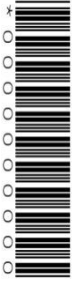


**GCSE (9–1) Mathematics**  
**J560/05 Paper 5 (Higher Tier)**

**Practice paper – Set 2**  
**Time allowed: 1 hour 30 minutes**



**You may use:**

- geometrical instruments
- tracing paper

**Do not use:**

- a calculator

<b>First name</b>										
<b>Last name</b>										
<b>Centre number</b>						<b>Candidate number</b>				

- INSTRUCTIONS**
- Use black ink. You may use an HB pencil for graphs and diagrams.
  - Complete the boxes above with your name, centre number and candidate number.
  - Answer **all** the questions.
  - Read each question carefully before you start to write your answer.
  - Where appropriate, your answers should be supported with working. Marks may be given for a correct method even if the answer is incorrect.
  - Write your answer to each question in the space provided. Additional paper may be used if required, but you must clearly show your candidate number, centre number and question number(s).
  - Do **not** write in the barcodes.

- INFORMATION**
- The total mark for this paper is **100**.
  - The marks for each question are shown in brackets [ ].
  - This document consists of **16** pages.

Answer **all** the questions.

1 (a) Work out.

(i)  $4^3 \times 3^0$

(a)(i)..... [2]

(ii)  $5^{-2}$

(ii)..... [1]

(b) Estimate.

$$\sqrt{\frac{4.04 \times 199.2}{2.11}}$$

(b)..... [3]

2 Aimee receives a 20% salary increase.  
Her new salary is £18 000.

What was Aimee's salary before the increase?

£..... [3]

3 (a) (i) Expand.

$$2(x + 3y)$$

(a)(i)..... [1]

(ii) Expand and simplify.

$$(x + 2)(x - 5)$$

(ii)..... [2]

(b) (i) Factorise completely.

$$5x^2 + 15xy$$

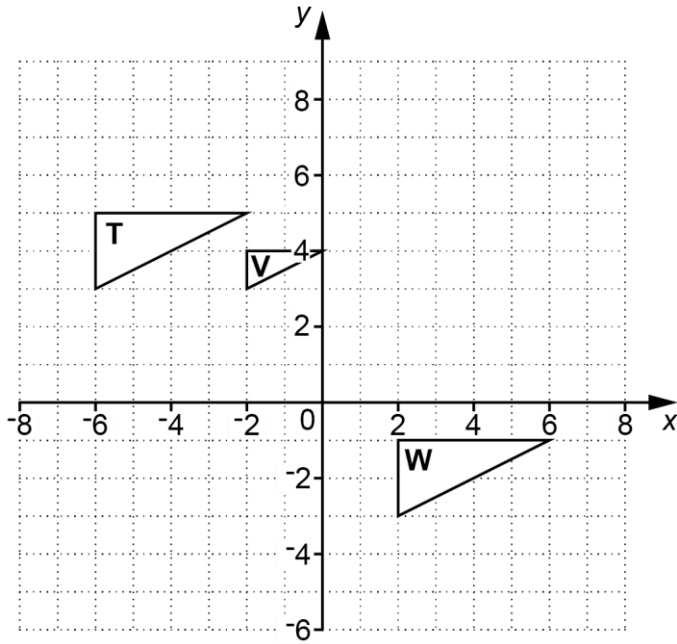
(b)(i)..... [2]

(ii) Factorise.

$$x^2 - 49$$

(ii)..... [1]

4 Three triangles are drawn on a coordinate grid.



(a) (i) Draw the image of triangle **T** after a reflection in the line  $y = 0$ . [2]

(ii) Draw the image of triangle **T** after a rotation  $90^\circ$  clockwise about  $(0, 0)$ . [2]

(b) (i) Describe fully the **single** transformation that maps triangle **T** onto triangle **W**.  
 .....  
 ..... [2]

(ii) Describe fully the **single** transformation that maps triangle **T** onto triangle **V**.  
 .....  
 ..... [3]

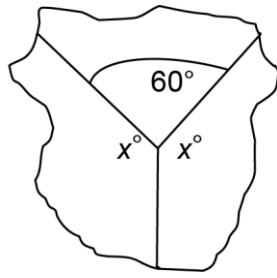
(c) Heather says

Any transformation always produces a shape that is congruent to the original shape.

Is her statement correct? Explain your reasoning.

..... [1]

- 5 Three **regular** polygons meet at a point.



**Not to scale**

Find the number of sides of each of the three regular polygons in the diagram.

.....and.....and.....[6]

- 6 Adam made 50 biscuits on Monday.  
On Tuesday he made 40% more biscuits than he made on Monday.  
On Wednesday he made 20% fewer biscuits than he made on Tuesday.

Find and describe the percentage change between the number of biscuits Adam made on Monday and the number of biscuits he made on Wednesday.

..... [5]

- 7 The width of this rectangle is  $(x + 5)$  cm.



**Not to scale**

$(x + 5)$  cm

The ratio width : length for this rectangle is 1 : 2.  
The perimeter of the rectangle is 48 cm.

Calculate the area of the rectangle.

..... cm<sup>2</sup>[6]

- 8 Andrew buys 3 coffees and 2 teas for £5.00.  
Katie buys 4 coffees and 3 teas for £6.95.

Work out the cost of one coffee and the cost of one tea.

Coffee £ .....

Tea £ .....

[5]

- 9 (a) At a car show there are 1500 people, correct to the nearest 100.  
Kamil states that the number of people,  $n$ , at the car show satisfies this inequality.

$$1450 \leq n \leq 1550$$

State an error that Kamil has made.

..... [1]

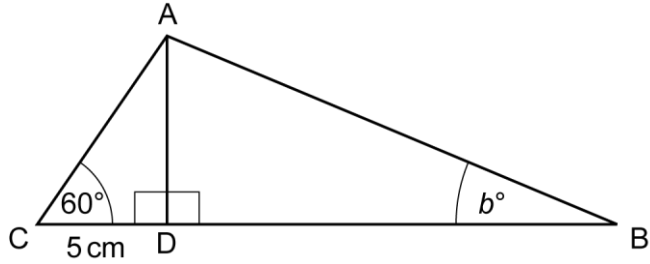
- (b) Kamil has a garage with parking space of length 5.2 m, correct to the nearest 0.1 m.  
He buys a car of length 5.15 m, correct to the nearest 0.01 m.

Will his car definitely fit into the garage?  
Show your reasoning.

..... [3]



10 In the diagram,  $CD = 5\text{ cm}$ , angle  $ACD = 60^\circ$  and  $\sin b^\circ = 0.5$ .



Not to scale

(a) Prove that triangle ACD is similar to triangle BAD.

.....

.....

.....

.....

..... [3]

(b) Find the ratio of the area of triangle ACD to the area of triangle BAD.

(b)..... : ..... [4]

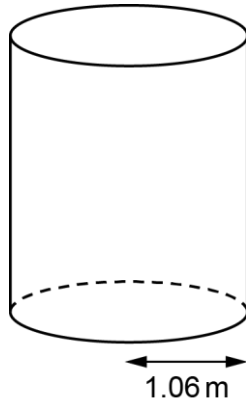
11 (a) Write  $\frac{4}{9}$  as a recurring decimal.

(a)..... [2]

(b) Write  $0.2\dot{6}$  as a fraction in its lowest terms.

(b)..... [3]

- 12 Weight is measured in newtons (N).  
A cylinder of ice of weight 5940 N rests on a horizontal surface.  
The base of the cylinder has radius 1.06 m.

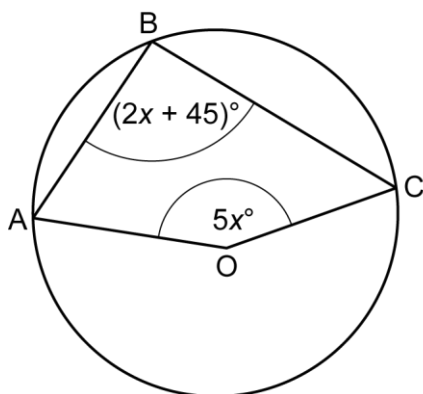


Hannah estimates that the pressure exerted by the cylinder on the surface is  $1000 \text{ N/m}^2$ .

Show that Hannah's estimate is incorrect.

[4]

- 13 A, B and C lie on a circle, centre O.  
In quadrilateral ABCO, angle AOC =  $5x^\circ$  and angle ABC =  $(2x + 45)^\circ$ .



Not to scale

Find the value of  $x$ .

$x = \dots\dots\dots$  [4]

14 Solve by factorising.

$$3x^2 - 8x + 5 = 0$$

..... [3]

15 Catrina plays a game throwing both a fair six-sided dice and a fair coin.

She wins a prize when the dice shows a 6 and the coin shows a head.

If Catrina does not win the prize with her first throw, she throws both the dice and the coin once more only.

Calculate the probability that Catrina wins a prize.

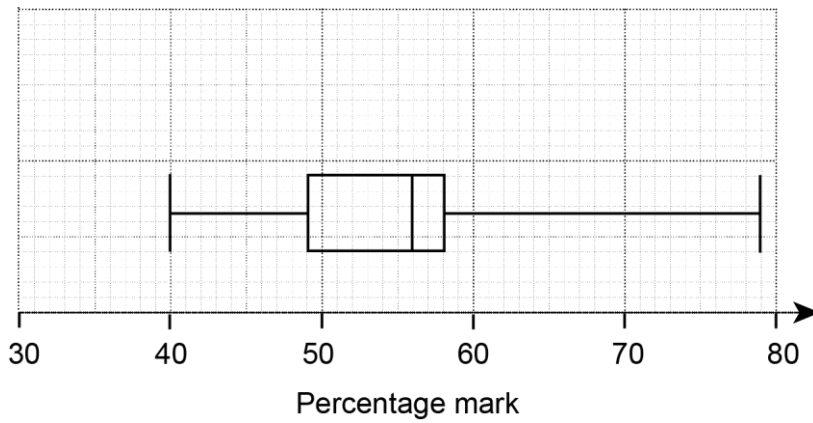
..... [6]

- 16  $y$  is directly proportional to  $x^2$ .  
 $y = 10$  when  $x = 2$ .

Express  $y$  in terms of  $x$ .

..... [3]

- 17 This box plot shows the distribution of students' percentage marks in a history test.



- (a) Use this box plot to find

(i) the median,

(a)(i)..... % [1]

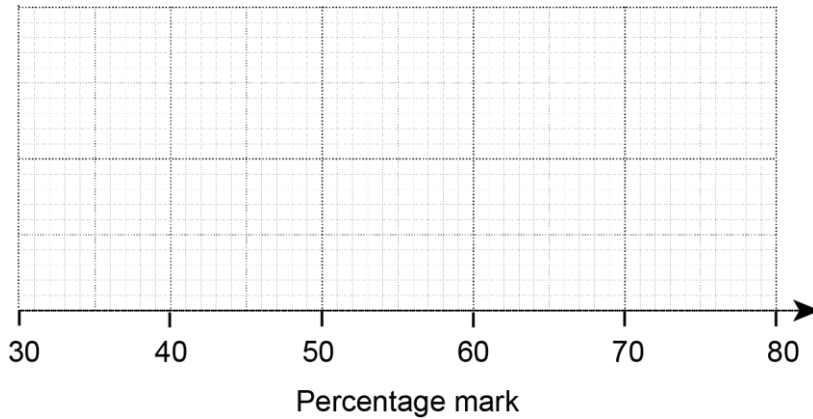
(ii) the interquartile range.

(ii)..... % [1]

(b) The following statements are true for the students' percentage marks in a geography test.

- The median is 5% less than in history.
- The lower quartile is 46%.
- The interquartile range is 13%.
- The range is 45%.
- The lowest score is 35%.

Use these statements to draw the box plot for the distribution of the students' percentage marks in geography.



[3]

(c) Compare the distribution of the percentage marks in geography and the distribution of the percentage marks in history.

..... [1]

18 A circle has equation  $x^2 + y^2 = 80$ .

- (a) Calculate the diameter of the circle.  
Give your answer as a surd in its simplest form.

(a)..... [3]

- (b) Colin says that the point (5, 7) lies outside the circle.

Is Colin correct?  
Show your reasoning.

..... [2]

- (c) Show that the line with equation  $y = \frac{1}{2}x + 10$  is a tangent to the circle. [6]

**END OF QUESTION PAPER**

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