**Gravitation 1**

1. What is a field force?

2. Write down the 5 fundamental forces and give a brief definition of each. What do these 5 forces have in common?

3. What causes a gravitational field?

4. What factors determine how large a gravitational field is?

5. What factors determine how large a gravitational force on a specific object is?

6. What units can the gravitational field be measured in?

7. What is another name for the gravitational field?

8. What is another name for the gravitational force of an object near the surface of a planet?

9. An object weighs 800 N on Earth.

a. What is the mass of the object?

b. What is the weight of the object on the moon, where the gravitational field strength is 1.6 N/kg?

c. Suppose the object weighed 2400 N on another planet. What is the gravitational field strength on this planet?

10. Describe the path of an object in orbit around the Earth. Include information about its speed, velocity, acceleration and the force acting on it.

11. Why does the Moon stay in orbit around the earth? Explain with 2 or more sentences.

12. Find acceleration due to gravity on the Earth if its mass is 5.98 x 1024 kg and its radius is 6.38 x 106 m,

13. The international space station is 400,000m above the earth. What is the gravitational field at the international space station?

14. Why do astronauts on the ISS feel weightless?

15. Is there gravity in space? Answer in CER format.

16. The acceleration due to gravity on earth is about 10m/s2. What is the gravitational field on a planet with half the mass of the earth and half its radius?

17. The force between two identical masses *M* separated by a distance *d* is *F.* What happens to the magnitude of F when:

a. One mass is doubled?

b. The distance separating the masses is halved?

c. Both masses are doubled?

d. Each mass is halved and the radius is tripled?