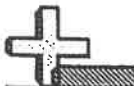


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Using Rate Language

Name: _____

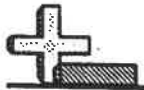
Solve each problem.

Answers

- 1) During the lunch rush a fast food joint sold 10 sodas and earned \$30, which is a rate of _____ dollars per soda.
- 2) A fair owner made 18 dollars when a group of 9 people entered, which is a rate of _____ dollar per person.
- 3) A carpenter installed 8 sheets of drywall in 2 minutes. What is the rate per minute?
- 4) An industrial machine is able to make 40 pens in 8 seconds. What is the rate made per second?
- 5) An ice machine used 3 gallons of water after running non-stop for 4 hours. How many gallons of water did it use each hour?
- 6) An experienced carpenter could build a house in 5 days. How much would he have finished if he worked for 3 days?
- 7) A warehouse placed 5 equal weight boxes on a scale. Total they weighed 3 pounds. Each box weighed _____ of a pound.
- 8) A printer took 2 minutes to print 20 pages. What is the rate of pages per minute?
- 9) A computer programmer worked for 8 hours and earned \$48, which is a rate of \$_____ per hour.
- 10) A recipe had 4 tablespoons of seasoning to 6 cups of flour. So there is _____ of a tablespoon of seasoning for each cup of flour.
- 11) A pencil company used 42 grams of rubber to make 7 pencils, which is a rate of _____ grams per pencil.
- 12) A tailor used 5 meters of string to make 7 Halloween masks. He used _____ of a meter for each mask.
- 13) A carpenter used 2 boxes of nails to build 3 bird houses. He used _____ of a box on each bird house.
- 14) A machine worked for 5 hours and used 4 kilowatts of electricity. The machine used _____ of a kilowatt each hour it worked.
- 15) A gardener used 6 kilograms of fertilizer over the course of 8 weeks. How much fertilizer did they use each week?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____

~~Grade 4~~ ~~Math~~ ~~Day 19~~



Function Machines - Filling in Missing Digit

Name: _____

Determine the number that correctly fills in the blank in the function machine.

1)

Input	Output
56	8
28	4
49	7
	5
42	6

2)

Input	Output
9	63
10	70
3	21
8	56
	14

3)

Input	Output
8	24
10	26
	21
2	18
4	20

4)

Input	Output
5	
3	23
9	29
4	24
8	28

5)

Input	Output
8	32
10	
7	28
5	20
2	8

6)

Input	Output
9	3
11	5
15	9
14	8
16	

7)

In	12	9	5	13
Out	9	6	2	10

8)

In	5	2	6	9
Out	45	18	54	81

9)

In	56	64	48	32
Out	7	8		4

10)

In	9		8	7
Out	12	6	11	10

11)

In	18	60	24	12
Out	3	10	4	2

12)

In	9	7	2	5
Out	45		10	25

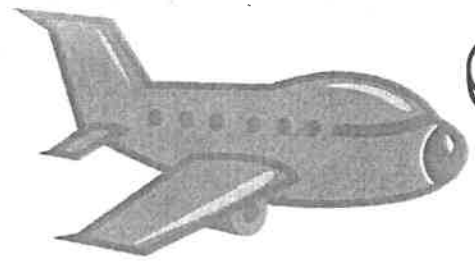
Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Figurative Language Stories #2

Task A: Identify Figurative Language

The Airport



Find, underline, and label each instance of figurative language in the paragraph. Check it on the list as you go. You should find:

- ___ simile
- ___ personification (2)
- ___ idiom (2)
- ___ metaphor
- ___ alliteration
- ___ allusion
- ___ hyperbole (2)
- ___ onomatopoeia (3)

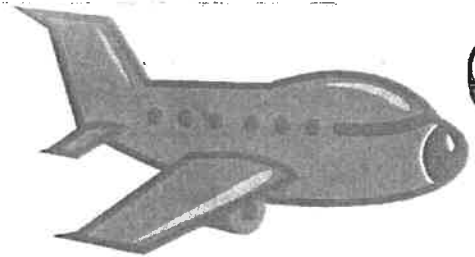


Jason could feel butterflies in his stomach as he entered the bustling airport. "This place is a zoo!" his mother exclaimed as she got in line at the ticket counter behind about a million other travelers. Like an obedient puppy, Jason followed. After waiting forever to check their luggage, Jason's family had a quick breakfast at the Dunkin Donuts counter before heading off to airport security. "Great," whined Jason, "another line." As he glanced ahead, Jason noticed that the main security guard looked more intimidating than Mr. T. Finally, Jason placed his shoes, belt, and change onto the tired conveyor belt and walked through the metal detector, relieved when he didn't hear a beep. He collected his items and finally reached the gate. Waiting in line to board the plane, an older lady asked Jason how he liked flying. He was close enough now to hear the engines roar as they came to life. "This is my first time," he replied.

Figurative Language Stories #2

Task B: Analyze Figurative Language

The Airport



Read the story again. Then, answer the questions.

1 Jason could feel butterflies in his stomach as he entered the bustling airport. "This
2 place is a zoo!" his mother exclaimed as she got in line at the ticket counter behind about a
3 million other travelers. Like an obedient puppy, Jason followed. After waiting forever to
4 check their luggage, Jason's family had a quick breakfast at the Dunkin Donuts counter
5 before heading off to airport security. "Great," whined Jason, "another line." As he glanced
6 ahead, Jason noticed that the main security guard looked more intimidating than Mr. T.
7 Finally, Jason placed his shoes, belt, and change onto the tired conveyor belt and
8 walked through the metal detector, relieved when he didn't hear a beep. He collected his
9 items and finally reached the gate. Waiting in line to board the plane, an older lady asked
10 Jason how he liked flying. He was close enough now to hear the engines roar as they
11 came to life. "This is my first time," he replied.

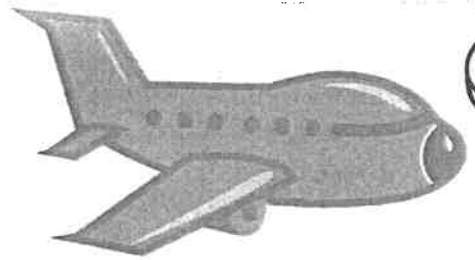
1. Which of the following words could replace the word "zoo" in line 2 without changing the meaning of the metaphor or sentence? a) airport b) circus c) busy d) restaurant
2. The personification in line 7 implies that the conveyor belt is a) broken b) slow c) shiny d) making noises
3. What two things are being compared in the simile in line 3? a) travelers and a puppy b) obedient and followed c) Jason and travelers d) Jason and a puppy
4. Later in the day, Jason's family had lunch at a restaurant whose name used the same type of figurative language used in the restaurant in line 4. At which restaurant did Jason's family eat? a) Golden Corral b) Cheap Cactus c) Fancy Fajita d) Burger King

5. Identify the onomatopoeia in line 8: _____

If the metal detector *had* sounded, list at least 2 more examples of onomatopoeia that could have described the sound. _____

Figurative Language Stories #2

Task C: Modify Figurative Language



The Airport

In Task A, you found 12 instances of figurative language in the story. Choose any 5 of the 12 instances of figurative language and rewrite them, using the table below. If you choose a simile, you must write a new simile. Do not change one form of figurative language to another. There are two examples in the table to help you.



Figurative Language	Original (from the story)	New (my own)
allusion	looked more intimidating than Mr. T	looked more intimidating than Muhammad Ali
personification	onto the tired conveyor belt	onto the complaining conveyor belt

Name: _____

Lesson 10 *7th - NTI Day 6*

Thermal Energy

In the intriguing realm of physics, fascinating phenomena are always at play, and **thermal energy** is one of them. Consider holding a solid chocolate chip in your hand. Over time, it would melt. The reason? Your hand possesses more thermal energy than the chocolate chip. In scientific terms, thermal energy is the cumulative kinetic energy (the energy due to motion) and potential energy (the stored energy due to position) of particles within a substance.

Despite the chocolate chip's solid state, the particles within it are not static; they are continually in motion. The particles in a solid, although confined to their fixed positions, vibrate continuously, pushing and pulling against their neighboring particles. The flow of thermal energy from one substance, such as your hand, to another, like the chocolate chip, is defined as **heat**. This heat energy invariably flows from the hotter substance to the cooler one. As the particles in the hotter substance move faster than those in the cooler one, the swift-moving particles in your hand prompt the particles in the chocolate to speed up. Once these particles achieve enough speed, they start flowing around each other, transforming the solid chocolate into liquid – voila, you have melted chocolate!

Now, let's extend this concept to how matter can transform from a liquid to a gas due to thermal energy. As a liquid's **temperature** increases – take water as an example – its particles gain speed and start behaving like gas particles, moving freely. However, temperature and thermal energy are two distinct concepts. Temperature measures the average kinetic energy of particles within an object, whereas thermal energy represents the total sum of kinetic and potential energy within the object. Imagine two bowls of hot soup with the same temperature; one is large, the other small. The larger bowl has more thermal energy as it contains a greater quantity of soup – thermal energy escalates with an increase in substance amount.

The transfer of heat through direct contact between two objects is known as **conduction**. This method is the sole mechanism for energy transfer in solids.

Picture a campfire scene. The heat from the fire transfers to a metal rod placed nearby – this is conduction at work. Though the particles in the rod stay in their place, the fire's high temperature causes them to vibrate faster, jostling against other particles. This chain reaction travels all the way to the rod's other end.

Campfire Diagram

7th Day 6



Convection, on the other hand, involves heat transfer in fluids, encompassing liquids and gasses. Returning to the campfire scene, observe the warm air above the fire. It ascends because it's less dense than the cooler surrounding air. When this warm air rises, cooler air rushes in to occupy the vacated space, gets heated, and likewise rises, setting a circular current in motion. This **convection current** is what we experience as wind.

Another mode of thermal energy transfer is **radiation**, which occurs via electromagnetic waves. Different objects, like fires or the sun, emit diverse electromagnetic waves depending on their temperatures. Radiation can even instigate chemical changes in materials. The heated coils in a toaster radiate heat that can scorch toast, while the sun's radiation can cause skin burns.

There are times when we want to either confine heat within an object or shield something from heat. This is where an insulator comes into play, preventing heat transfer between objects. Your winter attire serves as an insulator, conserving your body heat and keeping the cold air at bay. Everyday items like thermoses and coolers are made of excellent insulating materials. In contrast, **conductors** facilitate heat transfer. A metal spoon dipped in hot chocolate quickly becomes hot as it conducts heat efficiently due to the easy vibration of its atoms. Skillets, usually made of excellent conductors like iron, quickly heat up during cooking. So, it's wise to use an insulator, such as a potholder, when handling the skillet handle to protect your hand from getting burnt.

The world of thermal energy is fascinating, isn't it? It helps us understand how we can control heat transfer to our advantage, whether it's by melting a chocolate chip, making a cup of hot chocolate, or even cooking our favorite dish. The next time you're warming your hands by a fire, or waiting for your toast to pop out of the toaster, remember - it's all the wonderful science of thermal energy at work!

END OF TEXT

Name: _____

Lesson 10 *7th Day 6*

Thermal Energy

1. What causes a solid chocolate chip to melt when held in your hand?
- A. Your hand is colder than the chocolate chip.
 - B. Your hand has less thermal energy than the chocolate chip.
 - C. Your hand has more thermal energy than the chocolate chip.
 - D. Your hand and the chocolate chip have equal thermal energy.
-
2. What is thermal energy?
- A. It's the total amount of motion energy and stored energy of particles in matter.
 - B. It's the amount of heat energy in a substance.
 - C. It's the rate of motion of particles.
 - D. It's the temperature of an object.
-
3. What does it mean when we say:
heat energy always flows from the hotter substance to the cooler substance
- A. The hotter substance loses energy to the cooler substance.
 - B. The cooler substance gives energy to the hotter substance.
 - C. Both substances share an equal amount of energy.
 - D. The cooler substance loses energy to the hotter substance.
-
4. How are temperature and thermal energy different?
- A. Temperature is the total amount of kinetic and potential energy of an object, while thermal energy is a measure of the average kinetic energy of particles in an object.
 - B. Temperature is the average kinetic energy of particles in an object, while thermal energy is the total amount of kinetic and potential energy of the object.
 - C. Both temperature and thermal energy are the same.
 - D. Thermal energy is the total amount of kinetic and potential energy of an object, while temperature is the measure of the motion of particles.
-
5. How does conduction transfer heat?
- A. Through the flow of a fluid.
 - B. By contact between two objects.
 - C. Through radiation.
 - D. Through insulation.
-

Name: _____

Lesson 10

Thermal Energy

7th Day 6

6. What is convection current?

- A. It's the flow of heat through solid objects.
- B. It's the flow of heat through radiation.
- C. It's the circular flow of heat in a fluid.
- D. It's the flow of heat through insulation.

7. What is radiation in the context of thermal energy?

- A. The flow of heat through a solid object.
- B. The circular flow of heat in a fluid.
- C. The transfer of thermal energy by electromagnetic waves.
- D. The prevention of heat transfer between objects.

8. How does a good insulator function?

- A. It transfers heat easily.
- B. It prevents heat from transferring from one object to another.
- C. It causes heat to move in a circular current.
- D. It transfers heat through electromagnetic waves.

9. Why do we use potholders when touching the handle of a hot skillet?

- A. Potholders enhance the heat conductivity of the skillet.
- B. Potholders help heat the skillet faster.
- C. Potholders act as an insulator to prevent burns.
- D. Potholders make the skillet handle cold.

10. Which of the following materials is an excellent conductor?

- A. Air
- B. Metal
- C. Wood
- D. Plastic