Name: _____
Block: _____

Learning Intentions

- Learn how to calculate the force of gravitational attraction between two objects.

Notes

- Force of gravity on the Earth's surface

- Universal Law of Gravitation

- The law is not actually universal. It was superseded by _____'s _____ Theory of _____.

Questions

1. What is the force of gravity between two 1.0 kg masses 1.0 metres apart?

2. The masses are moved so that they are 1.0 mm apart. What is the force of gravity between the masses?

3. The masses are moved so that they are at opposite "ends" of the universe, 93 billion light years apart. What is the force of gravity between the masses?

4. Using the Universal Law of Gravitation, find the force of gravity on a 1.0 kg mass at the Earth's surface. The Earth has a mass of 5.972×10^{24} kg, and a radius of 6,371 km.

5. What will be the force of gravity on the 1 kg mass at the moon's surface? How does this compare to Earth's gravity? The moon has a mass of 7.35×10^{22} kg, and a radius of 1,737 km.

See over →

6. Using the Universal Law of Gravitation, find the force of gravity on a 1.0 kg mass on the International Space Station, which is located 400 km above the Earth's surface. How does this compare with the force of gravity at the surface?

7. If there is still gravity at the ISS, why do astronauts float?

Answers

1. 6.7×10^{-11} N [towards each other]
2. 6.7×10^{-5} N [towards each other]
3. 8.6×10^{-65} N [towards each other]
4. 9.8 N [down]
5. 1.6 N [down], about 16% (1/6) as strong
6. 8.7 N [down], about 89% (8/9) as strong