**1.** (a) Write  $7.97 \times 10^{-6}$  as an ordinary number.

(b) Work out the value of  $(2.52 \times 10^5) \div (4 \times 10^{-3})$  Give your answer in standard form.

$$a^{x} - a^{y} = a^{x-y}$$

$$\frac{2.52}{4} = \frac{1.26}{2} = 0.63. \qquad \frac{2.52}{4} = 0.63$$

$$10^{5} \div 10^{-3} = 10^{(5--3)} = 10^{8}$$

$$0.63 \times 10^{8}$$

0.63 X 10



(Total for Question is 3 marks)

2. The table shows some information about eight planets.

Planet	Distance from Earth (km)	Mass (kg)
Earth	0	$5.97 \times 10^{24}$
Jupiter	$6.29 \times 10^{8}$	$1.898 \times 10^{27}$
Mars	$7.83 \times 10^{7}$	$6.42 \times 10^{23}$
Mercury	$9.17 \times 10^{7}$	$3.302 \times 10^{23}$
Neptune	$4.35 \times 10^{9}$	$1.024 \times 10^{26}$
Saturn	$1.28 \times 10^{9}$	$5.68 \times 10^{26}$
Uranus	$2.72 \times 10^{9}$	$8.683 \times 10^{25}$
Venus	$4.14 \times 10^{7}$	$4.869 \times 10^{24}$

(a) Write down the name of the planet with the greatest mass.



(b) Find the difference between the mass of Venus and the mass of Mercury.

$$= \frac{4.5388\times10}{10}$$
 kg

Nishat says that Neptune is over a hundred times further away from Earth than Venus is.

(c) Is Nishat right?
You must show how you get your answer.

$$\frac{4.35 \times 10^9}{4.14 \times 10^7} = 105.07246...$$

Planet	Distance from Earth (km)	Mass (kg)
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Jupiter	$6.29 \times 10^{8}$	$1.898 \times 10^{27}$
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## **Edexcel Maths GCSE - Standard Form (H)**

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**3.** Work out  $(13.8 \times 10^7) \times (5.4 \times 10^{-12})$  Give your answer as an ordinary number.

$$(13.8 \times 10^{7}) \times (5.4 \times 10^{-12})$$
  
=  $13.8 \times 6.4 \times 10^{7} \times 10^{-12}$   
=  $74.62 \times 10^{-5}$   
=  $0.0007462$ 



0.0007452

(Total for Question is 2 marks)

$$4. \quad T = \sqrt{\frac{w}{d^3}}$$

$$w = 5.6 \times 10^{-5}$$
 d =  $1.4 \times 10^{-4}$  } In Standard form

(a) Work out the value of T.

Give your answer in standard form correct to 3 significant figures.

$$a \times 10^{b}$$
 where  $1 \le a < 10$ 

$$T = \sqrt{\frac{5.6 \times 10^{-5}}{(1.4 \times 10^{-4})^3}} = 4517.53... 1$$

$$= 4520 \text{ to 3SF}$$

$$= 4.52 \times 10^3$$

$$| \leq 4.52 \leq 10$$

$$T = 4.52 \times 10^3$$
 (2)

$$w$$
 is increased by 10%  $\leftarrow$  Scale factor of 1.1  $d$  is increased by 5%  $\leftarrow$  Scale factor of 1.05

Lottie says,

"The value of T will increase because both w and d are increased."

(b) Lottie is wrong. Explain why.

Calculating the Scale factor by which T has been multiplied:

$$=\sqrt{\frac{1.1}{1.05^3}} = 0.974...$$

The value of the scale factor by which T is multiplied (to calculate its new value) is less than I, so there is a decrease in T 0

(Total for Question is 4 marks)

**5.** (a) Work out an estimate for the value of  $\sqrt{63.5 \times 101.7}$ 

$$\approx \sqrt{64 \times 100} \quad 0$$

$$\approx \sqrt{64} \times \sqrt{100}$$

$$\approx 8 \times 10$$

$$\approx 80$$

- $(2.3)^6 = 148$  correct to 3 significant figures.
- (b) Find the value of  $(0.23)^6$  correct to 3 significant figures.

$$0.23 = \frac{2.3}{10}$$

$$(0.23)^6 = \left(\frac{2.3}{10}\right)^6 = \frac{(2.3)^6}{10^6} = \frac{148}{10^6}$$

$$= 0.000148$$

(c) Find the value of  $5^{-2}$ 

$$5^{-2} = \frac{1}{5^2} = \frac{1}{25}.$$
(Total for Question is 4 marks)

- **6.** (a) Write 0.00562 in standard form.
  - (b) Write  $1.452 \times 10^3$  as an ordinary number.

(Total for Question is 2 marks)

7. Work out 
$$(3.42 \times 10^{-7}) \div (7.5 \times 10^{-6})$$
  
Give your answer in standard form.

out 
$$(3.42 \times 10^{-7}) \div (7.5 \times 10^{-6})$$
  
your answer in standard form.
$$\frac{Q^{2}}{Q^{9}} = Q^{2} - \frac{10^{-7}}{Q^{9}} = 0.456 \times 10^{-7} =$$

**8.** (a) Write 32 460 000 in standard form.



 $3.246 \times 10^{-7}$ 

(b) Write  $4.96 \times 10^{-3}$  as an ordinary number.

0.00496

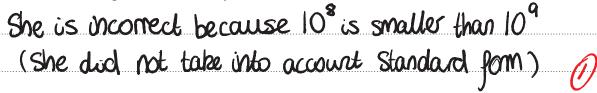
Asma was asked to compare the following two numbers.

$$A = 6.212 \times 10^8$$
 and  $B = 4.73 \times 10^9$ 

She says,

"6.212 is bigger than 4.73 so A is bigger than B."

(c) Is Asma correct?
You must give a reason for your answer.



(1)

9. Write these numbers in order of size. Standard John: Ax10<sup>n</sup> (14A<10)
Start with the smallest number.

(Total for Question is 2 marks)

**10.** (a) Write  $4.5 \times 10^5$  as an ordinary number.



450000

(b) Write 0.007 in standard form.

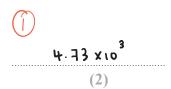
1 x 10 -3

(c) Work out  $4.2 \times 10^3 + 5.3 \times 10^2$  Give your answer in standard form.

$$4.2 \times 10^{3} + 5.3 \times 10^{3}$$

$$= 4.2 \times 10^{3} + 0.53 \times 10^{3}$$

$$= 4.3 \times 10^{3}$$



(Total for Question is 4 marks)