ALBERTA PHYSICS 20 · UNIT A · 25 QUESTIONS

Kinematics — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **Which of the following quantities is a vector?**

- A Distance
- B Speed
- C Displacement
- D Time

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2 **A car travels 240 m in 12 s at a constant speed. The speed of the car is**



A 0.050 m/s

B 20 m/s

C 2.0 m/s

D 2880 m/s

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3 **An object moves 45 m [E] in 9.0 s at a constant velocity. Its velocity, in metres per second, is**

ANSWER

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4 **A car moving east slows down from 20 m/s to 8 m/s in 3.0 s. Taking east as positive, the acceleration of the car is**



A 4.0 m/s² [W]

B 4.0 m/s² [E]

C 9.3 m/s² [W]

D 0.25 m/s² [W]

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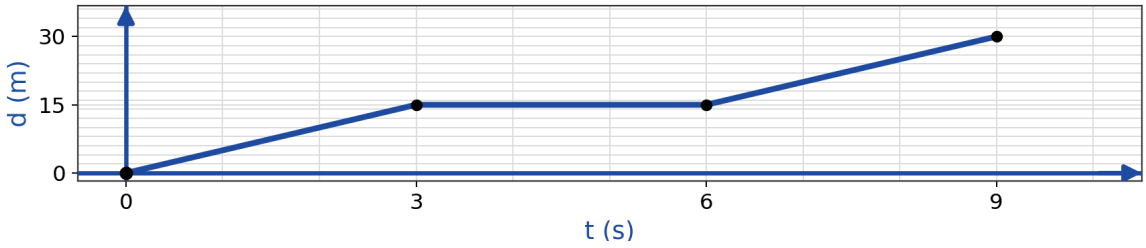
5 **The position-time graph shows an object moving in a straight line. The velocity of the object between 6 s and 9 s is**



A 0 m/s

B 3.3 m/s

C 5.0 m/s

D 15 m/s

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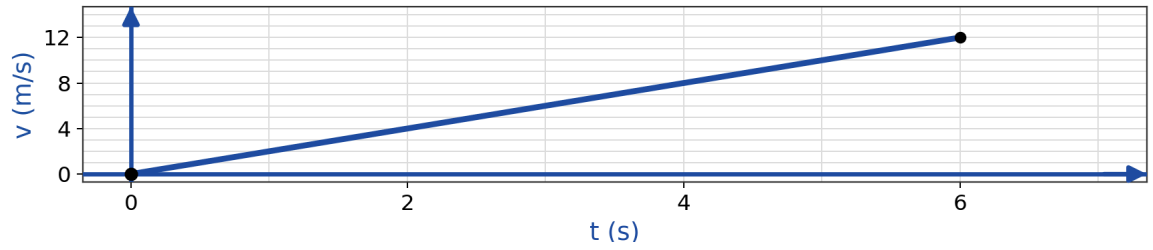
6 **The velocity-time graph shows an objects velocity increasing uniformly from 0 to 12 m/s over the first 6.0 s of its motion. The displacement of the object during these 6.0 s is**



- **A** 2.0 m
- **B** 72 m
- **C** 36 m
- **D** 18 m

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7 **A car starts from rest and accelerates uniformly at 3.5 m/s² for 6.0 s. The distance travelled, in metres, to the nearest metre, is**

ANSWER _____

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8 **An object is dropped from rest from a tall building. Use g = 9.81 m/s² and ignore air resistance. The speed of the object after 3.0 s is**

- A 29 m/s
- B 3.3 m/s
- C 44 m/s
- D 88 m/s

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9 **A hiker walks 5.0 km east, then turns and walks 12 km north. The magnitude of the hikers total displacement is**

- A 7.0 km
- B 13 km
- C 17 km
- D 60 km

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10 **A train moving at 12 m/s accelerates uniformly at 0.80 m/s² over a distance of 200 m. Its final speed, in metres per second, to the nearest tenth, is**



ANSWER

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11 **A ball rolls off the edge of a table 1.25 m above the floor with a horizontal speed of 2.0 m/s. Use g = 9.81 m/s². The ball lands a horizontal distance from the base of the table of approximately**

- **A** 0.25 m
- **B** 4.0 m
- **C** 1.0 m
- **D** 0.50 m

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12 **A projectile is launched from ground level at 20 m/s at an angle of 30° above the horizontal and lands at the same height. Use g = 9.81 m/s². The time the projectile is in the air, in seconds, to the nearest tenth, is**

ANSWER _____

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13 **A projectile is launched from ground level at 20 m/s at an angle of 30° above the horizontal and lands at the same height. Use g = 9.81 m/s². The horizontal range of the projectile is approximately**

- A 35 m
- B 18 m
- C 41 m
- D 71 m

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14 **A boat heads directly across a river, moving at 4.0 m/s relative to the water, perpendicular to the current. The river flows at 3.0 m/s. The speed of the boat relative to the shore is**

- A 7.0 m/s
- B 1.0 m/s
- C 3.5 m/s
- D 5.0 m/s

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15 **A car travelling at 25 m/s brakes uniformly with an acceleration of magnitude 5.0 m/s² until it stops. The distance travelled while braking, in metres, is**



ANSWER

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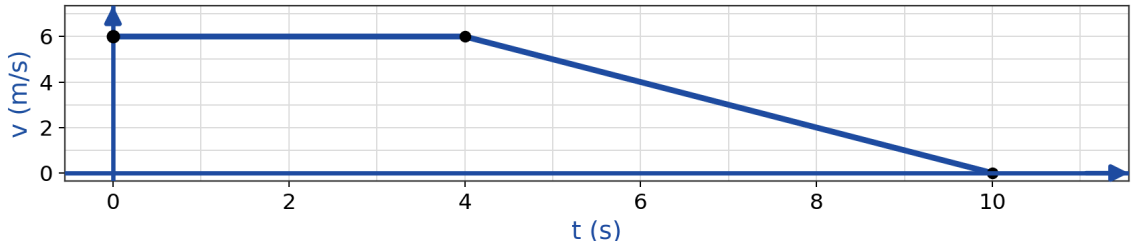
16 **The velocity-time graph shows an objects motion over 10 s. The total displacement of the object over the 10 s is**



A 24 m

B 42 m

C 60 m

D 36 m

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17 **A ball is launched at 15 m/s at an angle of 53° above the horizontal. Use g = 9.81 m/s². The maximum height reached above the launch point is**

- **A** 11 m
- **B** 4.3 m
- **C** 7.3 m
- **D** 23 m

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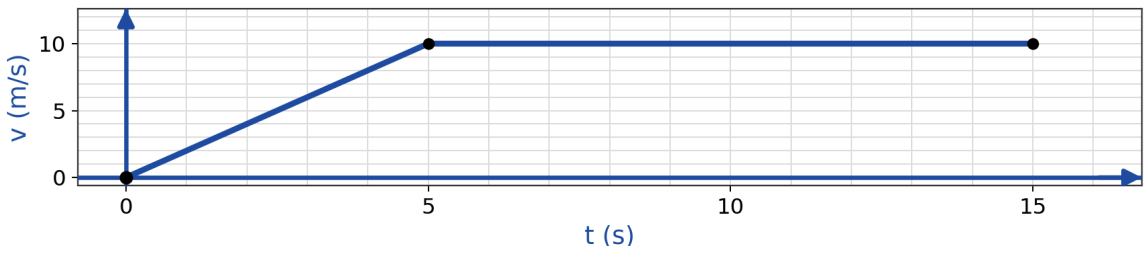
18 **The velocity-time graph shows a cars motion over 15 s. The total distance travelled, in metres, is**



ANSWER

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19 **A ball is thrown straight up into the air at 14 m/s. Use g = 9.81 m/s² and ignore air resistance. The maximum height reached by the ball is closest to**

A 10 m

B 5.0 m

C 14 m

D 20 m

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20 **Two cars on a straight road are 300 m apart and drive directly toward each other, one at 20 m/s and the other at 25 m/s, both at constant speeds. The time until the cars meet is**



A 12 s

B 15 s

C 3.8 s

D 6.7 s

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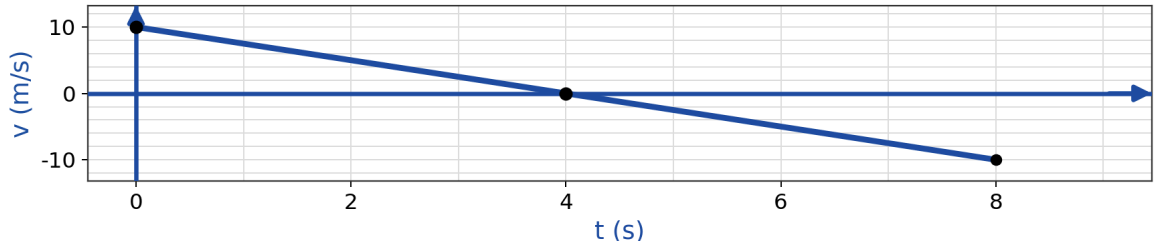
21 **The velocity-time graph shows an objects motion over 8.0 s. The displacement of the object during this interval is**



A 40 m

B 0 m

C 80 m

D -40 m

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22 **A relief package is dropped from a plane flying horizontally at 40 m/s at a height of 490 m above the ground. Use g = 9.81 m/s² and ignore air resistance. The horizontal distance the package travels before it hits the ground, to the nearest ten metres, is**

ANSWER _____

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23 **A soccer ball is kicked at 18 m/s at an angle of 40° above the horizontal. The vertical component of the balls initial velocity is**

- **A** 18 m/s
- **B** 14 m/s
- **C** 12 m/s
- **D** 28 m/s

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24 **A velocity-time graph for an object is a straight line passing through the points (0 s, 4 m/s) and (8 s, 20 m/s). The acceleration of the object is**

- **A** 2.0 m/s^2
- **B** 0.50 m/s^2
- **C** 2.5 m/s^2
- **D** 3.0 m/s^2

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25 **Taking east as positive, a car travels west at a constant speed and then brakes to a stop. While the car is braking, its velocity and acceleration are**



A Velocity positive, acceleration positive

B Velocity positive, acceleration negative

C Velocity negative, acceleration negative

D Velocity negative, acceleration positive

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ANSWER KEY

1. C
2. B
3. 5
4. A
5. C
6. C
7. 63
8. A
9. B
10. 21.5
11. C
12. 2
13. A
14. D
15. 62.5
16. B
17. C
18. 125
19. A
20. D
21. B
22. 400
23. C
24. A
25. D

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