

Practice Problems

Examples

What is the average speed of a cheetah that traveled 115.0 m in 4.0 s?

$$\text{average speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{average speed} = \frac{115.0 \text{ m}}{4.0 \text{ s}}$$

$$\text{average speed} = 28.8 \text{ m/s}$$

A car travels with an average velocity of 25.0 m/s north. What is the displacement of the car in 60.0 s?

$$\text{average velocity} = \frac{\text{displacement}}{\text{time}}$$

$$25.0 \text{ m/s} = \frac{\text{displacement}}{60.0 \text{ s}}$$

$$\text{displacement} = (25.0 \text{ m/s}) \times (60.0 \text{ s})$$

$$\text{displacement} = 1500 \text{ m north}$$

Jeffrey is on his skateboard and starts skating down a ramp. After 10.0 s he has a speed of 20.0 m/s. What was his acceleration?

$$\text{acceleration} = \frac{\text{final velocity} - \text{initial velocity}}{\text{time}}$$

$$\text{acceleration} = \frac{20.0 \text{ m/s} - 0.0 \text{ m/s}}{10.0 \text{ s}}$$

$$\text{acceleration} = 2.00 \text{ m/s}^2$$

1. What is the average speed of a car that travels 400.0 m in 20.0 s?
2. You move 50.0 m west in 10.0 s. Calculate your average velocity.
3. It takes Serena 0.25 hours to drive to school. Her route is 16.0 km long. What is Serena's average speed on her drive to school, in m/s?
4. A racecar drives once around a 2400 m track in 54 s. What is the average speed and velocity of the racecar?

5. How much time will it take for a bug to travel 5.0 meters across the floor if it is traveling at 1.00 m/s?

6. An athlete throws a flying disk 42.0 meters through the air. While in flight, the disk traveled at an average speed of 13.0 m/s. How long did the disk remain in the air?

7. How far do you travel if you run for 20.0 s at an average speed of 3.0 m/s?

8. A bus travels east with an average speed of 30.0 m/s. What is the displacement of the bus after 120 s?

9. A car is driving along a straight level road. The car changes its speed from 3.5 m/s to 4.5 m/s in 5.0 seconds. Calculate its acceleration.
10. A car slows down from 50.0 m/s to 20.0 m/s in 6.00 s. What is the acceleration?
11. A coin is dropped from the top of a bridge. It experiences an acceleration of 10.0 m/s^2 down. How long will it take before it reaches a final velocity of 50.0 m/s down?
12. A car skids to a stop in 0.5 s. If the acceleration of the car was -20.0 m/s^2 , what was the initial velocity of the car?