

Practice Problems: Acceleration

Directions: Complete the table below.

	Final velocity v_f	Initial velocity v_i	$v_f - v_i$ Δv	Time (t)	$a = \frac{\Delta v}{t}$
1	26 m/s	20 m/s	6	6 s	1 m/s ²
2	0 km/s	12 km/s	-12	4 s	-3 m/s ²
3	8 m/s	3 m/s	5	2 s	2.5 m/s ²
4	46.4 m/s	27.3 m/s	19.1	11 s	1.74 m/s ²
5	5 m/s	15 m/s	10	5 s	2 m/s ²

Complete the following word problems. Show your work.

6. A paperboy rode his bike at 3 m/s. After being chased by a dog for 8 seconds, he was traveling 6 m/s. What is his acceleration?

$$\begin{array}{r} 0.375 \\ 8 \overline{)30} \\ \underline{-24} \\ 6 \end{array}$$

$$a = \frac{6 \text{ m/s} - 3 \text{ m/s}}{8 \text{ sec}} = \frac{3}{8}$$

$$0.375 \text{ m/s}^2$$

$$a = \frac{6 \text{ m/s} - 3 \text{ m/s}}{8 \text{ sec}} = \frac{3}{8}$$

7. A pumpkin is dropped, and after 5 seconds its velocity is 47 m/s. What is its acceleration?

$$a = \frac{47 - 0}{5} = 9.4 \text{ m/s}^2$$

6. A soccer player is running at 6 m/s. He then stumbles over an opponent's foot, falls and rolls to a stop. This took 4 seconds. What was his acceleration?

$$A = \frac{0 - 6}{4} = \frac{-6}{4} = -1.5$$

7. A skateboarder fell doing a jump. She got up and after 5 seconds returned to a velocity of 5 m/s. What was her acceleration?

$$A = \frac{5 \text{ m/s} - 0}{5} = 1 \text{ m/s}^2$$

Name Liam Jordan

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Quiz Describing Motion

Matching

b 1. Motion

speed that does not vary

d 2. Distance

when an object changes position

e 3. Displacement

speed at any given point in time

c 4. Instantaneous speed

how far an object has moved

a 5. Constant speed

distance and direction of an object's change in position

6. To skate 100 meters in 20 seconds, a skater must skate at a speed of 5 m/s.

7. If a runner maintains a constant speed of 12 miles/hour, how long will it take to complete a half marathon race of 13.1 miles? 1.09 hours

8. If Johnny won a 300 meter race in 40 seconds, his speed would be 7.5 m/s.

Speed (v)

Distance an object travels per unit of time; rate of change in position

UNITS: m/s, cm/s, km/s

To calculate SPEED you divide distance by time

Distance (d)
How far an object has traveled
UNITS: cm, m, km
To calculate DISTANCE you multiply speed x time

A measured time (t) which an action period persists
UNITS: sec, min, h
To calculate TIME you divide speed into distance

Speed (v)

Distance ON a object travel per unit of time; rate of change in position

UNITS: m/s, cm/s, km/s

to calculate speed you divide distance by time

Distance (d)
How far an object has traveled
UNITS: cm, m, km, h
To calculate DISTANCE you multiply speed x time

A measured time (t) which an action period persists during
UNITS: sec, min, h