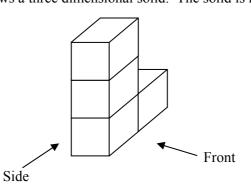
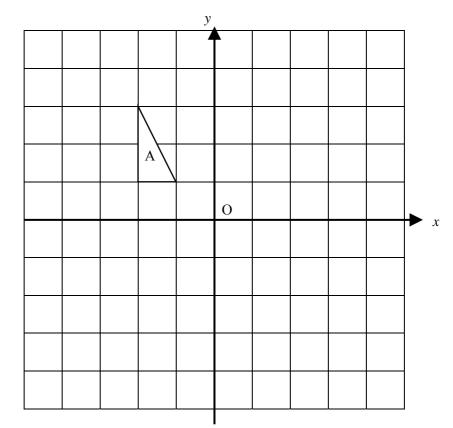
DC	O NOT WRITE ON THIS PAPER	<b>TIME</b> – 2 hours	Paper 4 of 5 from ZigZag Education				
	mple GCSE Examination Paper rmediate tier non-calculator paper	Standard Equipment: pen, pencil, ruler.					
1.	Paula was working out the mileag	ge cost of hiring a van for a day.					
	She used the formula: Mileage Cost = Miles Travelled × Mileage Rate						
	The mileage rate was 6 pence per a) How many miles had Pau	0	£9.60.				
	Paula worked out the total hire co	st by using the formula:					
	Total Hire Cost	= Standard Charge + Mileage (	Cost				
	The total hire cost came to £44.60b)Work out the standard characterized		4 marks				
2.	Work out $3 - \sqrt{64}$		1 mark				
3.	Solve the equations- a) $7x + 3 = -18$ b) $3q - 5 = 2q + 4$		4 marks				
4.	On graph or squared paper draw t	he graph of $y + x = 9$	2x 5 marks				
5.	Work out a formula for the perime	eter and area of the rectangle.	3 marks				
6.	Work out: (a) $3^2$ (b) $5^3$	(c) $10^5$ 3 marks					
7.	a) Estimate the answer to the	e following $\frac{48.2 + 32.8}{3.2 \times 8.7}$					
	b) Calculate an exact decima	al equivalent of $\frac{7}{8}$	5 marks				
8.	•	The nearest pound. The nearest penny.	3 marks				
9.	The drawing shows a three dimen	sional solid. The solid is made o	f cubes of side 1cm.				



р1

On squared paper, draw front and side elevations of this solid. Label each elevation.

3 marks



The triangle A has been marked on the grid. The coordinates of the vertices of A are (-1, 1), (-2, 1), (-2, 3). *Copy the diagram.* 

- (a) Rotate **triangle** A through one quarter turn clockwise about the origin. Label the image B.
- (b) Reflect **triangle B** in the *x*-axis. Label this image C.
- (c) Triangle C can be mapped onto triangle A by a single transformation.
   Describe the transformation that maps C onto A.
   7 marks
- 11. By dividing up a circle or otherwise construct a regular octagon.
- 12. A box contains many pieces of card. Each piece of card has a number written on it. The numbers on the card are either 1, 2, or 3.

When a piece of card is picked at random from the box, the probability that it is has a 1 written on it is 0.2. The probability that it has a number 2 written on it is 0.3.

a) What is the probability of picking a card with the number 3 written on it?

p2

There are 120 pieces of card in the box.

b) Work out how many cards there are with the number 1 written on them. 4 marks

3 marks

13. 18 pupils from a class took a maths test. They scored the following results.

16	17	18	19	20	22
23	25	33	35	37	37
40	45	46	48	51	51

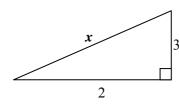
John begins to draw a stem and leaf diagram.

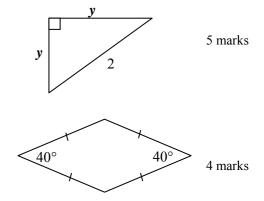
Stem	Leaves						Frequency
10	6						

- (a) Copy and compete the stem and leaf diagram to show these results. 4 marks
- (b) What information does the stem and leaf diagram show, that a grouped frequency chart does not?
- 14. There are 50 trillion cells in the average human. A trillion is 1,000,000,000.000.
  - a) i) Write a trillion in standard index form.
    - ii) Write the average number of cells in a human in standard index form.

The area inside the orbital path of Pluto is 36 quintillion square miles, where a quintillion is  $1 \times 10^{18}$ .

- b) Assuming the orbital path is circular, estimate the radius of the orbital path. Use 1.5 as an estimated value for  $\sqrt{\pi}$ .
- 15. a) Display the inequality  $-1 \le x < 3$  on a number line. Solve the inequalities
  - b) i)  $-1 \le 2x + 4$ ii) -1 < -2x
- 16. Calculate the missing lengths x and y, giving your answer exactly.





Pluto

5 marks

6 marks

4 marks

18. a) Work out the highest common factor of 112 and 64

the longest diagonal of the rhombus.

A rhombus has side of 5cm and a smallest angle of 40°. Using the estimate  $\cos 20^{\circ} \approx \frac{94}{100}$  calculate the length of

b) Work out the lowest common multiple of 112 and 64.

19. An ink blot is spilt on some tissue paper and ink blot has an area of approximately 0.16cm<sup>2</sup>.
a) Calculate the area of the ink plot in square millimetres.

The volume of ink spilt to create the blot is approximately 0.032cm<sup>3</sup>.

pЗ

- b) What is this volume, in cubic millimetres?
- c) Assuming the blot penetrates the tissue paper to an equal depth, estimate the depth of the ink penetration in mm. 5 marks

17.

- 20. Write down the reciprocal of:
  - a) 17

 $\frac{1}{3}$ 

c)  $-\frac{2}{3}$  3 marks

Experimental

Probability

0.07

0.14

0.2

0.24

0.15

0.04

Sum of the

two dice

2

3

4

5

6

7

8

Theoretical

probability

1/16

1/16

- 21. John throws two four sided dice and adds the scores. He throws the pair of dice 200 times and uses his results to work out experimental probability. He also works out the theoretical probabilities.
  - a) Copy and complete the table of probabilities.
  - b) Calculate the number of times his sum was 8. 5 marks
- Bag A has green and red balls in it, in the ratio 3:1 respectively.Bag B has green and red balls in it, in the ratio 5:3 respectively.

The same number of balls are in Bags A and B.

a) Calculate the least number of balls in bag A.

A ball is selected from each bag.

The diagram shows the part of a tree diagram.

b) Calculate the probability that both balls selected are red.

The number of balls in bags A and B is changed but the ratio of balls remains 3:1 and 5:3 as before. Bag C has green and red balls in it, in the ratio 5:1 respectively.

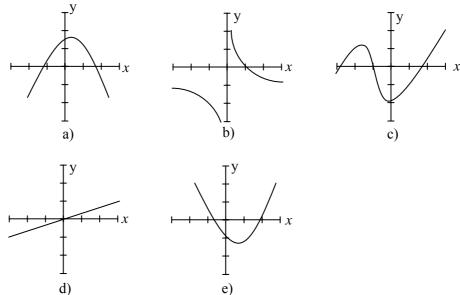
The same number of balls are in Bags A, B and C.

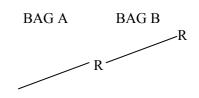
c) Calculate the least number of red balls that are contained altogether in the three bags. 8 marks

- 23. Match-up the five sketch graphs to the five suggested curves,
  - i) Quadratic with a minimum point ii) Reciprocal
  - iii) Quadratic with a maximum point iv) Cubic v) Linear

As an example, the graph labelled i) is a quadratic function.

p4





•)

5 marks