Directed Reading for Content Mastery

Overview
Motion

Directions: *Complete the concept map using the terms below.*

velocity   **position**   **speed**   **direction**

An object's
acceleration

is its rate of
change of

1.

which depends
on its

2.   and   **4.**

which is its rate
of change of

3.
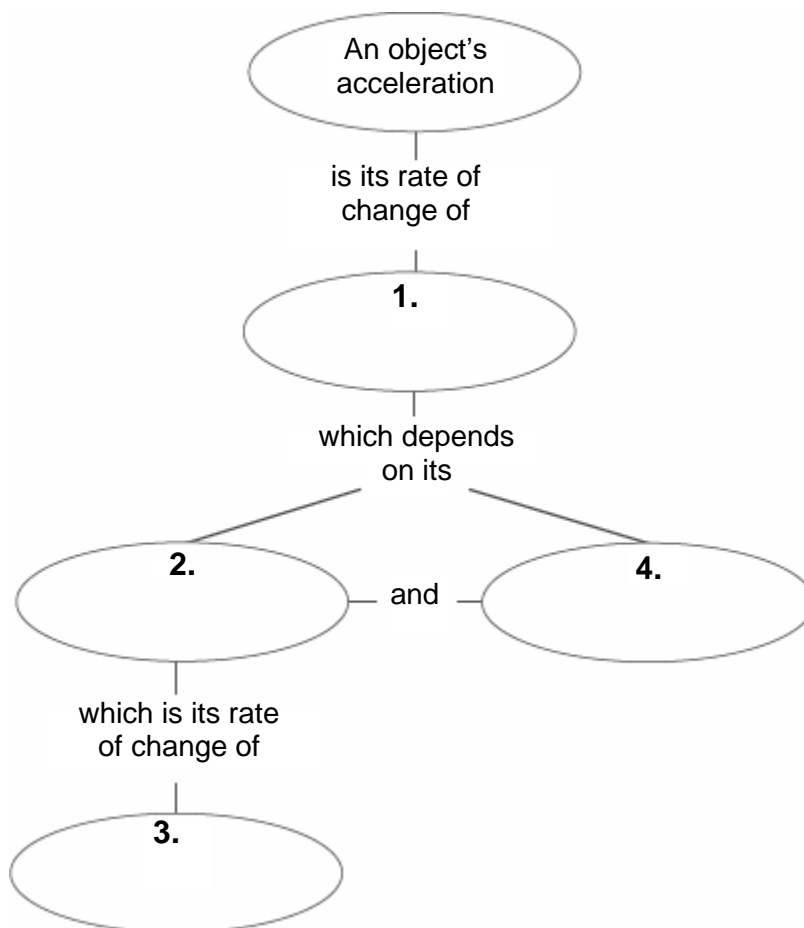
Directions: *Circle the term in parentheses that correctly completes the sentence.*

5. As a car follows a bend in the road going to the left, its centripetal acceleration is to the (right/left).

6. Displacement depends on an object's distance and (speed/direction) compared to a starting point.

7. An automobile that slows down when approaching a stop sign has (negative, positive) acceleration.

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Section 1 ■ Describing Motion

Directions: *For each of the following, write the letter of the term or phrase that best completes the sentence.*

_____ **1.** A sprinter runs 200 m west and 100 m east. Her displacement is _____.
  a. 300 m   **b.** 100 m west

_____ **2.** Speed can be calculated by dividing distance by _____.
  a. time   **b.** displacement

_____ **3.** The speed of a motorcycle at a particular moment is its _____ speed.
  a. average   **b.** instantaneous

_____ **4.** Earth's plates move only a few _____ per year.
  a. centimeters   **b.** meters

_____ **5.** Two cars are each traveling at 72 km/h. One car is traveling northeast, and the other is traveling south. The two cars have different _____.
  a. velocities   **b.** speeds

Directions: *Look at the graph. Match the letters in the graph to the sentences below.*

Graph of Ruth's Motion
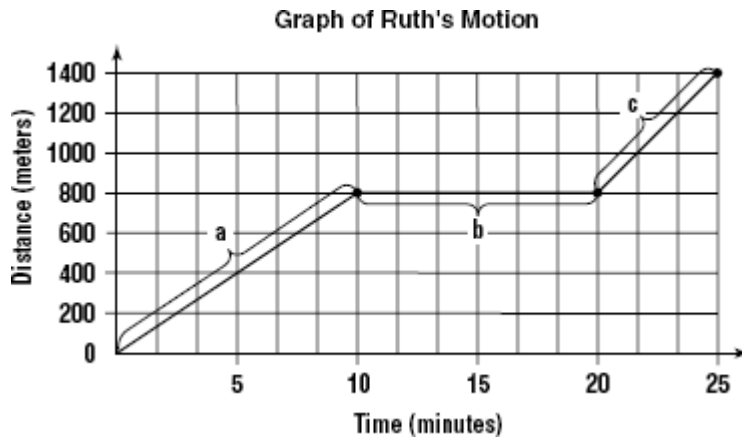
_____ **6.** Ruth stops for 10 minutes to speak to a friend.

_____ **7.** She walks at a constant speed of 80 m/min.

_____ **8.** She jogs 600 m in 5 minutes.

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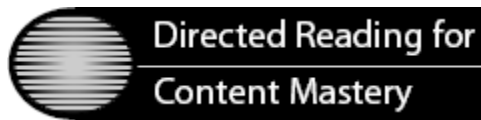
Section 2 ■ **Velocity and Momentum**
Section 3 ■ **Acceleration**

Directions: *Answer the following questions.*

1. Calculate the average velocity in m/y of a tectonic plate that has travelled 9000 km to the south in 60 million years.

_____

2. Explain why it is important to identify a reference point for any description of motion.

_____

3. How is it possible for two objects to have the same momentum, but different velocities? Give an example.

_____

4. A table tennis ball with a mass of 0.003 kg and a soccer ball with a mass of 0.43 kg are both set in motion at 16 m/s. Calculate and compare the momenta of both balls.

_____

_____

Directions: *Complete the paragraph by filling in the blanks using the terms listed below.*

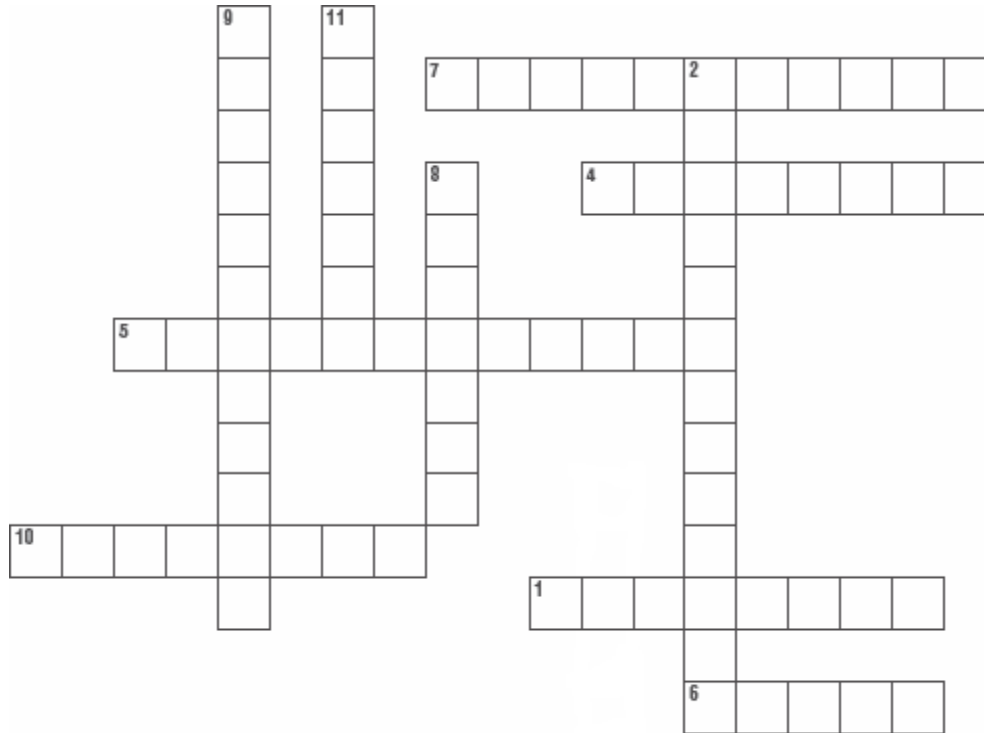| acceleration	velocity	direction
negative	**positive**	**time**

Acceleration occurs when an object's **5.** _____ changes.

When an object speeds up, it has **6.** _____ acceleration. When

an object's final velocity is less than its initial velocity, however, it has **7.**

_____ acceleration. An object that is changing

8. _____ is accelerating, even if its speed remains the same.

Acceleration can be calculated by dividing the change in velocity by the

9. _____ interval in which the change occurred. The SI unit

of **10.** _____ is m/s^2.

Directed Reading for Content Mastery

Key Terms
Motion

Directions: *Use the clues below to complete the crossword puzzle.*

Across

1. includes both the speed of an object and the direction if it moving

4. a measure of how far an object has moved from a starting point

5. the rate of change of velocity

6. the distance an object travels per unit of time

7. _____ is the acceleration towards the inside of a curved path.

10. the product of mass and velocity

Down

2. The rate of change in position at a given point in time is _____ speed.

8. _____ speed is equal to the total distance traveled divided by the total time of travel

9. the distance and direction of an object from a starting point

11. Change in velocity is the final speed minus the _____ speed.