

Acceleration Problems

Name: _____

1. A school teacher's sedan can go from 0 to 25 m/s in only 4.0 seconds. What is the acceleration of the sedan?
2. A student drops an object from a fourth floor window. The velocity of the object is measured at 29.28 m/s 3.0 seconds later. What is the acceleration of the object?
3. A motorist is driving at a constant velocity of 28 m/s when he decides to pass a car that is in front of him. He accelerates at a rate of 2.5 m/s^2 for 3.0 seconds while passing the car. What is his velocity at the end of the 3.0 seconds?
4. A boy on a motor scooter is traveling at a velocity of 14.1 m/s when he applies his brakes in order to stop. How much time will it take him to stop if he slows down at a rate of 3.2 m/s^2 ?
5. A golf ball comes to rest 1.9 seconds after hitting a net. The force of the net slowed the ball down at a rate of 56.3 m/s^2 . What was the velocity of the ball when it first hit the net?

6. A speedboat increases its speed from 42 m/sec to 88 m/sec in a 4.0 second period. What is its acceleration during this period?

7. A jet plane is traveling at 210 km/hr when its wheels leave the runway and at 340 km/hr 8.0 seconds later. What is its acceleration during this time?

8. The same plane lands at a speed of 185 km/hr and comes to rest 36.2 seconds later. What is its acceleration during landing?

9. Jack times a race car as it passes two points on a race track. Its speeds at those two points are 43.2 m/s and 68.7 m/s. If the car requires 2.0 seconds to travel between these two points, what was its acceleration?

10. Jill steals second base running at a speed of 4.2 m/s. She slides into second from a distance of 3.1 m. what is her acceleration during this slide, and what time is required for her to complete the slide?

11. The space shuttle leaves its launch pad with a uniform acceleration of 8.5 m/s^2 .
what will be its speed after 1.0 seconds?
- b. What is its speed after 40 seconds?
12. Donna swings at a racquetball moving forward at a speed of 3.0 m/s . She hits the ball with a force that accelerates it by 2.5 m/s^2 for $.8$ seconds. What is the final velocity of the ball?
13. A spacecraft orbits at a uniform speed of 1050 m/s . The firing of one of its rockets gives it an acceleration of 185 m/s^2 . What will be its new speed after 12.5 seconds of rocket ignition?
14. The driver of a bobsled brakes the speed of his sled from 24.9 m/sec to 12.2 m/sec . If the brakes are applied for 1.4 seconds what was the rate of acceleration?
15. An airplane, traveling at 164 km/hr at the moment it touches the runway, runs off the end of the runway still traveling at 34 km/hr . If the planes rate of acceleration was -1.6 m/ssec^2 , how long and far did the plane travel along the runway?