror. We have to stop terrorism, even if doing so interferes with our civil liberties. We can’t stay involved in the affairs of every country in the Middle East. They will have to learn to take of their own business. I think that fair trade is a good thing. It opens up commerce and improves relations. We need to make sure that corporations do business around the world. Manufacturing our products in different parts of the world helps us because it keeps prices down. Finally, I’d like to say, we have to do everything we can to reduce global warming. We all must do our part to save the earth.”

CANDIDATE B

“Thank you Candidate A and to all of you for coming here tonight. I too am concerned about terrorism. But I do not believe we should curtail our civil liberties in our fight against terrorism. The history of the Middle East has shown repeatedly that this region cannot take charge of its own affairs. We shouldn’t try to take control, but we have to be there to provide direct assistance. Fair trade worries me. We haven’t kept the needs of our American workers in mind. Our country grew with the idea of free enterprise. We shouldn’t tell corporations where to do their business. If it is better for them to manufacture things out of the country, then so be it. Finally, I’m in complete agreement with candidate A; we must do everything we can to prevent global warming.”

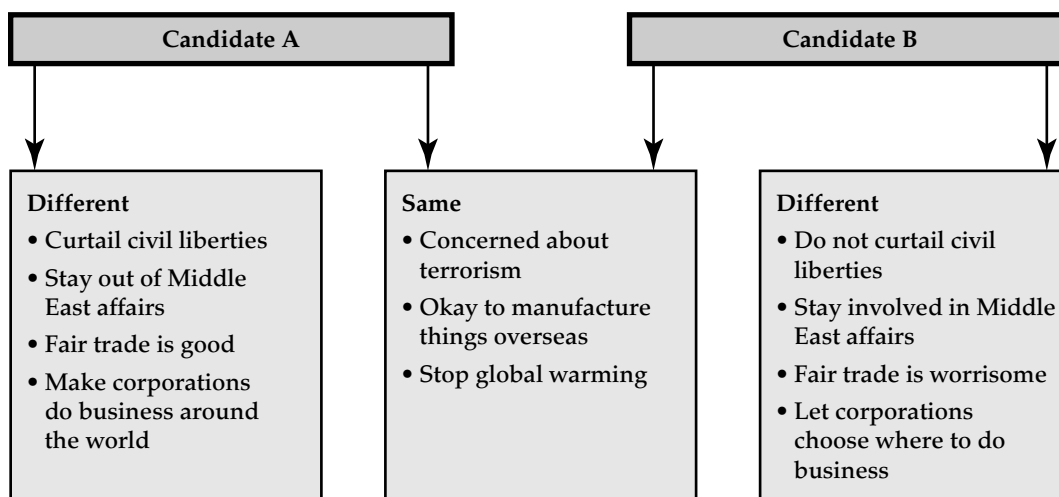
6-4 Compare-Contrast Graphic Organizer (continued)



Here are the steps to follow to construct a compare-contrast graphic organizer.

1. Draw two boxes at the top of a sheet of paper.
2. In the left-hand box, write the name of one of the things you are comparing and contrasting.
3. In the right-hand box, write the name of the other thing you are comparing and contrasting.
4. Below the two boxes at the top, draw three evenly spaced vertical boxes that extend to the bottom of the page. Label the first and third boxes "Different" and the middle box "Same."
5. Draw a line from the top left-hand box to the left-hand "Different" box, and a second line to "Same" box.
6. Draw a line from the top right-hand box to the right-hand "Different" box, and a second line to "Same" box.
7. In the two boxes labeled "Different," write the differences between the two things you are comparing and contrasting.
8. In the two boxes labeled "Same," write how the two things you are comparing and contrasting are the same.

Here is the compare-contrast graphic organizer a student constructed about the views of the two candidates from the previous page.



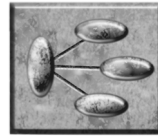
6-4 Compare-Contrast Graphic Organizer (continued)

Read the following information about lions and tigers. Then complete the compare-contrast graphic organizer.

Lions are a member of the family Felidae. They belong to the species *Panthera leo*. Lions are found in both Africa and Asia. Lions live for about 10 to 14 years in the wild but can live longer in captivity. They typically inhabit savanna and grasslands. Lions are very social when compared to other big cats. They live in groups called prides. Prides consist of related females and offspring and a small number of adult males. Most of the hunting is done by the females in packs.

Tigers are also a member of the family Felidae. They belong to the species *Panthera tigris*. Tigers are found only in Asia. Tigers live 15 to 20 years in the wild and somewhat longer in captivity. They are quite comfortable living in savanna and grasslands. Tigers are not very social and prefer to live alone. Hunting is done equally by males and females.

Question-Answer Graphic Organizer



6-5

A **question-answer graphic organizer** works well when you have questions about something.

Andrew's father mentioned that he had to go to the building supply store to buy some pressure-treated lumber. Andrew wanted to know why wood was pressure treated, how wood is pressure treated, and what safety measures should be taken when working with pressure-treated wood. He read the following article about pressure-treated lumber. Read the article yourself.

Wood is a great building material. However, many varieties of bacteria, fungi, and insects attack and eat wood. This is a big problem when lumber is stored on moist ground in lumberyards.

Pressure-treated lumber is wood that is immersed a liquid preservative and then placed in a pressure chamber. The pressure ensures that the chemical soaks deeply into the wood. The most common chemical used to treat lumber is a mixture of copper and arsenic called CCA. Wood that is not treated lasts only a year or two when in contact with moist ground. Wood treated with CCA can last decades.

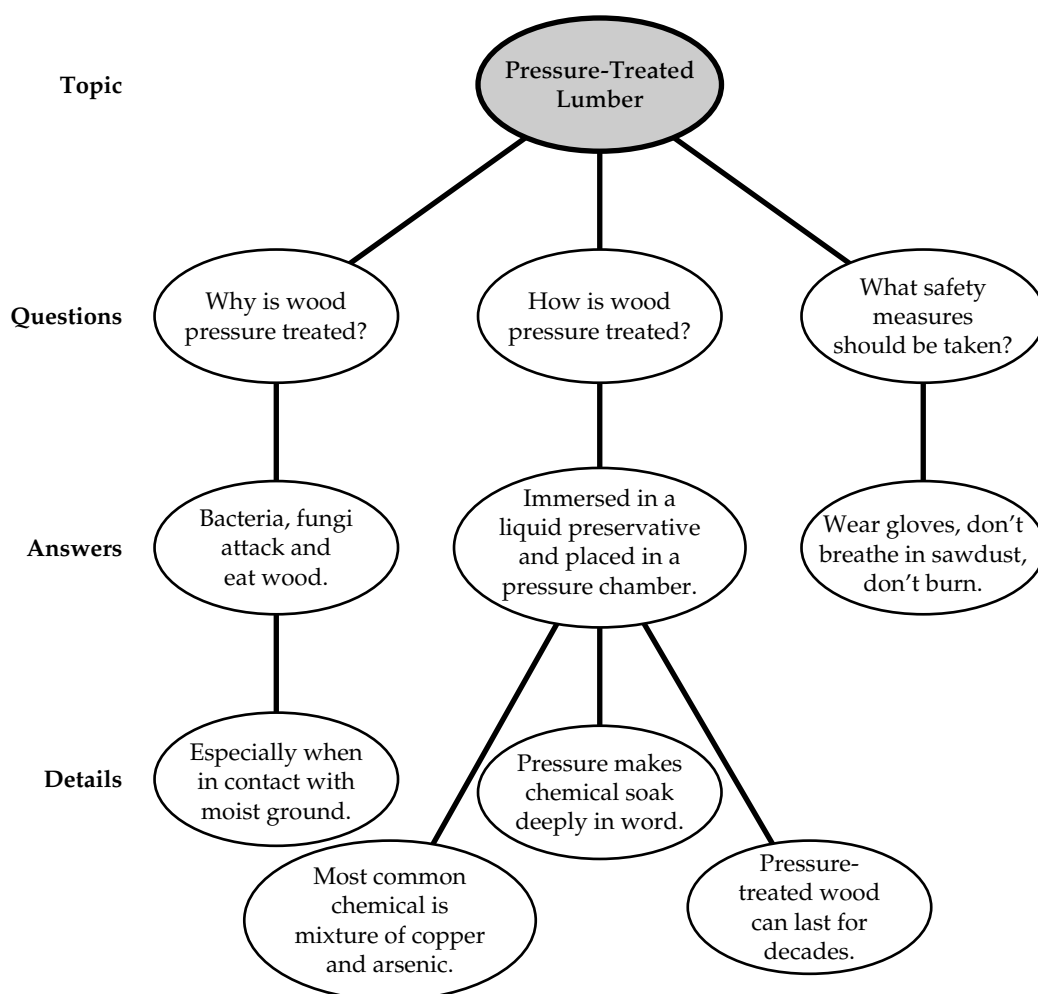
Chemicals such as CCA used to treat wood can be dangerous to people. Warnings are posted to wear gloves when handling treated word, to avoid breathing sawdust produced when the wood is sawed, and to not burn the wood.

Here are the steps to follow to construct a question-answer graphic organizer.

1. Draw an oval at the top center of a sheet of paper. Write the heading "Topic" to the left of the oval. Write the topic in the oval.
2. Below the topic draw ovals going across for each of your questions. Write the heading "Questions" to the left of the first oval. Connect each oval by a line to the oval for the topic. Write a question in each oval.
3. Draw an oval below each oval for a question. Connect each oval by a line to the oval for its question. Write the heading "Answers" to the left of the first oval. Below each question, write the answer to the question in its oval.
4. Below each oval for an answer, draw an oval for each detail related to the answer. Connect each of these ovals to the oval for the answer the detail relates to. Write the heading "Details" to the left of the first oval. Write each detail in the appropriate oval.

After he read the article about pressure-treated lumber, Andrew constructed the question-answer graphic organizer shown on the next page.

6-5 Question-Answer Graphic Organizer (continued)



Suppose that when your class gets too noisy, your teacher has a habit of saying, “Keep those decibels down.” You wanted to know what a decibel is, what the decibel level is for common sounds, and whether a sound that is too high in decibels can harm your hearing.

To answer these questions, you read the following encyclopedia article about decibels.

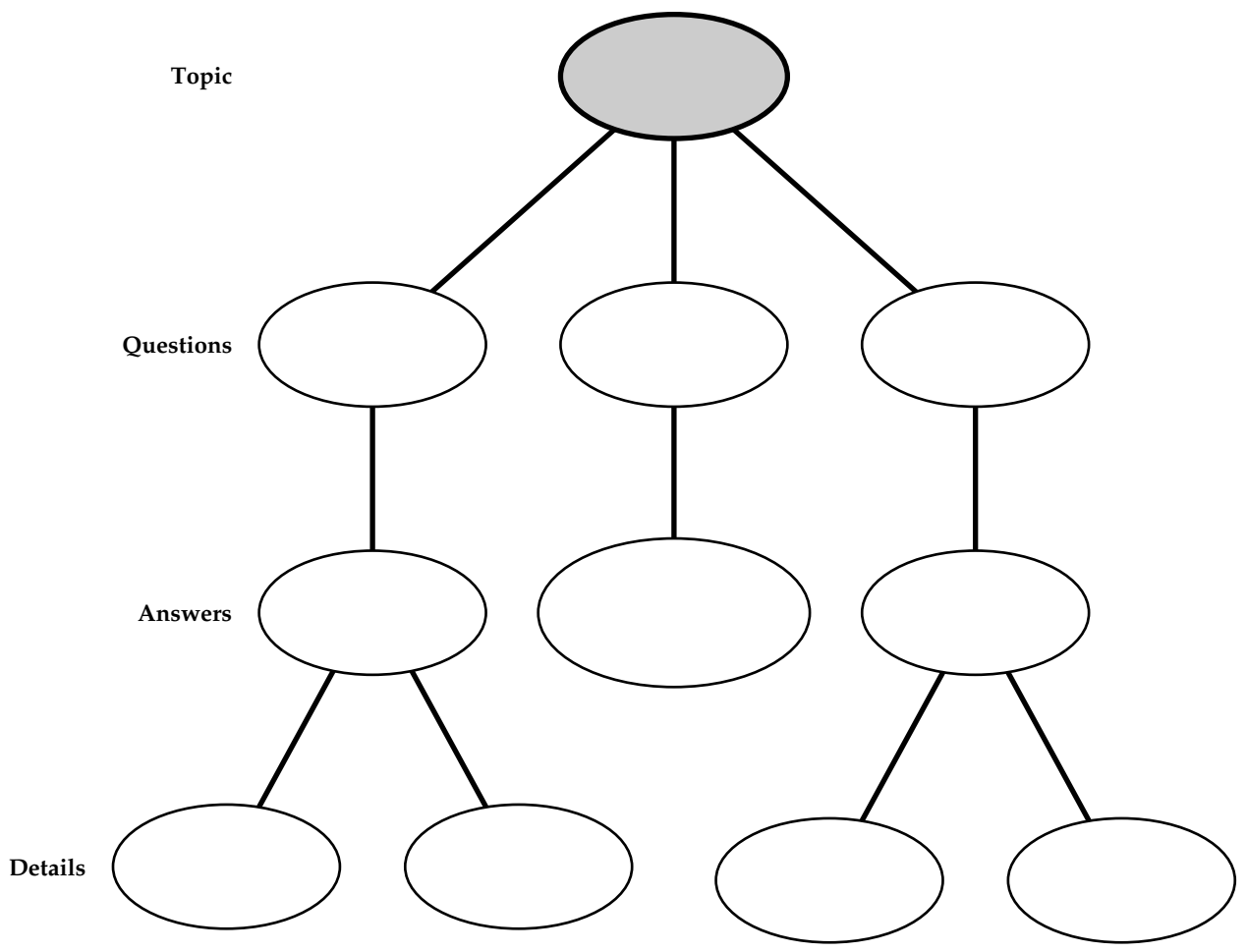
A decibel is the unit used to measure the intensity of a sound. It is abbreviated as dB. On the decibel scale, the smallest sound that can be heard is 0 dB. This is close to total silence. A sound that is ten times the intensity of 0 dB is rated as 10 dB. A sound 100 times in intensity is 20 dB, a sound 1000 times in intensity is 30 dB, and so on. Our normal conversation is 60 dB. When you mow the lawn the sound of the lawnmower is 90 dB. Have you ever attended a rock concert? The sound there can get as high as 120 dB. A firecracker set off on Independence Day comes in at 140 dB.

Any sound above 85 dB can cause hearing loss. The amount of hearing loss depends not just on the intensity of the sound, but also on how long you are exposed to the sound. If you are anywhere that you need to raise your voice for others to hear you, you will know that the sound around you is at least 85 dB.

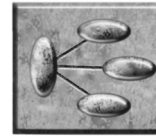
6-5 Question-Answer Graphic Organizer (continued)



Complete the question-answer graphic organizer for the encyclopedia article about decibels.



Cause-Effect Graphic Organizer

**6-6**

A **cause-effect graphic organizer** illustrates something that causes a number of effects.

Read the following passage about too many cars on the road.

Cars are everywhere. You see them being driven on our roads, parked on our streets, and waiting to be purchased in new and used car lots. This may be good for the car manufacturers but not for us drivers. Why do I say this? Well, I've been late to work three times in the last month! Each time I left home on time but there was so much traffic that I could not move fast enough to arrive on time to my job. Quite clearly the tremendous number of cars on the road makes it very difficult to get from place to place. You can see the frustration on drivers' faces. Worse, sometimes we see road rage. A frustrated driver gets out of his car, starts screaming at another driver to move faster, and before you know it, a fight takes place. What finally gets them to stop fighting is they realize they can't breathe. Why can't they breathe? Well, the pollution from the gas exhaust produced by all the cars around them makes it difficult for them to draw a clean breath. They give up and get back in their cars because they are late to where they are going. So they try to speed up and begin to drive recklessly. You won't believe this, but their cars collide. Luckily they have only minor injuries. They look at each other, shrug their shoulders and say, "That's life today!" Unfortunately, many car accidents are of a serious nature. People are often badly hurt and sometimes killed.

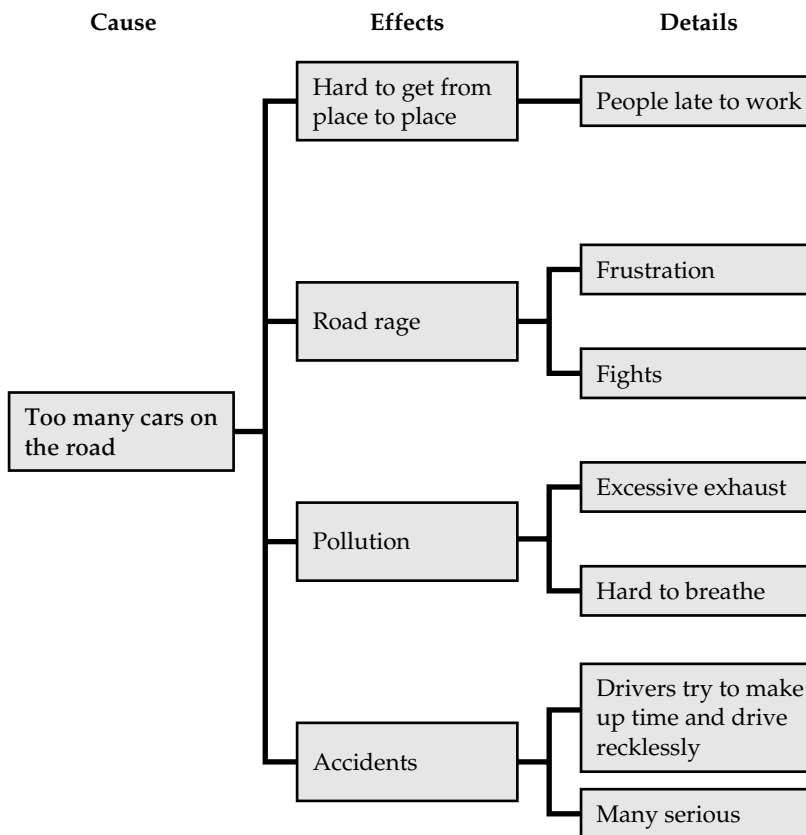
Here are the steps to follow to construct a cause-effect graphic organizer.

1. At the top of a sheet of paper, write the headings "Cause," "Effects," and "Details" going across the page from left to right.
2. Draw a box under "Cause." Write the cause in the box.
3. Under "Effects," draw a box for each effect. Write each effect in its own box. Connect each of these boxes by a line to the box showing the cause.
4. For each effect, draw a box under "Details" for each detail related to the effect. Write each detail in its box. Connect each box by a line to the effect it relates to.

6-6 Cause-Effect Graphic Organizer (continued)



Here is the cause-effect graphic organizer a student constructed for the passage about too many cars on the road.

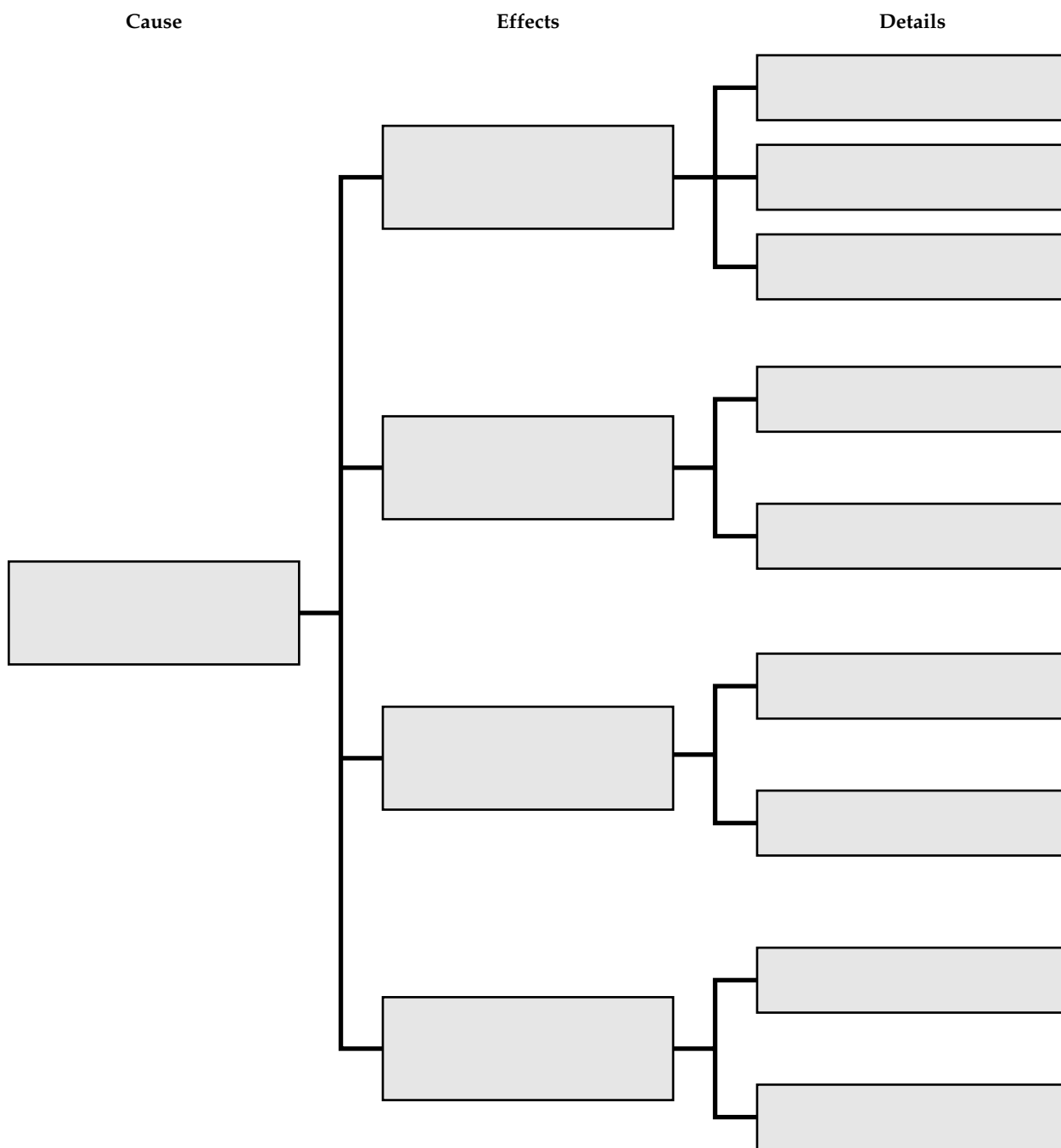


Read the following passage about not enough money for education. Then complete the cause-effect graphic organizer that follows on the next page.

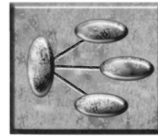
Have you ever heard the expression, “Your tax dollars at work”? This expression is used by federal, state, and city governments to let us know they are putting the taxes we pay to good use. This is not true in the case of education. Not enough funding is provided to help schools give their students the best possible education.

There are several consequences of the underfunding of education. First, there are simply not enough schools because there is not enough money to build them. This results in overcrowded schools that have too many children in each room. Sometimes classes have to be held in the gym, auditorium, and even in the lunchroom. Some classrooms are portable structures located outside the main school building. These can be uncomfortably hot in the summer and cold in the winter. Another consequence of underfunding is that teachers are often not paid enough to keep them in their jobs. Many good teachers leave for higher-paying jobs, and it is difficult to recruit new teachers. Books and materials are often in short supply. Students often have to share a book, and teachers cannot purchase new books and materials, but have to make do with outdated versions. Student achievement is not as high as it should be. Many students act out their frustrations. Behavior then becomes a big problem that takes teachers’ attention away from their teaching.

6-6 Cause-Effect Graphic Organizer (continued)



Sequence Chart



6-7

A **sequence chart** shows the steps to follow to accomplish something.

Read about the steps to follow when writing a research paper.

The first thing to do when writing a research paper is to select a topic. Your topic should not be too narrow or too broad. The next thing you must do is locate sources of information about your topic. These will be in both print and electronic form. As you locate each source of information, prepare bibliography cards to keep a record of the sources from which you obtain the information on note cards. Then write your first draft of the paper. Use a checklist to see the ways in which you must revise your draft. Write your final paper. Last, add a title page, table of contents, and bibliography.

Here are the steps to follow to construct a sequence chart.

1. Write the thing to be accomplished.
2. Write the first step.
3. Write each of the remaining steps up to the final step, each on its own line.
4. Write the final step.

Here is the sequence chart a student constructed to show the steps to follow when writing a research paper.

Thing to be Accomplished	Write a research paper
First	Select a topic. Should be not too narrow or broad.
Next	Locate sources of information in print and electronic form.
Next	Prepare bibliography cards.
Next	Prepare note cards.
Next	Write first draft.
Next	Use checklist to see what you must review.
Next	Write your final paper.
Last	Add title page, table of contents, and bibliography.

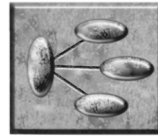
6-7 *Sequence Chart (continued)*

Read about the steps of a strategy for reading and taking notes from textbook chapters. Then complete the sequence chart.

It is very important to have a strategy for reading and taking notes from textbook chapters. Here are the steps in an effective strategy for doing so. Begin by surveying your assigned chapter. Do this by reading the title, introduction, headings, and summary or conclusion. Then change the first heading into one or more questions and write the question(s). Use the words *who*, *what*, *where*, *when*, *why*, and *how* to form the questions. Next, read the information that follows the heading to find the answer(s) to the question(s) you wrote. Add one or more additional questions and their answer(s) as needed. Once you have done this, write the answer(s) to the question(s). Repeat the question-and-answer procedure for each heading in the chapter. Review your questions and answers as frequently as possible.

Thing to be Accomplished
First
Next
Next
Next
Next
Next
Next
Next
Next
Last

Five W's Chart



6-8

A **five W's chart** is useful for organizing information found in a newspaper or magazine article.

Read the following newspaper article.

Polar bears vs. gas project in Alaska
by Adam Williams
Associated Press
January 20, 2009

The polar bear can be found in just one place in America—Alaska. The federal government is considering listing polar bears as threatened under the Endangered Species Act. If the government does this, measures would be taken to protect the shrinking Arctic sea ice. Alaskans fear this would stop a proposed project to build a natural gas pipeline to tap Alaska's vast reserves. Sarah Palin, the governor of Alaska, issued a statement at a news conference in Anchorage yesterday opposing listing polar bears as threatened for this reason. Many state officials and newspaper reporters attended the conference. There is ongoing controversy as to whether the number of polar bears is decreasing.

Here is how to construct a five W's chart.

1. Draw a large box on a sheet of paper.
2. Draw horizontal lines to separate the box into five sections labeled in the following order: What happened? Who was there? Why did it happen? When did it happen? Where did it happen?
3. Write each answer in the appropriate section.

Here is the five W's chart a student constructed about the newspaper article.

What happened?	The governor of Alaska issued a statement opposing the federal government's plan to list the polar bear as threatened.
Who was there?	State officials and newspaper reporters.
Why did it happen?	The plan would interfere with Alaska's hope for a project to build a natural gas pipeline.
When did it happen?	January 20, 2009
Where did it happen?	Anchorage, AK

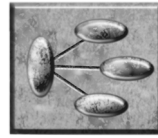
6-8 *Five W's Chart (continued)*

Read the following newspaper article and then complete the five W's chart that follows.

<p>Timber toy town By Lorraine Hawkins Loveland Star March 15, 2009</p>
<p>The Timber Dan Antique and Collectable Toy Show was held here in Loveland yesterday. The event brought together exhibitors from here in Colorado and nine other states. Many collectors from all over attended to buy and sell toys.</p> <p>“Timber Dan” VanderLinden started the show in Loveland in the mid-1980s. He started the show because he became tired of traveling to toy shows all over the country. He started by collecting farm toys. Now living in Minnesota, he travels to Colorado to display and sell his toys.</p> <p>The show has been a big success. Yesterday’s event included 70 vendors. Profits from the show go the Lions Club.</p>

What happened?
Who was there?
Why did it happen?
When did it happen?
Where did it happen?

KWL Chart



6-9

A **KWL chart** is very useful when you are reading to learn about a topic.

The **K** stands for what you already know about the topic.

The **W** stands for what you want to learn about the topic.

The **L** stands for what you learn about the topic.

Here are the steps to follow to construct a KWL chart.

1. Draw a horizontal box across the top of a sheet of paper. Label this box "Topic." Write the topic you want to learn about in this box.
2. Draw three vertical boxes extending to the bottom of the page. Label the first box "K," the second box "W," and the third box "L."
3. Activate your prior knowledge about the topic. Think about what you already know and write this in the K column of the chart.
4. Write questions about what you want to know in the W column.
5. Read to find answers to the questions you wrote. Write the answers and any other useful information you learn in the L column.

Here is a KWL chart completed by a student about deserts.

Topic: Deserts		
K	W	L
<p>A desert has sand.</p> <p>It's hot in the desert.</p> <p>You find deserts where it's very dry.</p>	<p>Are there any plants living in the desert?</p> <p>What animals live in a desert?</p> <p>What is the largest desert?</p>	<p>Plants in the desert have long spreading roots to reach available moisture. These plants are designed to cut down on water loss from evaporation.</p> <p>There are animals. They usually hide from the heat during the day and come out at night. Camels live in the desert. They don't need much water.</p> <p>There is water in the desert that comes from underground streams. An area where this happens is called an oasis.</p> <p>The Sahara in North Africa is the largest desert in the world.</p>

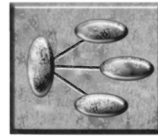
6-9 *KWL Chart (continued)*



Choose a topic you want to learn about. Complete the KWL chart for this topic.

Topic:		
K	W	L

Selecting a Graphic Organizer or Chart



6-10

The names of the graphic organizers and charts you learned to construct are shown in the box.

Topic-List Graphic Organizer	Sequence Chart
Problem-Solution Graphic Organizer	Series of Events Graphic Organizer
Compare-Contrast Graphic Organizer	Question-Answer Graphic Organizer
Cause-Effect Graphic Organizer	Five W'S Chart
KWL Chart	

For each of the following, write the name of the graphic organizer or chart that would be best to use. Use each graphic organizer or chart just once.

1. You have been studying the uses of electricity. You read to answer some questions you have about electricity.

2. You read an interesting article in your local newspaper about the hiring of a new school principal.

3. You are concerned about the problem of pollution. You read a book about how to reduce pollution.

4. You are studying the events that led to the American Civil War.

5. You took notes as your teacher described how to find the main idea in a paragraph.

6. You read about Republicans and Democrats and want to show how they are alike in some ways and different in other ways.

7. You want to read to learn more about sharks.

6-10 *Selecting a Graphic Organizer or Chart (continued)*

8. You have read a lot of information about how animals breed. You want to organize this information showing subtopics and details.
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9. You have read about how smoking can produce many health difficulties.
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