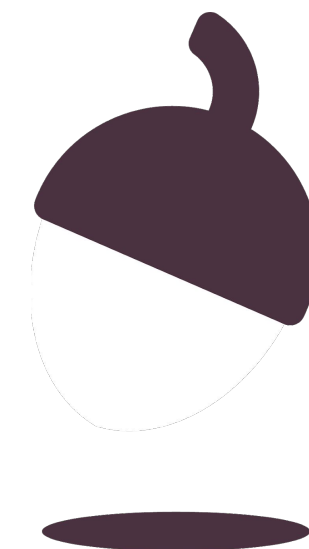


Combined Science Key Stage 4 - Forces

Gravity, Mass, and Weight

Mr Saville



OAK
NATIONAL
ACADEMY

Independent practice

1. Convert 4 kN into N
2. Convert 2000 N into kN
3. Convert 500 N in kN
4. Convert 10000 N in kN
5. Convert 3 N into kN
6. Convert 8.2 kN into N
7. Convert 0.4 kN into N
8. Convert 0.00072 kN into N



Independent practice:

Calculate (1/2):

1. the weight of a 3 kg object in a gravitational field with a strength of 9.8 N/kg
2. the weight of a 5 kg object in a gravitational field with a strength of 9.8 N/kg
3. the weight of a 450 g object in a gravitational field with a strength of 9.8 N/kg Give your answer to 2 significant figures.



Independent practice:

Calculate (2/2):

1. the mass of an object 500 N object in a gravitational field with a strength of 9.8 N/kg. Give your answer to 3 significant figures
2. the mass of an object 4500 N object in a gravitational field with a strength of 9.8 N/kg. Give your answer to 2 significant figures.
3. the mass of an object 3298 N object in a gravitational field with a strength of 9.8 N/kg. Do this to 3 significant figures.
4. the gravitational field strength for a 135 kg object with a weight of 1325 N. Give your answer to 3 significant figures .
5. the gravitational field strength for a 5.75 kN object with a mass 874 kg. Give your answer to 2 significant figures.
6. the gravitational field strength for a 2.4 kN object with a mass 125 kg.



A newtonmeter measures the weight of an object. Look at the figure to the right

What is the weight of the object in the figure?

Weight = _____ N **(1)**

(c) An object has a weight of 6.4 N. Calculate the mass of the object.

Use the equation

$$\text{mass} = \text{weight} \div \text{gravitational field strength } (g)$$

$$\text{gravitational field strength} = 9.8 \text{ N / kg}$$



Mass = _____ kg **(1)**



(d) The mass of a bag of sugar is 1 kg.

- On Earth the weight of this bag of sugar is 10 N.
- On Mars the weight of this bag of sugar is 4 N.

Suggest why the weight of the bag of sugar is different on Earth and on Mars.

(1)

