

Kinematics practice problems:

1. Georgia is jogging with a velocity of 4 m/s when she accelerates at 2 m/s² for 3 seconds. How fast is Georgia running now?
2. In a football game, running back is at the 10 yard line and running up the field towards the 50 yard line, and runs for 3 seconds at 8 yd/s. What is his current position (in yards)?
3. A cat is moving at 18 m/s when it accelerates at 4 m/s² for 2 seconds. What is his new velocity?
4. A race car is traveling at +76 m/s when it slows down at -9 m/s² for 4 seconds. What is his new velocity?
5. An alien spaceship is 500 m above the ground and moving at a constant velocity of 150 m/s upwards. How high above the ground is the ship after 5 seconds?
6. A bicyclist is traveling at +25 m/s when he begins to decelerate at -4 m/s². How fast is he traveling after 5 seconds?
7. A squirrel is 5.0 m away from you while moving at a constant velocity of 3 m/s away from you. How far away is the squirrel after 5 seconds?
8. A ball is dropped off a very tall canyon ledge. Gravity accelerates the ball at 9.8 m/s². How fast is the ball traveling after 5 seconds?
9. During a race, a dragster is 200 m from the finish line when something goes wrong and it stops accelerating. It travels at a constant velocity of 45 m/s for 3 seconds to try to finish the race. How far from the finish line is the dragster after 3 seconds?
10. A dog is 60 m away while moving at a constant velocity of 10 m/s towards you. Where is the dog after 4 seconds?
11. Isaac throws an apple straight up (in the positive direction) from 1.0 m above the ground, reaching a maximum height of 35 meters. Neglecting air resistance, what is the ball's velocity when it hits the ground?
12. Two kittens are on opposite sides of a field, 250 m apart. Kitten A runs at a constant speed of 25 m/s due east on a collision course with kitten B, which is traveling west at 12 m/s. How much time elapses before the two kittens collide?

Velocity and Acceleration Calculation Worksheet

DIRECTIONS: Solve the following situation problems using equations for velocity and acceleration.

- 1 What is the speed of a rocket that travels 9000 meters in 12.12 seconds?
- 2 What is the speed of a jet plane that travels 528 meters in 4 seconds?
- 3 After an impact involving a non-functioning satellite, a paint chip leaves the surface of the satellite at a speed of 96 m/s. After 17 seconds, how far has the chip landed?
- 4 The space shuttle Endeavor is launched to altitude of 500,000 m above the surface of the earth. The shuttle travels at an average rate of 700 m/s. How long will it take for Endeavor to reach its orbit?
- 5 How long will your trip take (in hours) if you travel 350 km at an average speed of 80 km/hr?
- 6 How many seconds will it take for a satellite to travel 450 km at a rate of 120 m/s?
- 7 What is the speed of a walking person in m/s if the person travels 1000 m in 20 minutes?
- 8 How far (in meters) will you travel in 3 minutes running at a rate of 6 m/s?
- 10 In 0.5 seconds, a projectile goes from 0 to 300 m/s. What is the acceleration of the projectile?
- 11 A meteoroid changed velocity from 1.0 km/s to 1.8 km/s in 0.03 seconds. What is the acceleration of the meteoroid?
- 12 The space shuttle releases a space telescope into orbit around the earth. The telescope goes from being stationary to traveling at a speed of 1700 m/s in 25 seconds. What is the acceleration of the satellite?