



# McRoberts Secondary

Kinematics Retest 3 2025-11-26



## Personal Data

Family Name:	
Given Name:	
Signature:	
	checked

## Registration Number

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In this section **no** changes or modifications must be made!

Scrambling

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Type

025

Exam ID(Physics 11)

25112600001

Please mark the boxes carefully: ☒ Not marked: ☐ or ☐

This document is scanned automatically. Please keep clean and do not bend or fold. For filling in the document please use a **blue or black pen**.

**Only clearly marked and positionally accurate crosses will be processed!**

## Answers 1 - 15

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	a	b	c	d

## Answers 16 - 25

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	a	b	c	d



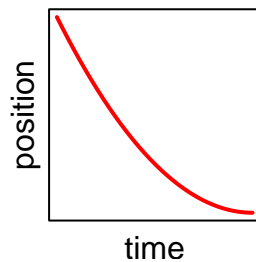


1. True or false? If an object changes direction, then the line on its velocity-time graph must have a changing slope.
  - a. True
  - b. False
2. True or false? An object which is slowing down is represented on a velocity-time graph by a line with a negative slope.
  - a. True
  - b. False
3. True or false? When you throw a ball over to your friend, the ball's velocity is zero when it reaches its maximum height.
  - a. True
  - b. False
4. True or false? If the velocity vector and the acceleration vector both point in the same direction, then the object must be speeding up.
  - a. True
  - b. False
5. True or false? If the velocity-time graph of an object is a horizontal line, then the object must be at rest.
  - a. True
  - b. False
6. A football is kicked with a velocity of 25 m/s at an angle of  $45^\circ$  above the horizontal. What is the vertical component of its acceleration as it travels along its trajectory? (Ignore air resistance.)
  - a.  $g \sin(45^\circ)$  upward
  - b.  $g \sin(45^\circ)$  downward
  - c.  $g$  upward
  - d.  $g$  downward
7. You hit a volley ball over the net. When the ball reaches its maximum height, its speed is
  - a. zero.
  - b. less than its initial speed.
  - c. equal to its initial speed.
  - d. greater than its initial speed.
8. A car traveling at speed  $v$  is able to stop in a distance  $d$ . Assuming the same constant acceleration, what distance does this car require to stop when it is traveling at speed  $7v$ ?
  - a.  $7d$
  - b.  $\sqrt{7}d$
  - c.  $49d$
  - d.  $d$
9. Which of the following is an accurate statement about motion with constant acceleration?
  - a. In equal times, speed increases by equal amounts.
  - b. In equal times, displacement changes by equal amounts.
  - c. In equal times, velocity changes by equal amounts.
  - d. In equal times, acceleration changes by equal amounts.

10. Which of the following are scalars? *Select all that apply.*

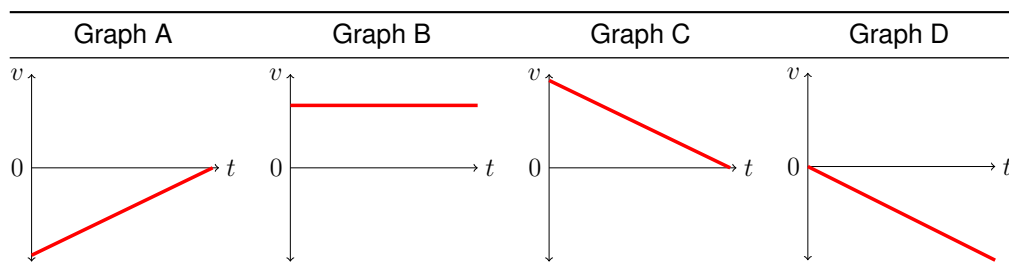
- a. displacement
- b. velocity
- c. distance
- d. acceleration

11. Which choice best matches the given position-time graph?



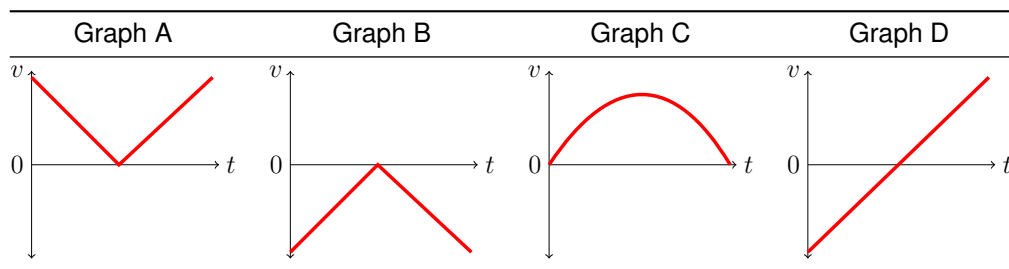
- a. moving to the right and speeding up.
- b. moving to the right and slowing down.
- c. moving to the left and speeding up.
- d. moving to the left and slowing down.

12. Which velocity-time graph represents motion with constant positive acceleration?



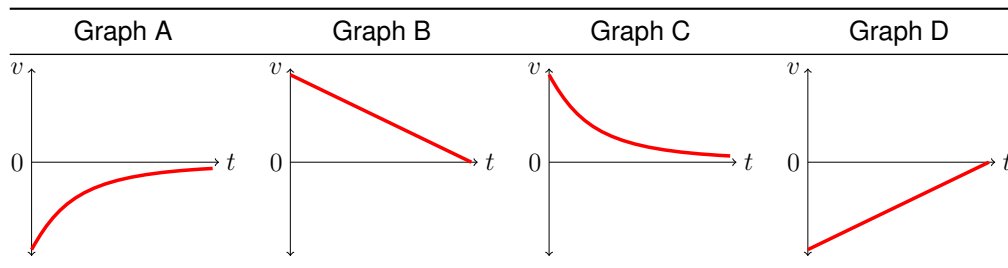
- a. Graph A
- b. Graph B
- c. Graph C
- d. Graph D

13. Which velocity-time graph represents the motion of an object that changes its direction?

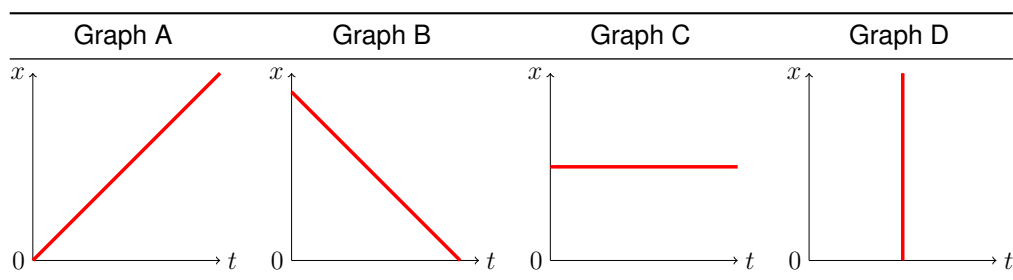


- a. Graph A
- b. Graph B
- c. Graph C
- d. Graph D

14. Which velocity-time graphs represent the motion of an object that is slowing down? *Select all that apply.*



- Graph A
  - Graph B
  - Graph C
  - Graph D
15. Which position-time graph represents an object at rest?



- Graph A
  - Graph B
  - Graph C
  - Graph D
16. A car travels 36 km at 44 km/h and 226 km at 92 km/h. What is the average speed for this trip?
- 80 km/h
  - 91 km/h
  - 74 km/h
  - 89 km/h
17. A runner completes a marathon (42.195 km) with an average pace of 3 minutes and 57 seconds per kilometre. What is the runner's time for the marathon? (Answers are formatted as hours : minutes : seconds)
- 02 : 46 : 40
  - 03 : 21 : 32
  - 01 : 45 : 36
  - 02 : 13 : 49

18. A particle initially moving with a velocity of 2 m/s in the  $x$ -direction experiences a constant acceleration of  $1 \text{ m/s}^2$  in the  $x$ -direction and  $-2 \text{ m/s}^2$  in the  $y$ -direction. What are the velocity components of the particle after 4 s?
- $v_x = 6 \text{ m/s}, v_y = -8 \text{ m/s}$
  - $v_x = 3 \text{ m/s}, v_y = -2 \text{ m/s}$
  - $v_x = -6 \text{ m/s}, v_y = 4 \text{ m/s}$
  - $v_x = 4 \text{ m/s}, v_y = -8 \text{ m/s}$
19. Suppose an object travels at a constant velocity of 7.51 m/s. How much time would it take for the object to travel a distance of 51.5 m?
- 387 s
  - 66 s
  - 0.15 s
  - 6.86 s
20. A car accelerates from 30 km/h to 100 km/h, at an average rate of  $1 \text{ m/s}^2$ . How much time does it take to complete this speed increase?
- 37.4 s
  - 19.4 s
  - 38.6 s
  - 3.08 s
21. What is the maximum height reached by a ball thrown straight up with an initial velocity of 27.7 m/s? Assume that the ball is thrown on the surface of the Earth and that it undergoes constant acceleration due to gravity (ignore air resistance).
- 39.1 m
  - 20.6 m
  - 36.1 m
  - 25.4 m
22. A ball is thrown straight up with an initial velocity of 18.8 m/s. How long does it take the ball to return to its starting point? Assume that the ball is thrown on the surface of the Earth and that it is undergoing constant acceleration due to gravity (ignore air resistance).
- 2.23 s
  - 0.41 s
  - 2.39 s
  - 3.84 s
23. A person throws a rock horizontally, with an initial velocity of 39.1 m/s, from a bridge. It falls 6.32 m to the water below. How far does it travel horizontally before striking the water?
- 35 m
  - 43.8 m
  - 31.3 m
  - 44.4 m
24. A person throws a rock straight down from a bridge with an initial speed of 10.6 m/s. It falls 12.7 m to the water below. How much time does it take for the rock to hit the water?
- 0.55 s
  - 1.04 s
  - 0.86 s
  - 0.63 s

25. A golf ball is hit with an initial velocity of 34 m/s at an angle of  $51^\circ$  above the horizontal. What is its range (horizontal distance before hitting the ground)? Ignore air resistance and assume a flat golf course.
- a. 115 m
  - b. 149 m
  - c. 151 m
  - d. 78 m