mass wt = Fg
1 kg = 2.2 lbs "Fig Newtons!"

$156\,lbs \times \frac{1\,kg}{2.2\,lbs} \times \frac{1000\,g}{1\,kg} = 70909\,g$

1 2.2. lbs of weight have a mass of 1 kg. If your teacher's weight is 156 lbs what is her mass in grams?

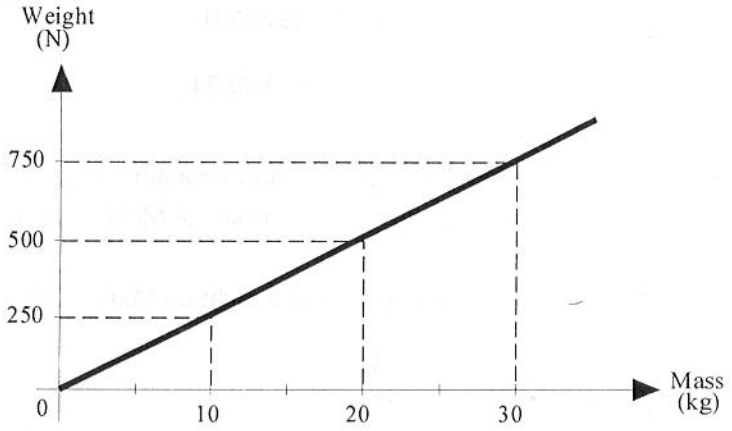
2 A 34 g mass has a weight of??? (in N) $Fg = 34\,g \times \frac{1\,kg}{1000\,g} \times 9.8\,\frac{m}{s^2} = 0.33\,N$ < than an apple

3 What is the acceleration due to gravity on Planet Xenon if a 15 kg mass has a weight of 53 N? Is Planet Xenon more or less massive than Planet Earth?? $\frac{Fg}{m} = \frac{mg}{m} = \frac{53\,N}{15\,kg} = 3.53\,\frac{m}{s^2} = g$ on Xenon

4 When Neil Armstrong walked on the moon in 1969, he brought back a fragment of lunar rock whose mass on the moon was 10 kg and whose weight was 16.3 N.

What is the mass of this fragment of lunar rock on Earth where the gravitational acceleration is 9.8 m/s²? 10 kg! mass stays the same

5 On Jupiter, different masses were weighed. The results were plotted on the following graph.



What is the gravitational field strength on Jupiter? = g $\frac{Fg}{m} = \frac{mg}{m} = \frac{750\,N}{30\,kg} = 25\,\frac{N}{kg} = 25\,\frac{m}{s^2}$

A) 25 N/kg

B) 4.0 N/kg

C) 2.5 N/kg

D) 0.40 N/kg

6 Which of the following statements corresponds to the definition of the weight of an object?

A) It is the amount of force required to set an object in motion.

B) It is the amount of force required to lift an object. remember Eureka & holding up the apple

C) It is the amount of force required to keep an object moving at a constant speed.

D) It is the amount of inertia of an object at rest.

1 k

① $F_g = mg = 1960\,N$, $\frac{F_g}{g} = \frac{mg}{g}$, $9.8\,\frac{m}{s^2}$

7 An astronaut was asked to bring an instrument to the surface of another planet. This instrument weighs 1960 N on Earth. When she was on the other planet, she determined that the instrument weighed 330 N.

What is the acceleration due to gravity on the surface of this planet?

$m = 200\,kg$

② $F_g = mg$, $\frac{F_g}{m} = \frac{mg}{m}$, $\frac{330\,N}{200\,kg} = g = 1.65\,\frac{m}{s^2}$

A) $0.168\ m/s^2$ C) $5.94\ m/s^2$

(B) $1.65\ m/s^2$ D) $58.2\ m/s^2$

8 An astronaut, who weighs 600.0 N on Earth, finds himself on the planet Jupiter where the gravitational constant, g, is $26.4\ m/s^2$.

What is the astronaut's weight on Jupiter?

① $F_g = mg$, $\frac{F_g}{g} = \frac{mg}{g}$, $\frac{600\,N}{9.8\,\frac{m}{s^2}} = 61.2\,kg = m$

② $F_g = mg$

$= (61.2\,kg)(926.$

$F_g = 1616\,N$

A) 22.7 N C) 1616.3 N

B) 61.2 N D) 15 840.0 N

9 Inspired by her idol Julie Payette, Karen dreams of becoming an astronaut and travelling to the planet Mars one day. She learns that the acceleration due to gravity on the surface of Mars is approximately $3.6\ m/s^2$. $= g$

Which of the following statements describing Karen's mass and weight on Mars would be true?

A) Her mass and weight are less than they are on Earth.

B) Her mass is less than it is on Earth, but her weight is the same.

(C) Her mass is the same, but her weight is less than it is on Earth. → the planet Mars is smaller than Earth ($g = 3.6\,m/s^2 < 9.8\,m/s^2$)

D) Her mass and weight are the same as they are on Earth.

10 An object weighing 2.0×10^1 N at Earth's surface is moved to a location where its weight is 1.0×10^1 N.

What is the acceleration due to gravity at this location?

$\frac{2.0 \times 10^1\,N}{1.0 \times 10^1\,N}$

A) $2.0\ m/s^2$ (C) $4.9\ m/s^2$

B) $2.4\ m/s^2$ D) $9.8\ m/s^2$

$\frac{F_{g_1} = mg}{F_{g_2} = mg}$ $\frac{mg_1}{mg_2}$ $\frac{F_{g_1}}{F_{g_2}} = \frac{g_1}{g_2}$