

# Eighth Grade (8)

## **WEEK #2**

English Language Arts Math Social Studies Science Physical Education & VAPA

## Language 1a

- 1a. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
  - Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.

## **Explanation**

A **verbal** is a verb form that does not act as a true verb. For example, the word *thrilled* functions as a true verb in this sentence: *The fireworks <u>thrilled</u> onlookers*. In this sentence, however, *thrilled* is a verbal that functions as an adjective, not a verb: *The <u>thrilled</u> crowd cheered*. **Gerunds, participles,** and **infinitives** are all verbals.

## **Examples**

**Gerunds** are verbals that end in *–ing*. Gerunds are used as nouns. They can function like any other noun in a sentence—as subjects, direct objects, or objects of prepositions.

**<u>Pitching</u>** was difficult for Maria. (functions as the **subject** of the sentence)

She avoided <u>pitching</u>. (functions as **direct object** of avoided.)

*She disliked the pressure of <u>pitching</u>. (functions as object of the preposition <i>of*)

**Infinitives** usually consist of the basic form of a verb preceded by the word *to*. An infinitive can function as a noun, an adjective, or an adverb.

The boys liked *to swim*. (functions as a **noun**; direct object of *liked*)

*The team had many laps to go.* (functions as an **adjective**; modifies *laps*)

The captain is always anxious to win. (functions as an adverb; modifies anxious)

**Participles** are verbals that can act as adjectives. A present participle is formed by adding *-ing* to a verb. It describes an ongoing or present condition. A past participle is formed by adding *-ed* to a verb. It describes something that has already happened.

The *confusing* rules baffled him. (present participle; modifies rules)

The <u>confused</u> team played badly. (**past participle**; modifies team)

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### Apply the Standard

**A.** Underline the infinitive in each sentence. On the line, write how the infinitive functions by writing *n* for *noun*, *adj* for *adjective*, or *adv* for *adverb*.

- 1. ..... To skate is her one and only goal.
- 3. ..... At the beginning of the lesson, he begins to demonstrate the move to students.

**4.**.....To compete in the regional competition would make Kim happy.

**B.** Underline the gerund in each sentence. On the line, write how the gerund functions in the sentence by writing **S** for *subject*, **DO** for *direct object*, or **OP** *object of a preposition*.

1	. Diving is difficult for Andrew.
2	. By practicing, he is improving his dives.
3	. Soon Michela will start swimming on a team.
4	. Good coaching from Miss Rodriguez is sharpening her technique.
5	. Sergio is beginning his training next week.
	ach contance. On the line, indicate if the work is an infinitive commend or

**C.** Underline the verbal in each sentence. On the line, indicate if the verb is an *infinitive, gerund*, or participle.

- **1.**....Bowling is Reggie's favorite sport.
- 2. ..... Personally, I like to watch.
- 3. ..... He begins to worry before a tournament.
- 4. ..... Excited players sometimes make mistakes.
- 5. ..... An athlete's spirits are lifted by cheering fans.

## Language 1b

- **1b.** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
  - Form and use verbs in the active and passive voice.

## **Explanation**

The kinds of verbs that you choose can either make your writing lively or limp. Use active forms of verbs, instead of passive forms, whenever possible. Active forms give sentences a sense of movement and energy.

## Examples

**Voice** is the form of a verb that shows whether the subject is performing the action or not. A verb is in **active voice** if its subject performs the action. Active verbs are used in these sentences:

Su Lin <b>removed</b> her boots at the doorway.	The subject <i>Su Lin</i> performs the action of removing boots.
Soon, crowds <b>filled</b> the stadium.	The subject <i>crowds</i> performs the action of filling the stadium.
The graceful skater <b>spun</b> at a dizzying speed.	The subject <i>skater</i> performs the action of spinning.

A verb is in **passive voice** if its action is performed upon the subject. A passive verb is made from a form of the verb *be* (*was, were, is, is being*) plus the past participle of a transitive verb. In general, it is best to use the active voice in your writing. During the editing process, look for places where you can change passive verbs to active verbs, as shown below.

Passive Verbs (Weaker)	Active Verbs (Stronger)
Piano lessons <b>were taken</b> by Juanita.	Juanita <b>took</b> piano lessons.
Suddenly James <b>was bitten</b> by the dog.	Suddenly, the dog <b>bit</b> James.
The player <b>was instructed</b> by the coach to play better defense.	The coach <b>instructed</b> the player on how to play better defense.

In at least two cases, it is appropriate to use the passive voice:

- To emphasize the receiver of the action, rather than the performer *Several eighth graders were admitted to the summer program.* (emphasizes the receivers)
- When the performer is not important or easily identified *The speaker was interrupted three times.* (the performer is not important)

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## Apply the Standard

**A.** Underline the verb in each sentence. Write *active verb* or *passive verb* on the line provided to identify the voice of the verb.

1. The principal named all of the students on the honor roll.
2. The new rule was criticized by many members.
3. All the sweaters on sale were bought by early customers.
4. A dessert was added to the order at the last minute.
5. A thick fog covered the valley.
6. He renewed his library card last week.
7. The call to action was read aloud by Tanya in a loud voice.
8. Fire fighters hooked the heavy hose to the nearest hydrant.
9. The windows were rattled by sharp winds.
<b>10.</b> Holiday shoppers crowded the stores in search of good buys
<b>B.</b> Rewrite the sentences below from passive to active voice. Write the new sentences on the lines.
<ul><li>B. Rewrite the sentences below from passive to active voice. Write the new sentences on the lines.</li><li>1. The high fly ball was easily caught by the outfielder.</li></ul>
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## Writing 1

#### 1. Write arguments to support claims with clear reasons and relevant evidence.

## Writing Workshop: Argument

When you construct a written argument, you make a claim that states your position on an issue. Once you have established your position, you present logical reasons and relevant evidence to back up your claim. The reasons and evidence that you use to support your claim are the basis of the argument. If the reasons are logical and the evidence is specific, then the argument will be strong.

## Assignment

Write an argumentative essay about an issue that concerns people in your community or school. Include these elements:

- ✓ a claim, or clear opinion statement that defines your position on an issue
- $\checkmark$  logical reasons and relevant evidence that support your position
- $\checkmark$  the use of reliable sources to give your argument accuracy and credibility
- $\checkmark$  evidence to distinguish between opposing points of view
- $\checkmark$  clear and effective organization
- $\checkmark$  the use of persuasive techniques, such as repetition and parallelism
- $\checkmark$  the use of transitions to create cohesion and clarify the relationships
- $\checkmark$  a consistent, formal style and correct use of language convention

## \*Additional Standards

- **1.** Write arguments to support claims with clear reasons and relevant evidence.
- **1.a.** Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- **1.b.** Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
- **1.c.** Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
- **1.d.** Establish and maintain a formal style.
- **1.e.** Provide a concluding statement or section that follows from and supports the argument presented.

#### Language

**1.** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

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### **Prewriting/Planning Strategies**

**Choose a topic.** Engage in a group discussion with classmates about issues in your school or community. List specific problems and two or three opposing points of view on how to solve these problems. For your topic, choose the issue that interests you the most.

You can also turn to the media to find a topic. Read local newspapers, including editorial and opinion columns, to find current controversial issues in your community. Watch or listen to local news on television and radio, especially to the editorial comments that often come at the end of a news broadcast. Choose an issue that sparks your interest.

**Define your position.** Before you can write, you need to define your position on the issue. Initially, you may support one side of an issue. After some quick research, however, you may discover that your position has changed. Once you have defined your position, write a strong thesis statement that summarizes your claim. Use the graphic organizer below to define your position and to write a thesis statement. When you write, use your thesis statement to keep you focused on your position.

Торіс	
Freewrite	
Jot down thoughts, feelings, arguments, and your position on the issue.	
Quick Research	
Jot down a few factual details that address more than one position on the issue.	
Combine Ideas	
Choose ideas from your freewrite and from your research notes that go together.	
Write a Thesis	
Statement	
Use the ideas above to construct a powerful thesis statement that defines your position	(Identify your specific topic) + (State your position)

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### **Supporting a Claim**

**Consider all sides of an issue.** Collect evidence—including facts and statistics, examples, expert opinions, surveys and interviews—from accurate, credible up-to-date sources. Try to find a minimum of two sources for each fact. Consult books on your topic, and take time to check the background of the authors. Professionals in a field will be more knowledgeable and objective than amateurs or writers paid by self-interest groups. Gather evidence related to counterarguments so that you can acknowledge and respond to them in your essay. Once you have completed your chart, review the evidence to make sure it is specific and relevant to the claim in your thesis statement.

- If any idea you list is not **clear** and **specific**, look for more facts and details to clarify and strengthen your ideas.
- If any evidence contradicts another piece of evidence, delete it, or put a question mark next to it until you can confirm which evidence is **accurate**.

Reasons and Evidence That Support My Claim	Sources Used
Reasons and Evidence That Address Counterarguments	

• If any idea is not relevant, or directly related to your topic, delete it.

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### **Drafting Strategies**

**Create a structure for your draft.** Make an organizational plan for your essay that is both logical and persuasive.

- Use the graphic organizer below to construct a sound argument. Copy the thesis statement that you developed during prewriting.
- Review the reasons and evidence you have gathered to support your claim. Rank reasons in order of importance, starting with number 1 for least important. List reasons in this order in the organizer. Choose one counterargument to address.

Claim	
Thesis Statement:	
Supporting Reason #1 (least important):	Evidence
	<b>A</b> .
	В.
Composition Desson #2.	Teridomos
Supporting Reason #2:	
	A.
	В.
Supporting Reason #3 (most important):	Evidence
	<b>A</b> .
	В.
Counterergyment	Fuidance
Counterargument:	A
	<b>A</b> •
	В.

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### **Developing and Evaluating Your Claim**

Keep your task, purpose, and audience in mind as you draft your essay.

- 1. Write an introduction that includes your thesis statement. Use precise words and phrases that your audience will understand.
- 2. As you draft your claim, continue to make your position clear. Take readers step-by-step through your argument, emphasizing the strength of your position.
- **3.** Use your notes as a guide. Include transitions to create a cohesive argument and to make the relationships among your claims, reasons, and evidence clear.
- 4. Address counterarguments fairly and reasonably. Give factual evidence that reveals the weaknesses of these counterarguments.
- **5.** Conclude with a strong statement that summarizes your argument. Give readers something new to think about or challenges them to take action.

My Claim	Evaluating the Claim, Reasons, and Evidence
	Is the claim clearly stated?
	Is there any doubt which side of the issue my argument supports?
	Are the reasons logical and serious?
	Is all the evidence specific, accurate, and relevant?
	Does the argument consider the audience's age and knowledge?
Counterarguments	
	Have I addressed a counterargument fairly and reasonably?

## Style

**Establish and maintain a formal style** When you write an argumentative essay, you want readers to trust your ideas and agree that your position on the issue has value. To build that trust with readers, maintain a formal style as you write. Below are some guidelines for establishing and maintaining a formal style in your essay.

A formal style

- maintains a distance between the writer and the reader.
- uses a matter-of-fact, unemotional tone; any emotion is presented with dignity, in an impersonal manner.
- expresses ideas clearly and logically.
- backs up claims and important ideas with specific facts, reasons, and evidence.
- uses precise language and powerful images.
- uses standard English and avoids contractions, dialect, and slang.

#### **Examples:**

**Claim:** The government cannot promote healthier eating habits by placing a higher tax on fatty, less nutritious foods.

**Informal:** Obviously, most Americans don't have the smarts to figure out for themselves what foods are healthy and what's junk.

**Formal:** Increased taxes might stop some consumers from purchasing fatty foods, but educating the public on nutrition would have widespread, longer lasting effect.

**Clarify the relationships among ideas.** A cohesive argument holds together because all the ideas relate logically to one another. You can create cohesion in several ways:

- Clarify connections between claims, reasons or evidence by connecting clauses that express those claims and reasons with such conjunctions as *and*, *but*, *or*, *so*, *yet*, *although*, *because*, and *whenever: Physical education benefits the mind and the body* <u>so</u> *it should be mandatory in schools*.
- Show the connections between ideas using phrases that begin with prepositions, such as *despite, because of,* and *due to: <u>Because of</u> its benefits to mind and body, physical education should be mandatory in schools.*
- Use transitional words, phrases, and clauses, such as *consequently*, *for this reason*, and *however* to clarify connections between sentences. *Physical education benefits the mind and the body*. *For this reason*, *it should be mandatory in schools*.

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### Conclusion

Provide a strong conclusion. Your written argument should end with a strong conclusion that flows logically from and supports the argument in the body of the essay. Use the strategies shown below to write a strong conclusion.

- Begin with a summary statement of the claim: As I have shown, a grading system that uses encouraging words to assess students' progress is more beneficial to students than a grading system of letters or number scores.
- Then review the main points of the argument: Students agree that, without the worry of passing or failing, they feel more relaxed and at the same time more motivated to learn. They also feel free to concentrate on learning ideas rather than memorizing facts to pass a test.
- End by restating the claim in a memorable way. *Give readers something more to think about or* encourage them to take action. Grading without grades is good for all students. Parents, teachers, and students should encourage the school board to change the grading system in all Montvale schools.

My Conclusion	Evaluating My Conclusion
	Does it begin with a restatement of my claim?
	Does it review the main points of my argument?
	Does it end with a memorable statement that gives readers something new to think about or asks them to take action?

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## **Revising Strategies**

Put a checkmark beside each question as you revise.

	Questions to Ask as You Revise
Writing Task	Have I written an essay that clearly defines my position on an issue?
	Does my topic have at least two sides?
	Does my essay have a clear and effective introduction, body, and conclusion?
Purpose	Does my introduction contain a thesis statement that clearly states my claim or position?
	Do I give reasons and accurate, relevant evidence to support my claim?
	Are the reasons clear and logical?
	Do I have enough facts, quotations, expert opinions, examples, and other evidence to support my claim?
	Do I use only relevant evidence to strengthen my argument?
	Does my conclusion follow logically from ideas presented in my argument?
Audience	Do I use precise language and details that are appropriate for the age and knowledge level of my readers?
	Is my argument cohesive?
	Do I use transitions to clarify relationships among ideas?
	Do I combine sentences to clarify relationships among ideas?
	Do I address questions and concerns my readers might have about my topic?
	Can readers distinguish my claim from alternate or opposing claims?
	Does my argument appeal to reason and not just to emotion?
	Will my audience be persuaded to agree with my position?

## Revising

**Revise for repetition and parallel structure.** Repetition and parallelism are techniques that you can use to strengthen your argument and make it more cohesive. When used correctly, repetition and parallelism add rhythm and balance to your writing. They also help clarify the relationships between claims, reasons, and evidence. As you revise, look for places where you can use repetition and parallel construction effectively.

#### Repetition

As the word suggests, repetition refers to the repeating of the same words and phrases within sentences, and from sentence to sentence.

Within a sentence: <u>At</u> work, <u>at</u> school, or <u>at</u> home, we have a right to privacy.

**From sentence to sentence:** <u>Eventually</u>, gender will not matter in an election. <u>Eventually</u>, voters will elect the best person for the job. <u>Eventually</u>, we will have a female president.

Use repetition for emphasis, but be careful. Too much repetition will make your writing sound monotonous.

#### **Parallel Construction**

Parallel constructions repeat identical patterns of words, phrases, and clauses within sentences. In parallel constructions all words in a series should be the same parts of speech, such as nouns, verbs, adjectives, or adverbs. All phrases and clauses in a series should be the same type, such as prepositional phrases or adverb or adjective clauses.

Not parallel: Locker searches are inconvenient, invasive, and they can be embarrassing.

Parallel: Locker searches are inconvenient, invasive, and embarrassing.

#### **Identifying and Correcting Nonparallel Constructions**

To revise sentences with nonparallel construction, use this strategy:

- **1.** Identify similar or equal ideas within a sentence.
- **2.** Determine whether the ideas are expressed in the same grammatical form—for example, all nouns or all prepositional phrases.
- **3.** Rewrite the sentence using the best grammatical pattern to express the equal ideas. The best forms produce the smoothest rhythms and use the fewest words.

#### **Revision Checklist**

- □ Are there places where repetition can stress relationships between ideas?
- Are words in a series (e.g., *for him, for her, for all of them*) in parallel structure?
- Are there equal ideas within a sentence that should be in parallel structure?

## **Editing and Proofreading**

Review your draft to correct errors in capitalization, spelling, grammar, and punctuation.

**Focus on Capitalization:** Review your draft carefully to find and correct capitalization errors. If your argumentative essay names places, people, or official groups and organizations, be sure that you have capitalized the proper name correctly.

Incorrect capitalization	Correct capitalization
mayor Janet Lewis	Mayor Janet Lewis

**Focus on Spelling:** An argumentative essay that includes spelling errors conveys a careless attitude toward your topic and your readers. Check the spelling of each word, especially words you misspell often. If you have used a computer to type your draft, run the spell-check feature to double-check for errors. Remember that spell-checkers will not find words that are typed incorrectly but spell a word, for example, *there* instead of *their*. Proofread carefully, even after you run spell-check.

**Focus on Grammar:** Proofread your essay to find and correct grammar errors. Check for double negatives, or the use of two negative words when only one is required.

**Double Negative:** There is *no* acceptable reason for drivers to *not* text while driving.

**Correction 1:** There is no acceptable reason for drivers to text while driving

**Correction 2:** There is not *any* acceptable reason for drivers to text while driving.

**Focus on Punctuation:** Proofread your writing to find and correct punctuation errors. In particular, look for words and phrases in a series. Be sure that you use serial commas and semicolons correctly.

**Rule: Use a comma to separate three or more words, phrases, or clauses in a series:** *The study showed that video games improve spatial awareness, visual attention skills, and problem-solving abilities.* 

**Rule: Use semicolons to avoid confusion when independent clauses or items in a series already contain commas:** *The playground equipment is old, broken, and dangerous; the grounds are littered and dirty; and the fence has fallen down.* 

#### **Revision Checklist**

- □ Have you checked that proper nouns are capitalized?
- □ Have you checked that all of the words are spelled correctly?
- Do you avoid creating confusion with double negatives?
- Do you use commas or semicolons in items in a series?

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### **Publishing and Presenting**

Consider one of the following ways to present your writing:

**Organize a forum.** Present your argument in a panel of classmates. Read your arguments aloud to the rest of the class. Allow time for panel members and classmates to ask questions and to debate the merits of your argument. Then have the class vote on whether students agree or disagree with your position.

**Publish in a newspaper.** Send your argument to a local newspaper with a brief letter requesting that the paper publish it. Provide a brief summary of your argument in your request. Many newspapers have both print and online editions. For online editions, submit your essay and request by email. Use polite, formal language in your letter or email.

#### Rubric for Self-Assessment

Find evidence in your writing to address each category. Then use the rating scale to grade your work.

Evaluating Your Argument			not very			very		
Focus: How clearly is your position stated?	1	2	3	4	5	6		
<b>Organization:</b> How cohesive is your argument and how effectively does it build to a conclusion?	1	2	3	4	5	6		
<b>Support/Elaboration:</b> How specific, accurate, relevant, and persuasive is your evidence?	1	2	3	4	5	6		
<b>Style:</b> How well have you maintained a formal, objective style throughout your argument?	1	2	3	4	5	6		
<b>Conventions:</b> How free of errors in grammar, usage, spelling, and punctuation is your argument?		2	3	4	5	6		

#### How does the natural world affect us?

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"Ecosystems: The Systems of Nature"

#### SUMMARY

This passage tells how the different parts of nature work together. An ecosystem is made up of both the living things and the nonliving things in an area. Plants and animals are examples of living things. Rocks and water are examples of nonliving things. The passage tells about the different kinds of living things and the places, or habitats, they live in. It also explains that each member of the ecosystem is important to every other member.

#### **Visual Summary**



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#### Text Structure ar

The title tells what the article is about. Circle the title of the article. What might "The Systems of Nature" mean?

**Use What You Know** 

Name three different kinds of organisms, or living things.

1. -

2.

3.

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#### Reading Strategy: Preview

Before reading the article, preview it by looking at the main title and headings of



Mark

Text

each section. Underline the main title and headings. What do you think this article will be about?

## Ecosystems: The Systems of Nature

#### **Organisms and Species**

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**ELD Work For English Learners** 

An organism is a living thing. A huge redwood tree is an organism. A small mouse is an organism. A tiny insect is an organism. A human is an organism, too. Some organisms, such as bacteria and viruses, are so small that you cannot see them.

A group of very similar organisms is a species. The organisms in a species are so similar that they can reproduce—that is, have offspring, or babies together, and their offspring can reproduce, too. Horses and cows, for example, cannot have offspring together because they are different species.

#### Habitats

A habitat is the place where an organism lives—its surroundings or environment. A habitat provides the things an organism needs to survive, such as food, water, a livable temperature, and shelter. A habitat can be as large as an ocean or as small as a drop of water. It can be a forest or one tree. Several species may live in the same habitat, such as a river.

shelter, place that protects you from bad weather or danger

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Different organisms live in different habitats because they have different requirements for survival. For example, a river or lake can be the habitat of some species of freshwater fish, such as trout. Freshwater trout cannot survive in the ocean, which contains salt water. An ocean and a lake are very different habitats. Similarly, the desert in the southwestern United States and northern Mexico is the habitat of the saguaro cactus. The saguaro cactus cannot survive in a tropical rain forest.

Sometimes animals move to different places within their habitats. For example, many kinds of frogs are born in water. However, they live mostly on land when they grow up. During very cold weather, some frogs go under the ground or bury themselves in mud at the bottom of ponds to stay warm.

requirements, needs tropical, hot and wet ponds, small lakes

#### **Comprehension Check**

Underline the Mark reason why different organisms live in different habitats. Why would freshwater trout have trouble surviving in the ocean?

#### **Text Structure**

Science textbooks often have highlighted vocabulary words. Their definitions are



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at the bottom of the page. Circle one of the highlighted words on this page. Look at its definition. Reread the sentence in which it appears. Rewrite the sentence without using the word.

#### **Comprehension Check**

Underline the various places a frog may move within its habitat. Why would a frog live in one



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part of its habitat in summer and in another part in winter?

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#### Reading Strategy: Preview

When you preview, you think about what you already know about the subject of the article. What is the difference between a population and a community?

#### **Text Structure**

A science article often explains important terms. Underline the definition of the term *population*. List three populations.

Mark

Text

1.	
2.	
3	
9.	

#### **Comprehension Check**

Underline why different populations in a community interact with one another. Then give an example of how different animals use the same resources.

#### **Populations and Communities**

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All the members of one species in the same area are a population. For example, all the frogs in a lake are a population. All the pine trees in a forest are a population. All the people in a city, state, or country are a population. Some populations do not stay in one place. Monarch butterflies travel south each year from parts of western Canada and the United States to Mexico. Some species of whales travel around many oceans.

A community is all the populations that live together in one place, such as all the plants and animals in a desert. In a community, the different populations live close together, so they interact with one another. One way populations interact in a community is by using the same resources, such as food and shelter. In a desert, for example, snakes, lizards, and spiders may all use rocks and holes for shelter. They may eat insects, other animals, or their own kind of food.

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#### The Parts of an Ecosystem

An ecosystem is made up of both the living and nonliving things in an area. Nonliving things include air, sunlight, water, rocks, and soil. All parts of an ecosystem, living and nonliving, interact. Plants take water from the soil, and they produce oxygen. Animals breathe in oxygen from the air. They eat plants and other animals.

#### **Three Kinds of Organisms**

In an ecosystem, there are three kinds of organisms: producers, consumers, and decomposers. Each kind of organism is important.

Most producers are plants. They use energy from sunlight to make their own food from water and carbon dioxide. (Carbon dioxide is a gas in the air. People and animals breathe it out.) This process of making food is called photosynthesis.

Consumers cannot make their own food. They eat, or consume, other organisms. All animals are consumers. Consumers are classified by what they eat.

- Herbivores, such as deer, horses, and many birds, eat only plants.
- Carnivores, such as lions, spiders, and snakes, eat only animals. Some carnivores are scavengers. A scavenger eats dead organisms. Scavengers include vultures and catfish.
- Omnivores, such as crows and bears, eat plants *and* animals.

soil, top layer of earth

oxygen, gas in the air that all plants and animals need to live breathe, take air through the nose and mouth energy, power that produces heat classified, put into groups

## **Comprehension Check** Underline the sentence Mark that defines what an ecosystem is made up of. What are some examples of nonliving things? **Reading Strategy:** Preview Circle the word in the Mark second heading that Text tells you how many kinds of organisms you will be reading about. How does putting a number in a heading help you preview what is coming next? **Comprehension Check** Circle the three Mark different types of Text organisms. What is the difference between an herbivore and an omnivore?

#### **Comprehension Check**

Underline what decomposers do. Why is it good for the ecosystem that decomposers break down plants and animals?

#### **Text Structure**

A paragraph contains a main idea. Circle the main idea in the second paragraph on this page. In your own words, explain the main idea of this paragraph.



**Comprehension Check** 

Underline the two main kinds of decomposers. In what kinds of places does a fungus grow?

Mark Text

Some consumers are also decomposers. Decomposers break down dead plants and animals. The dead plants and animals are changed into nutrients, which go back into the soil. Producersplants-consume these nutrients. Decomposers are very important in the ecosystem because plants need nutrients to grow.

The two main kinds of decomposers are bacteria and fungi. Bacteria are very small living things. We cannot see bacteria, but they live in soil, air, and water and on other organisms. A fungus is a plantlike organism without leaves that grows in dark, warm, wet places. Mushrooms are one kind of fungus.





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#### **Food Chains**

The movement of food through a community is called a food chain. A food chain always begins with producers—plants. In the ocean, a food chain begins with algae, which are very small plantlike organisms. Small fish eat the algae. Medium-size fish eat the small fish. Big fish eat the medium-size fish.

On land, a food chain is similar. It begins with a plant. A consumer, such as an insect, eats the plant. Then another consumer, such as a bat, eats the insect. Next, a bigger consumer, such as an owl, eats the bat. Finally, the owl dies, and decomposers break it down into nutrients.

Every part of the food chain is necessary to every other part. Without water, plants die. Without plants, animals cannot live.

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#### Choose one and complete:

- 1. Research the different kinds of living creatures that might live in a forest. Then make a drawing of that community.
- 2. Research an animal mentioned in this article. Learn more about its habitat and where it fits in the food chain. Write a short report that shows all you have learned.
- **3.** Write a poem describing your own ecosystem. Try to include plants and animals that live in your area.

#### READING WRAP-UP

#### **Retell It!**

Think about the different parts of the food chain that feed you. Tell the story of how this food chain works. Make sure you include how producers and small consumers make a difference to you and why they are needed.

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#### **Reader's Response**

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Since plants produce oxygen and humans need oxygen to breathe, it's important to protect the forests. How can you help protect the world's forests?

#### **Think About the Skill**

How did previewing the different sections help you better understand the article?

## **Interpreting a Linear Function**

#### Interpret the linear function to solve the problems. Show your work.

1 A group of volunteers is spending a week cleaning up the trails in the Hudson Highlands. On day 2 the volunteers begin at the point on the trail where they ended the day before. The graph shows their elevation, in feet, as a function of the number of hours they work to clean the trails.



**a.** What does the ordered pair (1, 1000) on the graph represent?

- **b.** The graph begins at 720 on the *y*-axis. What does this value represent? Is this the rate of change or the initial value?
- c. By how many feet does the elevation increase for one hour of work? What does this value represent, rate of change or initial value?
- **d.** What is the equation that represents this function?

2 The table shows number of people as a function of time in hours. Write an equation for the function and describe a situation that it could represent. Include the initial value, rate of change, and what each quantity represents in the situation.

Hours	Number of People
1	150
3	250
5	350

## Interpreting a Linear Function continued

3 Amber plans to cook a turkey and macaroni and cheese for a special dinner. Since she will need to use the oven for both dishes, and they won't both fit in the oven at the same time, she has to determine how much time all the cooking will take. The macaroni and cheese will take a set amount of time, while the turkey takes a certain number of minutes per pound that the turkey weighs.

The equation models the total cooking time Amber will need to prepare her dishes.

$$y = 15x + 40$$

- **a.** What do variables *x* and *y* represent? Use the phrase *is a function of* to describe how the two quantities relate to each other.
- **b.** What does the value 40 represent?
- c. What does the rate of change represent?
- **d.** What is the total cooking time for just the turkey if it weighs 12 pounds? How do you know?

## Writing an Equation for a Linear Function from a Verbal Description

> Write an equation for each linear function described. Show your work.

The graph of the function passes through the point (2, 1), and y increases by 4 when x increases by 1.

2 the function with a rate of change of  $\frac{3}{2}$  whose graph passes through the point (4, 10.5)

3 the function with a rate of change of  $\frac{4}{5}$  that has a value of 10 at x = 10

4 the function that has an x-intercept of -2 and a y-intercept of  $-\frac{2}{3}$ 

5 Cameron stops to get gas soon after beginning a road trip. He checks his distance from home 2 hours after filling his gas tank and checks again 3 hours later. The first time he checked, he was 170 miles from home. The second time, he was 365 miles from home. What equation models Cameron's distance from home as a function of the time since getting gas?

6 A charity organization is holding a benefit event. It receives \$28,000 in donations and \$225 for each ticket sold for the event. What equation models the total amount earned from the event as a function of the number of tickets sold?

## Writing an Equation for a Linear Function from a Verbal Description continued



The same charity organization from problem 6 has to pay \$4,700 for the banquet hall as well as \$110 per plate for each ticket sold.

- a. What equation models the total amount spent as a function of the number of tickets sold?
- **b.** Using your answer from problem 6, write an equation for the charity's profit as a function of ticket sales. (profit = amount earned - amount spent)
- 8 A school pays \$1,825 for 150 shirts. This includes the \$25 flat-rate shipping cost.
  - a. What equation models the total cost as a function of the number of T-shirts ordered?
  - **b.** What does each variable represent?
  - c. What are the initial value and rate of change of the function? What does each one represent?

## Using Graphs to Describe Functions Qualitatively

> Tell a story that could be represented by the graph shown.









## **Using Graphs to Describe Functions** Qualitatively continued

3 The graph shows sales as a function of time.



5 For an interval on a graph that shows that a change is happening, explain how the shape of the graph on that interval tells you whether the change is happening gradually or quickly.

## Finding the Slope of a Line

Use the information provided to find the slope of each line. State what the slope represents.





## 35

## **Measuring Waves**

#### **Lesson Objectives**

- Define wave amplitude and wavelength.
- Relate wave speed to wave frequency and wavelength.

#### **Lesson Vocabulary**

- hertz (Hz)
- wave amplitude
- wave frequency
- wavelength
- wave speed

#### Introduction

Tsunamis, or the waves caused by earthquakes, are unusually large ocean waves. You can see an example of a tsunami in **Figure 35.1**. Because tsunamis are so big, they can cause incredible destruction and loss of life. The tsunami in the figure crashed into Thailand, sending people close to shore running for their lives. The height of a tsunami or other wave is just one way of measuring its size. You'll learn about this and other ways of measuring waves in this lesson.



#### FIGURE 35.1

This tsunami occurred in Thailand on December 26, 2004.

#### Wave Amplitude and Wavelength

The height of a wave is its amplitude. Another measure of wave size is wavelength. Both wave amplitude and wavelength are described in detail below. **Figure** 35.2 shows these wave measures for both transverse and longitudinal waves. You can also simulate waves with different amplitudes and wavelengths by doing the interactive animation at this URL: http://sci-culture.com/advancedpoll/GCSE/sine%20wave%20simulator.html .



#### FIGURE 35.2

Wave amplitude and wavelength are two important measures of wave size.

#### Wave Amplitude

**Wave amplitude** is the maximum distance the particles of a medium move from their resting position when a wave passes through. The resting position is where the particles would be in the absence of a wave.

- In a transverse wave, wave amplitude is the height of each crest above the resting position. The higher the crests are, the greater the amplitude.
- In a longitudinal wave, amplitude is a measure of how compressed particles of the medium become when the wave passes through. The closer together the particles are, the greater the amplitude.

What determines a wave's amplitude? It depends on the energy of the disturbance that causes the wave. A wave caused by a disturbance with more energy has greater amplitude. Imagine dropping a small pebble into a pond of still water. Tiny ripples will move out from the disturbance in concentric circles, like those in **Figure** above. The ripples are low-amplitude waves. Now imagine throwing a big boulder into the pond. Very large waves will be generated by the disturbance. These waves are high-amplitude waves.

#### Wavelength

Another important measure of wave size is wavelength. **Wavelength** is the distance between two corresponding points on adjacent waves (see **Figure 35.2**). Wavelength can be measured as the distance between two adjacent crests of a transverse wave or two adjacent compressions of a longitudinal wave. It is usually measured in meters. Wavelength is related to the energy of a wave. Short-wavelength waves have more energy than long-wavelength waves of the same amplitude. You can see examples of waves with shorter and longer wavelengths in **Figure 35.3**.



#### **Wave Frequency and Speed**

Imagine making transverse waves in a rope, like the waves in **Figure** above. You tie one end of the rope to a doorknob or other fixed point and move the other end up and down with your hand. You can move the rope up and down slowly or quickly. How quickly you move the rope determines the frequency of the waves.

#### **Wave Frequency**

The number of waves that pass a fixed point in a given amount of time is **wave frequency**. Wave frequency can be measured by counting the number of crests or compressions that pass the point in 1 second or other time period. The higher the number is, the greater is the frequency of the wave. The SI unit for wave frequency is the **hertz (Hz)**, where 1 hertz equals 1 wave passing a fixed point in 1 second. **Figure** 35.4 shows high-frequency and low-frequency transverse waves. You can simulate transverse waves with different frequencies at this URL: http://zonalandeduca tion.com/mstm/physics/waves/partsOfAWave/waveParts.htm .



The frequency of a wave is the same as the frequency of the vibrations that caused the wave. For example, to generate a higher-frequency wave in a rope, you must move the rope up and down more quickly. This takes more energy, so a higher-frequency wave has more energy than a lower-frequency wave with the same amplitude.

#### Wave Speed

Assume that you move one end of a rope up and down just once. How long will take the wave to travel down the rope to the other end? This depends on the speed of the wave. **Wave speed** is how far the wave travels in a given amount of time, such as how many meters it travels per second. Wave speed is not the same thing as wave frequency, but it is related to frequency and also to wavelength. This equation shows how the three factors are related:

Speed = Wavelength  $\times$  Frequency

In this equation, wavelength is measured in meters and frequency is measured in hertz, or number of waves per second. Therefore, wave speed is given in meters per second.

The equation for wave speed can be used to calculate the speed of a wave when both wavelength and wave frequency are known. Consider an ocean wave with a wavelength of 3 meters and a frequency of 1 hertz. The speed of the wave is:

Speed = 
$$3 \text{ m} \times 1 \text{ wave/s} = 3 \text{ m/s}$$

#### You Try It!

*Problem:* Jera made a wave in a spring by pushing and pulling on one end. The wavelength is 0.1 m, and the wave frequency is 0.2 m/s. What is the speed of the wave?

If you want more practice calculating wave speed from wavelength and frequency, try the problems at this URL: http://www.physicsclassroom.com/class/waves/u10l2e.cfm .

The equation for wave speed (above) can be rewritten as:

$$Frequency = \frac{Speed}{Wavelength} \text{ or Wavelength} = \frac{Speed}{Frequency}$$

Therefore, if you know the speed of a wave and either the wavelength or wave frequency, you can calculate the missing value. For example, suppose that a wave is traveling at a speed of 2 meters per second and has a wavelength of 1 meter. Then the frequency of the wave is:

Frequency = 
$$\frac{2 \text{ m/s}}{1 \text{ m}} = 2$$
 waves/s, or 2 Hz

#### You Try It!

Problem: A wave is traveling at a speed of 2 m/s and has a frequency of 2 Hz. What is its wavelength?

#### **The Medium Matters**

The speed of most waves depends on the medium through which they are traveling. Generally, waves travel fastest through solids and slowest through gases. That's because particles are closest together in solids and farthest apart in gases. When particles are farther apart, it takes longer for the energy of the disturbance to pass from particle to particle.

#### **KQED: Science of Big Waves**

The organizers of the famous Maverick surf contest have voted that the conditions are right for hanging ten this weekend. The monster waves at Mavericks attract big wave surfers from around the world. But what exactly makes these Half Moon Bay waves so big? For more information on waves, see <a href="http://science.kqed.org/quest/video/science-of-big-waves/">http://science.kqed.org/quest/video/science-of-big-waves/</a>.



#### MEDIA Click image to the left or use the URL below.

URL: http://www.ck12.org/flx/render/embeddedobject/116517

#### **Lesson Summary**

- Wave amplitude is the maximum distance the particles of a medium move from their resting positions as a wave passes through. Wavelength is the distance between two corresponding points of adjacent waves. Waves with greater amplitudes or shorter wavelengths have more energy.
- Wave frequency is the number of waves that pass a fixed point in a given amount of time. Higher frequency waves have more energy. Wave speed is calculated as wavelength multiplied by wave frequency. Wave speed is affected by the medium through which a wave travels.

#### **Lesson Review Questions**

#### Recall

- 1. How is wave amplitude measured in a transverse wave?
- 2. Describe the wavelength of a longitudinal wave.
- 3. Define wave frequency.

#### **Apply Concepts**

4. All of the waves in the sketch below have the same amplitude and speed. Which wave has the longest wavelength? Which has the highest frequency? Which has the greatest energy?



5. A wave has a wavelength of 0.5 m/s and a frequency of 2 Hz. What is its speed?

#### **Think Critically**

- 6. Relate wave amplitude, wavelength, and wave frequency to wave energy.
- 7. Waves A and B have the same speed, but wave A has a shorter wavelength. Which wave has the higher frequency? Explain how you know.

#### **Points to Consider**

You read in this lesson that waves travel at different speeds in different media.

- When a wave enters a new medium, it may speed up or slow down. What other properties of the wave do you think might change when it enters a new medium?
- What if a wave reaches a type of matter it cannot pass through? Does it just stop moving? If not, where does it go?

#### References

1. David Rydevik. <a href="http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg">http://commons.wikimedia.org/wiki/File:2004-tsunami.jpg</a>

#### ESSENTIAL QUESTION

Why does conflict develop between people and their government?

## John Adams on the Reaction to the Stamp Act

#### **PRIMARY SOURCE: DIARY**

**DIRECTIONS:** Read the following excerpt and answer the accompanying questions.

**EXPLORE THE CONTEXT:** John Adams, who would become the second president of the United States, was an influential figure in the country's revolutionary and founding eras. A Boston lawyer, Adams became politically active in 1765 with Britain's introduction of the Stamp Act. The following excerpt is from Adams's diary from December 1765.

#### VOCABULARY

*engine:* machine *fabricated:* created *thro:* through detestation: dislike ignominy: disgrace censure: punishment discover: reveal

ANALYZING Does Adams believe the colonists' reaction to the Stamp Act will be important to the history of present and future citizens? Which of his words express his thoughts on the subject? **66** Braintree. December 18. [1765] Wednesday.

How great is my loss in neglecting to keep a regular journal through the last Spring, Summer, and Fall! ... The year 1765 has been the most remarkable year of my life. That enormous engine, fabricated by the British Parliament, for battering down all the rights and liberties of America, I mean the Stamp Act, has raised and spread through the whole continent a spirit that will be recorded to our honor with all future generations. In every colony, from Georgia to New Hampshire inclusively, the stamp distributors and inspectors have been compelled by the unconquerable rage of the people to renounce their offices. Such and so universal has been the resentment of the people, that every man who has dared to speak in favor of the stamps, or to soften the detestation in which they are held, how great soever his abilities and virtues had been esteemed before, or whatever his fortune, connections, and influence had been, has been seen to sink into universal contempt and ignominy.

The people, even to the lowest ranks, have become more attentive to their liberties, more inquisitive about them, and more determined to defend them, than they were ever before known or had occasion to be... Our presses have groaned, our pulpits have thundered, our legislatures have resolved, our towns have voted; the



crown officers have everywhere trembled, and all their little tools and creatures been afraid to speak and ashamed to be seen....

How long we are to remain in this languid condition, this passive obedience to the Stamp Act, is not certain. But such a pause cannot be lasting. Debtors grow insolent; creditors grow angry; and it is to be expected that the public offices will very soon be forced open, unless such favorable accounts should be received from England as to draw away the fears of the great, or unless a greater dread of the multitude should drive away the fear of censure from Great Britain.

It is my opinion that by this inactivity we discover cowardice, and too much respect to the Act. This rest appears to be, by implication at least, an acknowledgement of the authority of Parliament to tax us. And if this authority is once acknowledged and established, the ruin of America will become inevitable. **??** 

–John Adams, from his diary, December 18, 1765

**2 IDENTIFYING** What does Adams say has happened to British officials and others who support the Stamp Act?

3 ANALYZING What does Adams mean when he says "Our Presses have groaned, our Pulpits have thundered, our Legislatures have resolved, our Towns have voted"?

CIVICS How does Adams think the Stamp Act controversy has affected the colonists' view of freedom? Which words express his views? Tea Party

#### ESSENTIAL QUESTION

## Why does conflict develop between people and their government?

#### DIRECTIONS: Read the following excerpt from a letter about the Boston Tea Party from Mercy Otis Warren to her friend Hannah Winthrop and answer the guestions that follow.

EXPLORE THE CONTEXT: Mercy Otis Warren (1728–1814) was a political writer concerned with the American Revolution. She was highly educated for a woman of her time. Many of her writings were published anonymously and throughout her lifetime were wrongly thought to have been written by men. She published a collection of poems and plays under her own name, which was unheard of for women of the period. Her husband, Massachusetts politician James Warren, unlike most men of the time, viewed and treated his wife as an equal. He encouraged her writing and invited her to join political gatherings and discussions that were normally restricted to men.

#### VOCABULARY

speculate: theorize commotions: clashes acquiesce: give in actuate: spur to action benevolent: caring laudable: admirable designs: plans apprehension: worry expatiate: say more perplexity: confusion exhilarated: thrilled Hemisphere: world

**SUMMARIZING** In the first paragraph, what is Warren saying she plans to do?

#### **PRIMARY SOURCE: LETTER**

A Woman's Opinion of the Boston

**C** When I took up my pen I determined to leave the field of politicks to those whose proper business it is to speculate and to act at this important crisis; but the occurrences that have lately taken place are so alarming and the subject so interwoven with the enjoyments of social and domestic life as to command the attention of the mother and the wife who before the contest is decided may be called to weep over the manes of her beloved sons....

I tremble for the event of the present commotions;there must be a noble struggle to recover the expiring liberties of our injured country; we must re-purchase them at the expence of blood, or tamely acquiesce, and embrace the hand that holds out the chain to us and our children.

Much interested in the success of the conflict — I feel myself unequal to the combat yet hope the women will never get the better of that disinterested regard to universal happiness which ought to actuate the benevolent mind. Heaven give us strength to sustain the shock, if this country should be compelled to the last appeal....

Whether the Patriots of the present day will be able to effect their laudable designs in our time is very uncertain, yet I trust they will lay the foundation deep and that future generations will not be wanting to



themselves, but will maintain and support the priviledges to which they are entitled both by nature and compact...

...the fears of a fatal interruption of private and social enjoyment often fill my mind with gloomy apprehensions...

But I expatiate no longer on the prospects of public distress nor dwell on the painful sensations of the human heart in this day of general perplexity, when the hero and the patriot are alternately exhilerated or depressed by the varying aspects of the political Hemisphere;- nor shall I make an apology for touching on a subject a little out of the line of female attention, as we are both happily united to such companions as think us capable of taking part in whatever affects themselves. As for that part of mankind who think every rational pursuit lies beyond the reach of a sex too generally devoted to folly, their censure or applause is equally indifferent to your sincere friend. **??** 

> —Mercy Otis Warren, letter to Hannah Winthrop, after January 1, 1774

**INFERRING** The second paragraph reveals Warren's point of view regarding the struggle between the Patriots and the British. Does Warren support the rebels in their actions against the British government? Why or why not?

**HISTORY** What does Warren hope will be the outcome of the struggle?

4 ANALYZING In your own words, what does Warren say in her final paragraph about other people's attitudes about women and politics?

Chapter 3 97

## <u>F.I.T.T.</u>

- Frequency (how often) exercise 3 times a week
- Intensity (how hard) your heart rate should be between 120-160 beats per minute.
  - Level 1-little exertion; little perspiration
  - Level 2-able to speak without gasping; increase in heart rate
  - Level 3-sweating, breathing heavily; increase in heart rate
- Time (how long) 20-30 minutes of continuous aerobic activity
- Type (what) walking, running, jump roping, push ups, sit ups, planks, workout video, etc

## Please practice social distancing when participating outside in fitness activities.

#### **Physical Activity Log Instructions**

How to fill out the log:

- Write the date
- Write in the type of activity
- Write in the total number of minutes you were active
- Write in the intensity level
  - Level 1-little exertion; little perspiration
  - Level 2-able to speak without gasping; increase in heart rate
  - Level 3-sweating, breathing heavily; increase in heart rate

Date	Activity	Number of Minutes	Intensity Level



Since ancient times, people have danced. Cave and rock paintings from as far back as 3300 B.C. show people dancing. People have danced for ritual, for celebration, and also just for fun!

Every culture has its own dance styles, and its own reasons for dancing. In ancient Greece, citizens would dance to honor gods and celebrate events. Ancient Egyptian women danced at funerals to express sadness. It was around Renaissance times that dance became something that people did for enjoyment.

In the 1600s, King Louis XIV of France enjoyed ballet, which helped make it popular with the public. Pretty soon, people were going to the theater to watch people dance, and it became into a true performing art. Now, there are all different styles of dance, from jazz to tap to hip-hop to salsa...and that's just in the Western world. All over the globe, there are countless styles of dancing, and countless reasons for it.

#### Make up a dance to a favorite song. Draw each step in the boxes below.









Now make up a dance that tells a story. Pick a favorite book or a famous fairy tale.









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DANCES FROM HISTORY













Stand-up is a kind of comedy where a person gets up on stage and tells jokes straight to an audience. Stand-up comedy started in the music halls of Britain and on the vaudeville stages of America. Comedy acts were by far the most popular kinds of acts in those shows, and the emcee, or host, would tell jokes to warm up the audience.

Stand-up comedy was at its peak in the '60s, '70s, and '80s. Some of the most famous actors and comedians of all time, like Bill Cosby, Woody Allen, and Jerry Seinfeld, got their start in stand-up.

Stand-up comedy can be performed anywhere, for anyone – from paying ticketholders in a theater to guests in a coffee shop to soldiers overseas. The jokes in stand-up can be told in many different ways, but they almost always poke fun at everyday life.

There are many different ways to tell a joke in stand-up. Try coming up with a joke for each of the joke types below. Then perform it them for your friends and family!

A *monologue* (mon-o-log) is basically a funny story. A comedian will spend a minute or two talking about something funny that happened to him or her. (Psst...it doesn't have to be true!)

A **one-liner** is a short joke that is one or two sentences long.

Physical comedy (fizz-ick-al com-eh-dee) is acted out instead of told.

Prop comedy uses props, or items, in a funny way.

Write a monologue about...dealing with your brother, sister or other family member.

Write a one-liner about...something you don't like.

Do a physical joke about...*eating a school lunch.* 

Do a prop joke about...going to the dentist.



## **F**ACIAL EXPRESSIONS: Our expressions tell people what we're feeling.



Embarrassed



Bored



 $\odot$ 

 $\overline{\mathbf{O}}$ 



Excited





 $\overline{)}$ 



Crying

Sad

Нарру

Surprised











**FACIAL EXPRESSIONS:** Use these empty heads to draw your own faces! Don't forget the eyebrows-they can be the most important part.



Name:

Date:

## Dialogue & Drama

Think about the personal narrative you are writing. Think about two characters in your narrative. Write words that they can say to each other in the speech bubbles below.





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## Solid Geometry Jack-In-The-Box

By combining simple shapes, we can create complex drawings. Let's draw a jack-in-the-box toy!

