

## Weight Practice

- 1 On Earth, what is the rule for working out the weight in newtons
  - (a) if you are given the mass in kg?
  - (b) if you are given the mass in g?

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- 2 Convert these masses into weights in newtons.

(a) 4.0 kg	(c) 0.3 kg	(e) 350 g
(b) 8.0 kg	(d) 7.2 kg	(f) 15 g

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- 3 Convert these weights into masses in kilograms.

(a) 80 N	(c) 480 N	(e) 2.5 N
(b) 30 N	(d) 25 N	(f) 0.2 N

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- 4 Convert these weights into masses in grams.

(a) 6.5 N	(b) 0.3 N	(c) 0.07 N
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- 5 Complete the word equations.
  - (a) Weight =
  - (b) Mass =
  - (c)  $g$  =

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- 6 Complete the equations using symbols.

$W$  is the weight,  $m$  is the mass and  $g$  is the gravitational field strength

(a) $W =$	(b) $g =$	(c) $m =$
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- 7 On a planet where  $g = 14 \text{ N/kg}$ , what is  $W$  when  $m = 52 \text{ kg}$ ?

The table below shows the gravitational field strengths at the surfaces of different objects in our Solar System.

Space object	Mercury	Jupiter	Saturn	Ceres	Sun	Pluto
$g$ (N/kg)	3.7	24.7	10.5	0.27	290	0.5

8 What is the weight of...

(a) a 62 kg teenager on Mercury?

(d) a 800 kg small car on Saturn?

(b) a 62 kg teenager on Jupiter?

(e) a 1400 kg van on Pluto?

(c) a 62 kg teenager on the Sun?

(f) a 2300 kg minibus on Ceres?

9 How many kilograms of mass would you need to weigh...

(a) 21 N on Saturn?

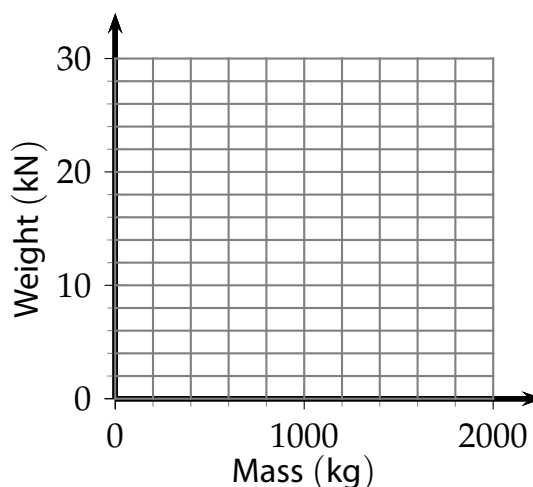
(c) 29 N on the Sun?

(b) 0.5 N on Pluto?

(d) 200 N on Ceres?

10 The weights of some objects on a new planet are given in the table.

Object	Mass (kg)	Weight (N)	Weight (kN)
Motorcycle	200	3000	
Car	1200	18 000	
Hippo	2000	30 000	
Walrus	1500	22 500	



(a) Fill in the column with weights in kN.

(b) Plot a graph of weight against mass. Add a best fit straight line.

(c) What is the weight of a 1800 kg giraffe? Use the graph.

(d) Choose a point on your straight line, and use it to work out the gravitational field strength on this planet.