

Warm-Up

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Name \_\_\_\_\_

## The Compass in Your Nose

You have a compass in your nose. It is a very small trace of iron located in the ethmoid bone between your eyes. This tiny piece of iron helps humans in direction finding. The iron is attracted to Earth's magnetic force, just as a compass pointer is attracted toward Earth's magnetic North Pole.

The human magnet works better on some people than on others. People have been tested on their ability to use this power. They have been blindfolded so they cannot see clues, such as the sun or the direction of objects. They are still often able to face north just as a compass needle does. However, some people are much better at this than others.

Tests have been done with magnets to prove this effect. Magnets placed near the right side of the head caused people to move to the right. Magnets placed to the left caused people to want to move to the left. This experiment proves that humans seem to be affected by magnetic fields. Many other animals, such as pigeons, salmon, dolphins, and honeybees, have the same ability to react to magnetic force. Try the experiment yourself and see if your personal "nose compass" is working!

### Check Your Understanding

- Where is the human compass located?
  - in the nostrils
  - in the brain
  - in the bone between the eyes
  - in the tip of the nose
- In which direction does the compass help orient humans?
  - west
  - north
  - south
  - east
- What might cause the compass in your nose to be disoriented in the wrong direction?
  - bright sunlight
  - standing near machinery with a strong magnet or electromagnet
  - wind
  - the moon
- Which of the following can you infer from the passage?
  - Humans are always aware that they are affected by magnetic fields.
  - People should carry a magnet with them.
  - Some people are more sensitive to magnetic fields than others.
  - both a and c

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Name \_\_\_\_\_

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## Snail Training

Garden snails are gastropods, which means “stomach-footed.” Most types of snails live in water, but these land creatures still need water. When the weather is hot and dry, they climb up a wall or branch and **estivate**, a process similar to hibernation. They seal their shells with thick mucus and don’t move until rain falls or a damp evening arrives. Wet weather provides a pleasant opportunity to find soft, wet plant food.

Because of their fondness for wet environments, snails can be trained to do several tricks. Place one or two garden snails on a wet paper towel and dampen the snails with water. They will soon emerge from their shells and glide along the paper towel eating some of it. You can soak a piece of yarn or

thick string and gently place the snail on the yarn. If you hold both ends of the wet yarn tightly, the snail will slowly glide along the yarn from one side to the other. It will also climb up the yarn if you hold it vertically, although even snails can lose their grip and fall off. Snails will even paint a picture, if you put them in wet food coloring and give them a piece of shiny paper to decorate. And who wouldn’t want a piece of art by a gastropod? It’s truly one of a kind!

## Check Your Understanding

- What was the author’s intent in writing the passage?
  - to describe the behavior of snails
  - to provide interesting ways to study the snail’s movement
  - to help the reader learn to eat snails
  - both a and b
- From the context of the passage, which word has a similar meaning to **estivate**?
 

a. late	c. hibernate
b. gastropod	d. move
- What encourages snails to come out of their shells?
 

a. wind	c. moisture
b. grass	d. sunlight
- Why are snails called gastropods?
 

a. They move on their stomachs.	c. They hide their feet in their stomachs.
b. They have pods on their bellies.	d. They need shoes to walk.



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## Earthworm Pets

Earthworms make fascinating pets. House your worms in a small box or plastic container. Be sure to collect several earthworms because they thrive better in groups than alone or in pairs. Perhaps they get lonely. Fill the box with soft soil and plant materials, such as leaves, grass, or vegetables. Try different plants to determine their favorite foods. Worms **decompose** plant matter and pass the digested matter out as “casts,” which enrich soil and make it excellent for plant growth. Earthworms need to be damp to breathe oxygen through their skins, but they will be forced out of water-filled tunnels because they cannot breathe in them. Earthworm tunnels loosen the soil, allowing water to penetrate and plants to sprout.

Observe how worms pull themselves along by stretching and contracting their long, segmented bodies. Use a magnifying glass to find the four pairs of tiny bristles on each segment. They use these bristles to help grip the walls of the tunnel or the soil above ground. Shine a flashlight on worms moving in the dark and notice their reactions. They “see” with their skin, which is light sensitive. Worms also react to some sounds but ignore others, so try playing different notes to your pet worms using a musical instrument to see which they like. Gently pet the worms and observe their reactions. Don’t be squeamish; instead, enjoy these unusual pets!

## Check Your Understanding

- How does the author feel about worms?
  - disgusted
  - interested and enthusiastic
  - bored
  - angry
- What does light-sensitive skin do?
  - It helps worms react to light.
  - It blinds them.
  - It improves their eyesight.
  - It covers their skin with eyes.
- Which senses does the author suggest you test on your worms?
  - touch
  - sound
  - skin sensitivity to light
  - all of the above
- From the content of the passage, what is the meaning of **decompose**?
  - to decay or break down
  - to die
  - to hold or grasp
  - to give birth

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Warm-Up

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## The Invention of Silly Putty®

Some of the best inventions happened purely by accident. James Wright was an engineer working for General Electric. While working in his lab one day, he accidentally mixed boric acid and silicone oil in a test tube. The substance he created was called a polymer. This is a substance consisting of giant molecules formed by chaining together many simpler molecules. This polymer had very different properties. It could bounce higher than a rubber ball. It could be stretched for a long distance without tearing. It did not rot or decay. It could even copy an image, like old newspaper print and comics, if pressed flat against the substance.

No one knew what to do with this new invention until a toy merchant came up with an idea. He realized that the material would make a great toy for children and adults. In 1949, it hit the market packaged in twelve little plastic eggs and sold to families as “nutty putty.” Later, the name was changed to Silly Putty®. It became one of the most popular toys of all time. Silly Putty is sold all over the world. It has never lost its popularity. More than nine million pounds of this strange substance have been sold. That’s quite a record for an accidental invention!

### Check Your Understanding

- Which two chemicals were mixed to create Silly Putty?
  - boric acid and oxygen
  - vinegar and silicone oil
  - silicone oil and boric acid
  - acids and bases
- What word describes “a substance with different properties and giant molecules made by chaining together smaller molecules”?
  - silicone
  - boric acid
  - molecules
  - polymer
- What can you infer about the copying ability of Silly Putty?
  - It appealed only to scientists.
  - Parents and children enjoyed the product because it could be used in so many ways.
  - It was only successful in the United States.
  - It doesn’t copy modern newspapers and comics as well as it did older ones.
- What is the main idea of the passage?
  - Silly Putty is a successful accidental invention.
  - Silly Putty is still very popular.
  - Silly Putty is a polymer.
  - Silly Putty was a great invention.



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Warm-Up

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Name \_\_\_\_\_

## Your Hair Is Dead

The hair on your head, arms, and any other place on your body is dead protein pushed through the skin by hair follicles. There are about five million hair follicles throughout the human body. You have approximately 120,000 follicles on your head. You have about 108,000 hairs on your head at any one time. If your hair averages two inches in length, you have 18,000 feet of hair on your head. If the hair on your head averages five inches long, you have about 45,000 feet of hair on your head. The average hair on your head grows about half an inch a month, and it grows fastest in the morning. You lose about seventy hairs a day. Your body will produce about one hundred feet of dead protein in a day and seven miles of hair in a year.

Hair **hibernates**. It grows in cycles. On the scalp, each hair grows continuously for three to five years and then enters a resting phase of about three months or so. The hair is shed but not replaced immediately. After another resting phase of several months, the follicle produces a new hair. You don't have to worry too much though. About 90 percent of the scalp is in the growing phase at all times. Eyebrow hairs stay short because their growing phase only lasts ten weeks. Eyelashes are replaced about every three months. You will grow about six hundred complete eyelashes in a lifetime. So brush your hair and enjoy it!

## Check Your Understanding

- What is the meaning of the term **hibernates**, when referring to hair?
  - Hair goes through several colors.
  - Hair sleeps every night.
  - Hair grows in cycles and then enters a resting phase.
  - Hair falls out and leaves you bald.
- How often are eyelashes replaced?
 

a. every ten weeks	c. every six months
b. every three to five years	d. every three months
- What is the author's purpose in writing the passage?
 

a. to encourage you to care for your hair	c. to inform the reader
b. to entertain the reader	d. to change your mind
- What can you infer about your own hair from the passage?
  - Some of the hair follicles are in a resting phase right now.
  - Hair grows at different rates in different parts of the body.
  - Red hair grows faster than black hair.
  - both a and b

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Warm-Up

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Name \_\_\_\_\_

## Sharks Are Survivors

A few swimmers are attacked and about six people are killed every year by sharks. Humans kill about one hundred million sharks every year. They are used for animal food, necklaces, fertilizer, shark-fin soup, shoes, wallets, and many other products. Sharks have been in existence for at least three hundred million years. They existed before, during, and after the dinosaur era. Today, there are about five hundred species of sharks living in the world's oceans. These seaborne predators are just as important to the ecology of the oceans as wolves, lions, bears, and other land predators are to the balance of nature on land.

The smallest shark in the world is the dwarf lantern shark. It is about the size of a

chocolate bar and feeds on small shrimp. The great white shark grows to at least twenty-three feet long. It is the largest **predatory** shark. For skin, all sharks have tiny tooth-like scales as tough as sandpaper. They have gill slits for breathing oxygen from water and jaws that can shoot forward to grab prey. Each jaw has rows of razor-sharp replaceable teeth. Some sharks use 20,000 teeth in a lifetime. A shark's skin is as sensitive as fingertips are to humans. Their ears can detect sounds too low for humans to hear. Their nostrils can detect scents in water. Gel pits in the nose can detect electrical impulses from the nerves of other animals. Sharks were designed for survival.

## Check Your Understanding

- What is the main idea of the passage?
  - Sharks eat too many people.
  - Sharks have sensitive nostrils.
  - Sharks are designed for survival and have survived a long time.
  - Sharks are useful to man.
- From the context of the passage, what is the meaning of **predatory**?
  - lives on plants
  - hunts and eats prey
  - man-eating
  - friendly
- Which of the following is a survival feature of sharks?
  - the ability to detect electrical impulses in water
  - the ability to detect smells in water
  - the ability to hear low sounds
  - all of the above
- Which word in the passage refers to the relationship between living things and their environment?
  - seaborne
  - predatory
  - ecology
  - survival

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Name \_\_\_\_\_

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## LEGO® Bricks

LEGO® bricks were invented by an out-of-work carpenter in Denmark. He started a small toy-making business in 1932. The carpenter named the business “LEGO” after two Danish words, “play well.” After starting his business, it took him over fifteen years to invent LEGO bricks. They were based on his wooden block carvings. The blocks interlocked and allowed a child to build with them. They were made of plastic and called Automatic Binding Bricks at first. The blocks had studs on top and were hollow underneath. They could easily be stacked and locked with each other. The first two colors were red and white. They were soon followed by green, blue, and yellow. The **unique** toy was an instant hit in Denmark and other European countries. It reached the United States in 1961

and was very popular by the 1970s. A special feature of LEGO toys is that the bricks can be arranged in more than a million different ways.

LEGO bricks can be made in about ten seconds from a kind of plastic. It is heated like bread dough. The material is pressed into molds and cooled. Out of every one million LEGO bricks made, only about twenty-six are rejected. Today, the LEGO Group sells more than 1,700 different shapes of LEGO bricks in every possible color. In the fifty years after its invention, more than 203 million LEGO building bricks have been made. This is why the LEGO Group is the fifth largest maker of toys. When is the last time you built something with LEGO bricks?

## Check Your Understanding

- Which of the following is a reasonable conclusion based on the passage?
  - LEGO bricks have remained popular for over fifty years.
  - Wooden building blocks lock together as easily as LEGO bricks.
  - All children love using LEGO bricks.
  - both a and b
- From the context of the passage, what is the best meaning of **unique**?
 

a. one	c. made of plastic
b. special and different	d. appealing to children
- Which of the following is the best topic sentence in the passage?
 

a. paragraph one, second sentence	c. paragraph two, second sentence
b. paragraph one, sixth sentence	d. paragraph two, sixth sentence
- Which of the following information would be irrelevant to the passage?
  - There are LEGOLAND parks in three nations.
  - The LEGO Company was created in 1932 before LEGO bricks were invented.
  - Tinkertoys® are sometimes used by children to build things.
  - Ole Kirk Kristiansen invented LEGO bricks in Denmark.



Warm-Up

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Name \_\_\_\_\_

## QWERTY

The first practical typewriter was created in 1867 by Christopher Sholes and Carlos Glidden. The two inventors also designed the standard keyboard layout. It is nicknamed QWERTY for the first six letters on the top line of the keyboard. The arrangement seems senseless. However, it was designed to prevent the keys on mechanical typewriters from catching each other. If they got caught, the typist had to stop typing and pull them apart.

The QWERTY arrangement forced typists to work a little slower. Some letters were placed in hard to reach places. For example, *A* is beneath the little finger on the left hand. *A* is a commonly used letter, but it is assigned to

the weakest finger. Therefore, it takes a bit more time to type. *E* is the most used letter in the English language, but *E* is placed on the top row. It is harder to reach. The middle row has the easiest-to-reach letters, but they are not the most commonly used. Some letter combinations like *sh* and *th* were placed apart from each other. As a result, typewriting keys were less likely to get caught with each other.

Why don't we invent a new and simplified keyboard arrangement? Millions of people would be required to learn a new system. The manual typewriter may be long gone, but quirky QWERTY is alive and likely to remain in use for decades to come.

## Check Your Understanding

- From the context of the passage, what is the meaning of the word "QWERTY"?
  - manual typewriter
  - questions asked
  - quick eraser
  - It has no meaning.
- What conclusion can you draw from reading the passage?
  - People should type with only two fingers.
  - Everybody wants a new keyboard design.
  - Everybody should return to using manual typewriters.
  - The keyboard system was designed for a useful purpose.
- What inference can you draw from the last paragraph?
  - People would probably resist changes to the standard keyboard design.
  - Nobody should use typewriters.
  - QWERTY is a new computer design.
  - Everybody should use computers.
- Why is the letter *E* on the top row of the keyboard?
  - It is easier to reach there.
  - It is the most used letter in English.
  - It is a little harder to reach in that location.
  - Nobody ever uses the letter.

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Warm-Up

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## Grizzly Bears

Grizzly bears are usually dark brown, but they vary from yellow-brown to black. White-tipped hairs provide the “grizzled” appearance that gives them their name. Grizzlies have a distinctive hump of solid muscle over the shoulders that gives them great strength. They can weigh from 320 to 1,500 pounds. The Alaskan Brown Bear, a grizzly, can reach 1,700 pounds, making it the largest land carnivore.

Although they usually avoid humans, grizzlies are immensely strong, unpredictable, and dangerous. They can bite through iron, bend rifle barrels, slice open cars with their claws, and smash through cabin doors looking for food. Running as fast as thirty-five miles an hour, they can easily outrun a person. Grizzlies are **omnivorous** feeders. They kill

and eat large mammals, such as elk, moose, mountain goats, sheep, and cattle. They eat carrion, or dead animals, killed by other predators. They also eat fish, especially salmon, which they catch during spawning season. Grizzlies are nimble enough to catch mice, squirrels, and other small mammals and insects. They feed on many kinds of plants, including roots, sprouts, berries, and fungi.

During its winter sleep, a grizzly will lose about two pounds a day and may wake up from its sleep at half its weight. They are not true hibernators and are easily awakened. Grizzlies give birth in their dens during the winter. They care for their cubs for as long as five years. A grizzly’s life span in the wild ranges from fifteen to thirty-four years.

## Check Your Understanding

- From the context of the passage, what is the meaning of **omnivorous**?
  - picky eater
  - eats only meat
  - eats only plants
  - eats both plant and animal foods
- What color is suggested by the word “grizzled” to describe the bears’ appearance?
  - white or streaked with white
  - jet black
  - dark brown or streaked with dark brown
  - yellow or streaked with yellow
- What should people avoid doing when they are in an area frequented by bears?
  - screaming and chasing after a bear
  - running away from a bear
  - leaving food out in cars and cabins
  - all of the above
- Which word refers to “the decaying flesh of a dead animal”?
  - omnivorous
  - carrion
  - hibernators
  - grizzled



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Warm-Up

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Name \_\_\_\_\_

## Slinkity Slinkys®

The Slinky® was invented by Richard James, a naval engineer during World War II. He was experimenting with coiled tension springs. He was trying to design a meter to measure horsepower for ships. James dropped one of the coiled springs on the floor one day and was both amazed and amused to watch the spring “walk” across the floor. He played and experimented with the spring to see what else he could make it do.

James immediately recognized the appeal the spring would have as a toy. He experimented with many versions, trying to determine which length of wire and which thickness would be best. He eventually settled on eighty feet of

thin, coiled wire. His wife, Betty, is given credit for the name Slinky, which is derived from a Swedish word meaning **sinuous**. The name also sounds a little like the “slinkity” noise that the toy makes when it “walks.”

The first versions of the toy were sold in Gimbel's Department Store in Philadelphia in 1945 for \$1.00. It was an instant hit, selling four hundred in less than two hours. Slinkys are now sold on six continents. Enough wire has been used in making Slinkys to circle the world more than 130 times. The distance around the world at the equator is about 25,000 miles. That is a lot of wire for a lot of Slinkys!

## Check Your Understanding

- From the context of the passage, what is the meaning of **sinuous**?
  - unusual
  - bending or winding in and out
  - evil
  - short and thin
- Which of the following is a good summary of the article?
  - Slinkys are fun to play with.
  - The Slinky is a successful toy resulting from an accidental discovery and careful experimentation.
  - The Slinky was first used to measure speed in naval ships.
  - Slinkys are made from coiled wire.
- What can you infer from the information in the last paragraph?
  - Slinkys are still a popular toy.
  - Slinkys are no longer sold in the United States.
  - There is no longer enough wire to make Slinkys.
  - The only place you can buy Slinkys is in Philadelphia at Gimbel's.
- On which of the seven continents are Slinkys probably *not* sold?
  - North America
  - Europe
  - Asia
  - Antarctica

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Warm-Up

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**13****Keeping Toads and Frogs**

Toads and frogs are well-known amphibians. They live on land and in water. Toads are squat and plump and have rough, warty-looking skin and webbed, rear feet. North American frogs are large with slim waists, long legs, pointed toes, and webbed, hind feet. Frogs and toads can be kept in a small plastic or glass aquarium. Divide the aquarium into a water area and a muddy section by using small pebbles or a piece of plastic. It's important that frogs and toads keep their skin damp at all times.

Both toads and frogs eat insects, which you can collect outside or purchase from any pet store. Live mealworm larvae, crickets, flies, and other similar prey will satisfy them immensely. Watch a toad as it eagerly prepares to catch its prey. The toad's eyes

spot movement, and it watches the prey carefully and gauges the distance between itself and its intended target. Sometimes, the toad will creep a little closer or just raise its body. The tongue of the common toad is attached to the front of its mouth and is sticky, but it flicks out like a whip to catch its prey. Then it easily snatches the prey back into its mouth. The toad may also use its front foot to push large insects into its mouth. It closes its eyes as it swallows the food. Toads can sometimes be trained to eat dead prey if the insect is dangled in front of the toad on a string. See for yourself which other foods toads or frogs will eat! Enjoy watching your toads and frogs before returning them to their natural environment.

**Check Your Understanding**

- What word refers to animals that live on both land and water?
  - prey
  - warty
  - amphibian
  - gauges
- In which sentences would you find information to compare and contrast frogs and toads?
  - paragraph two, sentences one through four
  - paragraph two, sentences five through eight
  - paragraph one, sentences one through four
  - paragraph one, sentences five through eight
- What part of a toad's body is compared to a whip?
  - front leg
  - tongue
  - eye
  - rear leg
- Why do you think the passage says you should return your frog or toad to its natural environment?
  - to preserve the balance of nature
  - to respect all living creatures
  - to recognize the importance of all creatures in the wild
  - all of the above



/4

## Save That Pencil

Students tend to lose their pencils, break them without thinking, and find all sorts of non-writing uses for them. The pencil in your hand is one of the most remarkable and useful tools in the world. A man named Friedrich Staedtler invented the modern “lead” pencil in about 1622 in Germany. He was the first person to mass-produce them.

Staedtler did not use lead, and there is no lead in your pencil. However, some pencils did use lead until the early twentieth century. Lead will make a mark, but it is **toxic** and not safe to use either in the hands or around the face and mouth where many pencils sometimes stray. Staedtler used black graphite, a soft form of carbon.

Graphite is still used today. It is mixed with clay and wax and heated to high temperatures. The modern pencil is a superb piece of technology. The pencil is less messy than ink, can be easily erased, and makes clear, dark, smooth, and smudge-free lines. The modern pencil can produce a continuous line twenty-two miles long. That’s a distance of 116,160 foot-long rulers laid end to end. Enjoy your pencil. For a few cents each, it is a remarkable bargain.

## Check Your Understanding

- Which is *not* a reason pencils are useful?
  - Their mark can be easily erased.
  - They make smooth lines.
  - They are not messy.
  - They don’t break.
- From the context of the passage, what is the meaning of **toxic**?
  - pretty
  - delicious
  - poisonous
  - clean
- Which of these statements can you infer from the passage?
  - Every pencil is used for twenty-two miles of writing.
  - Finding a useful, inexpensive writing material was important to people in earlier times.
  - Students put pencils in or near their mouths.
  - both b and c
- Which of these sentences is a topic sentence in paragraph three?
  - The modern pencil is a superb piece of technology.
  - Staedtler used black graphite, a soft form of carbon.
  - Staedtler invented the modern “lead” pencil about 1622 in Germany.
  - For a few cents each, it is a remarkable bargain.



Name \_\_\_\_\_

**15****The Safety Pin**

The safety pin was designed to hold separate pieces of cloth together. It was invented on April 10, 1849, because the inventor owed a friend \$15. Walter Hunt was a mechanic who lived in New York. He felt obliged to repay his debt right away. Hunt experimented with a piece of wire for three hours that afternoon. He designed the safety pin with a spring and a clasp to hold the pin in place. Hunt created the model and wrote the design and application for the patent. He sold the invention that day for \$400. He immediately paid back his \$15 debt.

Hunt never received another penny for this invention. Stores have sold millions of dollars worth of safety pins, and the pin is still in use

today. During the course of his lifetime, Hunt also designed and created a streetcar bell and a stove that burned hard coal. He created a flax-spinning machine and a knife sharpener. Hunt built a repeating rifle and a nail-making machine. Hunt made a paper collar for dress shirts of the day. This inventive genius also designed an ice plow, a metal bullet that exploded, and an early version of the sewing machine. He never patented the sewing machine because he didn't want to put seamstresses out of work. His new machine would have cost them their jobs. For all of his creative gadgets and clever ideas, Walter Hunt never seemed to make much money. However, he made life easier for a lot of people.

**Check Your Understanding**

- From the context of the passage, what conclusion can you draw about the character and personality of Walter Hunt?
  - Hunt was creative and imaginative.
  - Walter was persistent in working on a project.
  - Hunt felt obligated to pay off his debts promptly.
  - all of the above
- What is a clasp used for on a safety pin?
  - a metal fastener to hold things together
  - a hand grip
  - a spring
  - a circle
- Which piece of information would be least relevant to the passage?
  - Hunt recognized simple needs that people had for daily life.
  - Hunt belonged to a religious group who believed in being self-sufficient, reliable, and trustworthy.
  - He patented his invention.
  - the name of the person to whom Hunt owed money
- Which of the following is an opinion and *not* a fact?
  - Walter Hunt was the greatest inventor of all time.
  - Everyone should be an inventor.
  - Walter Hunt created several inventions.
  - both a and b

