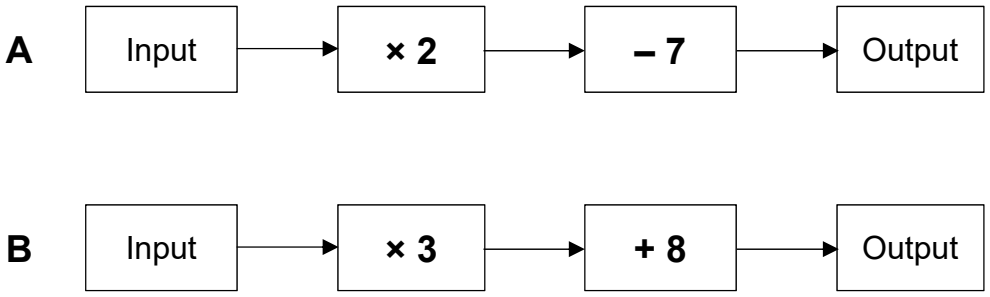
Edexcel Practice GCSE Examination Paper Higher Set 2 Paper 1 Non-Calculator	**Time:** 1 hour 30 minutes	Set 2 of 10
	Standard equipment: pen, pencil, ruler, protractor, compasses. **Do *not* use a calculator.**	
Instructions to candidates: You must show all of your working. Write all answers in the spaces provided.		

1. Here are two number machines, A and B.

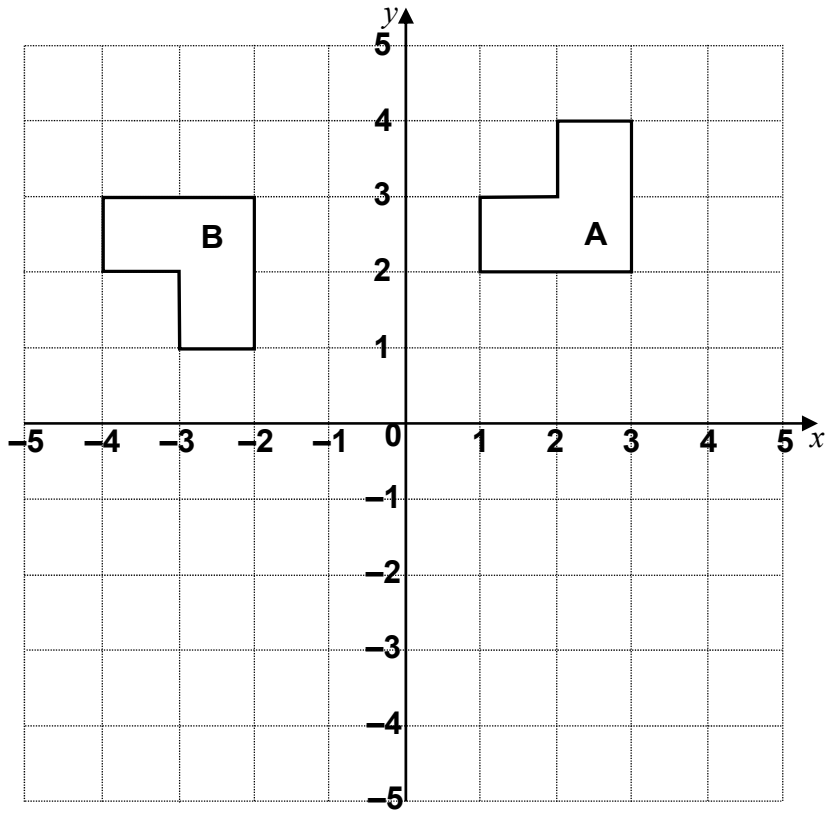


You are given that both number machines have the same output.
Work out the output when the input of A is four times the input of B.

(5)

Total 5 Marks

2.

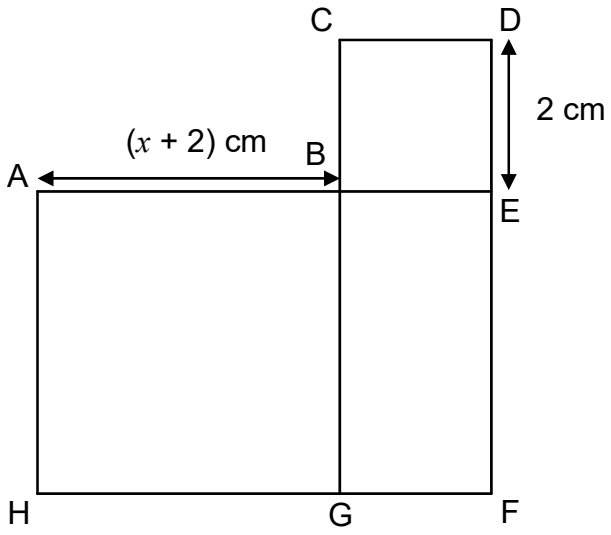


Describe the single transformation that maps shape A onto shape B.

(2)

Total 2 Marks

3.



ABGH is a square.
BEFG is a rectangle.
BCDE is a square.
The three shapes are joined together to make a larger shape.

(a) Show that the total area of the larger shape is $x^2 + 6x + 12$.

(4)

Given that the area of the larger shape is 39 cm^2,

(b) Work out the value of x.
You must show all of your working.

$x =$ _____ *(2)*

Total 6 Marks

4. Rafael is given the following equation:

$$(x + 2)(x + 5) = 3(x + 2)$$

He attempts to solve the equation.
Here are his incorrect workings.

		x	2
Step 1	x	$2x$	$x+2$
	5	$x+5$	7

Step 2 $2x+(x+2)+(x+5)+7=3(x+2)$
Step 3 $4x+14=3(x+2)$
Step 4 $4x+14=3x+6$
Step 5 $x+14=6$
Step 6 $x=-8$

(a) Write down the step where Rafael made his first mistake.
You must give a reason for your answer.

_____

Reason:

(1)

(b) Solve the equation $(x + 2)(x + 5) = 3(x + 2)$

$x =$ _____ *(4)*

Total 5 Marks

5. James draws an irregular polygon.
The smallest angle in C's polygon is 35°.
James then enlarges his polygon by scale factor 5.
James says,

"The smallest angle in my enlarged shape is 175° because 5 × 35 = 175"

Is James correct? Explain why.

_____

Reason:

(1)

Total 1 Mark

6. w is inversely proportional to z.

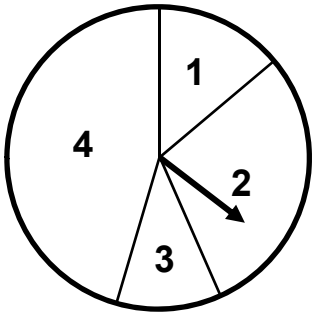
When $z = 12$, $w = 4.5$.

Write an expression for w in terms of z.

$w =$ _____ *(2)*

Total 2 Marks

7. A fair spinner has four sections.



Not Drawn Accurately

Chris says,

"There are four sections on the spinner so the probability of the spinner landing on 3 is $\frac{1}{4}$"

Chris also says,

The probability of the spinner landing on 3 twice in a row is $\frac{1}{2}$ because

$$\frac{1}{4}+\frac{1}{4}=\frac{1}{2}$$

(a) Write down two mistakes Chris made when calculating these probabilities.

Mistake 1:

Mistake 2:

(2)

The probability of spinning 1 twice in a row is $\frac{1}{36}$

(b) Work out the angle of the sector labelled 1.

_____ ° *(3)*

Total 5 Marks

8. Write $6(8x+3)-4(5x-2)-4$ in the form $a(bx+c)$
where a, b and c are positive integers.
You must show all of your working.

(3)

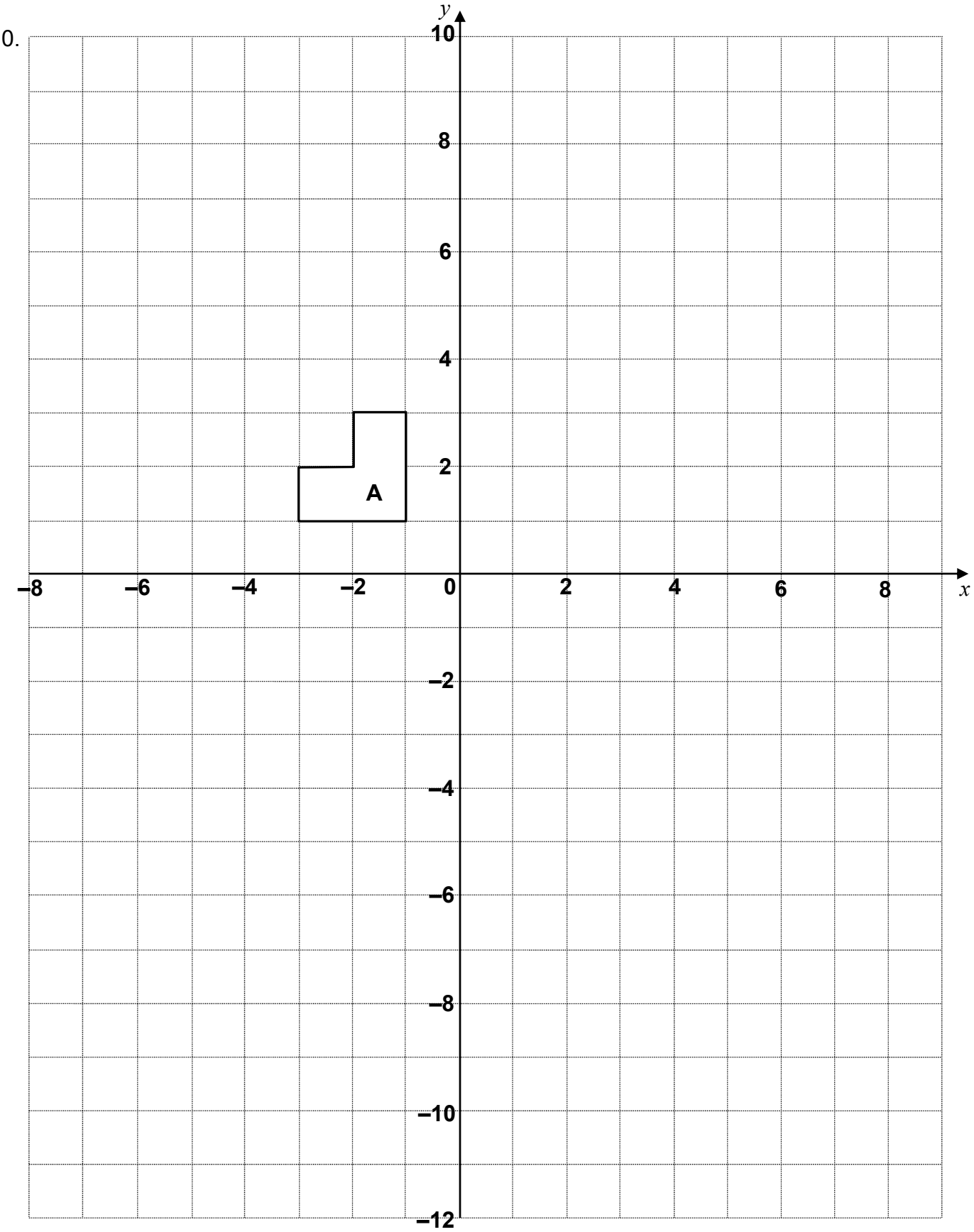
Total 3 Marks

9. Work out an estimate for $\sqrt[3]{4.21\times(18.92-2.75)}$

(3)

Total 3 Marks

10.



(a) On the grid above, enlarge shape A by scale factor –3, centre (0, 0). Label this shape B. *(2)*

(b) Describe the single transformation that maps shape B onto shape A.

(1)

Total 3 Marks

11. $(2x-5)^2 + px + q = 4x^2 + 2x + 17$

p and *q* are both integer constants.
Find *p* and *q*.

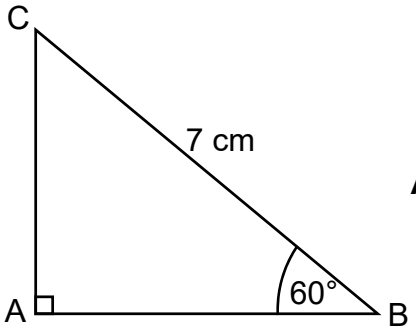
p = _____ q = _____ *(4)*

Total 4 Marks

12. (a) Write down the exact value of tan 60°.

_____ *(1)*

(b)



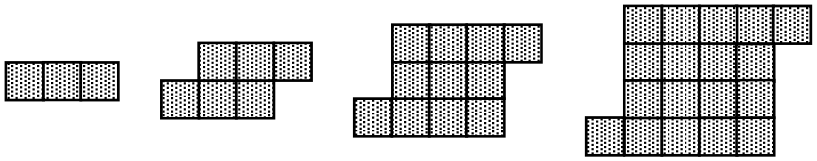
Not Drawn Accurately

Given that cos 60° = 0.5, work out the length of AB.

_____ cm *(3)*

Total 4 Marks

13. The first four patterns in a sequence are shown below:



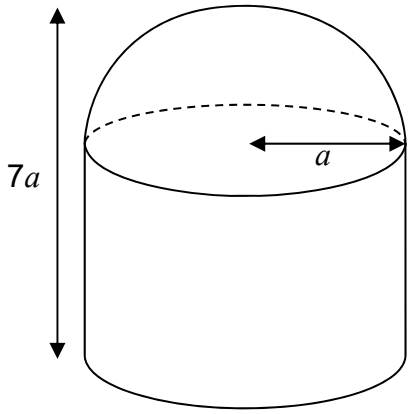
Give an expression for the number of squares in the n^{th} pattern.

_____ *(2)*

Total 2 Marks

14. An object consists of a hemisphere on top of a cylinder.

Volume of a sphere $= \frac{4}{3}\pi r^3$

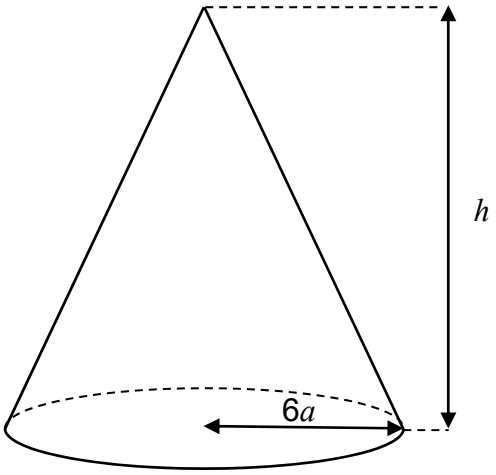


Not Drawn Accurately

Total height of object = $7a$
Radius of cylinder = radius of hemisphere = a

The cone shown below has the same volume as the object.

Volume of a cone $= \frac{1}{3}\pi r^2 h$



Not Drawn Accurately

Total height of cone = h
Radius of cone = $6a$

Find an expression for h in terms of a.
Give your answer in its simplest possible form.

$h =$ _____ *(5)*

Total 5 Marks

15. John has a ball of string.

The total length of the string in the ball is $4\frac{7}{8}$ m.

John cuts a length of string from the ball which is $2\frac{1}{4}$ m.

What fraction of the ball of string did John cut off?
Give your answer in its simplest form.

(3)

Total 3 Marks

16. Corine has a problem to solve:

A sphere has surface area 144π cm.
Find the volume of the sphere in terms of π.

Surface area of a sphere $= 4\pi r^2$

Volume of a sphere $= \frac{4}{3}\pi r^3$

Corine carries out the following steps in the order shown:

- Square-root answer
- Divide by 4π
- Multiply by $\frac{4}{3}\pi$
- Cube answer

Evaluate the method that Corine has used.

(2)

Total 2 Marks

17. Show that 10sin 60° + 6tan 30° can be written in the form $a\sqrt{b}$, where a and b are integers.

(3)

Total 3 Marks

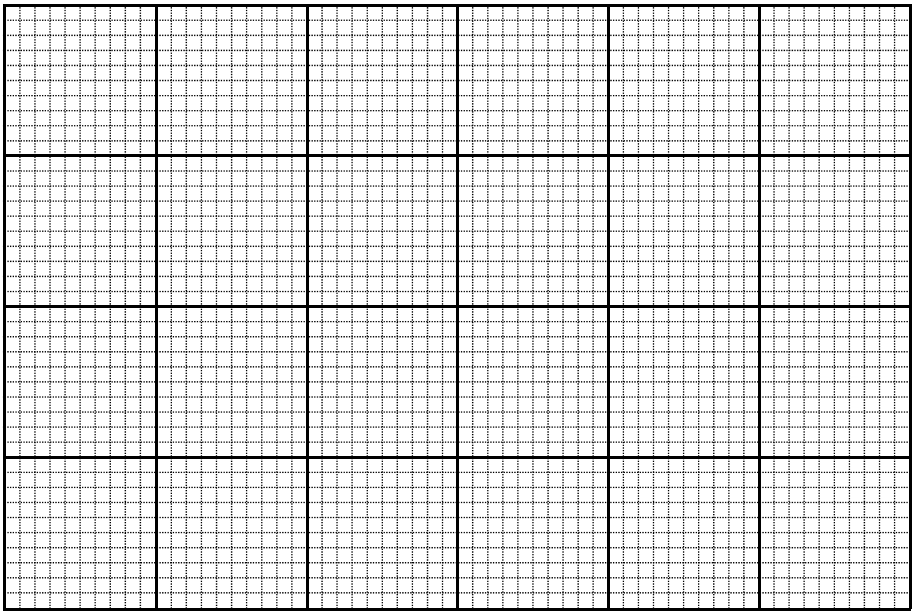
18. Evaluate $16^{-\frac{3}{2}}$

_____ *(3)*

Total 3 Marks

19. A toy train is placed on the floor.
It moves in a straight line from rest.
It travels with constant acceleration for 4 seconds, reaching a velocity of 3 m/s.
It travels at a constant velocity of 3 m/s for 5 seconds.
It then slows down with a constant deceleration of 0.5 m/s^2 for 2 seconds.
It then hits a wall and comes to a stop.

(a) Draw a velocity-time graph for the toy train.



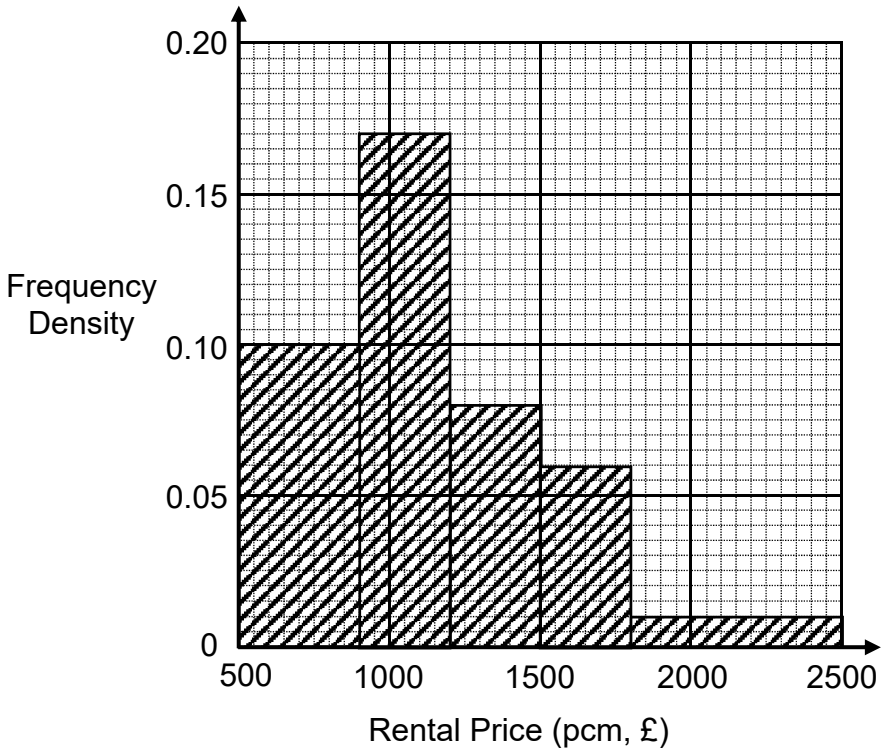
(3)

(b) Work out the total distance travelled by the toy train.

_____ m *(3)*

Total 6 Marks

20. Information about the rental price per calendar month (pcm) of 1 bedroom flats in Town A was recorded in a histogram.



(a) Use the histogram to complete the grouped frequency table.

Price per calendar month, p (£)	Frequency
$500 < p \leq 900$	
$900 < p \leq 1200$	
$1200 < p \leq 1500$	
$1500 < p \leq 1800$	
$1800 < p \leq 2500$	

(2)

25% of the flats did not have an oven.

The flats which did not have an oven were the flats with the lowest rent prices.

(b) Work out an estimate for the maximum rent a person renting a 1 bedroom flat without an oven may be paying.

£ _____ *(3)*

Total 5 Marks

21. The ratio of the number of men to the number of women in an office is 2 : 3.
Four women leave the office.
The ratio of the number of men to the number of women in the office is now 4 : 5.

Work out the number of men in the office.

_____ *(4)*

Total 4 Marks

22. (a) Write 582000 in standard form.

_____ *(1)*

(b) Write 7.2×10^{-3} as an ordinary number.

_____ *(1)*

(c) Work out $(4 \times 10^3) \times (7 \times 10^5)$
Give your answer in standard form.

_____ *(2)*

Total 4 Marks

Total For Paper: 80 Marks

