DO NOT WRITE ON THIS PAPER	**TIME –** 2 hours	*Paper 2 of 5 from ZigZag Education*
Sample GCSE Examination Paper **Intermediate tier non-calculator paper**	Standard Equipment: pen, pencil, ruler, protractor. Compasses (Q17).	

1. A group of students survey the local population about their working hours and type of work.
They summarise their findings in the following table:

	Men	Women
Office workers surveyed	8	5
Voluntary workers surveyed	4	9
Other workers surveyed	6	10
Average hours per week	33	31

A worker is selected at random.

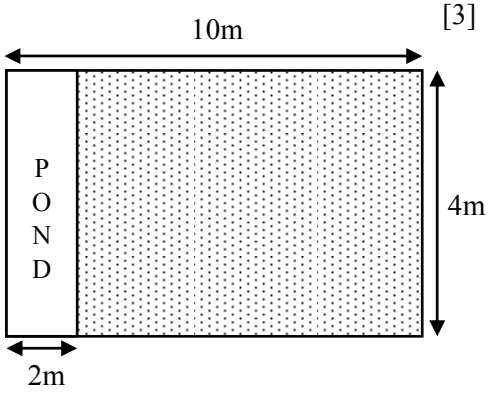
a) What is the probability that a woman is selected? [2]

A student studies the average hours per week done by women using the table below.

	Women	Average hours per week	Total Hours Worked
Office workers surveyed	5	30	150
Voluntary workers surveyed	9	30	270
Other workers surveyed	10	*x*	y
ALL women surveyed	24	31	744

b) Calculate the missing number, represented by the *x*. [3]

2. Sandy is designing his new lawn, and needs to know how much money he needs to buy turf. Turf is £5 per square metre. His garden, as shown in the diagram, has a rectangular pond at one end.



How much money will Sandy need for his lawn? [3]

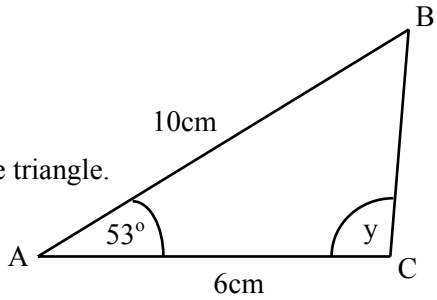
3. a) Simplify:
   i) $y^5 \times y^2$
   ii) $4y + 3 - 2y$
   iii) $3y + 2y^2 - y$
   b) Solve:
   i) $6x - 12 = 18$
   ii) $24 - x = 3$

7 marks

4. Continue the next two numbers of the following sequences:
   a) 4, 7, 10, 13, … …
   b) 12, 9, 5, 0, … …
   c) 1, 4, 9, 16, … …

5 marks

5. Here is a sketch of a triangle *ABC*.



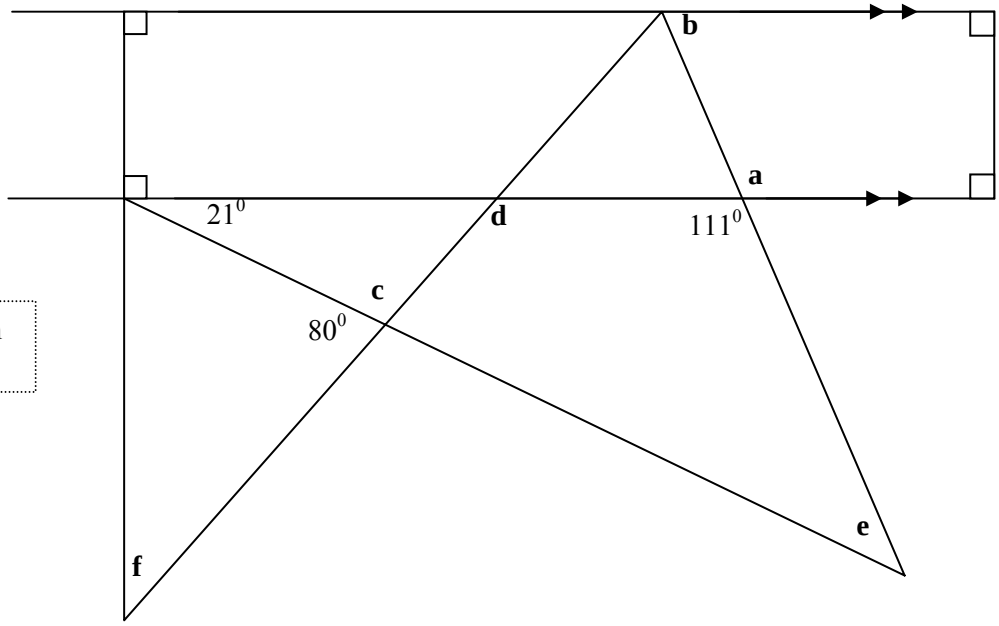
   a) Construct a full scale, accurate drawing of the triangle.
   b) Measure the size of angle *y*.
   c) Find the perimeter of the triangle.

6 marks

6. Joe and Ashra buy a lottery ticket, which costs £1.
Joe contributes 80p and Ashra 20p.
They win £50.
They divide their winnings in the same ratio as their contributions.
How much does Joe get?

2 marks

7. Calculate the missing angles **a**, **b**, **c**, **d**, **e**, and **f**. 6 marks



Not drawn accurately

8. *You will need graph or squared paper for this question.*
   a) Draw the graph of $y = 3x + 5$. Use values of x from and including 0 and up to and including 3.
   b) Draw the line PQ where the coordinates of P and Q are P(2.5, 0) and Q(2.5, 14).
   Write down the coordinates of where the 2 lines cross. 8 marks

9. Coffee jar A contains 450g of coffee and costs £4.50.
   Coffee jar B contains 900g of coffee and costs £10.00.
   You must show your working in this question to gain any marks.
   a) Out of these 2 jars which is the best value, *showing your working*.
   Coffee jar C contains 1kg of coffee and costs £11.00.
   b) List the jars of coffee from best value to worst value, *showing your working*.
   Coffee jar D contains ***x*** g of coffee and costs £1.00. ***x*** is a whole number.
   c) Calculate the smallest value of ***x*** such that Jar D is the best value out of the four jars.
   d) Calculate the largest value of ***x*** such that Jar D is the worst value out of the four jars. 8 marks

10. a) Estimate: $\dfrac{111 \times 0.0018}{12}$
    b) Write 51^2 as the product of primes
    c) Calculate $4 \times 1.2 \times 10^4$ and write your answer in standard form.
    d) Calculate $\dfrac{1.2 \times 10^4}{3}$ and write your answer in standard form. 6 marks

11. 30 students swim the length of the pool and their time is recorded.
    Jim puts the results in the following table.
    Estimate the mean time for the class. 4 marks

Time in seconds	Frequency
$10 < t \leq 20$	3
$20 < t \leq 25$	10
$25 < t \leq 35$	17

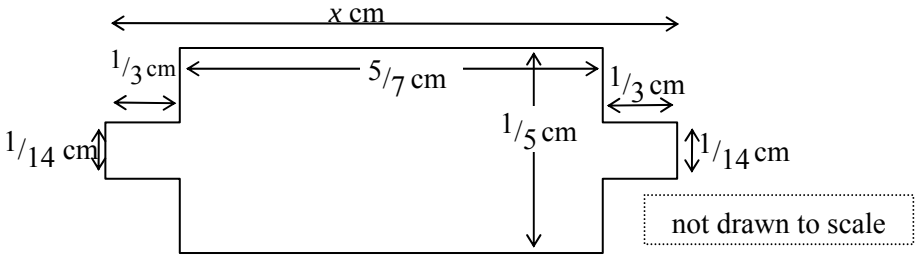
12. a) Write down formulae to represent the n^{th} term of sequences i) and ii).
    i) 5, 9, 13, 17,... ii) $1/2, 2/3, 3/4, 4/5,...$
    b) Jim thinks of a number, times it by 3 and then adds 4.
    If the result is ***x*** what did he start with?

c) Jo thinks of a number. He tells John that his number is not a whole number.
He also tells John that if he adds 50 to his starting number then this is the same as multiplying his starting number by 5.

i) Formulate an equation in ***x*** which must be true; where ***x*** is Jo's starting number.

ii) Solve the equation. 9 marks

13. In the following diagram find *x* and the perimeter and the area of the shape.

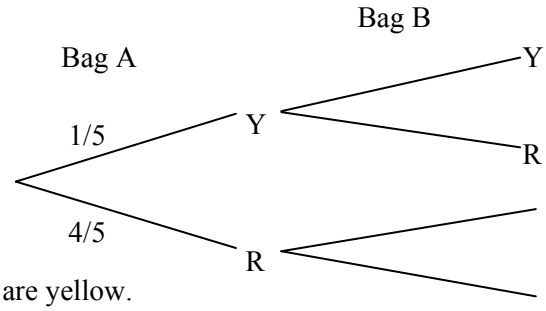


5 marks

14. a) Solve the equation $10 - x = 2x - 10$ and write your answer as a mixed number.

b) Simply the expression: $\frac{x^2 - 9}{x - 3}$ 4 marks

15. There are two bags.
Bag A contains 1 yellow ball and 4 red balls.
Bag B contains 1 yellow ball and 9 red balls.
A ball is selected from bag A and then from B.



a) Copy and complete the tree diagram

b) Calculate the probability that both balls are yellow.

4 marks

16. John buys some skis in a sale. His skis were reduced by 10%. He pays £189.

a) How much would he have paid if the skis had not been in the sale?
Joshua also buys some skies whose price before the sale is £212.12.

b) Calculate the cost of Joshua's skis after the sale of 10% to the nearest penny. 4 marks

17. a) Construct on plain paper the triangle ABC such that: AB = 10cm, BC = 6cm and AC = 9cm.

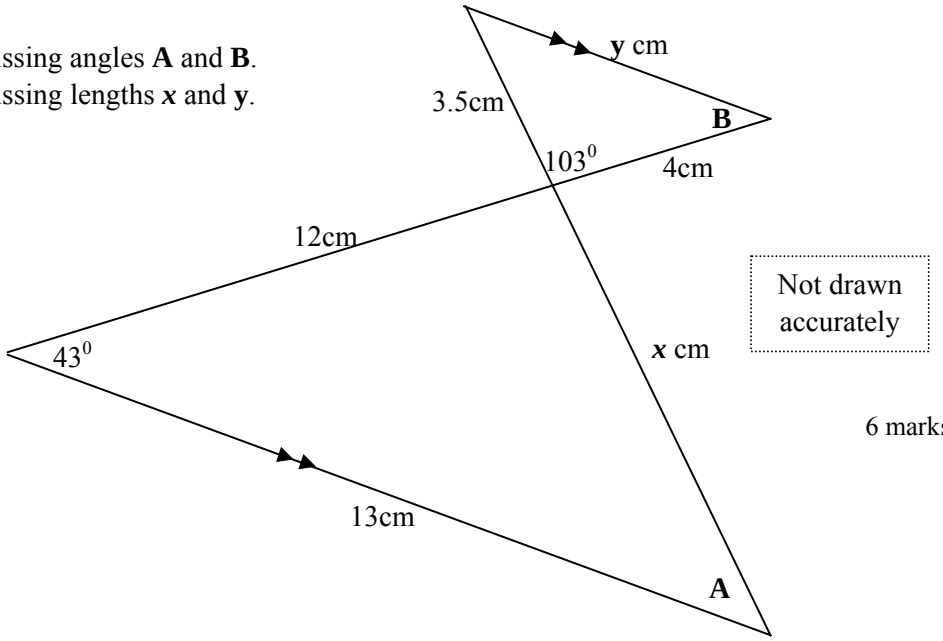
b) Measure the acute angle ABC to the nearest degree.

c) Draw the line of points that are the same distance from AB and BC.

d) Shade all the points inside the triangle that are less than 4cm from A. 5 marks

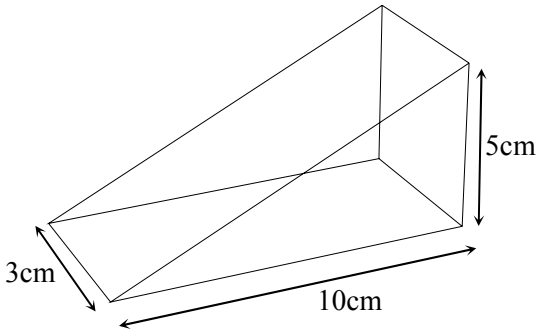
18. a) Work out the missing angles **A** and **B**.

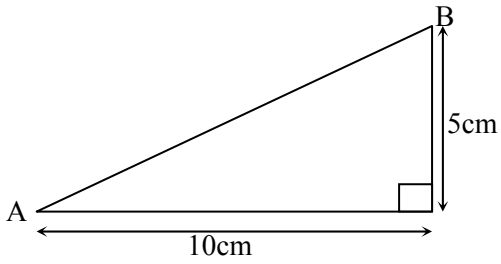
b) Work out the missing lengths ***x*** and **y**.



6 marks

19. A prism has a height 5cm, a width of 10cm and a depth of 3cm as shown.
One of the faces of the prism is a right-angled triangle as shown.
Calculate the volume of this prism and the length AB giving your answer exactly.





3 marks