

Name: _____ Date: _____

PHYSICS

Speed & Velocity Review

Speed $v = \frac{d}{t}$	Velocity $\vec{v} = \frac{\Delta x}{t}$	How Far $d = v \cdot t$ $\Delta x = \vec{v} \cdot t$	Time $t = \frac{d}{v}$ $t = \frac{\Delta x}{\vec{v}}$	v = speed (m/s) d = distance (m) t = time (s) v = velocity (m/s) Δx = displacement (m) t = time (s)
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Instructions

- Read each question carefully.
- Identify the numbers, match them to the correct variables.
- Convert time to seconds. 1 min = 60 s; 1 hr = 3600 s. If time is already in units of seconds, no conversion is needed.
- Convert distance to meters. 1 km = 1000 m. If distance is already in units of meters, no conversion is needed.
- Choose the correct equation to solve for the variable in the question.
- Type your answer into the answer box.

Part 1. Calculate Speed. Complete the table and solve for speed.

Problem	Distance d (m)	Time t (s)	Speed v (m/s)
1. A car moved 100 meters in 6 seconds. Calculate the car's speed.			
2. A runner ran the 50 meter dash in 8.22 seconds. Calculate the runner's speed.			
3. A man on a bicycle rode his bike 3000 m in 6.0 minutes. Calculate his average speed (m/s).			
4. A man on a bicycle rode his bike 20,000 m in 24 minutes. Calculate his average speed (m/s).			

Part 2. Calculate Velocity. Complete the table and solve for velocity.

Problem	Displacement Δx (m)	Time t (s)	Velocity \vec{v} (m/s)
5. A horse ran 150 m N in 60 s. Calculate the horse's velocity.			
6. A bowling ball rolled 18 m E in 4 s. Calculate the bowling ball's velocity.			
7. Johnny rode his bicycle 2400 m S in 8 minutes. Calculate Johnny's velocity.			
8. A cheetah ran 250 m SW in 20 seconds. Calculate the cheetah's running velocity.			

Part 3. Solve for "how far". Complete the table and solve for "how far".

Problem	Speed v or Velocity \vec{v} (m/s)	Time t (s)	Distance d or Displacement (m)
9. A cheetah ran at a velocity of 21 m/s S for 9 seconds. Calculate the cheetah's displacement.			
10. A man rode his bike at an average speed of 15 m/s for 5 minutes. Calculate the distance he rode his bike.			
11. Randy ran for 1.8 minutes with an average speed of 3.2 m/s. Calculate the distance he ran.			

Part 3. Solve for the time of motion. Complete the table and solve for time.

Problem	Speed v or Velocity \vec{v} (m/s)	Distance d or Displacement (m)	Time t (s)
12. A cheetah ran 300 meters S at a velocity of 24 m/s S. Calculate the time that the cheetah ran.			
13. Randy ran 85 meters with an average speed of 2.2 m/s. Calculate the amount of time Randy ran.			
14. A man rode his bike 3000 m W at a velocity of 12 m/s W. Calculate the time that the man rode his bike.			

Part 4: Comparing speed or velocities. Read the statements. Choose which option best describes the motion of the people involved. Draw pictures of motion to help you.

- _____ 15. Jenny walked 1.5 m/s N. Connie walked 1.5 m/s E.
A. Jenny and Connie moved equal velocities.
B. Jenny and Connie moved equal speeds.
C. Jenny and Connie moved unequal velocities and unequal speeds.

- _____ 16. Jenny walked 1.2 m/s S. Connie walked 1.2 m/s S.
A. Jenny and Connie moved equal velocities.
B. Jenny and Connie moved equal speeds.
C. Jenny and Connie moved unequal velocities and unequal speeds.

- _____ 17. Jenny walked 1.7 m/s W. Connie walked 1.4 m/s W.
A. Jenny and Connie moved equal velocities.
B. Jenny and Connie moved equal speeds.
C. Jenny and Connie moved unequal velocities and unequal speeds.

- _____ 18. Esteban rode his bicycle at a speed of 4.5 m/s. Which statement best describes his motion?
A. For every 1 second he rides, he moved 4.5 m.
B. For every 4.5 seconds he rides, he moved 1.0 m.
C. For every 4.5 seconds he rides, he moved 4.5 m.
D. For every 1 second he rides, he moved 1.0 m.

Three children were running on the playground. Which child ran the fastest?

- Harriet ran 60 m in 45 s.
- Corey ran 60 m in 42 s.
- Janine ran 60 m in 36 s.

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- A. Harriet
B. Corey

- C. Janine
D. All ran equal speeds.

Three children were running on the playground. Which child ran the fastest?

- Harriet ran 95 m in 63 s.
- Corey ran 72 m in 53 s.
- Janine ran 81 m in 59 s.

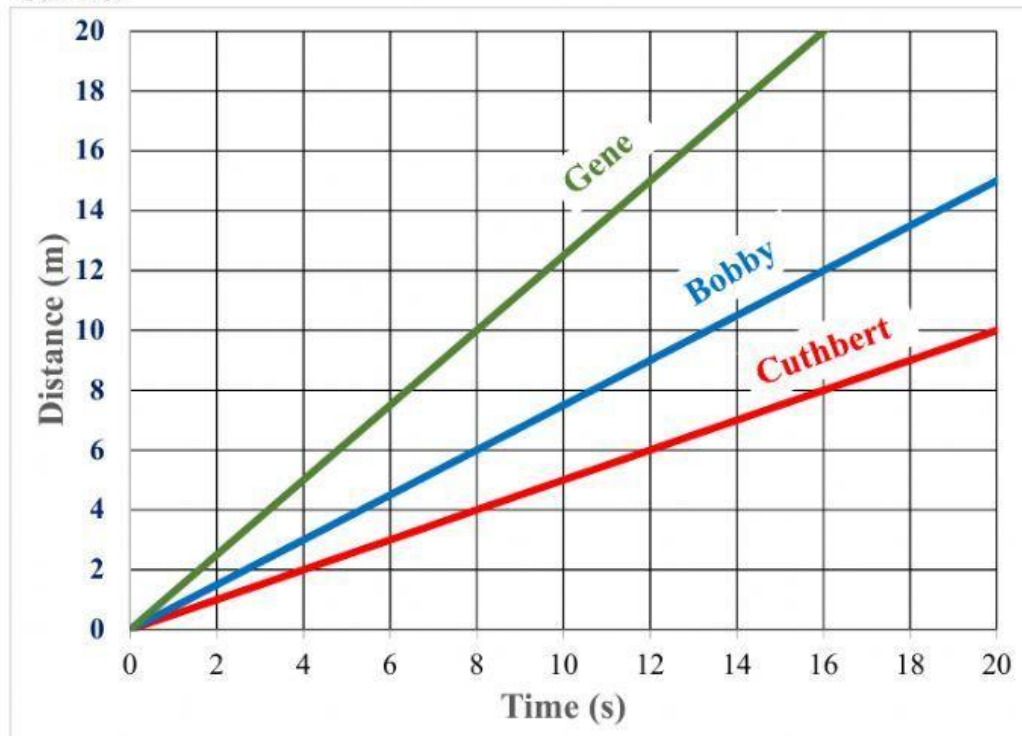
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- A. Harriet
B. Corey

- C. Janine
D. All ran equal speeds.

Part 5: Graphs that represent moving objects

Three friends were riding their skateboards. They started moving at the same time, but each traveled at a different speed. The graph below shows how far they moved (distance, m) as a function of time (s). Gene's movement is represented by the green line. Bobby's movement is represented by the blue line. Cuthbert's movement is represented by the red line.



21. Using the graph, identify how far (distance, d) each friend moved on his skateboard at the given times. Report distances to 1st number after the decimal.

Friend	At 0 s	At 4 s	At 8 s	At 12 s
Gene				
Bobby				
Cuthbert				

21. Using the graph, calculate the speeds of the three friends. Use the speed equation $v = \frac{d}{t}$. Report speed to the nearest 2nd number after the decimal.

Friend	Distance d (m)	Time t (s)	Speed v (m/s)
Gene			
Bobby			
Cuthbert			

23. Look at the slopes of the lines on the graph. What is the relationship between the slope of the lines on a distance vs. time graph and the speeds of the objects the line represents?