(b)

		Cost to build in euros, €
	London Eye	8.4×10^7
	Singapore Flyer	1.08×10^8

Complete the following statement. [2]

The Singapore Flyer cost .... million euros **more** to build than the London Eye.

....

....

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....

10. Metric prefixes are used to describe large or small numbers.
The metric prefix 'milli', in millimetres or milligrams, is used to describe small numbers.
For example, 1 millimetre is 1000^{-1} metres which can also be written as 10^{-3} metres.

Complete the table below. [6]

Metric prefix	1000^x	10^y	Standard form
hecto	$1000^{\frac{2}{3}}$	....	....
tera	....	10^{12}	....
deci	$1000^{-\frac{1}{3}}$	....	....
yocto	....	10^{-24}	....

....

....

....

9.
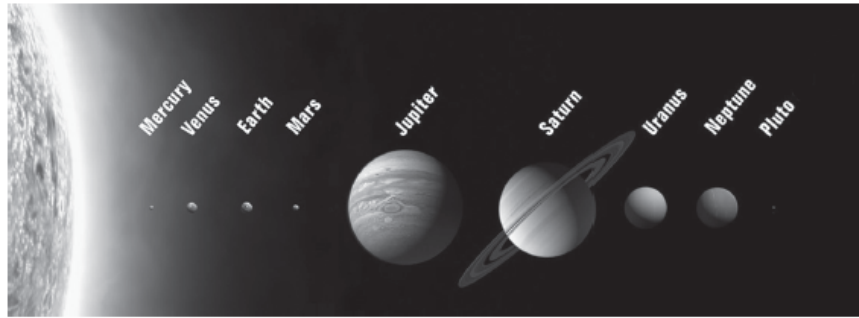
Some data is found on two different websites, www.sciencenow.com and www.planetalong.uk about some of the planets.
The data found varies slightly between the two websites.

www.sciencenow.com		
Planet	**Radius, km**	**Mass, kg**
Mercury	2439	$3 \cdot 30 \times 10^{23}$
Venus	6052	$4 \cdot 87 \times 10^{24}$
Earth	6378	$5 \cdot 98 \times 10^{24}$
Mars	3397	$6 \cdot 42 \times 10^{23}$
Jupiter	71 492	$1 \cdot 90 \times 10^{27}$

www.planetalong.uk		
Planet	**Radius, km**	**Mass, kg**
Mercury	2439	$3 \cdot 3 \times 10^{23}$
Venus	6052	$4 \cdot 9 \times 10^{24}$
Earth	6378	$6 \cdot 0 \times 10^{24}$
Mars	3394	$6 \cdot 4 \times 10^{23}$
Jupiter	71 398	$1 \cdot 9 \times 10^{27}$

(a)   Write down the radius of Mars, in km, correct to three significant figures in standard form for both of the websites.

....

....

....

....

www.sciencenow.com .... km

www.planetalong.uk .... km

[3]

Ex

(b) Use the data found at **www.sciencenow.com** to complete the statement below.
Give your answer correct to two significant figures.

Mass of Venus = ... × Mass of Mercury

....

....

....

....

[3]

(c) (i) The masses of the planets are recorded differently on the two websites.
Explain fully this difference.

....

....

....

....

....

[2]

(ii) Calculate the difference between the values stated on the two websites for the mass
of Mars.
Give your answer, in kg, in standard form.

....

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....

[2]

9. (a) In 2010 there were approximately 34 204 000 metres of railway track in the UK.
Each section of railway track has **two rails**.
The diagram shows a length of railway track.

Calculate an estimate for the total length, in metres, of **rails** in the UK in 2010.
Give your answer in standard form.

....

....

....

....

[2]

(b) In some countries there are small gaps in the rails to allow them to expand in hot weather.

There is a 3 cm gap in every 19 metres of rail.
In one of these countries there is 5.43×10^6 metres of rail.
Calculate an estimate for the total length of the **gaps in the rail**, in metres.
Give your answer in standard form.

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[4]

11. The Earth is approximately spherical.

(a)   The radius of the Earth is 6378·1 km.
Calculate the circumference of the Earth, giving your answer in standard form correct to 3 significant figures.

....

....

....

....

[4]

(b)   The total surface area of the Earth is approximately $5·112 \times 10^8$ square kilometres.
Oceans cover an approximate area of $3·618 \times 10^8$ square kilometres and the remainder of the surface is covered by land.
Calculate the area of the Earth covered by land, giving your answer in standard form.

....

....

....

[2]

11. The reciprocal of the speed of light squared is 2.22×10^{-18}.
Find the speed of light in standard form correct to two significant figures.

....

....

....

....

....

[3]

9. £22 600 is the cost, per metre, of building a new motorway.
Calculate the cost of building a new 85 km motorway.
Give your answer, in standard form, correct to 2 significant figures.

....

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[4]