BRITISH COLUMBIA PHYSICS 12 (MPH--12) · UNIT B · 25 QUESTIONS

Dynamics and Circular Motion — 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 net force of 12 N acts on a 4 kg crate. Its acceleration, in metres per second squared, is**



ANSWER

Understand It with Pulse | Flag a mistake

2 **A 5 kg object sits on Earth. Using g = 9.8 m per s squared, its weight, in newtons, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

3 **A 10 kg block slides on a flat surface with a coefficient of kinetic friction of 0.4. Using g = 9.8 m per s squared, the friction force, in newtons, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

4 **Forces of 20 N east and 12 N west act on an object. The net force, in newtons, is**

A 8 east

B 8 west

C 20 east

D 32 east

Understand It with Pulse | Flag a mistake

5 **A 2 kg mass is lifted upward with an acceleration of 2 m per s squared. Using g = 9.8 m per s squared, the tension, in newtons, is**

ANSWER

Understand It with Pulse | Flag a mistake

6 **A 10 kg block rests on a slope. The component of its weight along the slope is 0.6 times its weight. Using g = 9.8 m per s squared, that component, in newtons, is**



ANSWER

Understand It with Pulse | Flag a mistake

7 **An object moves in a circle of radius 3 m at a speed of 6 m per s. Its centripetal acceleration, in metres per second squared, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

8 **A 2 kg object moves in a circle of radius 3 m at a speed of 6 m per s. The centripetal force, in newtons, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

9 **A wheel makes 20 revolutions in 10 s. Its period, in seconds, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

10 **A cyclist moves in a circle of radius 4 m with a period of 4 s. Using π = 3.14, its speed, in metres per second, is**



ANSWER

Understand It with Pulse | Flag a mistake

11 **If the distance between two masses is doubled, the gravitational force between them becomes**

- **A** twice as large
- **B** four times as large
- **C** one quarter as large
- **D** one half as large

Understand It with Pulse | Flag a mistake

12 **If the orbital radius of a satellite increases by a factor of 4, its orbital period increases by a factor of**

- **A** 2
- **B** 4
- **C** 8
- **D** 16

Understand It with Pulse | Flag a mistake

13 **For satellites in circular orbit, a lower orbit generally means a**



A slower orbital speed

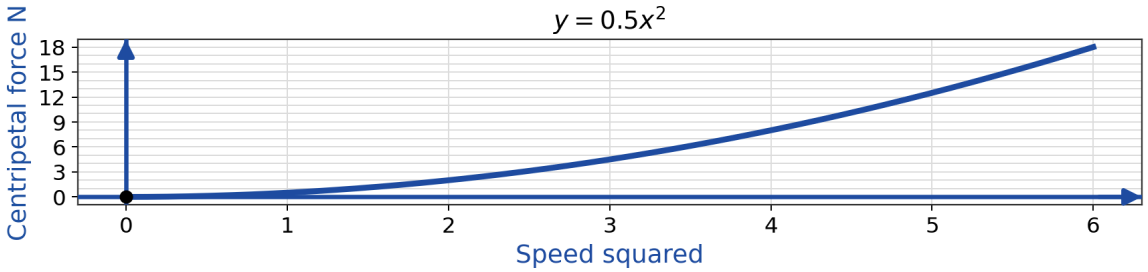
B faster orbital speed

C longer orbital period

D zero gravitational force

Understand It with Pulse | Flag a mistake

14 **The graph shows centripetal force against speed² for a 2 kg object in a circle of radius 4 m . At a speed of 4 m per s , the force , in newtons , is**



A 2

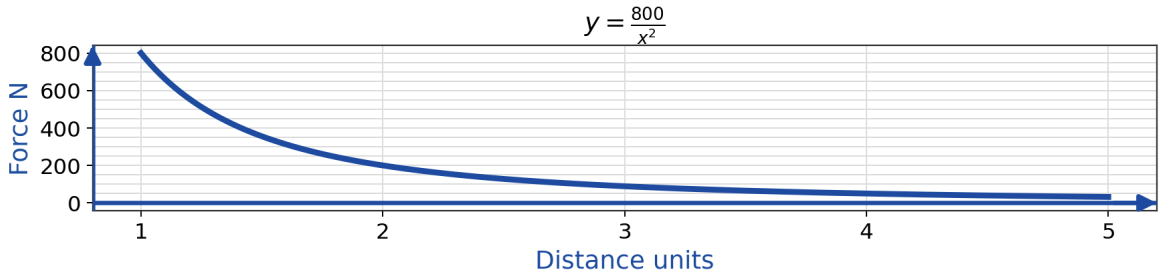
B 4

C 8

D 16

Understand It with Pulse | Flag a mistake

15 **The graph shows gravitational force against distance for two masses , with F = 800 / distance² . At a distance of 2 units , the force , in newtons , is**



A 100

B 200

C 400

D 800

Understand It with Pulse

Flag a mistake

16 **Inertia is best described as the tendency of an object to**

- A resist a change in its motion
- B speed up on its own
- C fall toward Earth
- D lose mass when pushed

Understand It with Pulse | Flag a mistake

17 **When a swimmer pushes water backward, the water pushes the swimmer forward. This illustrates**

- A the law of inertia
- B action and reaction
- C conservation of mass
- D uniform circular motion

Understand It with Pulse | Flag a mistake

18 **For an object in uniform circular motion, the acceleration points**

A toward the centre of the circle

B along the tangent

C away from the centre

D in the direction of motion

Understand It with Pulse | Flag a mistake

19 **Kepler second law states that a planet sweeps out equal areas in**



A equal times

B equal distances

C equal speeds

D one year

Understand It with Pulse | Flag a mistake

20 **If both masses in a gravitational pair are doubled, the gravitational force between them becomes**

A twice as large

B four times as large

C eight times as large

D unchanged

Understand It with Pulse | Flag a mistake

21 **The centripetal force that keeps a satellite in circular orbit is**

A gravity

B friction

C air pressure

D the normal force

Understand It with Pulse | Flag a mistake

22 **An object moves at a constant speed in a circle. The net force on it**

A is zero

B is not zero and points toward the centre

C points along its motion

D points away from the centre

Understand It with Pulse | Flag a mistake

23 **A 1 kg ball on a string moves in a horizontal circle of radius 2 m at a speed of 4 m per s. The tension in the string, in newtons, is**



ANSWER

Understand It with Pulse | Flag a mistake

24 **A block on a flat surface has a coefficient of static friction of 0.5 and a mass of 4 kg. Using g = 9.8 m per s squared, the maximum static friction, in newtons, is**

ANSWER

Understand It with Pulse | Flag a mistake

25 **An object in a gravitational field experiences a force that depends on**

A its mass and the field strength

B its speed only

C its colour

D its temperature

Understand It with Pulse | Flag a mistake

ANSWER KEY

1.	3	**10.**	6.28	**19.**	A
2.	49	**11.**	C	**20.**	B
3.	39.2	**12.**	C	**21.**	A
4.	A	**13.**	B	**22.**	B
5.	23.6	**14.**	C	**23.**	8
6.	58.8	**15.**	B	**24.**	19.6
7.	12	**16.**	A	**25.**	A
8.	24	**17.**	B		
9.	0.5	**18.**	A		

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