Weight Practice

1 Are these describing weight or mass? Decide each one separately.

(a) It is a force.

(b) It is measured in grams.

(c) It measures how much stuff something is made of.

(d) It makes things hard to hold up for long.

2 A space delivery company ships a box of apples to the Moon to feed explorers. On Earth the mass was 12 kg and the weight was 120 N. The Moon's gravity field is one sixth of the Earth's gravity field.

(a) What is the mass of the box once it gets to the Moon?

(b) What is the weight of the box once it gets to the Moon?

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3 Work out the numbers which need to go in the boxes to make the equations true.

(a) $\square = 7 \times 10$ (b) $\square = 15 \times 3$ (c) $\square = 0.80 \times 7$

4 Work out the numbers which need to go in the boxes to make the equations true.

(a) $90 = \square \times 10$ (b) $75 = \square \times 3$ (c) $42 = \square \times 7$

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weight (N) _____ = mass (kg) ____ weight (N) _____ = mass (kg) ___

5 Work out these weights using the equations:

(a) 8 kg parcel on Earth

weight (N)	=	mass (kg)	×	10
	=	_	×	10

(b) 12 kg of soil on Venus

weight (N)	=	mass (kg)	×	7
	=	__	×	7

6 Work out these masses using the equations:

(a) 1500 N llama on Earth

weight (N)	=	mass (kg)	×	10
____	=		×	10

(b) 140 N electric scooter on Venus

weight (N)	=	mass (kg)	×	7
___	=		×	7

7 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? $(1\text{ kg} = 1000\text{ g})$

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8 Calculate the weight of these masses.

(a) 4.0 kg on Earth

(b) 8.0 kg on Earth

(c) 0.3 kg on Venus

(d) 7.2 kg on Venus

(e) 350 g on Venus

(f) 15 g on Earth

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9 Calculate the mass (in kg) of these weights.

(a) 80 N on Earth

(b) 30 N on Earth

(c) 490 N on Venus

(d) 28 N on Venus

(e) 2.5 N on Earth

(f) 0.35 N on Venus

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10 Calculate the mass (in g) of these weights on Earth. 1 kg = 1000 g

(a) 6.5 N

(b) 0.3 N

(c) 0.07 N

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11 Complete the word equations.

(a) weight $=$

(b) mass $=$

(c) gravitational field strength $(g) =$

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12 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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13 On a planet where $g = 14$ N/kg, what is W when $m = 52$ 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

14 What is the weight of...

(a) a 62 kg teenager on Mercury?

(b) a 62 kg teenager on Jupiter?

(c) a 62 kg teenager on the Sun?

(d) a 800 kg small car on Saturn?

(e) a 1400 kg van on Pluto?

(f) a 2300 kg minibus on Ceres?

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

(a) 21 N on Saturn?

(b) 0.5 N on Pluto?

(c) 29 N on the Sun?

(d) 200 N on Ceres?

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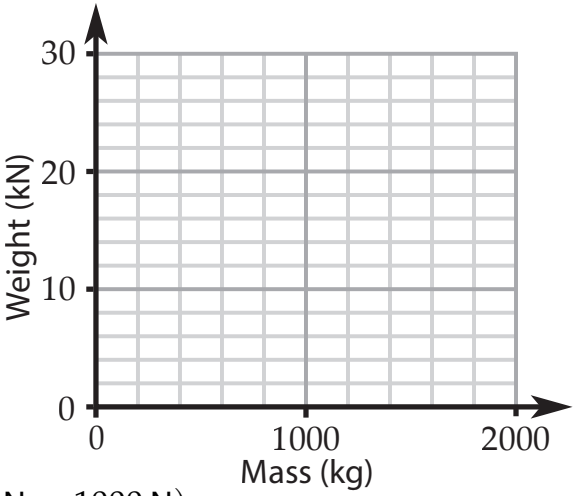
16 The weights of some objects on a new planet are given in the table.

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. $(1\text{ kN} = 1000\text{ N})$

(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.