

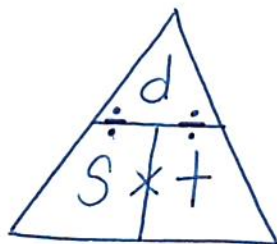
Name \_\_\_\_\_  
Chapter 1

KEY

Date TEST 10/24/19

Define the Vocabulary:

1. Motion- The state in which one object's distance from another is changing.
2. Reference Point- A place or object used for comparison to determine if an object is in motion.
3. International System of Units- A system of measurement based on multiples of ten and on established measures of mass, length and time.  
METRIC SYSTEM - Used by scientists all over the world.
4. Distance- The length of the path between two points.
5. Speed- The distance an object travels per unit of time.
6. Average Speed- The overall rate of speed at which an object moves.  
calculated by:  $\frac{\text{Total distance}}{\text{Total time}}$
7. Instantaneous Speed- The speed of an object at one instant of time.
8. Velocity- speed in a given direction.
9. Slope- The steepness of a graph line; the ratio of the vertical change (the rise) to the horizontal change (the run)
10. Acceleration- The rate at which velocity changes.
11. Draw the speed triangle:



$$\text{Speed} = \frac{\text{distance}}{\text{time}} \quad s = \frac{d}{t}$$

$$\text{time} = \frac{\text{distance}}{\text{speed}} \quad t = \frac{d}{s}$$

$$\text{distance} = \text{speed} \times \text{time} \quad d = s \times t$$

Solve the following word problems. Round all answers to the nearest tenth.

12. A boy walks to school at a speed of 4 km/hr. How much time does he take to walk a distance of 20 km?

Formula	$t = \frac{d}{s}$
Substitution	$t = \frac{20 \text{ km}}{4 \text{ km/hr}}$
Final Answer with Units	$t = 5.0 \text{ hr.}$

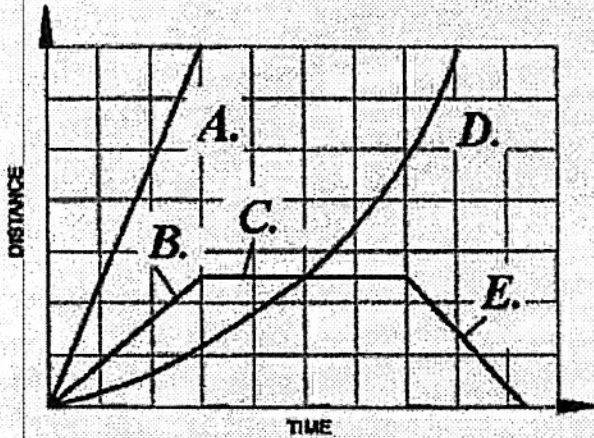
13. A cyclist covers a distance of 15 miles in 2 hours. Calculate his speed.

Formula	$s = \frac{d}{t}$
Substitution	$s = \frac{15 \text{ mi}}{2 \text{ hr}}$
Final Answer with Units	$s = 7.5 \text{ mi/hr}$

14. An airplane flies with a constant speed of 540 mi/hr. How far can the plane travel in 3 hours?

Formula	$d = s \times t$
Substitution	$d = 540 \text{ mi/hr} \times 3 \text{ hr}$
Final Answer with Units	$d = 1,620.0 \text{ mi}$

15. Match the part of the graph to the description.



Match the part of the graph to the description:

Stationary:	<u>C</u>
Increasing speed: (acceleration)	<u>D</u>
Slow & constant speed:	<u>B</u>
Fast & constant speed:	<u>A</u>
Returning to start:	<u>E</u>

Match each description of motion with the corresponding line segment on the graph.

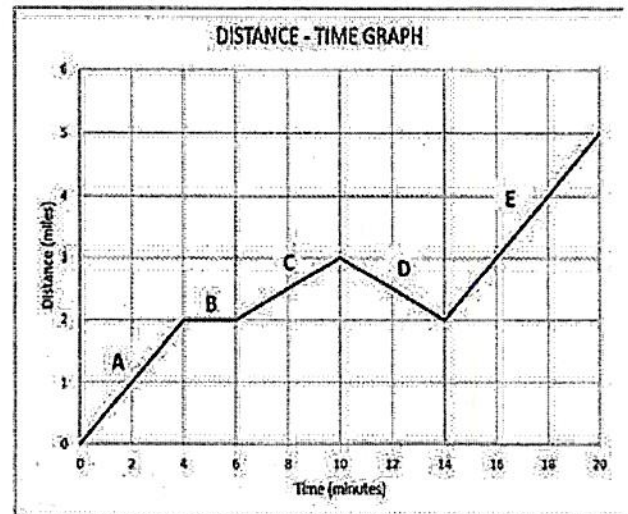
D 16. The bus has a detour because of an accident and backtracks 1 mile along a road that is full of potholes. It takes 4 minutes to get to the end of the detour.

A 17. The bus begins its routes and travels 2 miles in 4 minutes.

C 18. The bus travels 1 mile in 4 minutes.

E 19. The bus travels 3 miles in 6 minutes.

B 20. The bus waits at one of the stops for a student who is slowly walking to the bus.



21. What is the formula for acceleration?

$$\text{acceleration} = \frac{\text{Final Velocity} - \text{Initial Velocity}}{\text{time}}$$

$$a = \frac{V_f - V_i}{t}$$



Calculate Acceleration. Round all answers to the nearest tenth.

22. A ball is rolled at a velocity of  $\overset{V_i}{12 \text{ m/sec}}$ . After 36 seconds, it comes to a  $\overset{V_f}{\text{stop}}$ . What is the acceleration of the ball?

Formula	$a = \frac{V_f - V_i}{t}$
Substitution	$a = \frac{0 \text{ m/s} - 12 \text{ m/s}}{36 \text{ s}} = \frac{-12 \text{ m/s}}{36 \text{ s}}$
Final Answer with Units	$a = -0.3 \text{ m/s}^2$

~~23.~~ A car going 50 mi/hr accelerates to pass a truck. Five seconds later the car is going 80 mi/hr. Calculate the acceleration of the car.

Formula	
Substitution	
Final Answer with Units	

24. A meteoroid changed velocity from  $\underline{1.0 \text{ km/s}}$  to  $\underline{1.8 \text{ km/s}}$  in  $\underline{0.03 \text{ seconds}}$ . What is the acceleration of the meteoroid?

Formula	$a = \frac{V_f - V_i}{t}$
Substitution	$a = \frac{1.8 \text{ km/s} - 1.0 \text{ km/s}}{0.03 \text{ s}} = \frac{0.8 \text{ km/s}}{0.03 \text{ s}}$
Final Answer with Units	$a = 26.7 \text{ km/s}^2$