

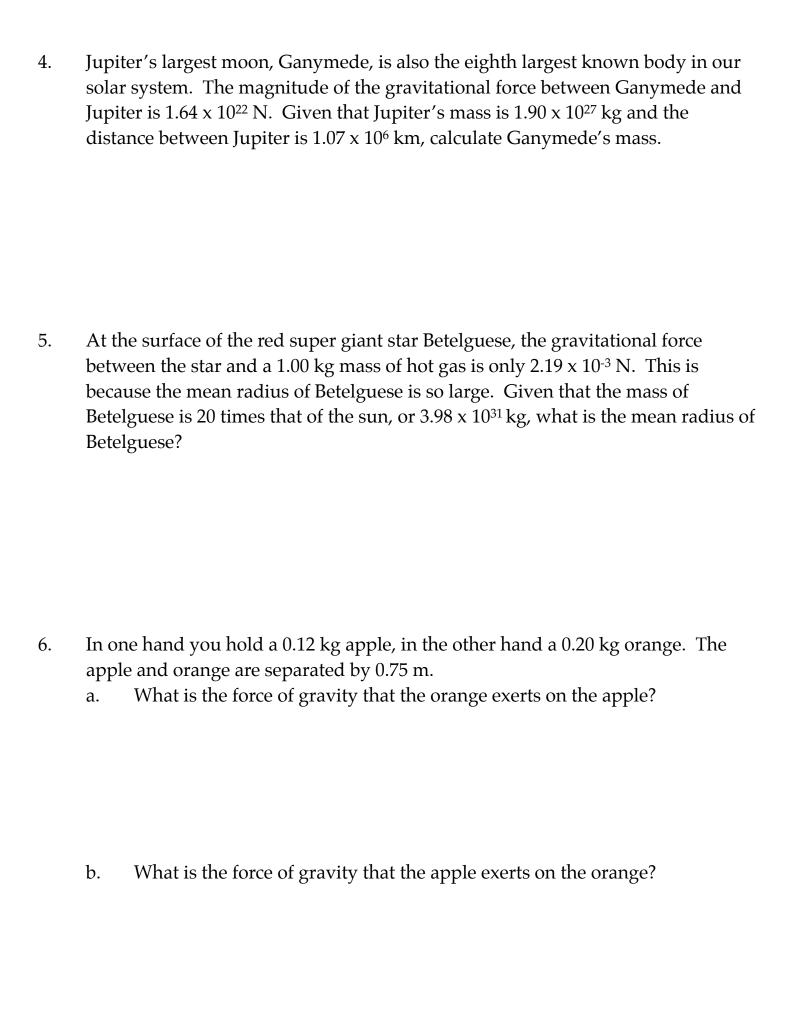
## Gravitational Force Worksheet

Name	 
Period	

1. In 1874, a swarm of locusts descended on Nebraska. The swarm's mass was estimated to be  $2.5 \times 10^{10}$  kg. If this swarm were split in half and the halves separated by  $1.0 \times 10^8$  m, what would the magnitude of the gravitational force between the halves be?

2. Jupiter, the largest planet in the solar system, has a mass 318 times that of Earth and a volume that is 1323 times greater than Earth's. Calculate the magnitude of the gravitational force exerted on a 50.0 kg mass on Jupiter's surface.

3. A whale shark can have a mass of  $2.04 \times 10^4$  kg. A blue whale can have a mass of  $1.81 \times 10^5$  kg. If the distance between these two creatures is 1.50 m, how large is the gravitational force between them?



7. At a new Moon, the Earth, Moon, and Sun are all in a line.



Find the net gravitational force exerted on the Moon.