Name: _____ Date: _____

PHYSICS
All About Gravity Concepts

Part 1: Gravity Vocabulary. Fill in the blank. Drag and drop the words into the paragraph at their correct places.

Attraction	Fall	Mass	Orbit
Decreases	Gravity	Moon	Sun
Distance	Increases	Newton	Tides

The English scientist Sir Isaac _____ developed the universal law of _____. This law states that gravity is a force of _____ between every object in the universe. This law also states that the force of attraction between two objects depends on two things: the _____ of the objects and the _____ between the objects. As the mass of the objects increases the force of gravity _____ As the distance between the objects increases the force of gravity_____. Gravity can be used to explain many of the things we observe in the universe. For example, gravity explains why objects _____ to the ground when you drop them. This is because the Earth's gravity is pulling on the object. Gravity also explains why the oceans have _____. They are caused by the gravitational pull of the _____ and the _____. Gravity combined with the law of inertia can even explain why the planets _____ the sun.

Facts About Gravity

Part 2: Complete the sentence with words and phrases such that your response accurately completes the response.

1. If two objects are moved closer together, the magnitude of gravitational attraction force will _____.

2. If two objects are moved farther apart, the magnitude of gravitational attraction force will _____.

3. If the distance between two objects doubles, the gravitational attraction force will _____.

4. If the distance between the two objects decreases to ½ of the original distance, the gravitational attraction force will _____.

5. The magnitude (how strong) two objects attract each other is proportional to the _____ and inversely proportional to the _____ between the objects.

6. Gravitational attraction is a mutual force. This means that two objects attract each other with a force that is _____ to each other.

7. Gravity is universal. This means that every object in our _____ is gravitationally attracted to every other object in our _____.

8. There are _____ high tides and _____ low tides on Earth's oceans every day.

9. The high tides (ocean bulges) are caused by the gravitational attraction of Earth's oceans to the _____.

10. Gravity is a fundamental force. That means that gravity cannot be created by _____ and gravity is automatically with matter because of _____.

Part 3. Multiple Choice. Read each question carefully. Choose the correct answer from the choices.

_____ 11. Gravitational attraction exists because of which property of matter?
A. Mass
B. Volume
C. Diameter
D. Energy

_____ 12. Gravitational attraction is proportional to the _____ of the objects attracting each other.
A. Sum of the masses
B. Square of the masses
C. Difference in the masses
D. Product of the masses

_____ 13. Gravitational attraction is inversely proportional the _____ the objects attracting each other.
A. Distance between
B. Distance squared between
C. Square root of the distances between
D. Difference in diameter of

_____ 14. Gravity is "Universal". Why is gravity universal?
A. Gravity is everywhere.
B. All matter has gravity because matter has mass.
C. All objects in our universe pull on all other objects in our universe.
D. Gravity is a force that naturally exists and cannot be created by man.

_____ 15. How does gravity align with Newton's 1st Law of Motion?

A. When objects interact by gravitational attraction, gravity's pull will cause objects to change their velocity or direction.

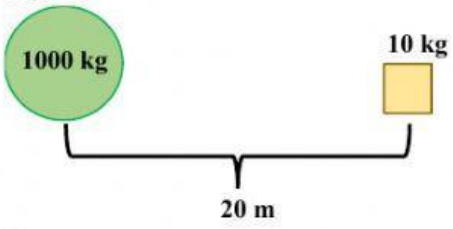
B. Objects pull on each other with a force that is equal in magnitude and opposite in direction.

C. Objects accelerate toward each other, and the magnitude of the acceleration is related to the mass of the objects.

D. When objects interact by gravity, smaller objects always fall downward to the surface of the planet, moon, or larger object.

_____ 16. Which combination of objects will have the strongest gravitational attraction force between them?

A.



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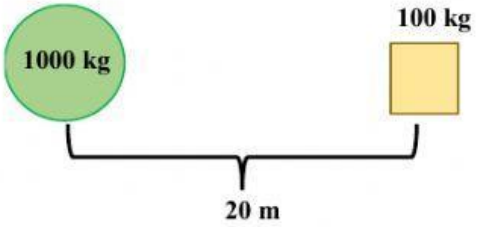

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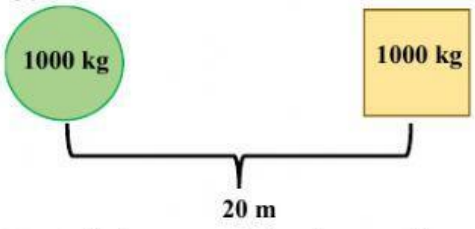
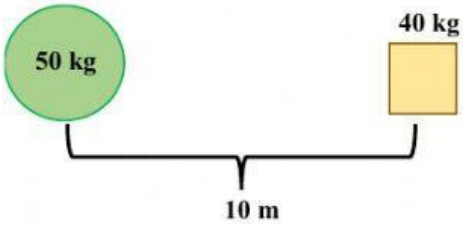


D. All three combinations will make the same magnitude of gravitational attraction force.

_____ 17. Which combination of objects will have the strongest gravitational attraction force between them?

A.



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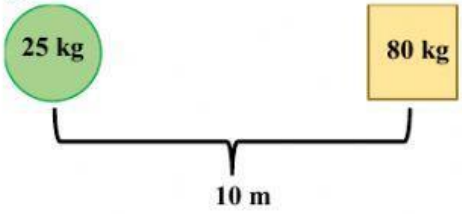

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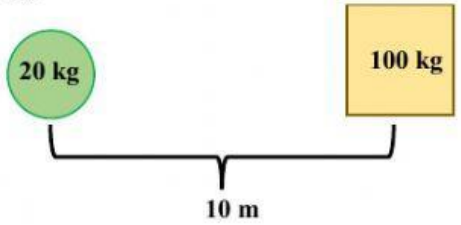

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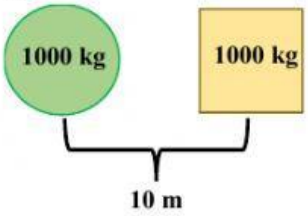
Which combination of objects will have the strongest gravitational attraction
_____ 18. force between them?

A.



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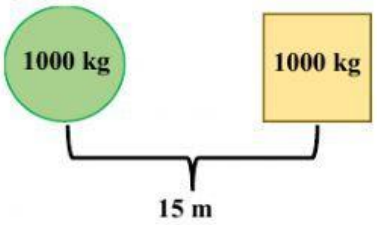

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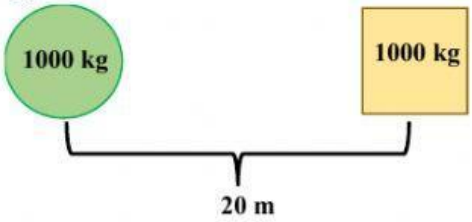
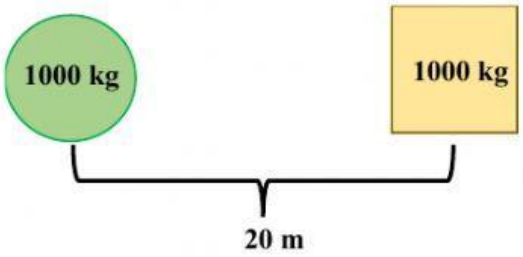


D. All three combinations will make the same magnitude of gravitational attraction force.

A 1000-kg green sphere and a 1000-kg orange block are placed 20 m apart.



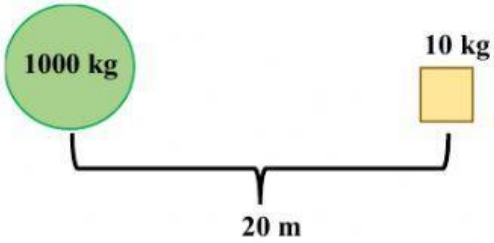
_____ 19. Which statement is correct?

A. The green sphere pulls with stronger force on the orange block. The orange block pulls with weaker force on the green sphere.

B. The green sphere and the orange sphere pull on each other with forces equal in magnitude.

C. The orange block pulls with stronger force on the green sphere. The green sphere pulls with weaker force on the orange block.

D. Neither the green sphere nor the orange block are pulling on each other by gravity force.



A 1000-kg green sphere and a 10-kg orange block are placed 20 m apart.

_____ 20. Which statement is correct?

A. The green sphere pulls with stronger force on the orange block. The orange block pulls with weaker force on the green sphere.

B. The green sphere and the orange sphere pull on each other with forces equal in magnitude.

C. The orange block pulls with stronger force on the green sphere. The green sphere pulls with weaker force on the orange block.

D. Neither the green sphere nor the orange block are pulling on each other by gravity force.

Astronaut Major Tom is travelling in a spaceship. The spaceship travels from Earth to Mars. The spaceship then travels from Mars to Earth's moon. On

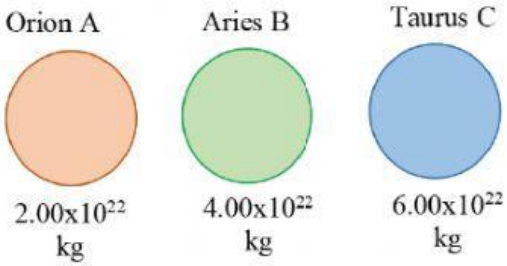
_____ 21. which body will Astronaut Major Tom the greatest mass?

A. On Earth
C. On Earth's moon
B. On Mars
D. Equal masses on all three bodies

Astronaut Major Tom is travelling in a spaceship. The spaceship travels from Earth to Mars. The spaceship then travels from Mars to Earth's moon. On

_____ 22. which body will Astronaut Major Tom the greatest weight?

A. On Earth
C. On Earth's moon
B. On Mars
D. Equal weight on all three bodies

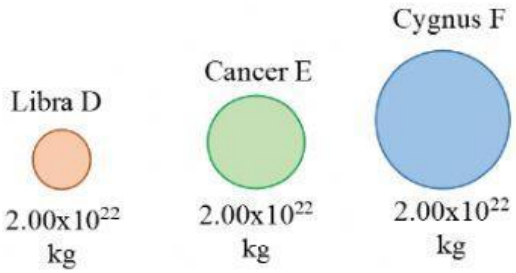


Astronaut Major Tom is travelling in a spaceship in a nearby solar system. The spaceship travels to and lands on planets Orion A, Aries B, and Taurus C. On which body will Astronaut

_____ 23 Major Tom have the greatest weight?

A. On Orion A
C. On Taurus C
B. On Aries B
D. Equal weight on all three bodies

_____ 24 Astronaut Major Tom is travelling in a spaceship in a nearby solar system. The spaceship travels to and lands on planets Libra D, Cancer E, and Cygnus F. On which body will Astronaut Major Tom have the greatest weight?



A. On Libra D
B. On Cancer E
C. On Cygnus F
D. Equal weight on all three bodies