MCMS
7th Grade
NTI Packet
Day 14

MCMS

7th Grade Math

NTI Day #14

Name _____ Date _____ Class _____

LESSON 5-2

Reteach

Rates

A **rate** is a ratio that compares two different kinds of quantities or measurements. Rates can be simplified. Rates sometimes use the words *per* and *for* instead of *to*, such as 55 miles per hour and 3 tickets for $1.

The scale on a map might be 3 inches equals 60 miles. Simplify by dividing both numerator and denominator by the same number.

$$\frac{3 \text{ inches}}{60 \text{ miles}} = \frac{3 \div 3}{60 \div 3} = \frac{1 \text{ inch}}{20 \text{ miles}}, \text{ or 1 inch to 20 miles}$$

A **unit rate** is a rate per 1 unit. So, in a unit rate, the denominator is always 1.

Miguel can type 180 words in 4 minutes.

$$\frac{180 \text{ words}}{4 \text{ minutes}} = \frac{180 \div 4}{4 \div 4} = \frac{45 \text{ words}}{1 \text{ minute}}, \text{ or 45 words per minute}$$

rate — unit rate — word form

Find each unit rate. Write in both fraction and word form.

1. Film costs $7.50 for 3 rolls.

$$\frac{\$7.50}{3 \text{ rolls}} = \frac{7.50 \div ___}{3 \div ___} = \frac{\$ ___}{1 \text{ roll}}$$

Word form: _____

2. Drive 288 miles on 16 gallons of gas.

$$\frac{288 \text{ mi}}{16 \text{ gal}} = \frac{288 \div ___}{16 \div ___} = \frac{___ \text{ mi}}{1 \text{ gal}}$$

Word form: _____

3. Earn $52 for 8 hours of work.

$$\frac{\$52.00}{8 \text{ hr}} = \frac{52 \div ___}{8 \div ___} = \frac{\$ ___}{\text{hr}}$$

Word form: _____

4. Use 5 quarts of water for every 2 pounds of chicken.

$$\frac{5 \text{ qt}}{2 \text{ lb}} = \frac{5 \div ___}{2 \div ___} = \frac{___ \text{ qt}}{\text{lb}}$$

Word form: _____

5. Snowfall of 12 inches in 4 hours

_____

_____

6. 90 students and 5 teachers

_____

_____

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Name _____ Date _____ Class _____

LESSON 5-2

Problem Solving

Rates

Write the correct answer.

1. A truck driver drives from Cincinnati to Boston in 14 hours. The distance traveled is 840 miles. What is the truck driver's average rate of speed?

_____

2. Melanie earns $97.50 in 6 hours. Earl earns $296.00 in 20 hours. Who earns a higher rate of pay per hour?

_____

3. Mr. Tanney buys a 10-trip train ticket for $82.50. Ms. Elmer buys an unlimited weekly pass for $100 and uses it for 12 trips during the week. Write the unit cost per trip for each person.

_____

_____

4. Metropolitan Middle School has 564 students and 24 teachers. Eastern Middle School has 623 students and 28 teachers. Which school has the lower unit rate of students per teacher?

_____

Choose the letter for the best answer.

5. Which shows 20 pounds per 5 gallons as a unit rate?

   A $\frac{20 \text{ lb}}{1 \text{ gal}}$

   B $\frac{4 \text{ lb}}{1 \text{ gal}}$

   C $\frac{5 \text{ lb}}{1 \text{ gal}}$

   D $\frac{1 \text{ gal}}{4 \text{ lb}}$

6. What is the unit price of a 6-ounce tube of toothpaste that costs $3.75?

   F $0.06

   G $0.23

   H $0.62

   J $0.63

7. Max bought 16 gallons of gas for $40.64. Lydia bought 12 gallons of gas for $31.08. Kesia bought 18 gallons of gas for $45.72. Who got the best buy?

   A Max got the best buy.

   B Lydia got the best buy.

   C Lydia and Kesia both paid the same rate, which is better than Max's rate.

   D Max and Kesia both paid the same rate, which is better than Lydia's rate.

8. A pack of 12 8-ounce bottles of water costs $3.36. What is the unit cost per ounce of bottled water?

   F $0.03 per ounce

   G $0.04 per ounce

   H $0.28 per bottle

   J $0.42 per bottle

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Name Date Class

7th Science
NTI 14 (1 page)

SECTION 3 Enrichment

The Gulf Stream

The Gulf Stream is one of the most important oceanic currents in the world. It is responsible for warmer climates in north Atlantic countries, like Iceland and the countries of western Europe. The Gulf Stream acts as a conveyor belt—moving warm ocean water into the icy cold waters of the north polar seas while the cold northern waters sink to the ocean bottom because they are very dense. This cold water flows south along the bottom of the ocean to the equator. As the cold waters flow south, the warmer equatorial surface layers of the ocean are pulled to the north. This warm water is pulled up and around the entire Atlantic Ocean, keeping climates relatively warm along the European coasts.

World Traveler

The Gulf Stream begins near Africa as an equatorial current formed when winds blow surface water from Africa westward to the Caribbean Sea. Warm water flowing out of the Gulf of Mexico meets the equatorial current in the Florida Straits between the Caribbean, Cuba, and the tip of Florida. From here, the Gulf Stream is then pulled north by the undertow movement of the cold polar water flowing south. The warm water continues up past Newfoundland, Greenland, Iceland, and Norway. It continues down along the western side of France, Spain, and back to Africa where the winds blow it west again.

Ponce de Leon, a Spanish explorer of the early 1500s, was the first person to describe the Gulf Stream current. Ben Franklin later put together puzzling stories from ship captains about how it took longer to sail from London to America than from America to London. He boarded a ship, sailed the current of the Gulf Stream and charted the first map of the current.

New Information

One of the most recent discoveries about the Gulf Stream is that during the ice ages it "shuts down." A scientist, Jean Lynch-Stieglitz, looked at oxygen levels in the shells of tiny organisms called foraminifera, found in muds that were at least 20,000 years old. Oxygen isotope levels change when climate changes. When it is cold, levels of O^{16} are lower in foraminifera shells, and O^{18} is high. Her study showed that during the ice ages, the Gulf Stream was very slow and did not carry warm water up to the poles as it does today. Whether the shutdown of the Gulf Stream caused the ice ages or the ice ages caused the shutdown is not known.

What we do know is that today the Gulf Stream current has a huge effect on climate in many parts of the world. If the Gulf Stream changes again, so will the climate. Or is that vice versa?

1. Where do winds start the current that will form the Gulf Stream?

2. What causes warm water in the Gulf of Mexico to be pulled toward the North Atlantic?

3. Has the Gulf Stream current always been as active as it is today? Explain your answer.

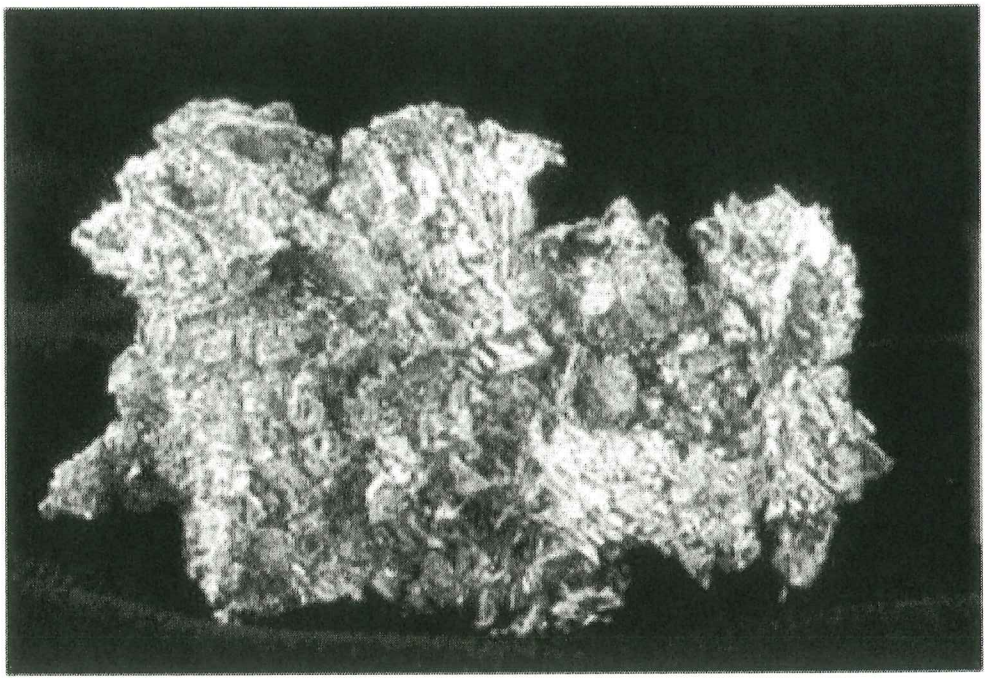
4. Why do you think the Gulf Stream current does not flow down into the southern hemisphere?

Meeting Individual Needs

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The Allure of Gold

by ReadWorks



The Egyptians used it to create funeral masks for their pharaohs. The Incas called it the "sweat of the sun." It is used to make medals for the best athletes in the world. It symbolizes wealth and riches. Over the centuries, gold has become important to humans. The heavy metal has cultural and economic meaning for human civilizations around the world. But this wasn't always the case.

Gold was used to make jewelry thousands of years ago. Some of the oldest pieces found date before 4000 B.C. Over the centuries, other cultures developed the ability to mine gold and began to use it to buy goods and services. The Ancient Greeks used gold as a form of currency and mined the metal throughout the Middle East and the Mediterranean. The Roman Empire also learned how to mine gold. Ancient Romans built waterwheels and diverted streams of water to extract gold from rivers.

The lure of gold has had a major impact on the course of history in the United States as well. When gold was found in California in 1848, it triggered a movement called the gold rush. Thousands of settlers moved west, hoping to find gold and become rich. In total, 300,000 people came from all over the world to California during the gold rush. Before the gold rush, San Francisco was a tiny town of only 200 people. By the end of the gold rush in 1870, San Francisco's population had grown to 150,000 people. Thousands of Native Americans were displaced by the new settlers and the natural environment was dramatically transformed.

So what exactly is gold? What are the properties of this metal that has become so important to human society? Gold is a pure chemical element and its symbol on the Periodic Table is *Au*. The symbol, Au, comes from the Latin word for gold, *aurum*. Gold's atomic number is 79, one of the higher naturally occurring atomic number elements. Even for a metal, gold is quite heavy-over 19 times

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heavier than water.

Scientists believe that gold was formed by explosions in space. Dusts that contained metals, including gold, were spread by these explosions throughout the galaxies until they condensed into the solar system and planets where we now live. Because the core of the earth was hot and molten when the planet formed, almost all of the gold sank into the earth's core where we cannot reach it. The gold that humans now find on the surface of the earth came from asteroids that hit the earth billions of years ago.

Gold originally acquired importance to humans because of its appearance. In societies from India to Egypt, gold was used to make decorative objects and jewelry. Unlike silver and some other metals, gold does not lose its brilliance or tarnish when it is exposed to water or air. Gold is also exceptionally resistant to the effects of acid and does not corrode easily. Like other metals, gold is highly conductive of electricity. It can be used in electronics, but because it is so expensive it is rarely used. There are only two metals that are more conductive than gold, based on volume: copper and silver.

Gold is present in the planet's oceans, with significant amounts of the metal in and below the water. It is estimated that in all of the earth's seawater there are approximately 15,000 tons of gold. Although many people have tried to extract gold from the oceans, no one has been successful at recovering gold from seawater.

When it is unmixed with other metals, gold is actually quite soft and malleable. This flexibility makes it easy to use gold in many different ways. A single gram of gold can be hammered into a thin sheet that is one square meter. You can even hammer gold leaf until it is so thin, it becomes transparent.

Because gold is so soft, it is often combined with other metals to make an alloy. The rose gold or white gold that is often found in contemporary jewelry is made by combining gold with other metals including copper, silver, nickel and palladium. Pure gold is measured by weight. Scientists use another term, *karat*, to express how much gold is present when it is combined with another metal. In these circumstances, pure gold is described as 24 karat gold. When gold is mixed with other metals, it becomes 22 karat, 18 karat, 14 karat or 10 karat gold.

Historically, gold was especially easy to melt and work with because it was often found in pure nuggets. Most other metals are only found in ore-bodies-mixes of rock and metals that are more difficult to separate. Gold is also found in ore, distributed in small particles or bands inside rock. When the rock breaks down naturally, for example, due to a river or stream passing over it, the gold particles are released into the debris. In the case of the river, this means that tiny gold nuggets can be found in the sand on the riverbank. There are other nuggets and rocks that look similar to gold, most notably pyrite (also known as "Fool's Gold"). Pyrite is an iron sulfide that looks like gold and may have very small amounts of gold in it. In addition to iron, gold is often found in metal solid solutions with silver or with quartz. A total of 174,100 tons of gold have been mined throughout human history and over three-fourths of this gold has been extracted since 1910.

Most of the gold currently sold in the world comes from mining. South Africa has one of the largest gold mining economies in the world. While this has brought wealth to the country, it has also caused some problems with pollution; mine waste releases harmful acid into the environment. As mines near the surface run out of gold, miners burrow deeper under the ground. Some gold mines are as deep as three miles under the earth's surface. Once a mine is dug, the gold must be extracted from the ground, separated from the ore, and then refined into pure gold. Only at that point can it be poured

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into bars for investment or made into fine jewelry. It may seem like a lot of work, but a single ounce of gold is worth as much as $1,300. It doesn't look like gold mining will stop any time soon.

Gold has impacted, and will continue to impact, human society and history. Whether used as jewelry or currency, gold carries value. Its properties-weight, durability, malleability, rarity, and beauty-combine to make it a natural symbol of wealth and prosperity. People want gold. Its pursuit has driven economic and technological development across the ages, all over the globe, from South Africa to California and beyond. But not without cost: the pursuit of gold has negative impacts, both environmental and social. Nevertheless, this precious mineral formed in space continues to inspire us. We, like the ancient peoples who first discovered it, are touched by the allure of gold.

Name: _____ **Date:** _____

1. According to the passage, gold was used to make which item thousands of years ago?

A. baskets

B. seashells

C. jewelry

D. clothing

2. The cause of the gold rush was the discovery of gold in California in 1848. What was an effect of the gold rush?

A. Thousands of settlers moved west, leading to the growth of cities like San Francisco.

B. Thousands of Native Americans started business based on gold and became rich.

C. Some farmers started trading their bushels of corn for baskets of tomatoes as part of a barter system.

D. Societies in China, South Asia and parts of Africa started using shells as a form of money.

3. Read the following sentences: "Gold was used to make jewelry thousands of years ago. Some of the oldest pieces found date before 4000 B.C. Over the centuries, other cultures developed the ability to mine gold and began to use it to buy goods and services. The Ancient Greeks used gold as a form of currency and mined the metal throughout the Middle East and the Mediterranean."

Based on this information, what can be concluded about the use of gold?

A. Gold has been used for only one purpose throughout history.

B. Gold has had different uses throughout history.

C. Gold was primarily used only by ancient civilizations.

D. Gold was used more in ancient times than it has been used in modern times.

4. Based on the passage, what can be concluded about the earth's supply of gold?

A. Humans have used up nearly all of the earth's supply of gold.

B. Humans have used up half of the earth's supply of gold.

C. The earth's supply of gold increases gradually from year to year.

D. Humans have used up little of the earth's supply of gold.

5. What is this passage mainly about?

A. jewelry making in ancient civilizations

B. the properties and use of gold

C. the use of gold throughout different time periods

D. the development of currency systems

6. Read the following sentences from the passage: "A single gram of gold can be hammered into a thin sheet that is one square meter. You can even hammer gold leaf until it is so thin, it becomes **transparent**."

As used in this passage, what does "**transparent**" most nearly mean?

A. see-through

B. cloudy

C. shiny

D. complex

7. Choose the answer that best completes the sentence below.

_____ gold is very valuable, gold mining will not stop any time soon despite the fact that it is a lot of work and can lead to pollution.

A. However

B. Although

C. Because

D. Consequently

8. What are some of the uses for gold described in the passage?

9. According to the passage, why did gold originally acquire importance to humans?

10. Explain why gold mining will not stop any time soon. Use evidence from the passage to support your answer.

On the Road [The Run Series, #4]

by Lynne Stahl



"That doesn't look good."

Dennis and Mac glanced at each other, then over their shoulders at the girl. She was huddled in the back of the truck. Her eyes were wide with horror as she stared down at the gash on her leg. Dennis forced his own gaze back to the road ahead of him. Sunnydale was shrinking quickly in the rearview mirror. For a second, the only noise was the truck's engine as the group sped across the abandoned countryside.

"Well, I guess we found Anna," said Mac, "Now what?"

"Let's find a safe spot, like we planned," replied Dennis, "Maybe we can set up camp in the woods around here." He gestured to the west, where a thick tree line rose up not far from the road. Whether the seclusion it offered was inviting or ominous, nobody could decide.

"Will Anna be okay?" Jeremiah piped up, looking worried. He turned and mouthed, "Are you all right?" through the rear windshield. She gave a weak nod.

"I'm sure she'll be okay," said Mac with confidence. He didn't want the boy, who was clearly scared, to panic. But Mac felt close to panic himself. Would Anna be okay? He looked at Dennis, whose furrowed brow suggested that he was having the same thoughts. Mac glanced back at Anna again. She was hugging legs to her chest, her forehead pressed against her knees. Mac saw that she was shaking. He couldn't tell if it was from the bumping of the truck on the uneven road or from crying. The wound on her leg stood out angrily against her pale skin.

served.

"How do you think the plague spreads?" asked Mac carefully, "I mean, how does someone turn into a zombie?"

Dennis shuddered, then seemed to steel himself. "It doesn't matter," he said firmly, "We saved her, and we're going to help her. Her leg is a mess." He steered the truck gently off the road toward the tree line. He slowed down, not wanting to jostle Anna in the back of the truck.

Mac nodded, "So we're a party of four now. Well, if I learned anything from my time on the farm, it's how to clean up messes." He tried to force some cheer into his voice for his own sake as much as for his companions, "Jeremiah, you didn't happen to take anything from the First Aid aisle at the gas station, did you?"

Jeremiah rifled through the stash of items he had grabbed. The gas station now seemed ages ago. "Band-Aids!" the boy held up a box of brightly colored Spider-Man bandages triumphantly, "and hand sanitizer!" He looked so hopeful that Mac had to suppress a laugh.

"Perfect," Mac replied. "She'll feel better in no time."

"This seems like a good place to stop for now," said Dennis. Fortunately, the woods were sparse enough that he had managed to inch the truck through. They were stopped at a clearing. Dennis parked the truck and removed the keys from the ignition. He let out a breath that he didn't know he had been holding, "I think we're safe for now." He opened the door, hopped out, and turned toward the back of the truck. "You must be Anna. I'm Dennis, and they're Mac and Jeremiah," he indicated his companions. "We heard you on the radio. Are you okay?"

Anna stood up, still shaky, and clambered out from the back of the truck. "You saved me!" her voice was ragged and breathless. "I thought I was a goner. Thank you so much."

Mac came around to the side of the truck and put a steadying hand on her shoulder. "Don't mention it," he said, "but we'd better take care of that cut." He led her to a rock where she could sit while he attended to her leg. "This is going to sting," he told her apologetically, holding up the bottle of hand sanitizer, "but that means it's working."

Anna nodded bravely and bit her lip. She winced as the clear gel made contact with the wound, but she didn't complain. "Do you..." her voice trailed off into a whisper. "Do you think I'm going to become one of them?"

Mac didn't have to ask what she meant by "them." With more confidence than he felt, he replied, "No way! The worst you'll get is a cool scar and a heck of a story to go along with it. If anything, you'll end up with superpowers from these Spider-Man Band-Aids."

Anna managed a small smile as Mac finished dressing the wound. Despite his joke, he was worried. Maybe it was his imagination, but the gash seemed to be intensifying in color. It had deepened into an unnatural shade of purple that almost glowed in the fading daylight. Anxiety gnawed at his stomach. He hastily covered the cut with the friendlier hues of the bandages. "You're all set," he tried to grin. "Now let's see how Dennis and Jeremiah are doing."

Dennis and Jeremiah had set up camp as the sun set. They used old blankets and tarps from the truck to create improvised beds. The four companions looked at each other, unsure what to do next. If not for the frightening circumstances, it would have felt like a fun camping trip. Nobody had much of

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an appetite, and all were exhausted. "We can make plans in the morning," Dennis said, "Right now, I'm too tired to think." The others agreed and tucked themselves in as well as they could.

Balling up his jacket to use as a pillow, Mac decided not to voice his fears about Anna's cut. He would wait until tomorrow, when he could get a moment alone with Dennis. He didn't want to scare Anna or Jeremiah further. He closed his eyes. Images from the day's events swirled in his head, but eventually sleep overtook him.

Hours later, Mac awoke to a strange rustling sound. It took him a moment to remember where he was, and why. Then, recalling his anxiety from the previous night, he rolled over and looked toward Anna's pile of blankets. He gasped.

Anna was gone.

--

Ed.: *The tale continues in Part 5, "Missing."*

Name: _____ **Date:** _____

1. What injury does Anna have?

A. a sprained wrist

B. a gash on her leg

C. a cut on her forehead

D. a broken ankle

2. The climax of a story is the most exciting or intense point in the story. What is the climax of this story?

A. the boys' conversation about whether Anna will be okay

B. Anna's disappearance from the camp

C. Mac cleaning and dressing Anna's wound

D. Mac deciding not to voice his fears about Anna's cut

3. Over the course of the story, Anna's wound is getting worse.

What evidence from the text supports this conclusion?

A. "...the gash seemed to be intensifying in color. It had deepened into an unnatural shade of purple that almost glowed in the fading daylight."

B. "[Anna] winced as the clear gel made contact with the wound, but she didn't complain."

C. "[Mac] hastily covered the cut with the friendlier hues of the bandages. 'You're all set,' he tried to grin."

D. "Her eyes were wide with horror as she stared down at the gash on her leg."

4. Anna asks Mac if he thinks she's going to become "one of them". Who might she mean by "them"?

A. doctors and nurses

B. Dennis and Jeremiah

C. the three boys

D. the zombies

5. What is the main idea of this text?

A. Four friends go on a camping trip in the woods, but one of them gets hurt.

B. An injured girl asks for help from some boys she comes across in the woods.

C. Three boys help an injured girl as they find a spot in the woods to stay safe from plague-ridden zombies.

D. Three boys hide from an injured girl whom they fear will get a plague and become a zombie.

6. Read these sentences from the text.

"Maybe it was his imagination, but the gash seemed to be intensifying in color. It had deepened into an unnatural shade of purple that almost glowed in the fading daylight."

Based on these sentences, what might the word "intensify" mean?

A. to become stronger or deeper

B. to become weaker or lighter

C. to become more painful

D. to become worried or anxious

7. Choose the answer that best completes the sentence.

Mac didn't want to scare Anna or Jeremiah further, ____ he decided not to voice his fears about Anna's cut.

A. although

B. while

C. but

D. so

8. When Mac is taking care of Anna's wound, Anna asks if he thinks she is going to become "one of them." What does Mac reply?

9. Describe how Mac feels as he is dressing Anna's wound.

Support your answer with evidence from the text.

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10. Read these sentences from the text.

"Mac decided not to voice his fears about Anna's cut. He would wait until tomorrow, when he could get a moment alone with Dennis. He didn't want to scare Anna or Jeremiah further."

What might Mac fear about Anna's cut?

Support your answer with evidence from the text.