Word Triangle

Word triangles are a particularly good strategy to use for concrete terms—such as *stem* or *strike-slip fault*—as they tend to lend themselves better to drawings. However, abstract terms—such as *salinity* or *biodiversity*—also work for word triangles. In fact, sometimes the creative process of thinking of a way to illustrate an abstract term can help students remember the definition.

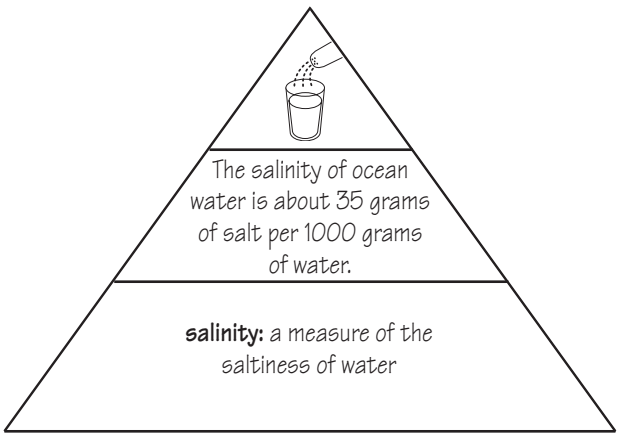
TRANSPARENCIES

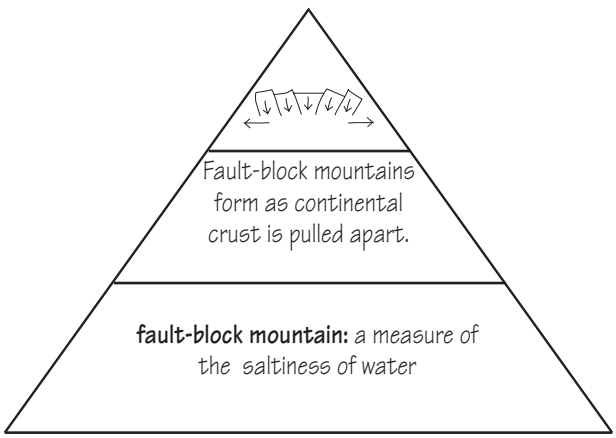
Page B18 includes instructions for filling out a word triangle along with a blank triangle. In addition to using this transparency to model the strategy for students, you can photocopy it and give it to students to fill in as a worksheet.

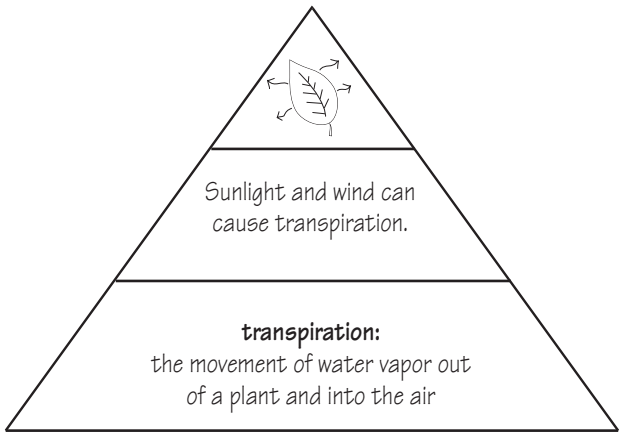
Page B19 includes a filled-in example of a word triangle.

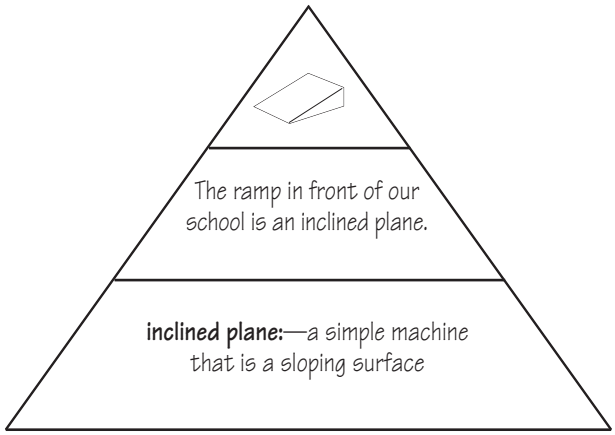
CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional word triangles that you can draw for your students using transparency page B18.









Description Wheel

The description wheel is good for words that students can't sketch or for words with complex definitions. For example, *kingdom* cannot easily be shown visually, but the term has several examples, such as plants and fungi. The description wheel allows students to write a number of details about a term, along with a definition.

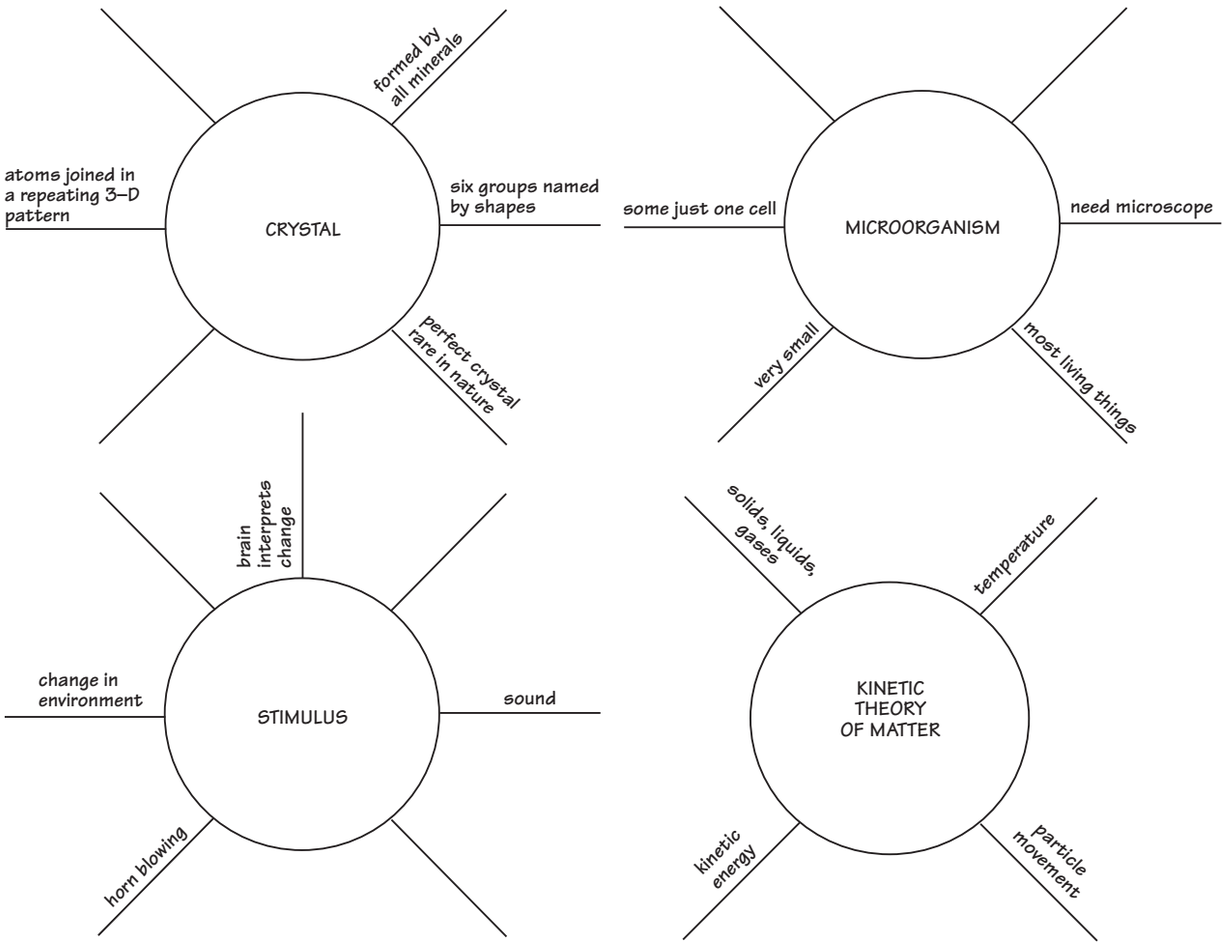
TRANSPARENCIES

Page B20 includes instructions for filling out a description wheel along with a blank wheel diagram. In addition to using this transparency to model the strategy for students, you can photocopy it and give it to students to fill in as a worksheet.

Page B21 includes a filled-in example of a description wheel.

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional description wheels that you can draw for your students using transparency page B20.



Four Square

The four square is a good way for students to think about a term in a variety of ways, both by defining it and by giving examples and characteristics. Because students must think of examples and nonexamples, it works best for broad terms. The nonexample square helps students better understand what something is by thinking about what it is not.

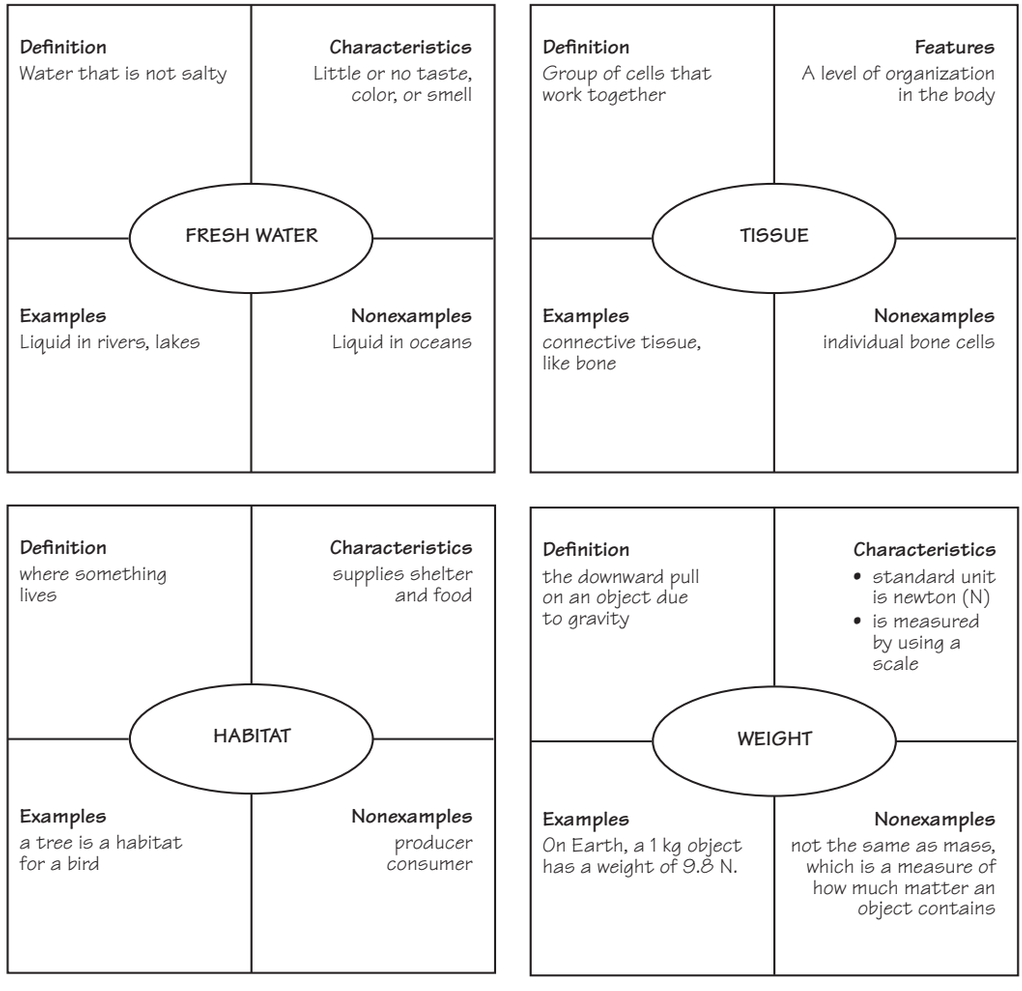
TRANSPARENCIES

Page B22 includes instructions for filling out a four square along with a blank four square. In addition to using this transparency to model the strategy for students, you can photocopy it and give it to students to fill in as a worksheet.

Page B23 includes a filled-in example of a four square.

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional four squares that you can draw for your students using transparency page B22.



Magnet Word

Magnet word is a good strategy for helping students understand a term by thinking of other words and phrases that are associated with it. For example, if *half-life* is the magnet word, the students should come up with terms and phrases that help them understand the term—such as *radioactivity, element,* and *dating of rocks.* Encourage students to use phrases for some of their entries, so that they don't simply write down single terms that they don't understand. The magnet word works well for both broad, conceptual words and specific terms.

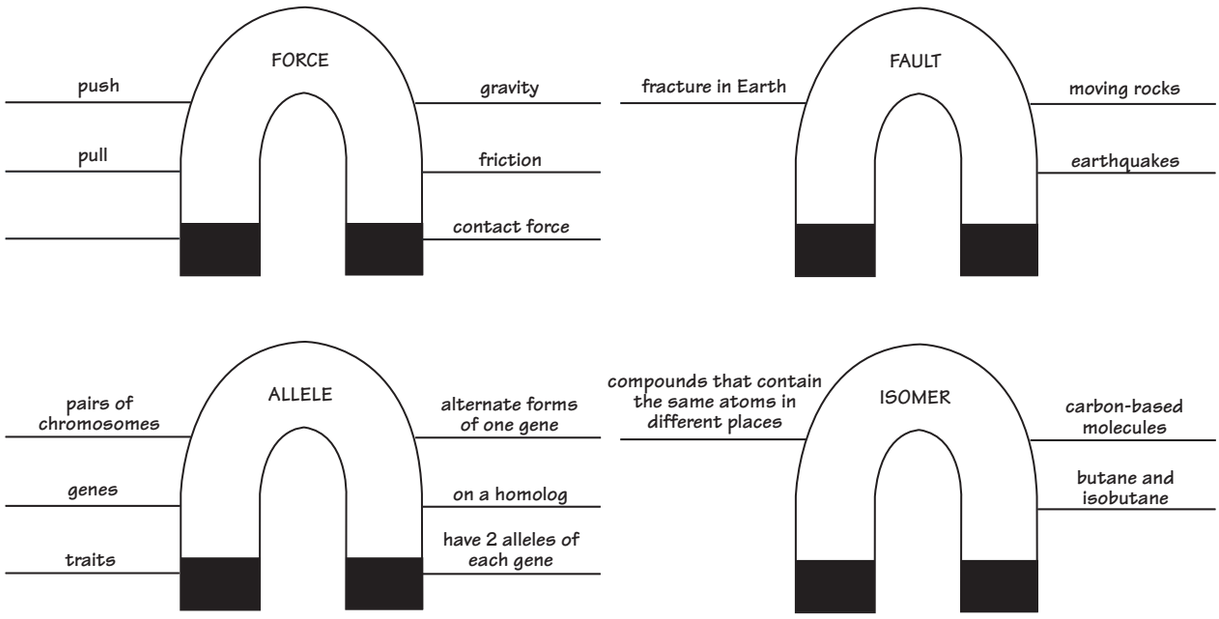
TRANSPARENCIES

Page B24 includes instructions for filling out a word magnet along with a blank magnet. In addition to using this transparency to model the strategy for students, you can photocopy it and give it to students to fill in as a worksheet.

Page B25 includes a filled-in example of a word magnet.

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional word magnets that you can draw for your students using transparency page B24.



Frame Game

The frame game gives students a flexible way to think about and learn vocabulary words. Students can choose the kinds of details they put into a frame for each term. For example, for *sonar* they could provide a definition, note that a fast sonar echo means the bottom is shallow, and mention that sonar replaced a cruder system of dropping weighted lines overboard. Students they can vary how they fill out the frame from term to term; for some terms they might concentrate on giving examples along with a definition. The frame game works well with any kind of word.

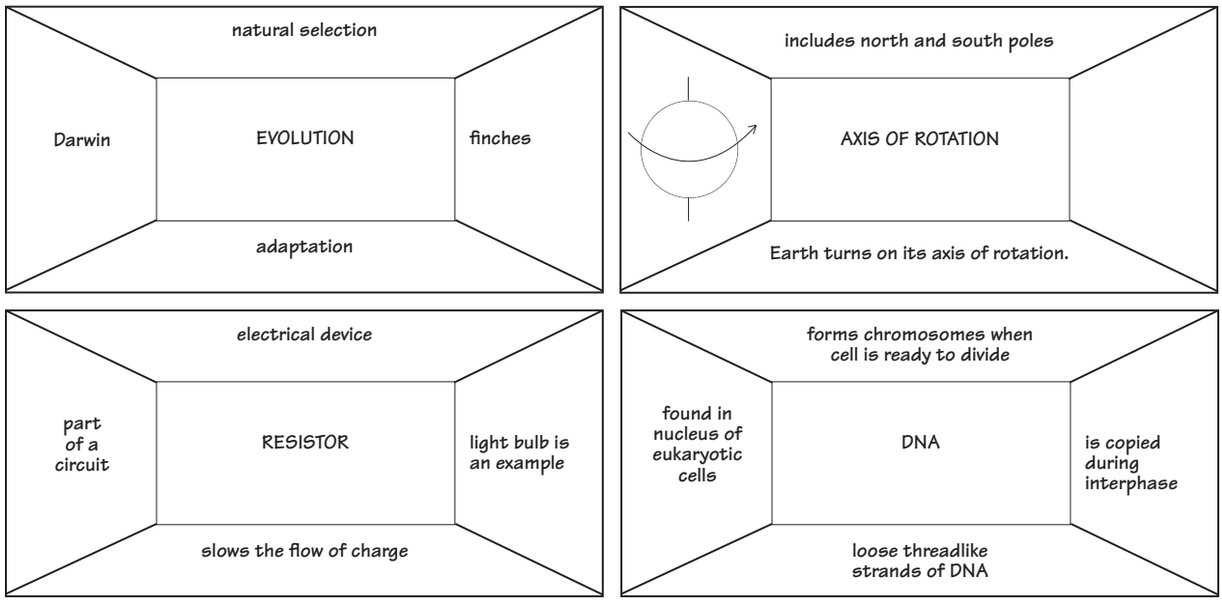
TRANSPARENCIES

Page B26 includes instructions for filling out a frame game along with a blank frame. In addition to using this transparency to model the strategy for students, you can photocopy it and give it to students to fill in as a worksheet.

Page B27 includes a filled-in example of a frame game.

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional frame games that you can draw for your students using transparency page B26.



Student Vocabulary Strategy

This strategy helps students to analyze word meanings from context and to use sensory connections that are associated with their particular learning styles. You can use this strategy before students read a section or chapter.

1. Assign a passage for students to read.
2. Before students begin, go over key vocabulary words, writing them on the chalkboard or on a tablet.
3. Ask students to identify unfamiliar words on the list and to use the vocabulary strategy on the transparency to learn their meanings.

TRANSPARENCIES

Page B28 includes instructions for using the student vocabulary strategy. In addition to using this transparency to model the strategy for students, you can photocopy it to use as a worksheet.

Page B29 includes a filled-in example of using the vocabulary strategy to find the meaning of the word *germination.*

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional sentences that you can give to your students who are using transparency page B28.

1. Water can wear down rocks on riverbeds and along shorelines by ***abrasion.***
2. The different soil layers in a specific location make up an area's ***soil profile.***
3. Most elements are somewhat ***reactive*** and can easily combine with other materials.
4. Without ***centripetal force,*** a whirling object would go flying off in a straight line.
5. At a ***subduction boundary,*** the edge of one tectonic plate sinks beneath the edge of another plate.
6. The nucleus of a cell divides during ***mitosis.***

Sort Cards

Sort cards are used to show semantic relationships among related terms and to help reinforce students' understanding of key concepts. Sort cards can also teach students the complex reasoning skills of classification and deduction. Besides using a transparency or worksheet, you can also use index cards to give students experience with this strategy.

As they work with sort cards, encourage students to use more than one way to classify the vocabulary words. This exercise can help them develop their classifying and deductive thinking skills and can deepen their understanding of key concepts.

TRANSPARENCIES

Page B30 includes instructions for using sort cards to classify words into groups. You can use the transparency to model the strategy for students or photocopy it as a worksheet.

Page B31 includes a filled-in example of using sort cards to categorize vocabulary terms about the properties of matter and types of heat transfer.

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional lists of words and categories that you can give to your students using transparency page B30.

1. In this example, different category names can be applied to the same terms.

Categories	Words
terrestrial planets	Mercury, Venus, Earth, Mars
gas giants	Jupiter, Saturn, Uranus, Neptune
OR	
inner planets	Mercury, Venus, Earth, Mars
outer planets	Jupiter, Saturn, Uranus, Neptune

2. In this example, the items are sorted differently depending on the categories.

Categories	Words
types of mammals	deer, wolf, orca, rabbit
types of arthropods	spider, moth, wasp, caterpillar
OR	
prey animals	deer, rabbit, moth, caterpillar
predator animals	wolf, orca, spider, wasp

Word Splash

A **word splash** is a collection of key words or concepts chosen from a passage or chapter that students are about to read. This strategy gives students a chance to relate the new words or concepts to the main topic of the reading.

TRANSPARENCIES

Page B32 includes instructions for using word splash. In addition to using this transparency to model the strategy for students, you can photocopy it to use as a worksheet.

Page B33 includes a filled-in example of using word splash to relate various vocabulary words about the topic of earthquakes.

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional main topics and key words or concepts that you can give to your students who are using transparency page B32.

1. **atom**—half-life, nucleus, protons, decay, radioactivity, isotope, ion
2. **rock**—exfoliated, metamorphic, rock cycle, gneiss, igneous, minerals
3. **soil**—horizon, humus, profile, pore space, desertification
4. **cell**—eukaryotic cell, nucleus, cytoplasm, organelle, membrane, tissue, chloroplast, mitochondria
5. **machine**—lever, efficiency, energy, inclined plane, mechanical advantage, pulley, fulcrum
6. **eye**—retina, rod cells, convex lens, cornea, focal point, visible light, iris

Context Clues: Restatement

A good way to help students make sense of an unfamiliar word is to have them look at the **context** in which the word is found. Sometimes a writer will **restate** the meaning of a word within a sentence, defining it for the reader. Restatements are often signaled by words or phrases such as

or	**which is**	**that is**
also called	**also known as**	**in other words:**

TRANSPARENCIES

Page B34 includes instructions for using restatement context clues to determine the meaning of an unfamiliar word. In addition to using this transparency to model the strategy for students, you can photocopy it to use as a worksheet.

Page B35 includes a filled-in example of using context clues to find the meaning of the word *divergent.*

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional sentences that you can give to your students who are using transparency page B34.

1. The shape of each planet's orbit is an ***ellipse,*** in other words, a flattened circle or oval.
2. An atom's protons and neutrons are grouped in the ***nucleus,*** also called the center of the atom.
3. Algae multiply rapidly during ***eutrophication,*** which is an increase of nutrients in a body of water.
4. The ***probe,*** or spacecraft that drops into a planet's atmosphere, measures pressure and temperature.

Context Clues: Examples

A good way to help students make sense of an unfamiliar word is to have them look at the **context** in which the word is found. Sometimes a sentence will provide an **example** that will help them understand the meaning of a word. Examples are often signaled by words or phrases such as

like	**for instance**	**this**	**such as**	**especially**
these	**for example**	**other**	**includes**	

TRANSPARENCIES

Page B36 includes instructions for using examples as context clues to determine the meaning of an unfamiliar word. In addition to using this transparency to model the strategy for students, you can photocopy it to use as a worksheet.

Page B37 includes a filled-in example of using context clues to find the meaning of the word *insulators.*

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional sentences that you can give to your students who are using transparency page B36.

1. ***Respiration*** provides a living cell with energy; for example, these chemical reactions "burn" glucose as fuel.
2. You use ***forces*** all day long to move objects, such as when you pull on a door or kick a ball.
3. ***Arthropods,*** which include insects, spiders, crabs, and millipedes, are invertebrates.

Context Clues: Comparison or Contrast

A good way to help students make sense of an unfamiliar word is to have them look at the **context** in which the word is found. Sometimes a sentence will provide a **comparison** or **contrast** to help them understand the means of a word. Certain words or phrases signal comparison or contrast.

Some Comparison Signals		Some Contrast Signals	
like	**similar to**	**but**	**although**
as	**also**	**unlike**	**however**
related to	**resembles**	**rather than**	**on the other hand**

TRANSPARENCIES

Page B38 includes instructions for using comparison or contrast context clues to determine the meaning of an unfamiliar word. In addition to using this transparency to model the strategy for students, you can photocopy it to use as a worksheet.

Page B39 includes a filled-in example of using context clues to find the meaning of the word *echolocation.*

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional sentences that you can give to your students who are using transparency page B38.

1. Unlike ***ionic*** compounds, covalent compounds exist as individual molecules.
2. Cloth will let liquids through easily; on the other hand, glass is ***impermeable*** and makes a good container.
3. The ***genome*** of an organism resembles a library that contains all the information known about a particular subject.

Analogies

An **analogy** is an extended comparison between two subjects. It is often used to help explain unfamiliar concepts, theories, and words by comparing them to more familiar ones. For example, one can compare Earth's layers to the layers of a hard-boiled egg. After students gain experience in using analogies, ask them to list another process, concept, or theory and think of their own analogies.

TRANSPARENCIES

Page B40 includes instructions for using an analogies table. For example, you might have students read the first concept and its function, and then prompt them to think of their own analogies by saying, "Tectonic plates are like . . . " In addition to using this transparency to model the strategy for students, you can photocopy it to use as a worksheet.

Page B41 includes a filled-in example of an analogies table.

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional concepts or terms and suggested analogies that you can write into the bottom row of transparency page B40.

Concept	Definition	Analogies (like)
geologic time scale	shows age of Earth	24-hour clock; roll of paper; a road with different markers
different parts of a living cell	structures for generating energy, disposing of waste, reproducing	different parts of a factory; team with specialized players
molecules	building blocks of matter	tinker-toy like building materials; marshmellows and sticks; steel structure and bricks in a building

Prefixes

Students can use their knowledge of prefixes to help them determine the meaning of an unfamiliar word. A **prefix** is a word part attached to the beginning of a base word or root. The meaning of the prefix combines with the meaning of the base word to form a new word. For example, the prefix *non-* means "not," as in *nonporous,* which means "not porous."

TRANSPARENCIES

Page B42 provides a table of prefixes, their meanings, and one example. Help your students fill in the missing cells, prompting them to use the meaning of the prefixes to figure out the definitions of the example words. You can also photocopy the transparency for students to fill out as a worksheet.

Answers to transparency B42:

- **universe** (definition:) all matter and energy everywhere; (other words:) uniform, unify, unite, universal
- **epicenter** (definition:) point at Earth's surface directly above an earthquake; (other words:) epidemic, epidermis, epicotyl, episode
- **circular** (definition:) relating to or shaped like a circle; (other words:) circumference, circulate, circumstantial, circulation
- **subduction** (definition:) process where the edge of one tectonic plate sinks under the edge of another plate; (other words:) subterranean, submerge, substantial, subject, submarine

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional prefixes that you can give to your students.

Prefix	Meaning	Words with Same Prefix
anti-	against	antimatter, antiproton, antithesis
bi-, bin-	two	binocular, bipedal, bifocal, binary
tri-	three	triangle, triad, trillion, triplet
semi-	half	semiannual, semicircle, semi-liquid
deci-	ten	decimal, decimeter, decimate
macro-	large	macrocosm, macroscope
pre-	before	preview, predetermine, preform, predate
peri-	throughout	perimeter, periscope, periphery
re-	back	recede, recall, reform, reshape
dia-	through, across	diameter, diagonal, diagnose

Suffixes

Students can use their knowledge of suffixes to help them determine the meaning of an unfamiliar word. A **suffix** is a word part attached to the end of a base word or root. For example, the suffix *-or* means "one who," as in *investigator,* which means "one who investigates."

TRANSPARENCIES

Page B43 provides a table of suffixes, their meanings, and one example. Help students fill in the missing cells, prompting them to use the meanings of the suffixes to figure out the definitions of the example words. You can also photocopy the transparency for students to fill out as a worksheet.

Answers to transparency B43:

- **solarium** (definition:) a room or other place exposed to the Sun; (other words:) auditorium, sanitarium, planetarium, aquarium
- **particle** (definition:) a very small piece or part of something; (other words:) corpuscle, icicle, cubicle
- **iodine** (definition:) lustrous, grayish-black, corrosive element; (other words:) chlorine, fluorine, bromine
- **granite** (definition:) a common, coarse-grained, light-colored igneous rock; (other words:) magnetite, hematite, lignite, anthracite, quartzite

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional suffixes that you can give to your students.

Suffix	Meaning	Words with Same Suffix
-ist	one who practices	geologist, biologist, botanist, paleontologist
-ory	place for	laboratory, conservatory
-ance	state or quality of	resistance, conductance, avoidance
-tion	state or quality of	classification, itemization, attention, caution, gravitation
-ment	product or thing	sediment, embankment, fragment, instrument
-ive	inclined to	active, passive, negative, conclusive
-ate	to make	activate, hibernate, annihilate, fascinate, germinate
-oid	relating to	asteroid, planetoid, humanoid

Word Roots

A **root** is the core of a word, or the part that contains the most important element of the word's meaning. Many students may find it easier to learn complex science words if they can break the words down into their simpler parts.

TRANSPARENCY

Page B44 includes a table of word roots, their meanings, and one example. Help students fill in the missing cells, prompting them to use the meanings of the word roots to figure out the definitions of the example words. You can also photocopy the transparency for students to fill out as a worksheet.

Answers to transparency B44:

- **equinox** (definition:) one of two times a year when day and night are of equal length; (other words:) equal, equilibrium, equator
- **quadrant** (definition:) any of four areas into which a plane is divided; (other words:) quadrangle, quarry, quarantine, quart
- **calcium** (definition:) an element found in Earth's crust and in most plants and animals; (other words:) calculate, calculation, calcify, calculator
- **tactile** (definition:) relating to the sense of touch; (other words:) integrate, contagion, contaminate, contact

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional word roots that you can give to your students

Word Root	Meaning	Words with Same Root
scop	see	periscope, telescope, stethoscope
gen	birth, race	generate, progeny, generation, genealogy
cardi	heart	cardiac, cardiology, cardiogram
phys	nature	physics, physical, physician
duct, duc	lead	conduct, aqueduct, induct, duct
lum	light	illuminate, luminous, luminescent
mut	change, interchange	mutation, mutable, mutual
mar	sea	marine, maritime, submarine
plic, plex	fold	duplicate, multiplication, complicate, complex

Greek Word Origins

A **root** is the core of a word, or the part that contains the most important element of the word's meaning. Many words in science have their roots in Greek. Knowing the meaning of these roots can help students understand unfamiliar words.

TRANSPARENCY

Page B45 includes a table of Greek word roots, their meanings, and one example. Help your students fill in the missing cells, prompting them to use the meaning of Greek word roots to figure out the definitions of the example words. You can also photocopy the transparency for students to fill out as a worksheet.

Answers to transparency B45:

- **thermostat** (definition:) device for regulating the amount of heat a boiler or furnace produces; (other words:) thermometer, thermal, hydrothermal, thermos
- **disaster** (definition:) an event causing widespread destruction and loss; (other words:) asteroid, astronaut, astronomy, catastrophe
- **geosphere** (definition:) structure of Earth, including all its layers and surface area; (other words:) geologist, geothermal, geography, geology, geocentric
- **polygon** (definition:) an object with many sides or angles; (other words:) diagonal, hexagon, trigonometry, polyhedron

CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional Greek word roots that you can give to your students.

Greek Root	Meaning	Words with Same Root
cycl	circle, ring	cyclone, cycle, bicycle, cyclops
areo	air	aerodynamics, aerate, aerial, aeronautics
archae, arche	primitive	archaeology, archaic, archetype, archive
cosm	universe	cosmos, cosmic, cosmonaut, microcosm
lith	stone	lithosphere, monolith, paleolithic, neolithic
hydr	water	hydrosphere, hydrogen, hydraulic, dehydrate
bio	life	biology, biosphere, biochemistry, biography
opt	eye	optical, optics, optician,

Latin Word Origins

A **root** is the core of a word, or the part that contains the most important element of the word's meaning. Many words in science have their roots in Latin. Knowing the meaning of these roots can help students understand unfamiliar words.

TRANSPARENCY

Page B46 includes a table of Latin word roots, their meanings, and one example. Help your students fill in the missing cells, prompting them to use the meaning of Latin word roots to figure out the definitions of the example words. You can also photocopy the transparency for students to fill out as a worksheet.

Answers to transparency B46:

- **traction** (definition:) the act of pulling or dragging something; (other words:) subtract, attraction, tractor, detract
- **aqueous** (definition:) relating to water, watery; (other words:) aquatic, aquarium, aquanaut, aquifer
- **syncline** (definition:) a fold in rocks in which both sides slant toward the middle; (other words:) incline, recline, anticline, inclination
- **fraction** (definition:) a small part of bit of something; (other words:) fragment, fracture, fragile

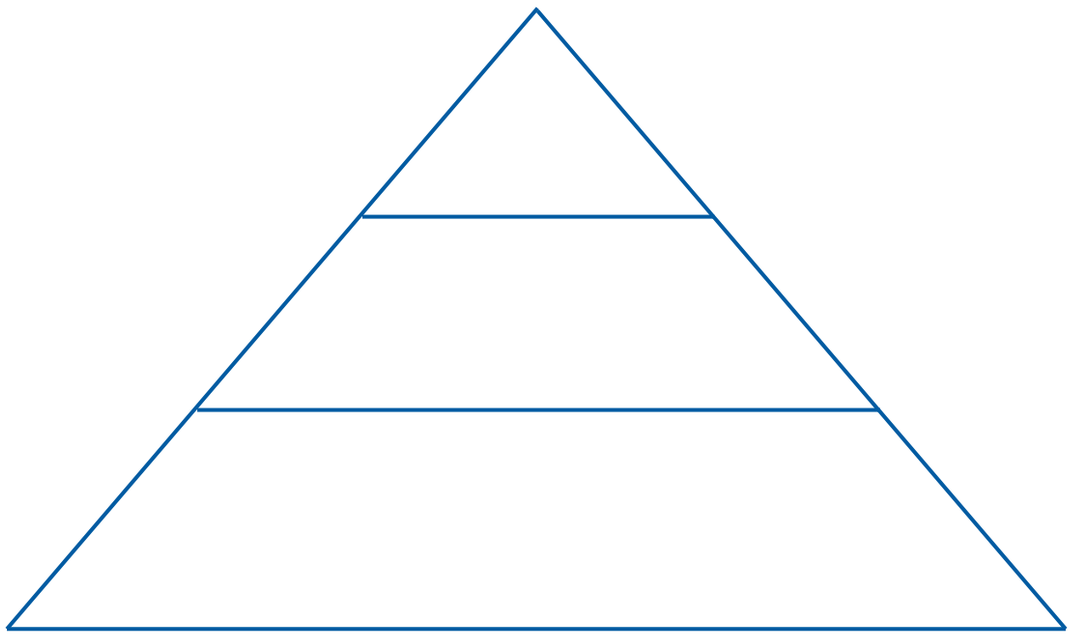
CUSTOMIZE FOR YOUR CLASSROOM

Here are some additional Latin word roots that you can give to your students.

Latin Root	Meaning	Words with Same Latin Root
duc, duct	lead	subduct, induct, aqueduct, conduct,
mot	motion	motor, mobile, motile, motion,
vac	empty	vacuum, evacuate, vacant
cal	hot	calorie, caldron, scald
center, centr	center	centrifugal, eccentric, egocentric, central
cum	heap	cumulus, cumulative, accumulate
div	divide	division, divide, division, divisible, diverse
solv	loosen	dissolve, solvent, solve, resolve
serv	keep, save	reservoir, conserve, preserve
stell	star	constellation, stellar, stellate,
terr	land	terrain, terrestrial, territory,
vor	eat	carnivore, herbivore, voracious
rad	ray	radius, radiology, radioactive

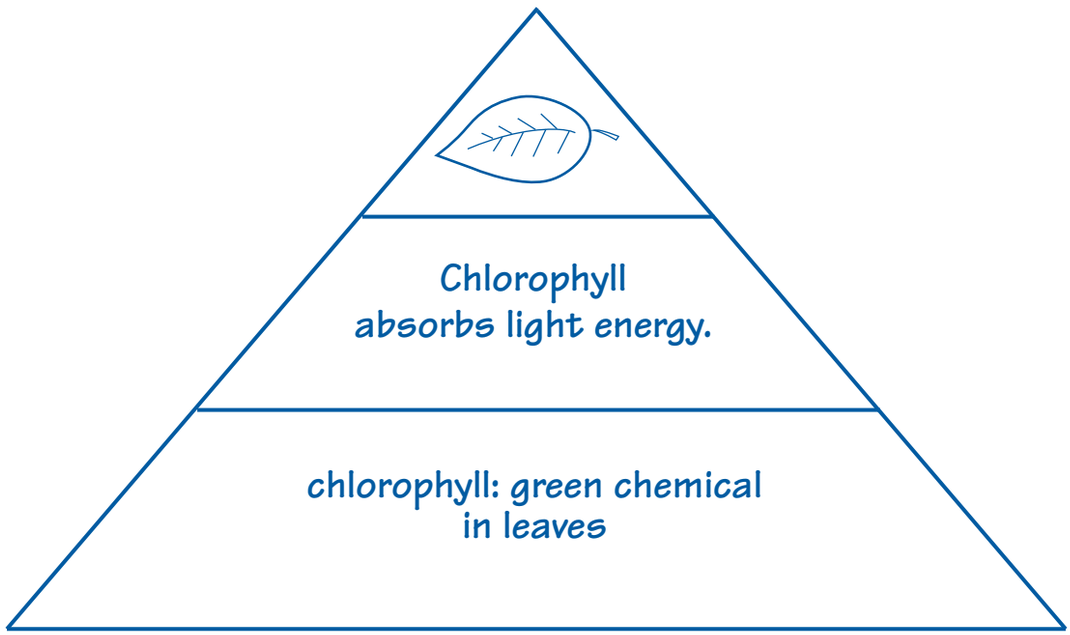
Word Triangle

1. Write a term and its definition in the bottom section.
2. In the middle section, write a sentence in which the term is used correctly.
3. In the top section, draw a small picture to illustrate the term.



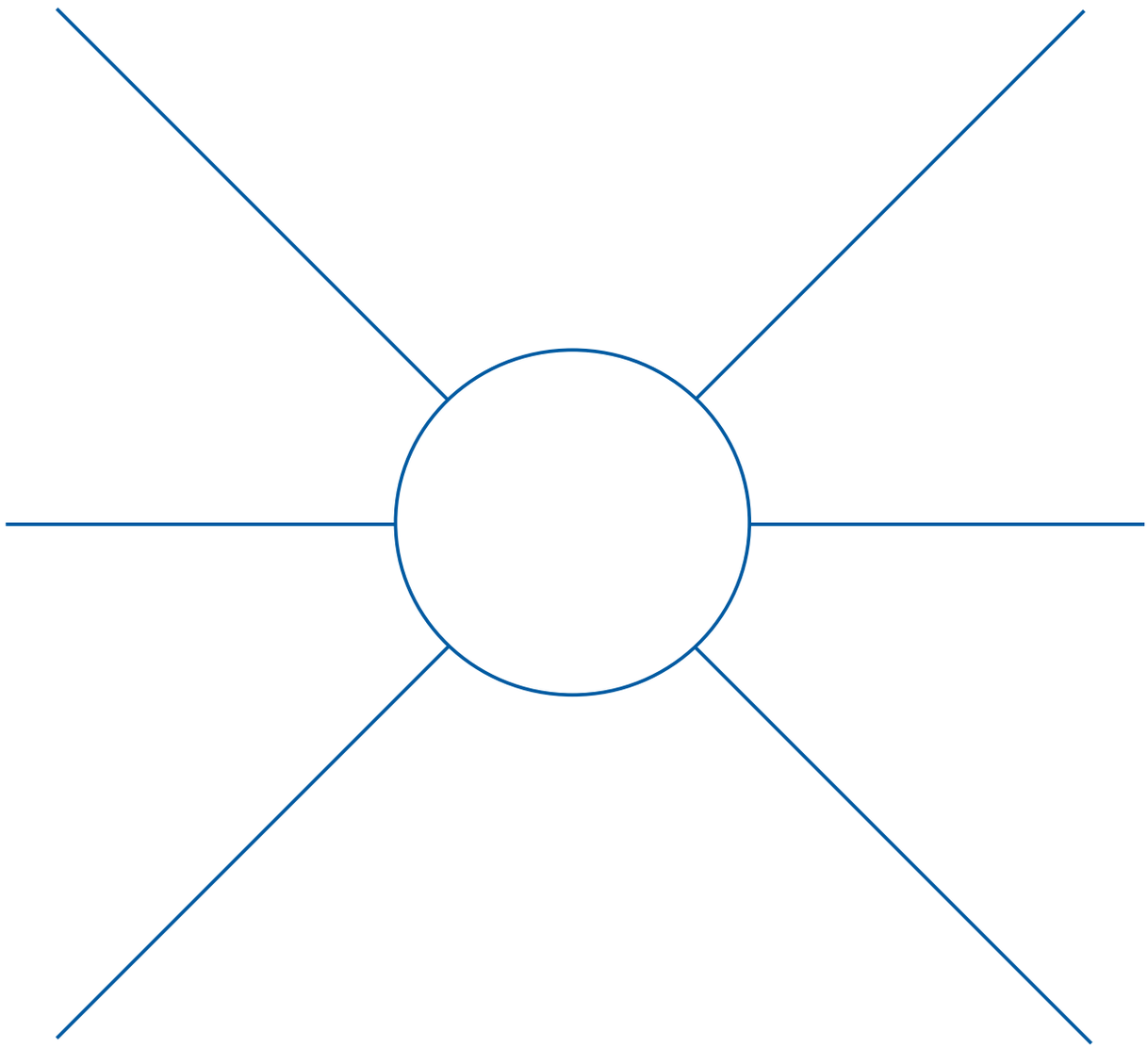
Word Triangle

1. Write a term and its definition in the bottom section.
2. In the middle section, write a sentence in which the term is used correctly.
3. In the top section, draw a small picture to illustrate the term.



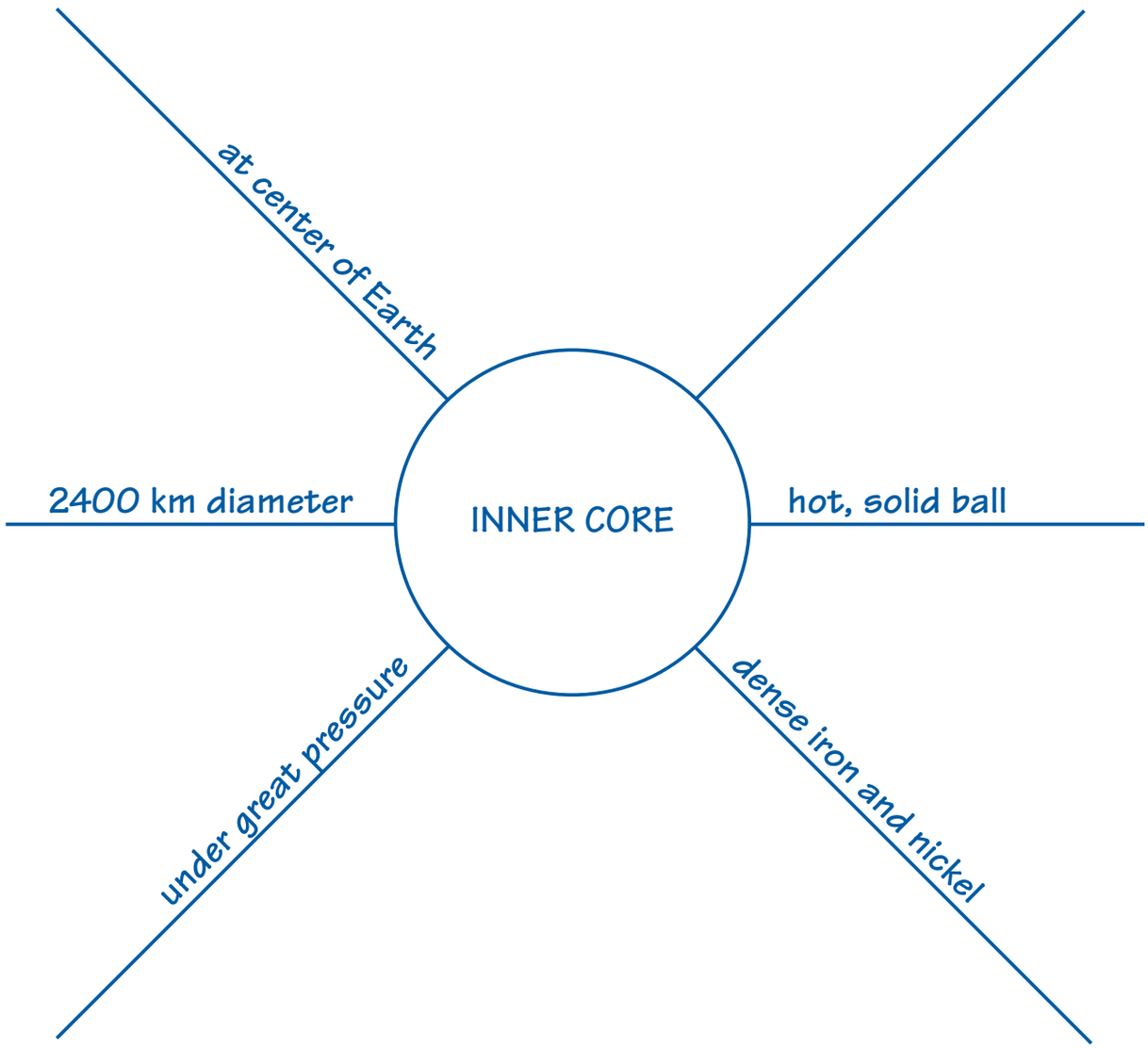
Description Wheel

1. Write the term in the center of a description wheel diagram.
2. On the spokes of the wheel, write some words describing the term. You can include a definition and examples.
3. Use as many spokes as you need.



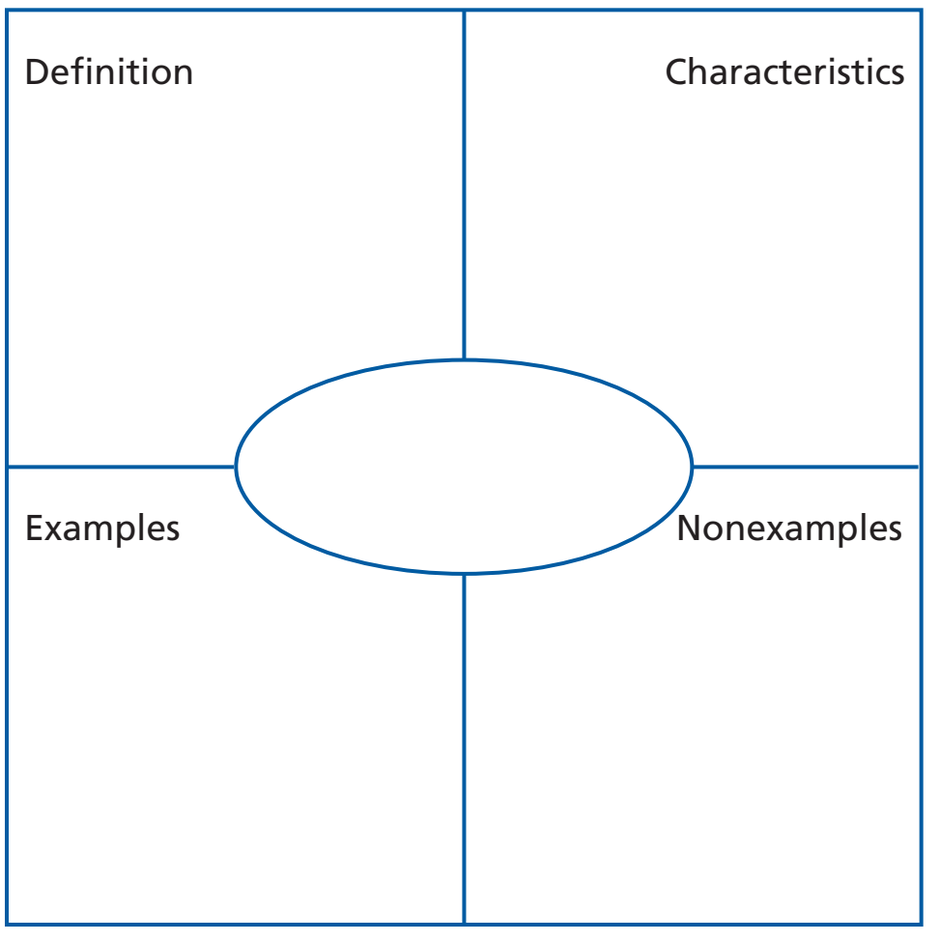
Description Wheel

1. Write the term in the center of a description wheel diagram.
2. On the spokes of the wheel, write some words describing the term. You can include a definition and examples.
3. Use as many spokes as you need.



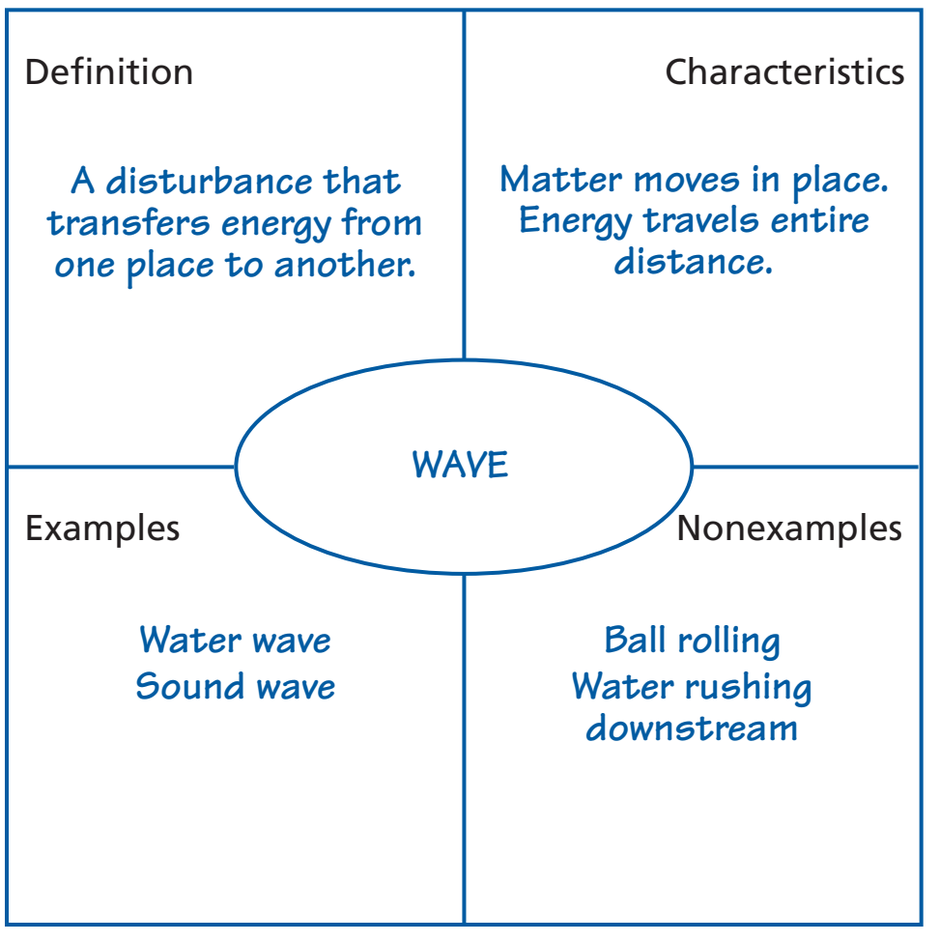
Four Square

1. Write a term in the center.
2. Write notes or responses in the squares for Definition, Characteristics, and Examples.
3. If possible, list some things in the Nonexamples box that are not examples of the term.



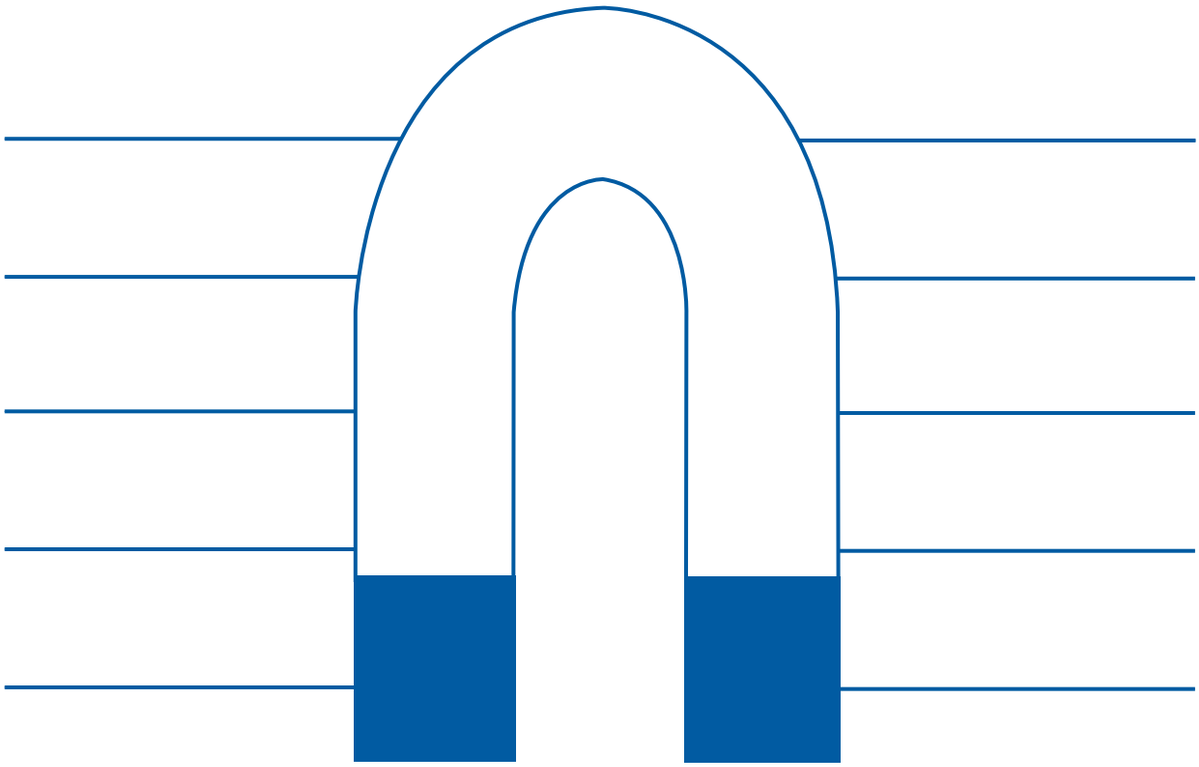
Four Square

1. Write a term in the center.
2. Write notes or responses in the squares for Definition, Characteristics, and Examples.
3. If possible, list some things in the Nonexamples box that are not examples of the term.



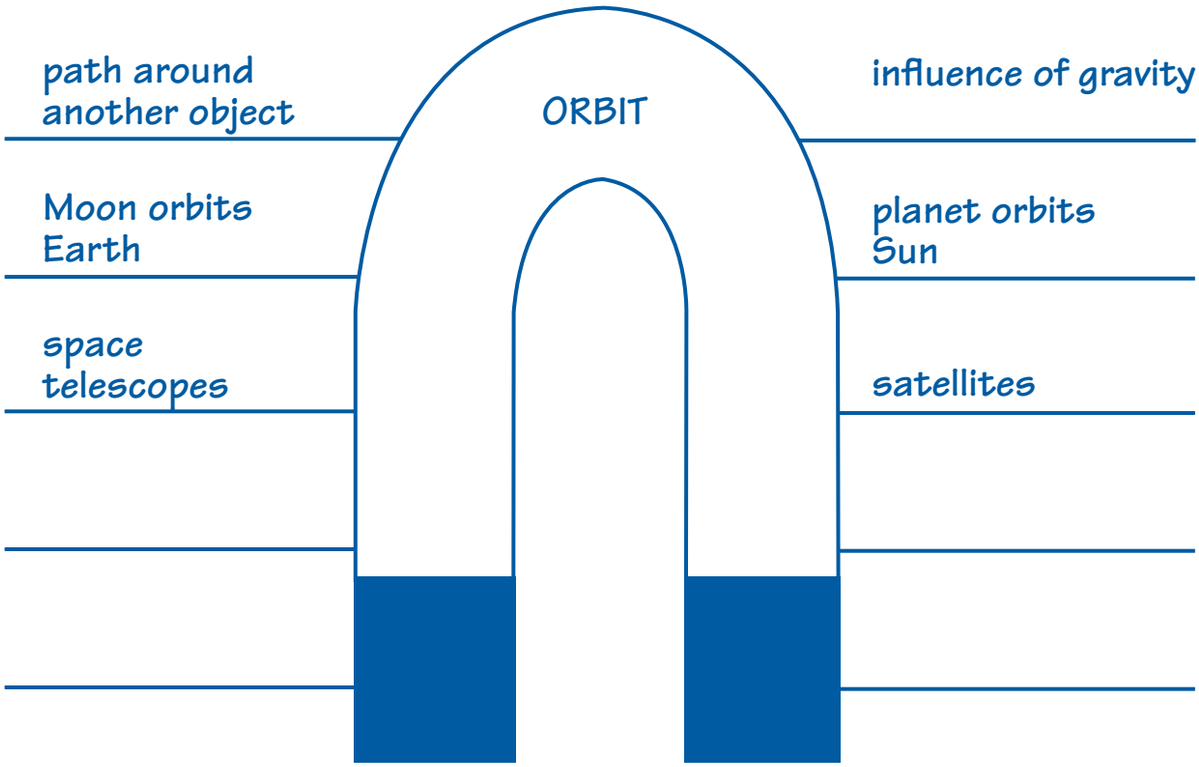
Magnet Word

1. Write the word or phrase in the magnet.
2. Think about and look for words and ideas that relate to the word or phrase.
3. Write the words and ideas on the lines around the magnet.



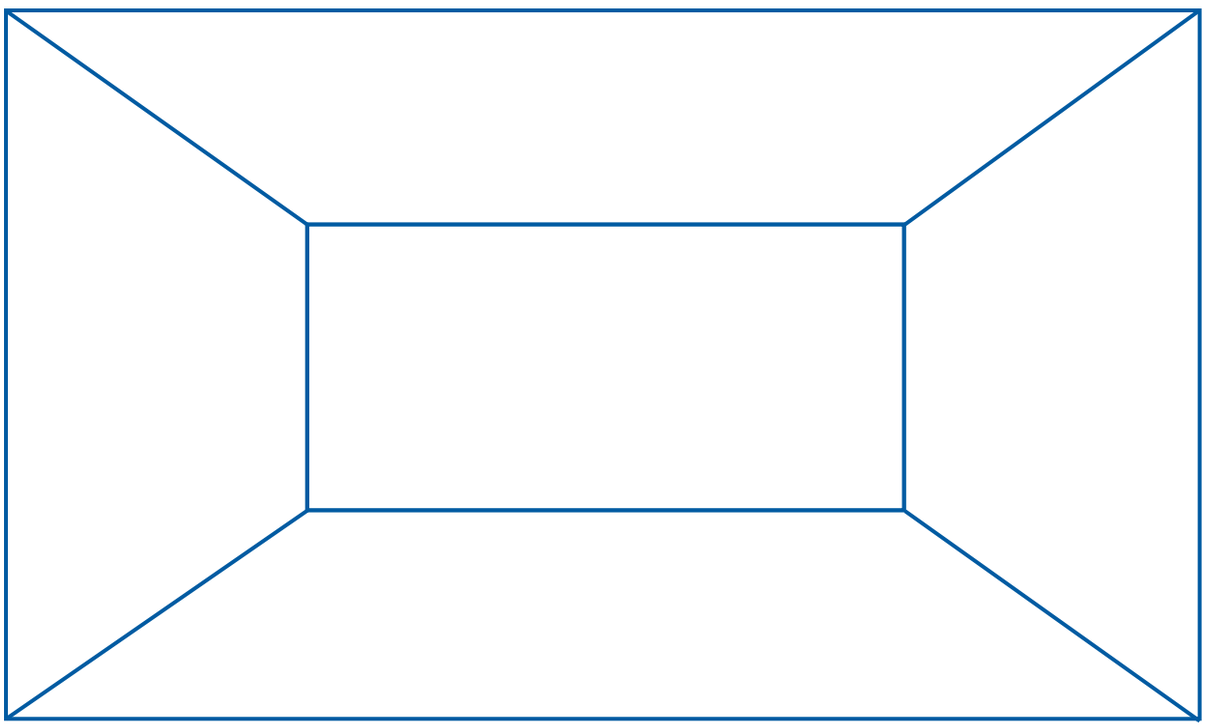
Magnet Word

1. Write the word or phrase in the magnet.
2. Think about and look for words and ideas that relate to the word or phrase.
3. Write the words and ideas on the lines around the magnet.



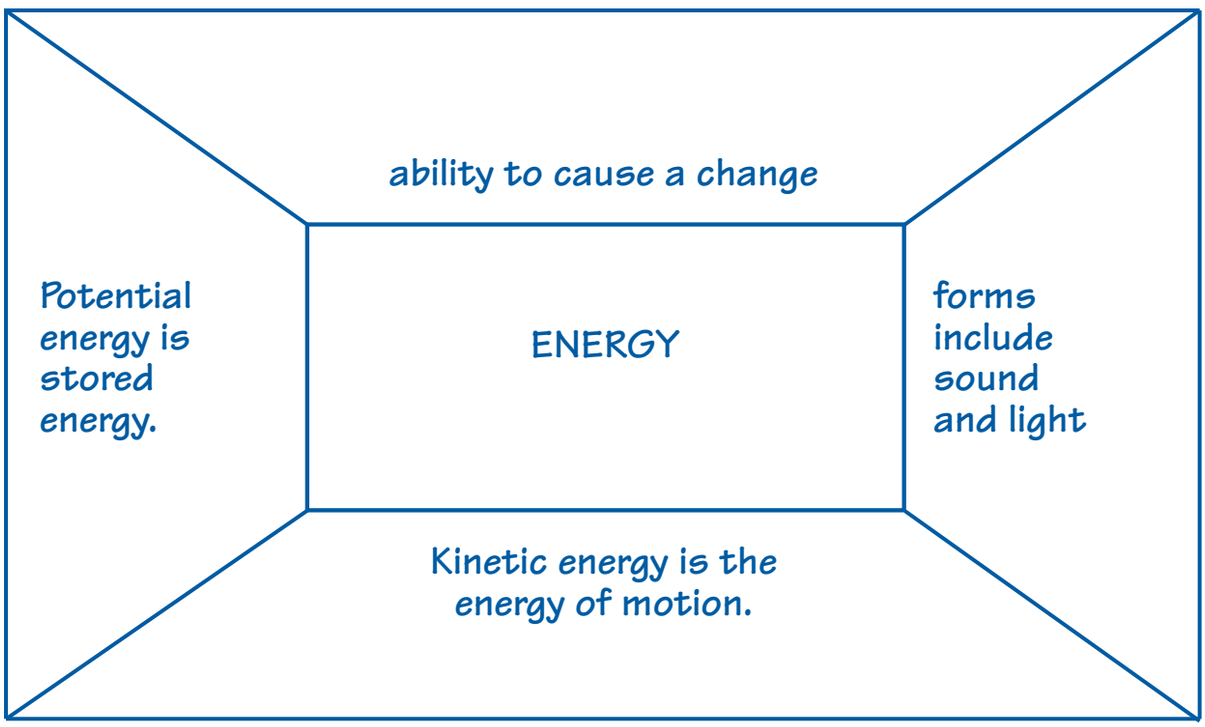
Frame Game

1. Write a term in the center of the frame.
2. Decide which information to frame with the term. You can use examples, a definition, descriptions, parts, sentences that use the term, or pictures.
3. You can change the frame to fit each term.



Frame Game

1. Write a term in the center of the frame.
2. Decide which information to frame with the term. You can use examples, a definition, descriptions, parts, sentences that use the term, or pictures.
3. You can change the frame to fit each term.



Student Vocabulary

Vocabulary Word: _____

1. Write the sentence in which the word appears in your text.

2. Based on how the word is used in the sentence, what do you think it means?

3. Ask a teacher or a friend, or look in a book for the actual definition.

   Expert:

   Expert's definition:

4. Use the word in a sentence of your own.

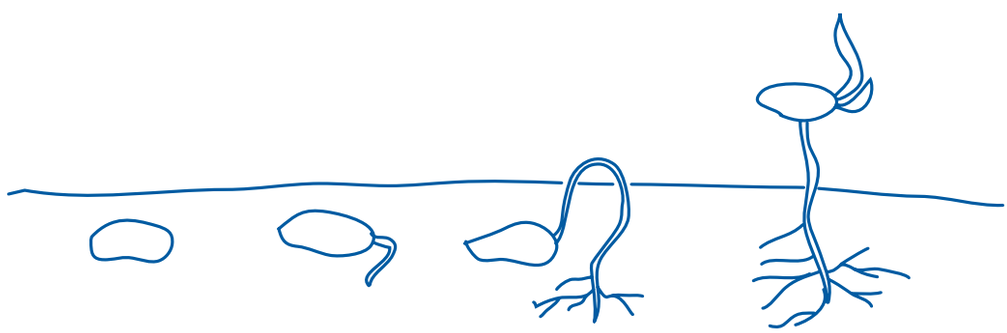
5. To help you remember the meaning, you can draw a picture; think of an action the word suggests to you; or connect the word to a song, story, or news report.

6. Explain why you chose this way to represent the word's meaning.

Student Vocabulary

Vocabulary Word: *germination*

1. Write the sentence in which the word appears in your text.
   If you've ever planted a seed that sprouted, you've observed germination.
2. Based on how the word is used in the sentence, what do you think it means?
   "planted a seed that sprouted" is a hint that "germination" may mean "growing from a seed"
3. Ask a teacher or a friend, or look in a book for the actual definition.
   Expert: *teacher*
   Expert's definition: *germination: the process of growing or sprouting*
4. Use the word in a sentence of your own.
   Spring is a time of germination for the seeds of many plants.
5. To help you remember the meaning, you can draw a picture; think of an action the word suggests to you; or connect the word to a song, story, or news report.



6. Explain why you chose this way to represent the word's meaning.
   Drawing is an easy way to show how a seed sprouts to illustrate "germination."

Sort Cards

1. Look over the following vocabulary words and think of two categories into which they might be sorted.

liquid	**radiation**	**volume**
conduction	**weight**	**convection**

2. Fill in the categories in the boxes below, then write the words that you think fall under each category.

Category: _____ Category: _____

Sort Cards

1. Look over the following vocabulary words and think of two categories into which they might be sorted.

liquid	**radiation**	**volume**
conduction	**weight**	**convection**

2. Fill in the categories in the boxes below, then write the words that you think fall under each category.

Category: properties of matter

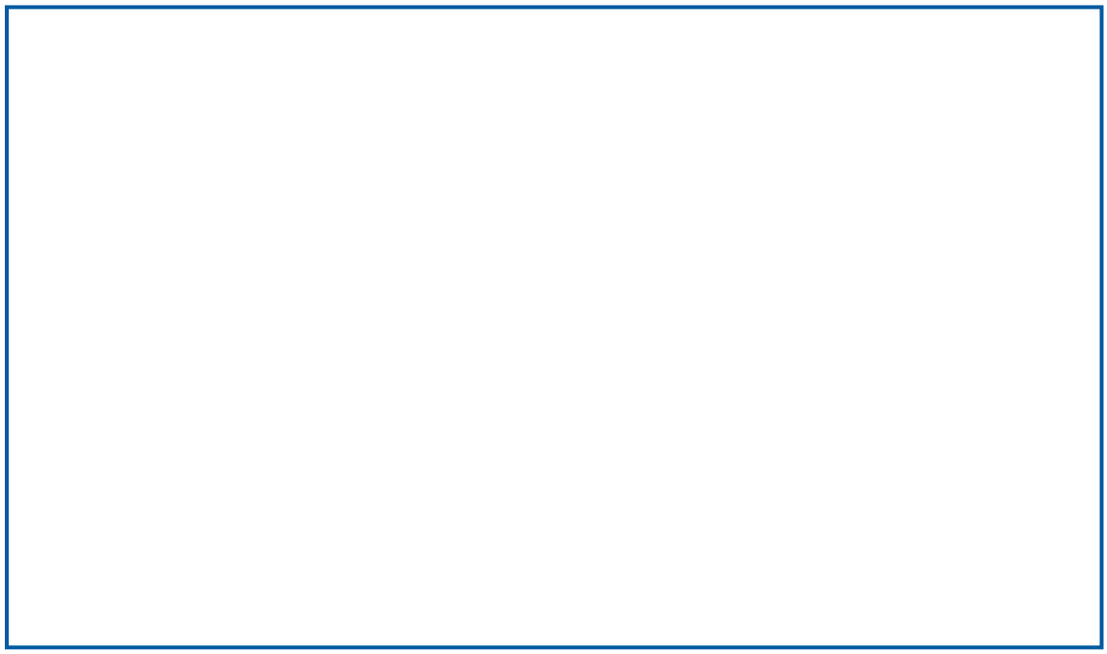
weight
volume
liquid

Category: types of heat transfer

convection
radiation
conduction

Word Splash

1. Look over the center word and the vocabulary words displayed around it.
2. Choose three vocabulary words. Write three sentences that predict how each of the words relates to the center word.
3. Read the assigned text to check the accuracy of your predictions.



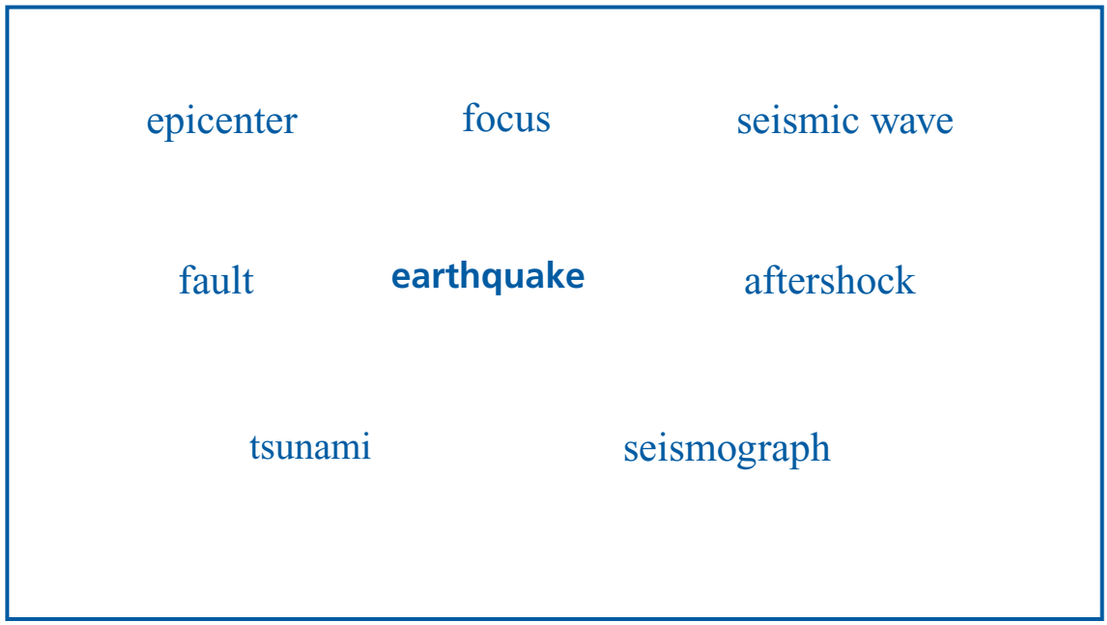
1. _____

2. _____

3. _____

Word Splash

1. Look over the center word and the vocabulary words displayed around it.
2. Choose three vocabulary words. Write three sentences that predict how each of the words relates to the center word.
3. Read the assigned text to check the accuracy of your predictions.



1. **Epicenter** contains the word "center," so it might mean the "center of an earthquake."

2. I know from the news that **tsunami** means "a huge wave." Maybe earthquakes set off tsunamis.

3. **Focus** is a word that means "concentrate on" or "make clearer." Maybe *focus* means "where the earthquake is strongest."

Context Clues: Restatement

A writer may **restate** the meaning of a difficult word within a sentence, defining it for you. Restatements are often signaled by words or phrases such as

or	**which is**	**that is**
also called	**also known as**	**in other words**

Some plate boundaries are divergent, that is, they move apart.

1. Identify the unfamiliar word.

2. Look for a word or phrase that may signal that a restatement follows.

3. Find the restated information.

4. Use this information to figure out what the unfamiliar word means.

5. Find the word in the dictionary and write the word and its definition.

Context Clues: Restatement

A writer may **restate** the meaning of a difficult word within a sentence, defining it for you. Restatements are often signaled by words or phrases such as

or	**which is**	**that is**
also called	**also known as**	**in other words**

Some plate boundaries are divergent, that is, they move apart.

1. Identify the unfamiliar word.
divergent

2. Look for a word or phrase that may signal that a restatement follows.
that is

3. Find the restated information.
they move apart

4. Use this information to figure out what the unfamiliar word means.
"They move apart" means that things are separating, so I think divergent means "moving apart or separating."

5. Find the word in the dictionary and write the word and its definition.
divergent: moving apart from a common point

Context Clues: Examples

A sentence may provide an **example** to help you figure out the meaning of a difficult word. Examples are often signaled by words or phrases such as

like	**for instance**	**such as**	**especially**
these	**for example**	**other**	**includes**

A polar bear's insulators, especially its layer of fat and specialized fur and guard hairs, allow the bear to live in the bitter Arctic cold.

1. Identify the unfamiliar word.

2. Look for a word or phrase that may signal that an example follows.

3. Find the example or examples. How does this information relate to the unfamiliar word?

4. Use this information to figure out what the unfamiliar word means.

5. Find the word in the dictionary and write its definition.

Context Clues: Examples

A sentence may provide an **example** to help you figure out the meaning of a difficult word. Examples are often signaled by words or phrases such as

like	**for instance**	**such as**	**especially**
these	**for example**	**other**	**includes**

A polar bear's insulators, especially its layer of fat and specialized fur and guard hairs, allow the bear to live in the bitter Arctic cold.

1. Identify the unfamiliar word.
   insulators

2. Look for a word or phrase that may signal that an example follows.
   especially

3. Find the example or examples. How does this information relate to the unfamiliar word?
   layer of fat, specialized fur and guard hairs; fat, guard hairs, and fur keep something warm; these words follow the word "especially," so they must be examples of insulators

4. Use this information to figure out what the unfamiliar word means.
   Since all three examples are things that keep the bear warm, insulators must mean things that keep in heat or prevent the loss of heat

5. Find the word in the dictionary and write its definition.
   insulator: something that prevents the passage of heat, sound, or electricity into or out of a material

Context Clues: Comparison or Contrast

A sentence may provide a **comparison** or a **contrast** to help you figure out the meaning of the word. Certain words or phrases signal comparison or contrast.

Some Comparison Signals		Some Contrast Signals	
like	similar to	but	although
as	also	unlike	however
related to	resembles	rather than	on the other hand

A car has headlights to detect what lies ahead; however, a submarine, like a dolphin, uses echolocation.

1. Identify the unfamiliar word.

2. Look for a word or phrase that may signal that a comparison or contrast follows.

3. Find the comparison or contrast.

4. Use this information to figure out what the unfamiliar word means.

5. Find the word in the dictionary and write its definition.

Context Clues: Comparison or Contrast

A sentence may provide a **comparison** or a **contrast** to help you figure out the meaning of the word. Certain words or phrases signal comparison or contrast.

Some Comparison Signals		Some Contrast Signals	
like	similar to	but	although
as	also	unlike	however
related to	resembles	rather than	on the other hand

A car has headlights to detect what lies ahead; however, a submarine, like a dolphin, uses echolocation.

1. Identify the unfamiliar word.

2. Look for a word or phrase that may signal that a comparison or contrast follows.

3. Find the comparison or contrast.
The car uses headlights, unlike the submarine, which uses echolocation and is compared to a dolphin.

4. Use this information to figure out what the unfamiliar word means.
A dolphin finds its way around the ocean by making sounds and bouncing them off of objects. Because the submarine is compared to a dolphin, I think echolocation means "using sound to find your way."

5. Find the word in the dictionary and write its definition.
echolocation: a process for determining location by sending out sound waves and analyzing the waves that are reflected back to the sender

Analogies

An **analogy** is an extended comparison between two subjects. Analogies can help you remember words and concepts. For example, the parts of a cell and their functions can be compared to the parts of a factory.

Read the concepts on the left side of the chart and fill in the right side with your own analogies.

Concept	Definition	Analogy (Like)
tectonic plates	rocky plates that make up Earth's crust	
exoskeleton	structure that protects the soft body parts of an animal that has no internal skeleton	
covalent bonds	a pair of shared electrons between two atoms	

Analogies

An **analogy** is an extended comparison between two subjects. Analogies can help you remember words and concepts. For example, the parts of a cell and their functions can be compared to the parts of a factory.

Read the concepts on the left side of the chart and fill in the right side with your own analogies.

Concept	Definition	Analogy (Like)
tectonic plates	rocky plates that make up Earth's crust	like pieces of a huge jigsaw puzzle; like pieces of broken asphalt
exoskeleton	structure that protects the soft body parts of an animal that has no internal skeleton	like a suit of armor; like protective sportswear
covalent bonds	a pair of shared electrons between two atoms	like two clouds overlapping; like two balls joined by sticks

Prefixes

A **prefix** is a word part attached to the beginning of a root, or base, word. The meaning of the prefix combines with the meaning of the word root to form a new word. For example, the prefix *non-* means "not," as in *nonporous,* which means "not porous."

Prefix	Meaning	Example	Definition	Other Words
micro-	small, short	microscope	tool that allows you to see small things	microphone, microfilm, microcosm
uni-	one	universe		
epi-	upon	epicenter		
circu-	around	circular		
sub-	under	subduction		

Suffixes

A **suffix** is a word part attached to the end of a root, or base, word. The meaning of the suffix combines with the meaning of the base word to form a new word. For example, the suffix *–or* means "one who," as in *investigator,* which means "one who investigates."

Suffix	Meaning	Example	Definition	Other Words
-ology	study of	biology	study of life	geology, cosmology, psychology
-arium, -orium	place for	solarium		
-cle	small	particle		
-ine	chemical	iodine		
-ite	mineral or rock	granite		

Word Roots

A **root** is the core of a word, or the part that contains the most important element of the word's meaning. Many words in science are formed using different word roots.

Word Root	Meaning	Example	Definition	Other Words
meter	measure	barometer	tool that measures air pressure	thermometer, diameter, centimeter
equ	equal	equinox		
quad	four	quadrant		
calc	lime, pebble	calcium		
tac, teg	touch	tactile		

Greek Word Origins

A **root** is the core of a word, or the part that contains the most important element of the word's meaning. Many words in science are formed using Greek roots.

Greek Root	Meaning	Example	Definition	Other Words
photo	light	photosyn-thesis	process in which organisms use light as an energy source	photography, telephoto, phototropic
therm	heat	thermostat		
ast	star	disaster		
geo	earth	geosphere		
gon	angle	polygon		

Latin Word Origins

A **root** is the core of a word, or the part that contains the most important element of the word's meaning. Many words in science are formed using Latin roots.

Latin Root	Meaning	Example	Definition	Other Words
alt	high	altitude	height of some-thing above a reference point, like sea level	altimeter, alto, altocumulus, altiplano
tract	pull, drag	traction		
aqua	water	aqueous		
cline	lean	syncline		
frag, fract	break	fraction		