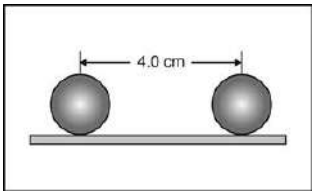
Study Guide: Gravitational Force

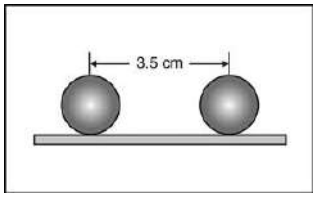
S8P5. Students will recognize characteristics of gravity, electricity, and magnetism as major kinds of forces acting in nature.
a. Recognize that every object exerts gravitational force on every other object and that the

1. Two identical objects are shown below. In which case is the gravitational force the least?

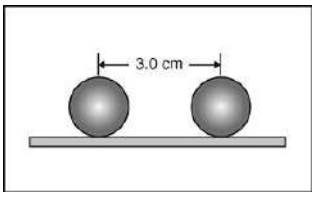
A.



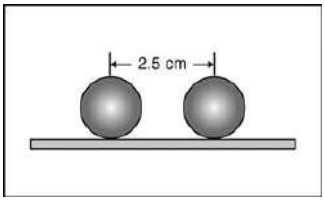
B.



C.



D.



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2. The force of gravity is related to the masses of the objects attracting each other. The chart shows the force of gravity on a 1 kg mass on the surface of four planets in the solar system.

Planet	Gravity (N)
Mercury	3.7
Venus	8.9
Jupiter	23.1
Neptune	11.0

Which planet has the greatest mass?

A. Mercury

B. Venus

C. Jupiter

D. Neptune

3. The gravitational attraction between objects increases as _____

A. the volume of the objects increases.

B. the objects are moved farther apart.

C. the mass of the objects decreases.

D. the objects move closer together.

4. When astronauts walked on the Moon, they used weighted boots to help them

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walk due to the lower gravitational pull. What difference between Earth and the Moon accounts for the difference in gravity?

A. density

B. diameter

C. mass

D. volume

5. Two identical books are on opposite ends of a table. Which of these would increase the gravitational force exerted between the two books?

A. decrease the distance between the books

B. decrease the mass of the books

C. decrease the mass of the table

D. decrease the temperature in the room

6. When placed at equal distances apart, the greatest gravitational attraction will be between two

A. skateboards.

B. refrigerators.

C. bowling balls.

D. school buses.

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7. Which is needed to determine the amount of gravitational force between two objects?

A. weight and time

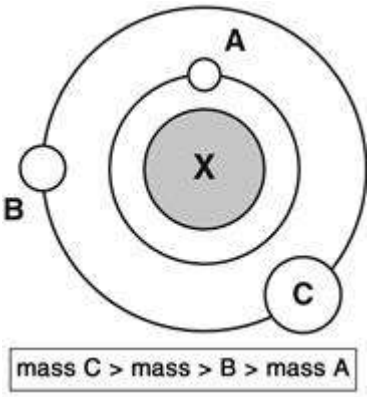
B. distance and mass

C. volume and mass

D. area and weight

Planet X has three moons. The gravitational force between the planet and each of its moons is the same.

8.



In which of these ways should the diagram be corrected?

A. Moon B should be smaller.

B. Moon A should be closer to Moon B.

C. The orbit of Moon A should be closer to Planet X.

D. The orbit of Moon C should be farther away from Planet X.

9. The force of gravity would be greatest between which of the following?

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Object	Mass
Pencil	15 g
Brick	60 kg
Car	1400 kg

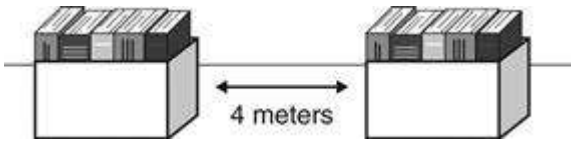
A. two cars two meters apart

B. two bricks two meters apart

C. a brick and a car one meter apart

D. a brick and a pencil two meters apart

Two boxes filled with books have the same mass and are placed 4 meters apart.



10. If the books are removed from each box to reduce the mass to one-half the original mass, how far apart must the boxes be placed to keep the gravitational force between the two boxes constant?

A. 1 meter

B. 2 meters

C. 8 meters