

Sample test questions:

Multiple choices: (Only one answer is correct. Please choose the best answer you think.)

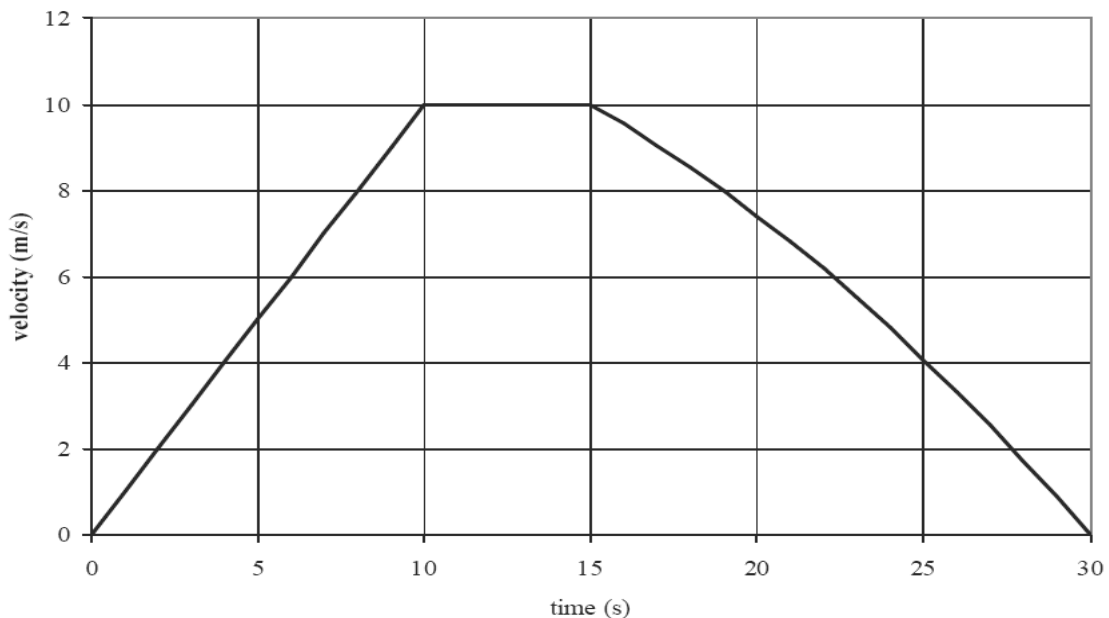
1. A ball is thrown vertically upward from the surface of the earth. Consider the following quantities: 1) the speed of the ball 2) the velocity of the ball 3) the acceleration of the ball. Which of these is (are) zero when the ball has reached the maximum height?
 - (a) 1 only
 - (b) 2 only
 - (c) 1 and 2
 - (d) 1 and 3
 - (e) 1, 2 and 3

2. Which one of the following would give the correct result when the following physical quantities are **multiplied** together: 3.6m/s and 214 s?
 - (a) 770.4m.
 - (b) 770.0m.
 - (c) 7.7m.
 - (d) 7.7×10^2 m
 - (e) 7.7×10^2 m/s.

Comprehensive questions:

The acceleration of gravity is 9.81 m/s^2 . What is the acceleration of gravity in units of kilometers per minute squared?

Consider the below graph of an object moving on the x-axis. (from $t = 0$ to 10 seconds the velocity is linear with respect to time; from $t = 10$ to 15 seconds the graph forms a horizontal line; from $t = 15$ to 30 seconds the graph is slightly curved).



- a) When (if ever) is the acceleration positive?
- b) When (if ever) is the acceleration zero?
- c) When (if ever) is the acceleration negative?

Answer:

1. C

2. D Note that A and B has wrong significant figures (always keep aligned with the LEAST number of sig. figs, *i.e.* the worst measurement decides the precision). C has wrong number (order of magnitude), and E has wrong units.

Brief Solution:

1.

$$g = 35.3 \frac{km}{min^2}$$

2.

a)

If the acceleration is positive, the velocity must be increasing. This only occurs from zero to 10 seconds.

b)

If the acceleration is zero, the velocity must be constant. This only occurs from 10 to 15 seconds.

c)

If the acceleration is negative, the velocity must be decreasing. This only occurs from 15 to 30 seconds.