1. (a) Write the number 0.00037 in standard form.

 $(\underline{1})$

3.7×10

(b) Write 8.25×10^{3} as an ordinary number.

(1)

8250

(c) Work out $(2.1 \times 10^8) \times (6 \times 10^{-5})$. Write your answer in standard form.

1.26 ×10 4 (2)

(4 marks)

2. (a) Write 6.43×10^5 as an ordinary number.

643000

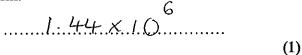
(b) Work out the value of $2 \times 10^7 \times 8 \times 10^{-12}$ Give your answer in standard form.

1.6×10⁻⁴

(3 marks)

3.	(a)	Write down the value of 10 ⁰	
	(b)	Write 6.7×10^{-5} as an ordinary number.	(1)
			O·000 6 67
	(c)	Work out the value of $(3 \times 10^7) \times (9 \times 10^6)$ Give your answer in standard form.	
		27×10^{13} 2.7×10^{14}	
		2.77	2.7×10 ¹⁴
			(4 marks)
4.	(a)	Write 8.2×10^5 as an ordinary number.	
			820000
	(b)	Write 0.000 376 in standard form.	
			3.76 × 10 ⁻⁴
	(c)	Work out the value of $(2.3 \times 10^{12}) \div (4.6 \times 10^{3})$ Give your answer in standard form.	
		O.5 × 109	
		0.5×10° 5×10°	
			5×10 ⁸
			(2)

- 5. A floppy disk can store 1 440 000 bytes of data.
 - Write the number 1 440 000 in standard form. (a)



A hard disk can store 2.4×10^9 bytes of data.

Calculate the number of floppy disks needed to store the 2.4×10^9 bytes of data.

$$2.4 \times 10^{9} \div 2.1.44 \times 10^{6}$$

$$= 1666.6$$

$$= 166.7$$
(4 marks)

6. Write 40 000 000 in standard form. (a) (i)

Write 3×10^{-5} as an ordinary number.

Work out the value of (b)

$$3 \times 10^{-5} \times 40\ 000\ 000$$

Give your answer in standard form.

$$3 \times 10^{-5} \times 4 \times 10^{-5}$$

$$12 \times 10^{2} \qquad 1.2 \times 10^{-5}$$

$$1.2 \times 10^{3} \qquad (4 \text{ marks})$$

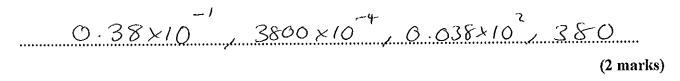
(2)

7.	(a)	Write the number 40 000 000 in standard form.	4×10	(1)	
	(b)	Write 1.4×10^{-5} as an ordinary number.	0.000014	(1)	
	(c)	Work out			
		$(5\times10^4)\times(6\times10^9)$			
		Give your answer in standard form.			
		30× 10 ¹³	3×1014	(2)	
				(4 marks)	
8.	(a)	Write 6.4 × 10 ⁴ as an ordinary number.	000	(1)	
	(b)) Write 0.0039 in standard form.			
			-3 10	(1)	
	(c)	Write 0.25×10^7 in standard form.			
		2.5 x	106	(1)	
	(d)	Work out $(3.2 \times 10^5) \times (4.5 \times 10^4)$ in standard	form.		
		14.4×109 1.44 x	10	(2)	
				, m 1 1 1	
				(5 marks)	

9.	(a)	(i)	Write 7900 in standard form.	7.9×10 ³
		(ii)	Write 0. 00035 in standard form.	3.5×10^{-4} (2)
	(b)	Wor	$k \text{ out } \frac{4 \times 10^3}{8 \times 10^{-5}}$	
		Give	e your answer in standard form.	5 × 10
				5 × 10 (2) (4 marks)
10.	(a)	Wri	te 30 000 000 in standard form.	
				3 × 10 (1)
	(b)	Wri	te 2×10^{-3} as an ordinary number.	0 0 n 0
				0.002 (1) (2 marks)
11.	(a)	Wri	ite 5.7× 10 ⁻⁴ as an ordinary number.	<u>0.00057</u>
	(b)	Wo Giv	rk out the value of $(7 \times 10^4) \times (3 \times 1)^4$ ye your answer in standard form.	0^{5}) 9 2.1×10^{10}
				(2)

12.	Write the following numbers in order of size.
	Start with the smallest number.

$$0.038 \times 10^{2}$$
 3800×10^{-4} 380 0.38×10^{-1} 3.8 0.38×10^{-1} 0.38×10^{-1}



13. The time taken for light to reach Earth from the edge of the known universe is 14 000 000 000 years.

Light travels at the speed of 9.46×10^{12} km/year.

Work out the distance, in kilometres, from the edge of the known universe to Earth. Give your answer in standard form.

14. The surface area of Earth is
$$510\,072\,000\,\mathrm{km}^2$$
. The surface area of Jupiter is $6.21795\times1010\,\mathrm{km}^2$.

The surface area of Jupiter is greater than the surface area of Earth.

How many times greater?

Give your answer in standard form.

$$\frac{6.21795 \times 10^{\circ}}{510072000} = 1.219 \times 10^{2} (48f)$$

(3 marks)

15.

$$p^2 = \frac{x - y}{xy}$$

$$x = 8.5 \times 10^9$$
$$y = 4 \times 10^8$$

Find the value of p.

Give your answer in standard form correct to 2 significant figures.

$$P = \sqrt{\frac{8.5 \times 10^9 - 4 \times 10^8}{(8.5 \times 10^9)(4 \times 10^8)}}$$

$$= 4.9 \times 10^{-5} (2sd)$$

4.9 x 10-5

(4 marks)

16.

$$y^2 = \frac{ab}{a+b}$$

$$a = 3 \times 10^8$$
$$b = 2 \times 10^7$$

Find y.

Give your answer in standard form correct to 2 significant figures.

$$y = \sqrt{\frac{(3\times10^{4})(2\times10^{7})}{(3\times10^{8})+(2\times10^{7})}}$$

$$= 4330.127019$$

$$= 4.3\times10^{3} (2st)$$

$$y = 4.3 \times 10^3$$

(4 marks)