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|---------------|--|--|--|--|--|-----------------|---|---|---|---|---|---------|------------|--|
| Centre No.    |  |  |  |  |  | Paper Reference |   |   |   |   |   | Surname | Initial(s) |  |
| Candidate No. |  |  |  |  |  | 4               | 4 | 0 | 0 | / | 2 | F       | Signature  |  |

Paper Reference(s)

**4400/2F**

**London Examinations IGCSE**

**Mathematics**

Paper 2F

**Foundation Tier**

Tuesday 10 November 2009 – Morning

Time: 2 hours

Examiner's use only

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|  |  |  |
|--|--|--|

Team Leader's use only

|  |  |  |
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|  |  |  |
|--|--|--|

**Materials required for examination**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

**Items included with question papers**

Nil

**Instructions to Candidates**

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper.

Answer ALL the questions. Write your answers in the spaces provided in this question paper.

Without sufficient working, correct answers may be awarded no marks.

**You must NOT write on the formulae page. Anything you write on the formulae page will gain NO credit.**

If you need more space to complete your answer to any question, use additional answer sheets.

**Information for Candidates**

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 23 questions in this question paper. The total mark for this paper is 100.

There are 24 pages in this question paper. Any blank pages are indicated.

You may use a calculator.

**Advice to Candidates**

Write your answers neatly and in good English.

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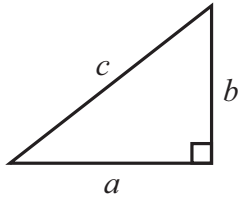
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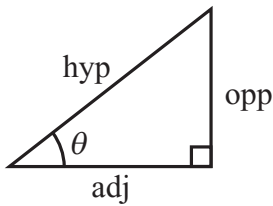
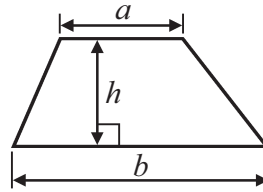
IGCSE MATHEMATICS 4400

FORMULA SHEET – FOUNDATION TIER

Pythagoras' Theorem  
 $a^2 + b^2 = c^2$



Area of a trapezium =  $\frac{1}{2}(a + b)h$



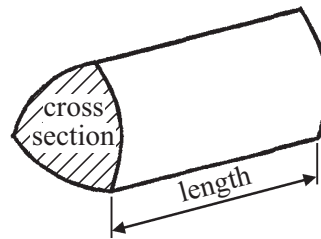
adj = hyp  $\times$  cos  $\theta$   
 opp = hyp  $\times$  sin  $\theta$   
 opp = adj  $\times$  tan  $\theta$

Volume of prism = area of cross section  $\times$  length

or  $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

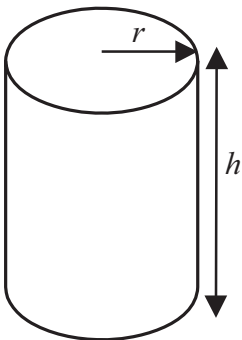
$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\tan \theta = \frac{\text{opp}}{\text{adj}}$



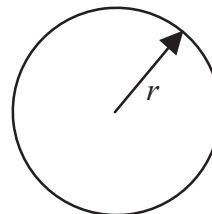
Circumference of circle =  $2\pi r$

Area of circle =  $\pi r^2$



Volume of cylinder =  $\pi r^2 h$

Curved surface area of cylinder =  $2\pi r h$



**Answer ALL TWENTY THREE questions.**

**Write your answers in the spaces provided.**

**You must write down all stages in your working.**

1. The table shows the lengths of some rivers.

| River    | Length (km) |
|----------|-------------|
| Huang He | 4667        |
| Mekong   | 4023        |
| Amazon   | 6387        |
| Nile     | 6690        |
| Zaire    | 4371        |

(a) Write down the name of the longest river.

.....  
(1)

(b) Write the number 4023 in words.

.....  
(1)

(c) Write down the value of the 3 in the number 6387

.....  
(1)

(d) Write the number 4371 correct to the nearest thousand.

.....  
(1)

(e) Write the number 4667 correct to the nearest hundred.

.....  
(1)

(f) How much longer is the River Nile than the River Amazon?

..... km  
(1)



The Amazon rain forest covers  $\frac{2}{5}$  of Brazil.

(g) Write  $\frac{2}{5}$  as

(i) a decimal,

.....

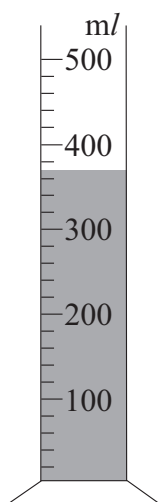
(ii) a percentage.

..... %  
**(2)**

**Q1**

**(Total 8 marks)**

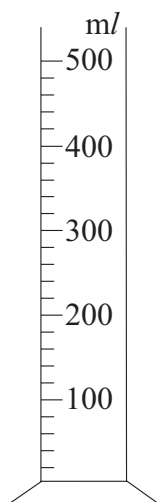
**2. (a)**



Write down the reading on this scale.

..... ml  
**(1)**

**(b)**



(i) On this scale, show the reading 180 ml.

(ii) Change 180 ml to litres.

..... litres  
**(2)**

(c) Change 2.5 litres to millilitres.

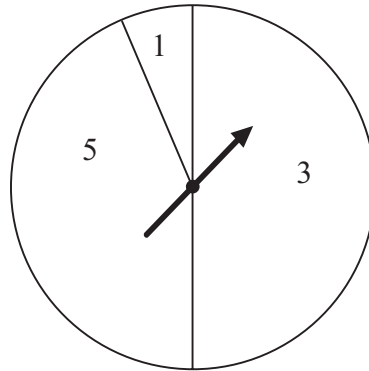
..... ml  
**(1)**

**Q2**

**(Total 4 marks)**



3. The diagram shows a pointer which spins about the centre of a fixed disc.



When the pointer is spun, it stops on one of the numbers 1 or 3 or 5  
Jack spins the pointer once.

|         |        |          |            |
|---------|--------|----------|------------|
| Certain | Likely | Unlikely | Impossible |
|---------|--------|----------|------------|

(a) Write down the word from the box that best describes each outcome.

(i) the pointer will stop on 2

.....

(ii) the pointer will stop on an odd number

.....

(iii) the pointer will stop on 1

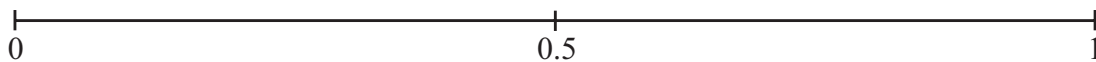
.....

**(3)**

(b) On the probability scale below, mark with a cross (X) the probability that

(i) the pointer will stop on 3  
Label this cross T.

(ii) the pointer will stop on 5  
Label this cross V.



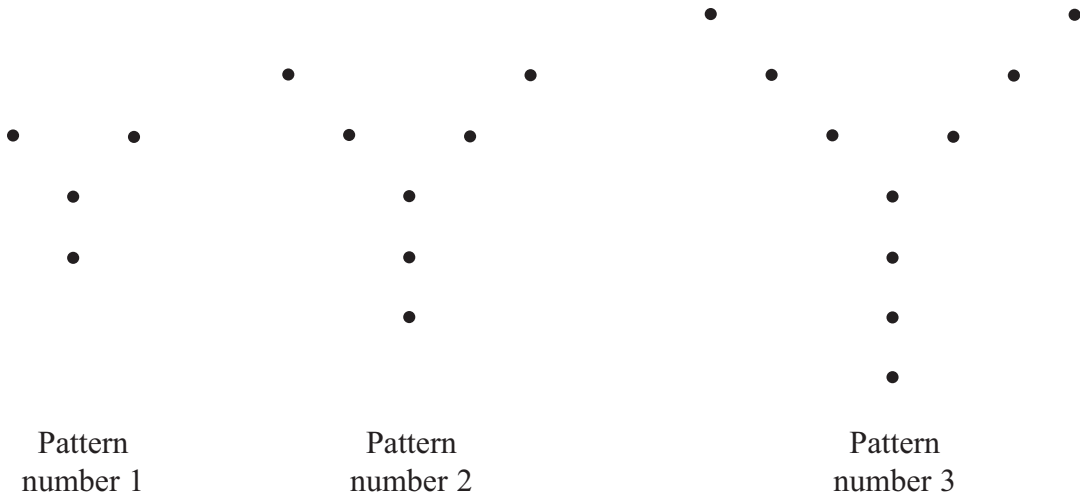
**(2)**

**(Total 5 marks)**

**Q3**



4. Here are some patterns made from dots.



(a) Draw Pattern number 4

(1)

(b) Complete the table.

|                |   |   |    |   |   |   |
|----------------|---|---|----|---|---|---|
| Pattern number | 1 | 2 | 3  | 4 | 5 | 6 |
| Number of dots | 4 | 7 | 10 |   |   |   |

(2)

(c) Work out the number of dots in Pattern number 12

.....  
(2)



(d) The number of dots in Pattern number 20 is 61

(i) Work out the number of dots in Pattern number 19

.....

(ii) Explain how you found your answer.

.....

(2)

(Total 7 marks)

Q4

5. The table shows the temperature in Oslo every 4 hours during a day in March.

|                    |      |      |      |      |      |      |      |
|--------------------|------|------|------|------|------|------|------|
| <b>Time</b>        | 0000 | 0400 | 0800 | 1200 | 1600 | 2000 | 2400 |
| <b>Temperature</b> | -2°C | -5°C | -4°C | -1°C | 0°C  | 3°C  | -1°C |

(a) Write down the lowest temperature.

..... °C

(1)

(b) By how many degrees did the temperature rise between 0800 and 1200?

..... °C

(2)

(c) Work out the range of the temperatures.

..... °C

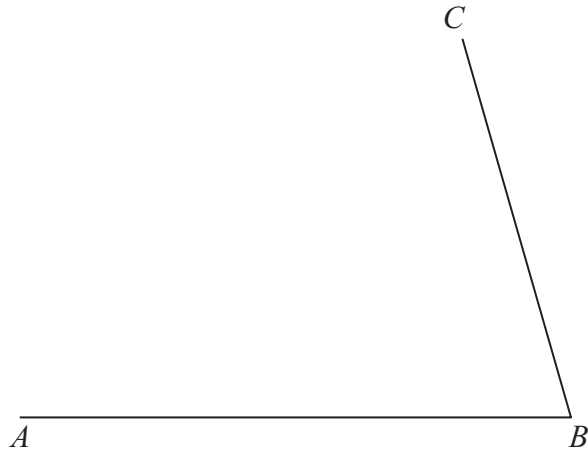
(2)

(Total 5 marks)

Q5



6.



(a) Measure the length of  $AB$ .

..... cm  
(1)

(b) Measure the size of angle  $ABC$ .

..... °  
(1)

$ABCD$  is a quadrilateral.

$D$  is a point such that angle  $BAD = 117^\circ$  and  $CD = 9.1$  cm.

(c) On the diagram, complete quadrilateral  $ABCD$ .

(3)

(Total 5 marks)

Q6





7. (a) Write  $\frac{48}{60}$  as a fraction in its simplest form.

.....  
(1)

(b) Work out  $\frac{3}{7}$  of 42

.....  
(2)

(c) Write these fractions in order of size.  
Start with the smallest fraction.

$$\frac{5}{6} \quad \frac{7}{8} \quad \frac{21}{25} \quad \frac{4}{5}$$

.....  
(2)

**(Total 5 marks)**

Q7



8.

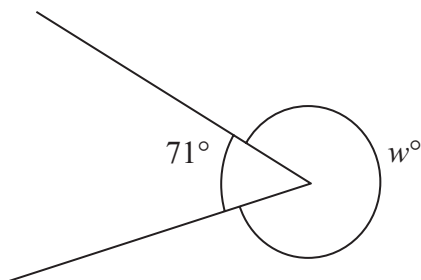


Diagram **NOT** accurately drawn

(a) (i) Work out the value of  $w$ .

$w = \dots\dots\dots$

(ii) Give a reason for your answer.

..... (2)

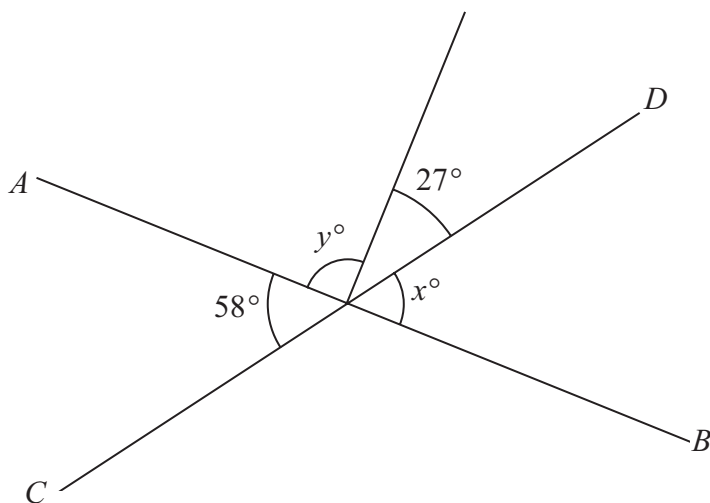


Diagram **NOT** accurately drawn

$AB$  and  $CD$  are straight lines.

(b) Give a reason why  $x = 58$

..... (1)

(c) (i) Work out the value of  $y$ .

$y = \dots\dots\dots$

(ii) Give a reason for your answer.

..... (2)

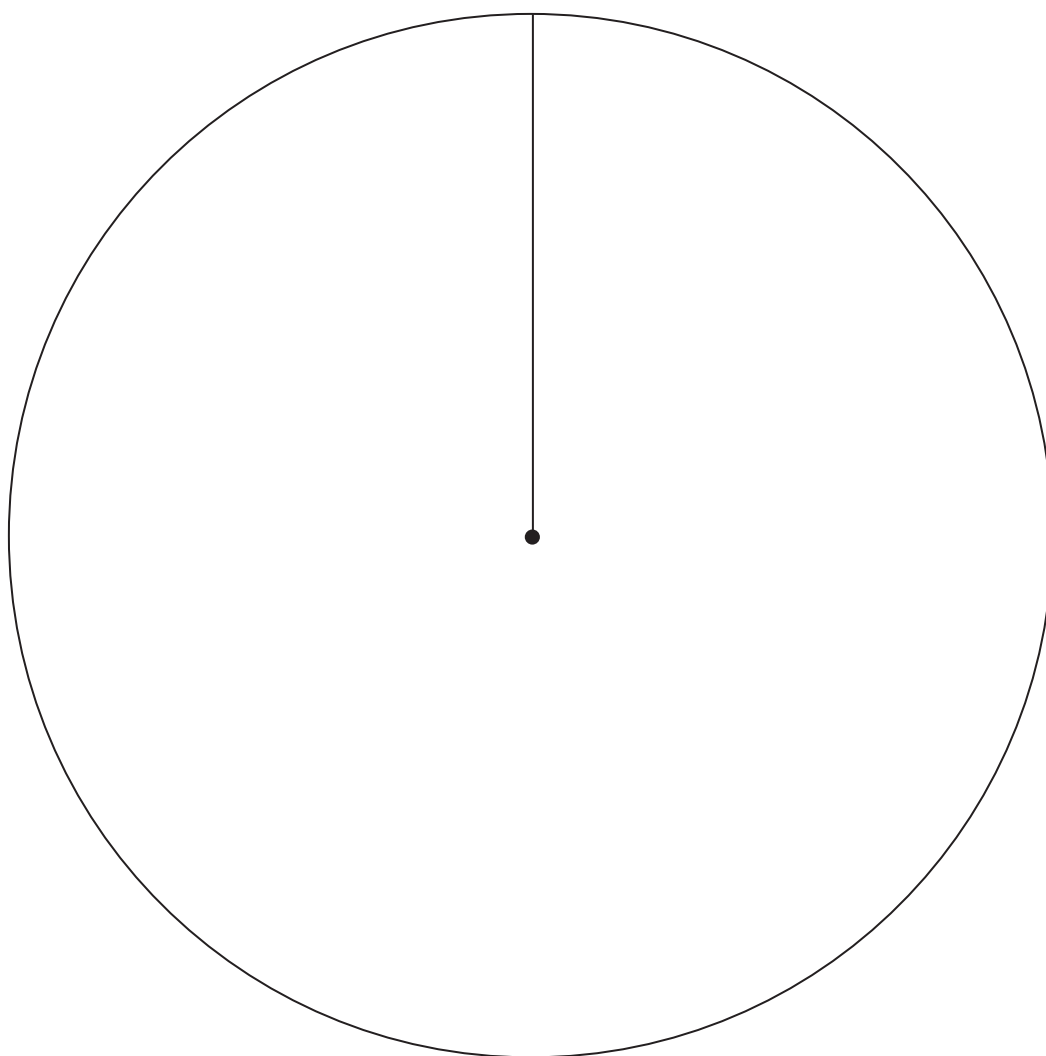
(Total 5 marks)

Q8



9. Last season, Mathstown Hockey Club played 48 matches. They won 20 matches, drew 18 and lost 10

Draw a pie chart to show this information.



(Total 3 marks)

Q9



10. The diagram shows a trapezium with two equal sides.

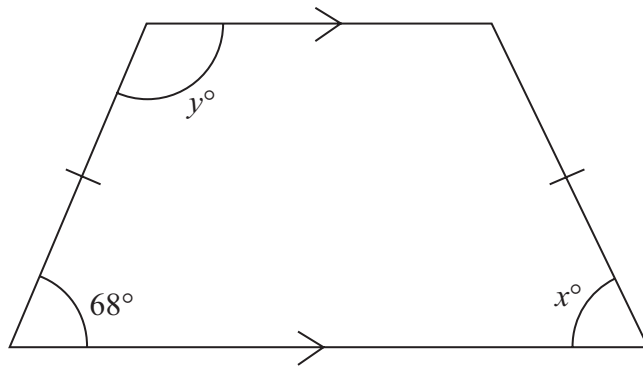


Diagram **NOT** accurately drawn

(a) Write down the value of  $x$ .

$x = \dots\dots\dots$   
(1)

(b) Work out the value of  $y$ .

$y = \dots\dots\dots$   
(2)

(Total 3 marks)

Q10

11.

£1 = 72.5 Indian rupees

(a) Change £86 to Indian rupees.

$\dots\dots\dots$  Indian rupees  
(2)

(b) Change 8700 Indian rupees to pounds (£).

£  $\dots\dots\dots$   
(2)

(Total 4 marks)

Q11

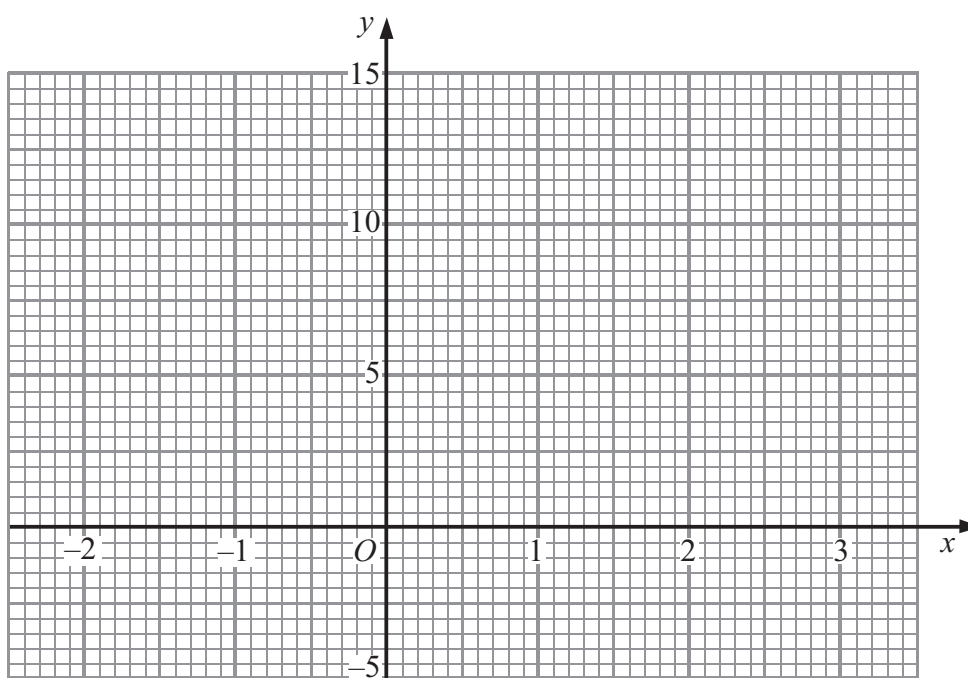


12. (a) Complete the table of values for  $y = 3x + 4$

|     |    |    |   |   |   |   |
|-----|----|----|---|---|---|---|
| $x$ | -2 | -1 | 0 | 1 | 2 | 3 |
| $y$ | -2 |    |   | 7 |   |   |

(2)

(b) On the grid, draw the graph of  $y = 3x + 4$



(2)

(Total 4 marks)

Q12



13. (a) Find the ratio of 24 seconds to 1 minute.  
Give your answer in its simplest form.

.....  
(2)

Carlos mixes cement, lime and sand in the ratios 1 : 2 : 9 by weight.

- (b) Work out the weight of cement, the weight of lime and the weight of sand in 60 kg of the mixture.

cement ..... kg

lime ..... kg

sand ..... kg

(3)

(Total 5 marks)

Q13

14. Use your calculator to work out the value of  $\frac{11.7 + 18.4^2}{0.3}$

Write down all the figures on your calculator display.

.....

(Total 2 marks)

Q14



15.

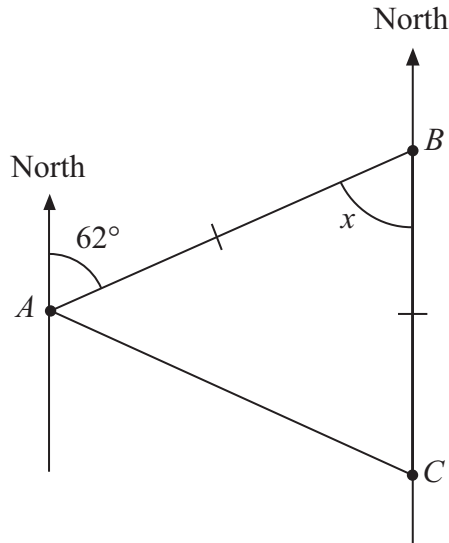


Diagram NOT accurately drawn

The bearing of  $B$  from  $A$  is  $062^\circ$ .  
 $C$  is due south of  $B$ .  
 $AB = CB$ .

(a) (i) Find the size of angle  $x$ .

.....  
 °

(ii) Give a reason for your answer.

.....  
 (2)

(b) Work out the bearing of  $C$  from  $A$ .

.....  
 °  
 (2)

(Total 4 marks)

Q15



16. A bag contains some beads.  
The colour of each bead is red or green or blue.  
Binita is going to take a bead at random from the bag.  
The probability that she will take a red bead is 0.4  
The probability that she will take a green bead is 0.5

(a) Work out the probability that she will take a blue bead.

.....  
(2)

(b) There are 80 beads in the bag.  
Work out the number of red beads in the bag.

.....  
(2)

**(Total 4 marks)**

**Q16**

17. (a) Cheng invested 3500 dollars.  
At the end of one year, interest of 161 dollars was added to his account.

Express 161 as a percentage of 3500

..... %  
(2)

(b) Lian invested an amount of money at an interest rate of 5.2% per year.  
After one year, she received interest of 338 dollars.

Work out the amount of money Lian invested.

..... dollars  
(3)

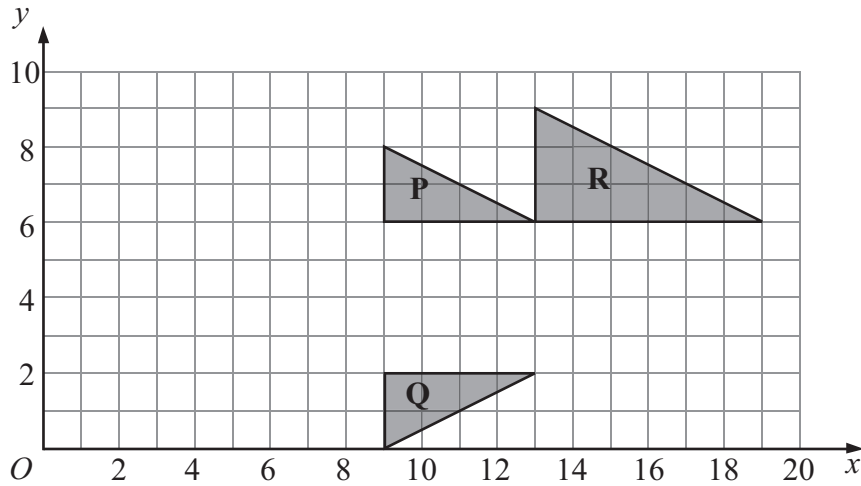
**(Total 5 marks)**

**Q17**





18.



(a) Describe fully the single transformation which maps triangle **P** onto triangle **Q**.

..... (2)

(b) Describe fully the single transformation which maps triangle **P** onto triangle **R**.

.....  
 ..... (3)

(Total 5 marks)

Q18



19. (a) Simplify  $d \times d \times d \times d \times d$

.....  
(1)

(b) Simplify  $5x - 4y + 2 + 3x + y$

.....  
(2)

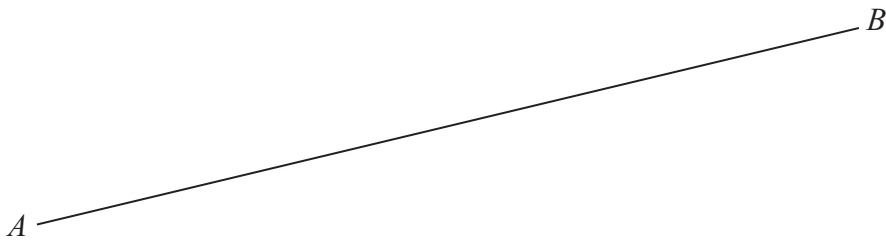
(c) Factorise  $n^2 - 4n$

.....  
(2)

(Total 5 marks)

Q19

20. Use ruler and compasses to construct the perpendicular bisector of the line  $AB$ .  
You must show all construction lines.



(Total 2 marks)

Q20



21. The table shows information about the rainfall in Singapore in December one year.

| Rainfall ( $d$ mm) | Number of days |
|--------------------|----------------|
| $0 \leq d < 10$    | 23             |
| $10 \leq d < 20$   | 3              |
| $20 \leq d < 30$   | 2              |
| $30 \leq d < 40$   | 3              |

Work out an estimate for the total rainfall in December.

..... mm

(Total 3 marks)

Q21

22. 
$$T = \frac{n(1+e)}{(1-e)}$$

Work out the value of  $T$  when  $n = 8.6$  and  $e = 0.2$

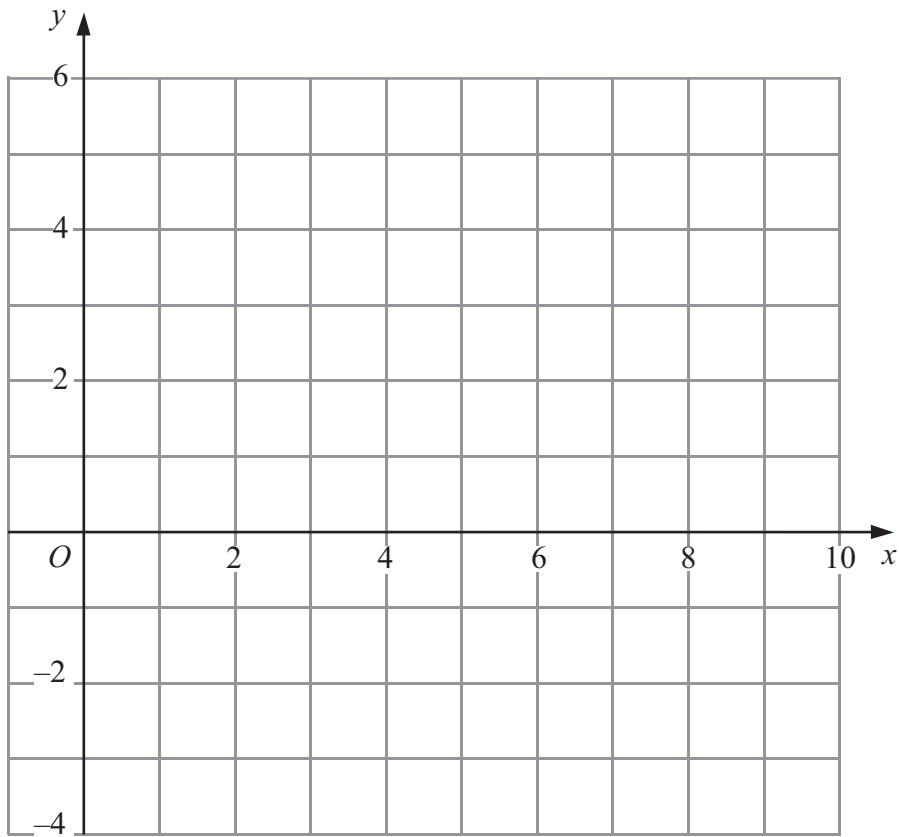
$T =$  .....

(Total 2 marks)

Q22



23. (a) On the grid, draw the graph of  $2x - 3y = 6$  from  $x = 0$  to  $x = 9$



(2)



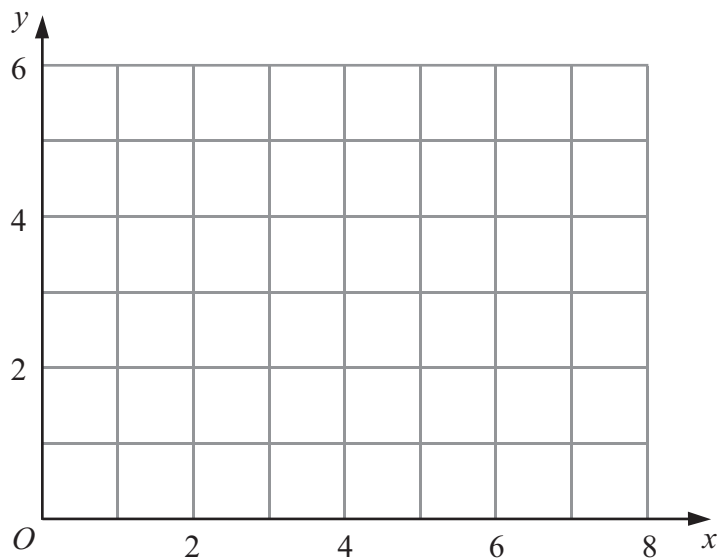
(b) On the grid, show by shading the region which satisfies the inequalities

$$3 \leq x \leq 6$$

**and**

$$2 \leq y \leq 4$$

Label your region **R**.



(3)

Q23

(Total 5 marks)

**TOTAL FOR PAPER: 100 MARKS**

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