



# McRoberts Secondary

Kinematics Retest 2 2025-11-05



## Personal Data

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| 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

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Exam ID(Physics 11)

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

## Answers 1 - 15

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|    | a                        | b                        | c                        | d                        |

## Answers 16 - 25

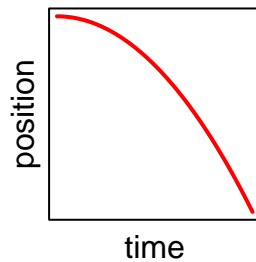
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|    | a                        | b                        | c                        | d                        |



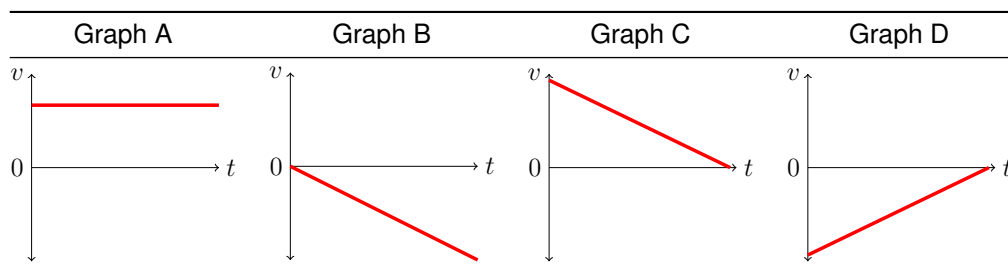


1. True or false? When a ball is thrown straight up, its velocity at the top is zero.
  - a. True
  - b. False
2. True or false? The area under a velocity-time graph is the displacement.
  - a. True
  - b. False
3. True or false? If an object is moving to the right, then its acceleration must also be to the right.
  - a. True
  - b. False
4. True or false? If the position-time graph of an object is a horizontal line, then the object must be at rest.
  - a. True
  - b. False
5. 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
6. An object is moving to the left and speeding up. Which choice best describes its velocity and acceleration? (Assume right is positive.)
  - a. velocity is positive; acceleration is negative.
  - b. velocity is negative; acceleration is positive.
  - c. velocity and acceleration are both positive.
  - d. velocity and acceleration are both negative.
7. Suppose that several projectiles are launched. Which one will be in the air for the longest time?
  - a. The one with the furthest horizontal range.
  - b. The one with the greatest maximum height.
  - c. The one with the greatest initial speed.
  - d. None of the above.
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  $4v$ ?
  - a.  $4d$
  - b.  $d$
  - c.  $16d$
  - d.  $\sqrt{4}d$
9. The gravitational acceleration on Mars is about one-third of that on Earth. If you hit a baseball on Mars with the same speed and angle that you do on Earth, the ball would land
  - a.  $1/9$  times as far
  - b.  $1/3$  times as far
  - c. 3 times as far
  - d. 9 times as far

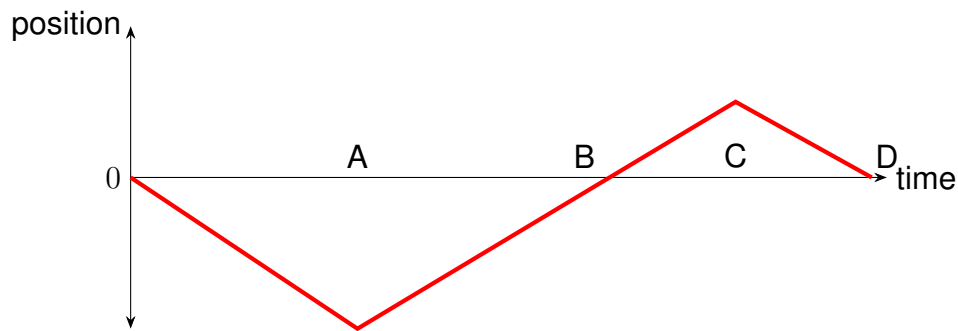
10. The gravitational acceleration on the Moon is about one-sixth of that on Earth. If you throw a baseball straight up with the same speed on the Moon as you do on Earth, the ball would be in the air for
- the same amount of time as on Earth.
  - 6 times longer than on Earth
  - 12 times longer than on Earth
  - 36 times longer than on Earth
11. What is the magnitude of the slope of a position-time graph?
- pace
  - acceleration
  - speed
  - distance
12. Which choice best matches the given position-time graph?



- moving to the right and speeding up.
  - moving to the right and slowing down.
  - moving to the left and speeding up.
  - moving to the left and slowing down.
13. Which velocity-time graph represents motion with constant positive acceleration?

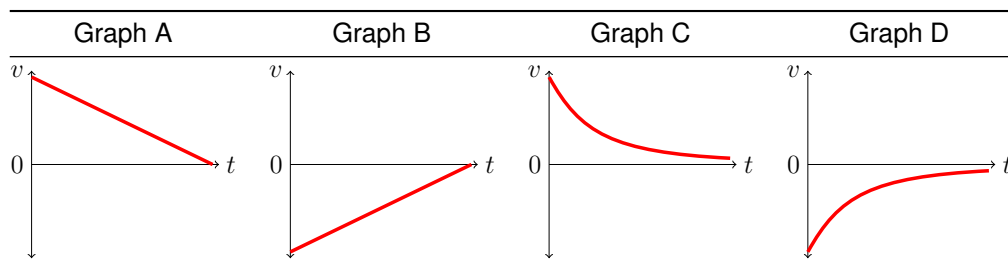


- Graph A
  - Graph B
  - Graph C
  - Graph D
14. The motion of an object is described by the following position-time graph. At which point in time is the magnitude of the object's displacement at a maximum?



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

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



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

16. Suppose an object travels at a constant velocity of 54.0 km/h. What distance would it travel in 19.0 minutes?

- a. 3.99 km
- b. 8.32 km
- c. 16.1 km
- d. 17.1 km

17. An F1 car accelerates from 0 to 60 miles per hour in 2.71 s. What is the acceleration of the car in SI units? (1 mile = 1609.34 m)

- a. 22.1 m/s<sup>2</sup>
- b. 14.9 m/s<sup>2</sup>
- c. 9.9 m/s<sup>2</sup>
- d. 20.9 m/s<sup>2</sup>

18. A car accelerates from 39 km/h to 110 km/h, at an average rate of 2 m/s<sup>2</sup>. How much time does it take to complete this speed increase?

- a. 44.8 s
- b. 9.86 s
- c. 35.5 s
- d. 4.96 s

19. How many seconds would it take the Sun's light to reach Earth? The speed of light in vacuum is  $3.00 \times 10^8$  m/s. The Sun is  $1.5 \times 10^{11}$  m from the Earth.
- 0 s
  - $2.0 \times 10^{-3}$  s
  - $5.0 \times 10^2$  s
  - $4.5 \times 10^{19}$  s
20. A light-year (ly) is the distance that light travels in vacuum in one year. The speed of light is  $3.00 \times 10^8$  m/s. How many miles are there in a light-year? (1 mile =  $1.609 \times 10^3$  m, 1 year = 365 days)
- $5.88 \times 10^{12}$  mi
  - $9.46 \times 10^{12}$  mi
  - $5.88 \times 10^{15}$  mi
  - $9.46 \times 10^{15}$  mi
21. A ball is thrown straight up with an initial velocity of 15.5 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).
- 5.65 s
  - 3.16 s
  - 4.06 s
  - 0.59 s
22. What is the maximum height reached by a ball thrown straight up with an initial velocity of 23 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).
- 52.9 m
  - 44.8 m
  - 27 m
  - 24.6 m
23. A person throws a rock horizontally, with an initial velocity of 16.1 m/s, from a bridge. It falls 2.73 m to the water below. How far does it travel horizontally before striking the water?
- 6.5 m
  - 12 m
  - 7.5 m
  - 10.1 m
24. A golf ball is hit with an initial velocity of 18 m/s at an angle of  $23^\circ$  above the horizontal. What is its range (horizontal distance before hitting the ground)? Ignore air resistance and assume a flat golf course.
- 24 m
  - 13 m
  - 19 m
  - 21 m
25. A ball tossed straight up returns to its starting point in 7.57 s. What was its initial speed? Ignore air resistance.
- 35.2 m/s
  - 37.1 m/s
  - 31.6 m/s
  - 19.3 m/s