

1.

Value: 1

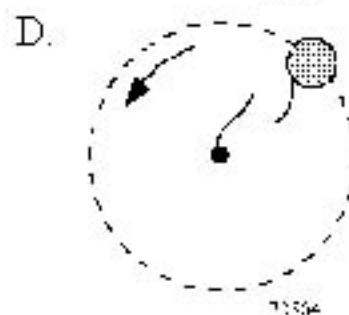
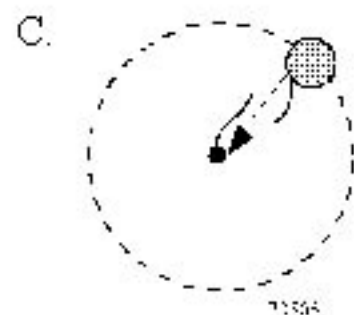
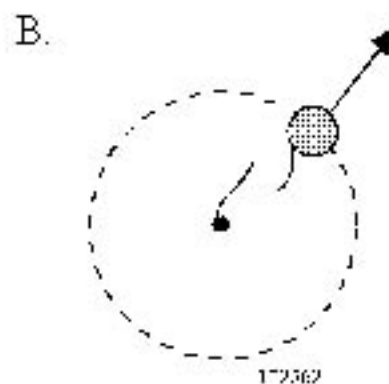
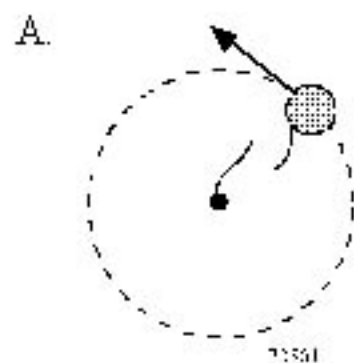
In relation to the force acting on an object causing it to move in a circle, which inference actually describes an aspect of this force?

- A. It balances all the other forces.
- B. It is in the same direction as its velocity.
- C. It is directed toward the centre of the circle.
- D. It is centripetal and parallel to the object's velocity.

2.

Value: 1

A ball is whirled around in a circle on the end of a string when the string suddenly breaks. Which diagram shows the new direction of the ball's motion?



3.

Value: 1

An object on the end of a string is twirled around with uniform circular motion in a horizontal plane. The force exerted on the object is directed toward the

- A. curving path of the circular motion
- B. centre of rotation for the circular motion
- C. tangent to the curve of the circular motion
- D. velocity vector opposite the circular motion

4.

Value: 1

If a student runs at a speed of 10 m/s on a circular track of radius 240 m, what is his acceleration?

- A. 0.042 m/s^2
- B. 0.21 m/s^2
- C. 0.42 m/s^2
- D. 2.4 m/s^2

5.

Value: 1

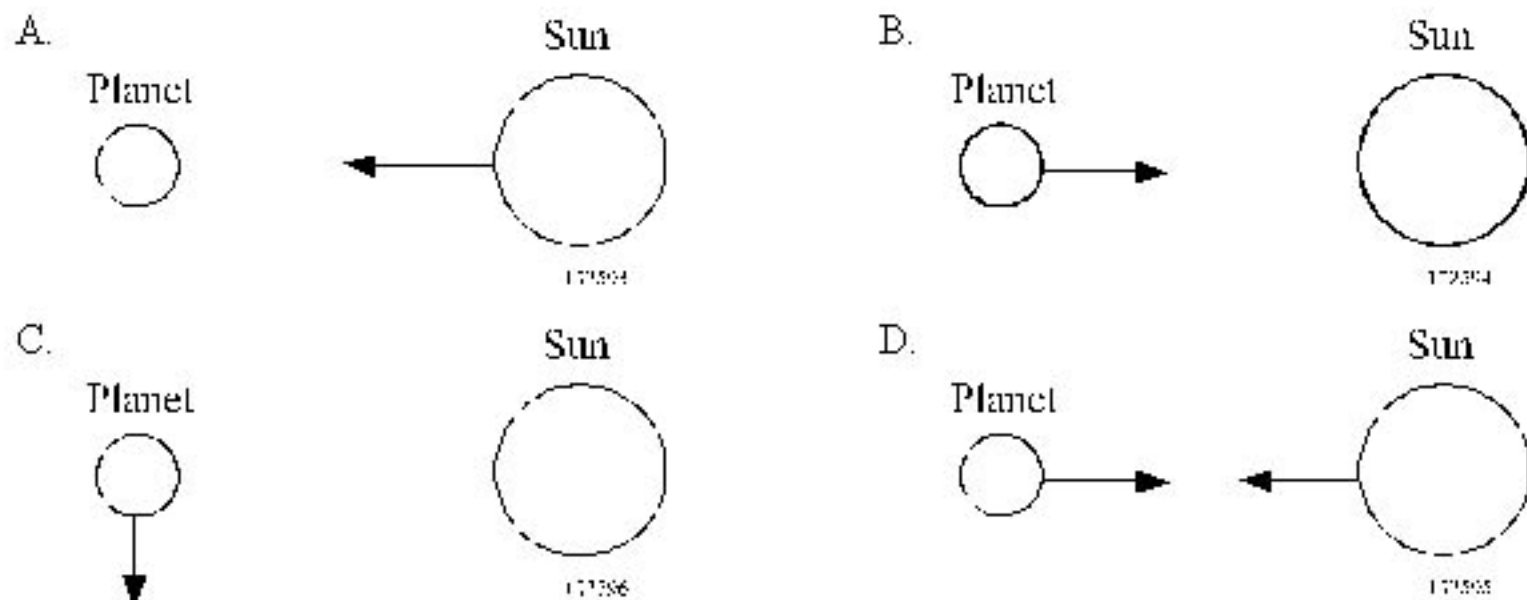
A 15 kg object is moving in a circle of radius 60 m at a speed of 20 m/s. Then, the object's speed is tripled and the radius of the circle is doubled. What was the original centripetal force exerted on the object, and by what factor is this force changed by the new conditions?

- A. A force of 5.0 N was changed by a factor of 1.5.
- B. A force of 5.0 N was changed by a factor of 4.5.
- C. A force of $1.0 \times 10^2 \text{ N}$ was changed by a factor of 1.5.
- D. A force of $1.0 \times 10^2 \text{ N}$ was changed by a factor of 4.5.

6.

Value: 1

In applying Newton's universal law of gravitation to a planet and the Sun, which diagram illustrates the part of this law that relates to forces of attraction?



7.

Value: 1

The gravitational force of attraction between two objects is F_g . If the mass of either of these objects is doubled, then the size of the force will be

- A. $\frac{1}{4}F_g$
- B. $\frac{1}{2}F_g$
- C. $2F_g$
- D. $4F_g$

8.

Value: 1

In a Cavendish experiment, the force of attraction between two spheres is 6.25×10^{-9} N at a separation distance of 1.60×10^{-1} m. If the mass of one of the spheres is 5.0 kg what is the mass of the other sphere?

- A. 0.48 kg
- B. 2.4 kg
- C. 3.0 kg
- D. 19 kg

9.

Value: 1

In a space shuttle orbiting 6.40×10^3 km above the surface of Earth, an astronaut releases a 325 g apple. If the radius of Earth is 6.40×10^3 km, what is the acceleration of the apple?

- A. 2.45 m/s^2
- B. 4.90 m/s^2
- C. 9.80 m/s^2
- D. 19.6 m/s^2

10.

Value: 1

A 1.5×10^{15} kg mass is attracted by a 1.2×10^{14} kg mass at a distance of 1.3×10^6 m. What is the gravitational force of attraction between the two masses?

- A. 7.1×10^6 N
- B. 9.2×10^{12} N
- C. 1.1×10^{17} N
- D. 1.4×10^{23} N