NUNAVUT PHYSICS 20 · UNIT C · 10 QUESTIONS

Circular Motion, Work & Energy — 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 **A 1200 kg car rounds a flat curve of radius 35 m at a speed of 14 m/s. The magnitude of the centripetal force acting on the car is**

- **A** 480 N
- **B** 6.7×10^3 N
- **C** 3.4×10^3 N
- **D** 2.4×10^5 N

Understand It with Pulse | Flag a mistake

2 **A spring is stretched 0.25 m by an applied force of 45 N. The spring constant, in N/m, is _____**

ANSWER _____

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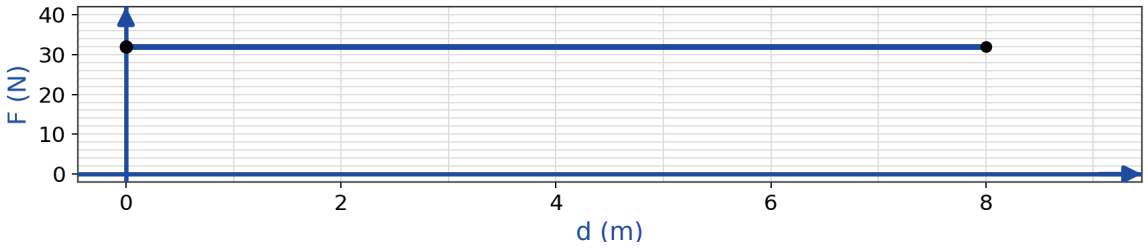
3 **The graph shows net force against distance for a 4.0 kg cart that is initially moving at 4.0 m/s. The force acts in the direction of motion over a distance of 8.0 m. The final speed of the cart is**



A 8.0 m/s

B 9.8 m/s

C 11 m/s

D 12 m/s

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4 **Two objects with masses of 50 kg and 80 kg have their centres 0.50 m apart. Use $G = 6.67 \times 10^{-11}$ N · m²/kg². The magnitude of the gravitational force between them is**

- **A** 2.7×10^{-7} N
- **B** 4.3×10^{-6} N
- **C** 1.1×10^{-6} N
- **D** 1.7×10^{-5} N

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5 **A satellite moves in a circular orbit of radius 8.0×10^{6} m around Earth. Use $G = 6.67 \times 10^{-11}$ N · m²/kg² and a mass for Earth of 5.97×10^{24} kg. The period of the orbit is**

- **A** 7.1×10^{3} s
- **B** 1.1×10^{3} s
- **C** 4.5×10^{4} s
- **D** 5.6×10^{5} s

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6 **A car travels around a flat curve of radius 25 m. The coefficient of static friction between the tires and the road is 0.60. Use g = 9.81 m/s². The maximum speed at which the car can round the curve without sliding, in m/s and to the nearest tenth, is _____**

ANSWER

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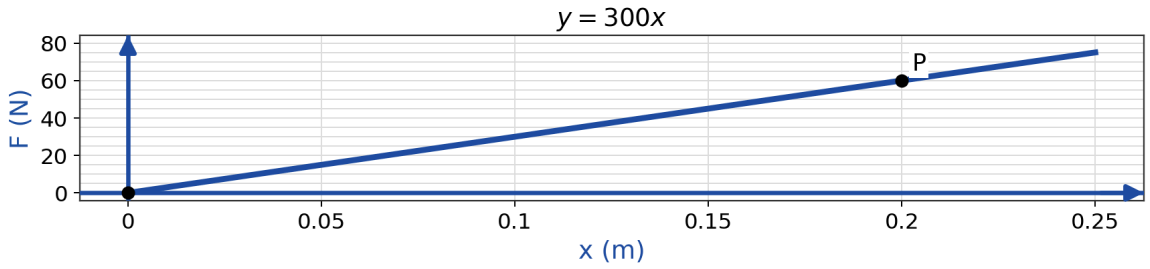
7 **The graph shows spring force against compression for a spring. The spring is compressed 0.20 m and launches a 0.30 kg block across a frictionless horizontal surface. The speed of the block as it leaves the spring is**



A 2.0 m/s

B 6.3 m/s

C 4.5 m/s

D 20 m/s

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8 **A 0.50 kg ball on a string moves in a vertical circle of radius 0.80 m. At the top of the circle, the speed of the ball is 4.0 m/s. Use g = 9.81 m/s². The tension in the string at the top of the circle is**

- **A** 0 N
- **B** 10 N
- **C** 15 N
- **D** 5.1 N

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9 **A 3.0 kg block slides down a frictionless incline, dropping a vertical height of 3.2 m. The block starts with a speed of 3.0 m/s. Use g = 9.81 m/s². The speed of the block at the bottom, in m/s and to the nearest tenth, is _____**

ANSWER _____

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10 **A planet orbits a star in a circular orbit with a radius nine times the radius of Earth's orbit around the same star. The period of the planet, compared with Earth's period, is**

A three times as great

B nine times as great

C twenty-seven times as great

D eighty-one times as great

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ANSWER KEY

1. B
2. 180
3. D
4. C
5. A
6. 12.1
7. B
8. D
9. 8.5
10. C

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