

DO NOT WRITE ON THIS PAPER	TIME – 2 hours	Paper 4 of 5 from ZigZag Education
Sample GCSE Examination Paper Intermediate tier non-calculator paper	Standard Equipment: pen, pencil, ruler.	

1. Paula was working out the mileage cost of hiring a van for a day.

She used the formula: **Mileage Cost = Miles Travelled \times Mileage Rate**

The mileage rate was 6 pence per mile. The mileage cost came to £9.60.

- a) How many miles had Paula travelled?

Paula worked out the total hire cost by using the formula:

$$\text{Total Hire Cost} = \text{Standard Charge} + \text{Mileage Cost}$$

The total hire cost came to £44.60

- b) Work out the standard charge.

4 marks

2. Work out $3 - \sqrt{64}$

1 mark

3. Solve the equations–

a) $7x + 3 = -18$

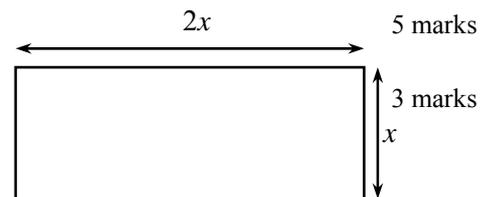
b) $3q - 5 = 2q + 4$

4 marks

4. On graph or squared paper draw the graph of $y + x = 9$

5 marks

5. Work out a formula for the perimeter 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 following $\frac{48.2 + 32.8}{3.2 \times 8.7}$

- b) Calculate an exact decimal equivalent of $\frac{7}{8}$

5 marks

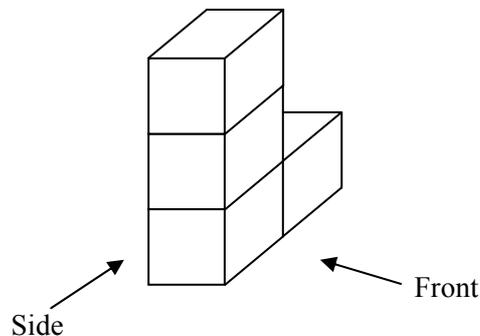
8. Calculate 5% of £267.

Give your answer to a) The nearest pound.

b) The nearest penny.

3 marks

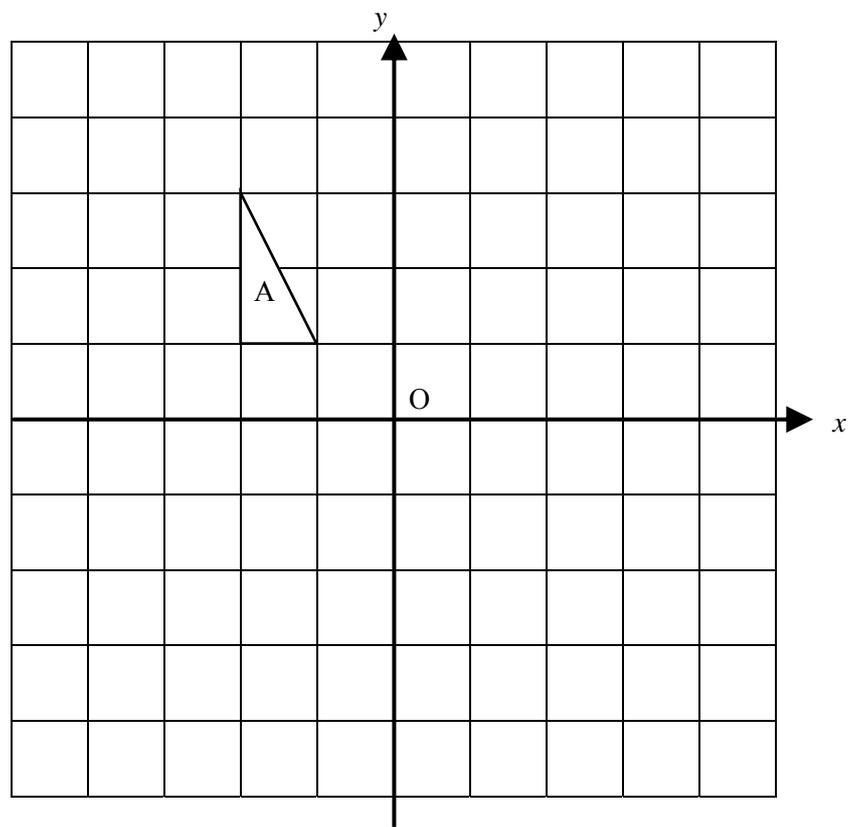
9. The drawing shows a three dimensional solid. The solid is made of cubes of side 1cm.



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

3 marks

10.



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. 3 marks

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?

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

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					

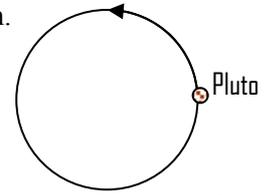
- (a) Copy and complete the stem and leaf diagram to show these results. 4 marks
 (b) What information does the stem and leaf diagram show, that a grouped frequency chart does not?

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 1×10^{18} .

- b) Assuming the orbital path is circular, estimate the radius of the orbital path.
 Use 1.5 as an estimated value for $\sqrt{\pi}$.



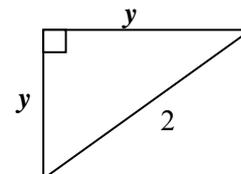
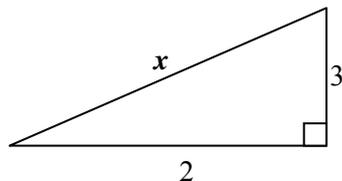
5 marks

15. a) Display the inequality $-1 \leq x < 3$ on a number line.
 Solve the inequalities

- b) i) $-1 \leq 2x + 4$
 ii) $-1 < -2x$

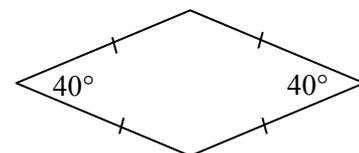
6 marks

16. Calculate the missing lengths x and y , giving your answer exactly.



5 marks

17. 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 the longest diagonal of the rhombus.



4 marks

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

4 marks

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

The volume of ink spilt to create the blot is approximately 0.032cm^3 .

- 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

