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MATHEMATICS

0580/03

Paper 3 Calculator (Core)

For examination from 2025

SPECIMEN PAPER

1 hour 30 minutes

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a scientific calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π , use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [].

This document has **20** pages.

List of formulas

Area, A , of triangle, base b , height h . $A = \frac{1}{2}bh$

Area, A , of circle of radius r . $A = \pi r^2$

Circumference, C , of circle of radius r . $C = 2\pi r$

Curved surface area, A , of cylinder of radius r , height h . $A = 2\pi rh$

Curved surface area, A , of cone of radius r , sloping edge l . $A = \pi rl$

Surface area, A , of sphere of radius r . $A = 4\pi r^2$

Volume, V , of prism, cross-sectional area A , length l . $V = Al$

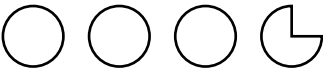
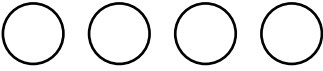



Volume, V , of pyramid, base area A , height h . $V = \frac{1}{3}Ah$


Volume, V , of cylinder of radius r , height h . $V = \pi r^2 h$

Volume, V , of cone of radius r , height h . $V = \frac{1}{3}\pi r^2 h$

Volume, V , of sphere of radius r . $V = \frac{4}{3}\pi r^3$

1 The pictogram shows the number of text messages sent by five students in one day.

Name of student	Number of text messages
Kira	
Matt	
Dani	
Hana	
Ramos	

Key:  represents text messages

(a) Kira sent 15 text messages.

Complete the key.

[1]

(b) Find the number of text messages sent by Hana.

..... [1]

2 Write down all the factors of 68.

..... [2]

- 3 Insert one pair of brackets to make this statement correct.

$$4 \times 6 - 2 + 1 = 17$$

[1]

- 4 Write down the reciprocal of 4.

..... [1]

- 5 Find the value of

(a) 24^2

..... [1]

(b) $\sqrt[3]{2197}$.

..... [1]

- 6 The lowest temperature recorded at Scott Base in Antarctica is -57.0°C .
The highest temperature recorded at Scott Base is 63.8°C more than this.

Calculate the highest temperature recorded at Scott Base.

..... $^\circ\text{C}$ [1]

- 7 Lee changes \$450 into euros.
The exchange rate is $\$1 = 0.8476$ euros.

Calculate the amount in euros that Lee receives.

..... euros [1]

8 $W = \frac{t}{2}(7t - 4)$

Find the value of W when $t = 18$.

$W = \dots\dots\dots$ [2]

9 A triangle has sides 6 cm, 7 cm and 8 cm.

Using a ruler and compasses only, construct the triangle.
The 6 cm line has been drawn for you.
Show all your construction arcs.



[2]

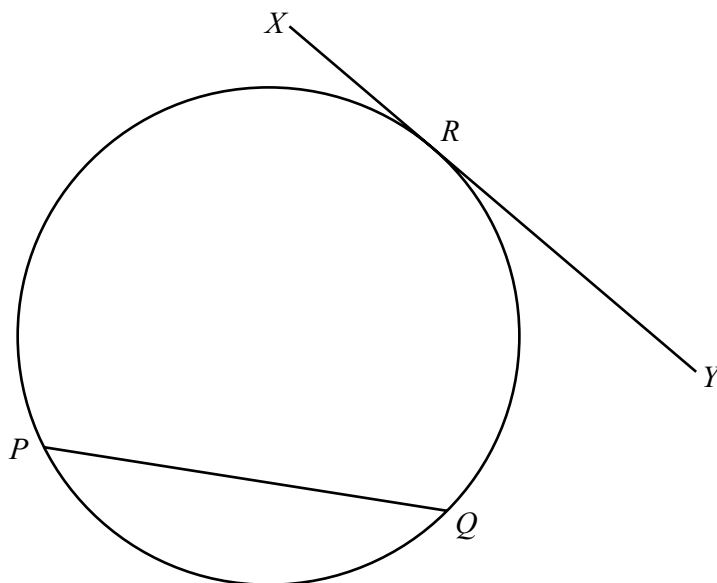
10 Calculate.

$$\frac{13.7 + 14.02}{-0.31 + \sqrt[3]{15.625}}$$

Give your answer correct to 2 decimal places.

..... [2]

11



NOT TO SCALE

- (a) The line XY touches the circle at the point R .

Write down the mathematical name for the line XY .

..... [1]

- (b) Points P and Q lie on the circle.

Write down the mathematical name for the line PQ .

..... [1]

- (c) The area of the circle is 43.5 cm^2 .

Calculate the radius of the circle.

..... cm [2]

- (d) The diameter of a different circle is 6.4 cm.

Calculate the circumference of this circle.

Give your answer in millimetres.

..... mm [3]

12 The stem-and-leaf diagram shows the scores of each of 27 students in a test.

2	8 8 9
3	2 5 6 6 7 8 8
4	0 1 1 2 3 4 6 7 9
5	1 3 4 5 5 7 8
6	2

Key: 2|8 represents a score of 28

(a) Find the range of the scores.

..... [1]

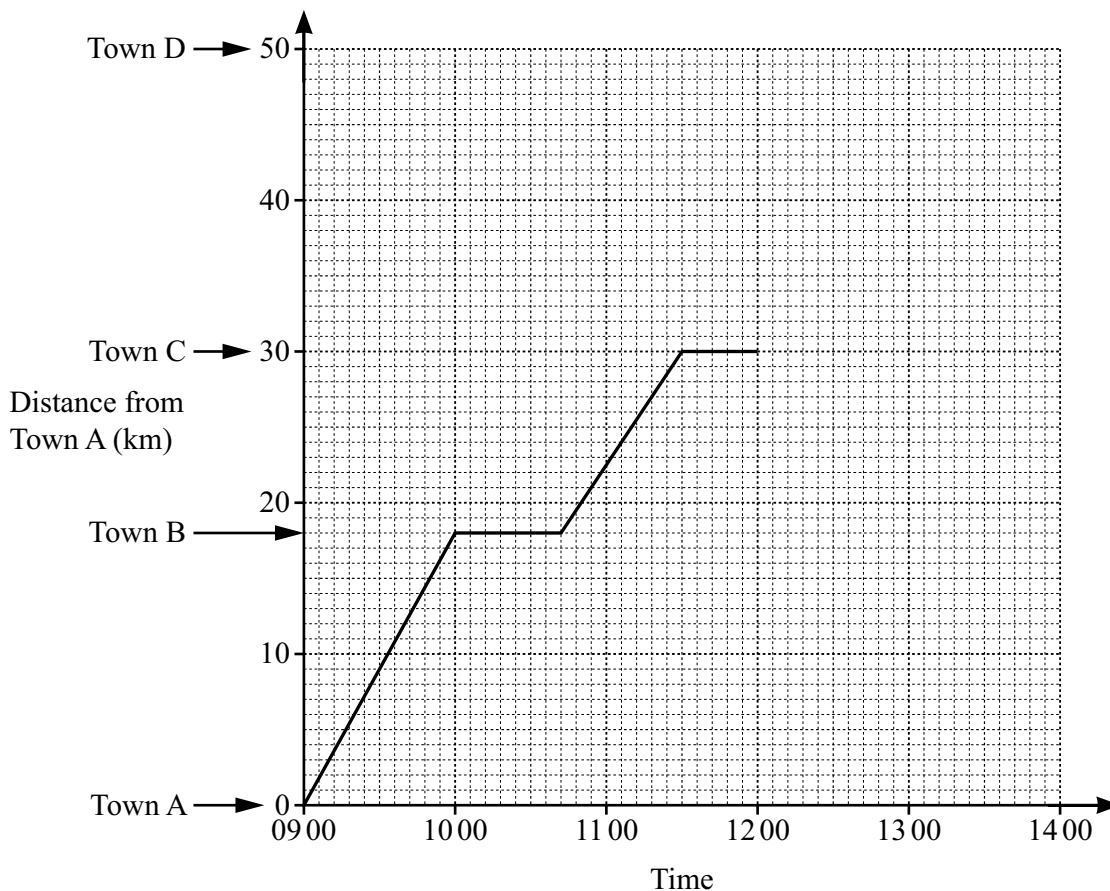
(b) When the score for another student is included in the diagram the new range is 38.

Find the two possible scores for this student.

....., [2]

Question 13 is printed on the next page.

- 13 Jason leaves Town A at 09 00 and cycles to Town C.
The travel graph shows Jason’s journey.



- (a) Find Jason’s average speed, in kilometres per hour, from Town A to Town B.

..... km/h [1]

- (b) Jason leaves Town C at 12 00.
Jason continues to Town D at a constant speed of 15 kilometres per hour.

- (i) Calculate the time Jason takes to travel from Town C to Town D.
Give your answer in hours and minutes.

..... h min [2]

- (ii) On the travel graph, complete Jason’s journey. [1]

- (c) Find the total time, in minutes, that Jason stopped between Town A and Town D.

..... min [1]

- (d) Calculate Jason's overall average speed, in kilometres per hour, from Town A to Town D.

..... km/h [3]

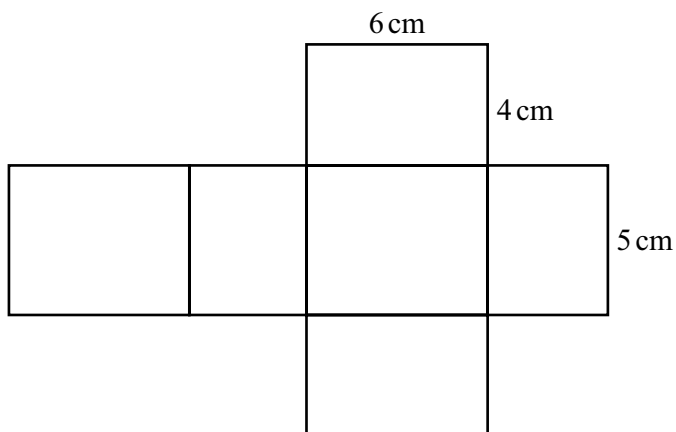
- (e) Lisa leaves Town C at 11 00 and arrives at Town A at 13 42.
Lisa cycles at a constant speed on the same road as Jason, without stopping.

(i) Draw a line on the travel graph to show Lisa's journey. [2]

- (ii) Find the distance from Town A when Lisa and Jason pass each other.

..... km [1]

14 (a)



NOT TO SCALE

The diagram shows the net of a cuboid.

(i) Find the volume of the cuboid.

..... cm³ [2]

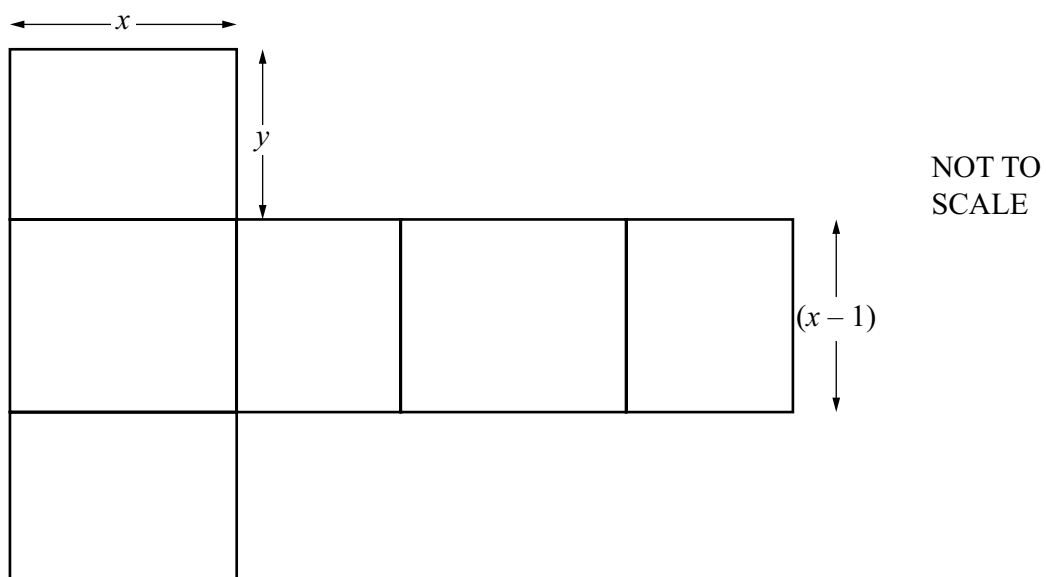
(ii) Show that the total surface area of the cuboid is 148 cm².

[2]

(iii) Calculate the total length of the edges of the cuboid.

..... cm [2]

(b) In this part, all measurements are in centimetres.



This is the net of a cuboid with edges of length x , y and $(x - 1)$.

Find an expression, in terms of x and y , for the perimeter of the net.
Give your answer in its simplest form.

..... [3]

15 A sphere has a surface area of 177 cm^2 .

(a) Calculate the radius of the sphere.

..... cm [2]

(b) Calculate the volume of the sphere.

..... cm^3 [2]

16 Jo and Mira buy a shop.

- (a) They pay for the shop in the ratio Jo : Mira = 7 : 15.
Mira pays \$84 000 more than Jo.

Work out how much they each pay.

Jo \$

Mira \$

[3]

- (b) The shop makes a profit of \$56 000.
Jo receives 12% of the profit.
Mira receives \$14 000 of the profit.
The rest of the profit is put into a bank account.

- (i) Calculate how much money Jo receives.

\$ [1]

- (ii) Calculate the amount put into the bank account as a percentage of the profit.

.....% [2]

- (iii) Mira invests \$14 000 at a rate of 2.4% per year compound interest.

Calculate the value of this investment at the end of 4 years.

\$ [2]

17 The number, N , is written as a product of its prime factors.

$$N = 2^4 \times 3^2$$

(a) Work out the value of N .

..... [1]

(b) Find the highest common factor (HCF) of 120 and N .

..... [2]

(c) Find the lowest common multiple (LCM) of 120 and N .

..... [1]

- 18 (a) These are the first five terms of a sequence.

$$7 \quad a \quad b \quad c \quad 31$$

In the sequence, the same number is added each time to obtain the next term.

Find the value of each of the terms a , b and c .

$$a = \dots\dots\dots$$

$$b = \dots\dots\dots$$

$$c = \dots\dots\dots$$

[2]

- (b) These are the first five terms of another sequence.

$$4 \quad 11 \quad 18 \quad 25 \quad 32$$

- (i) Find the n th term of the sequence.

..... [2]

- (ii) Show that 361 is a term in the sequence.

[2]

18

- 19 In a quiz, the mean score of each of 12 adults is 43.25 .
In the same quiz, the mean score of each of 16 children is 39.75 .

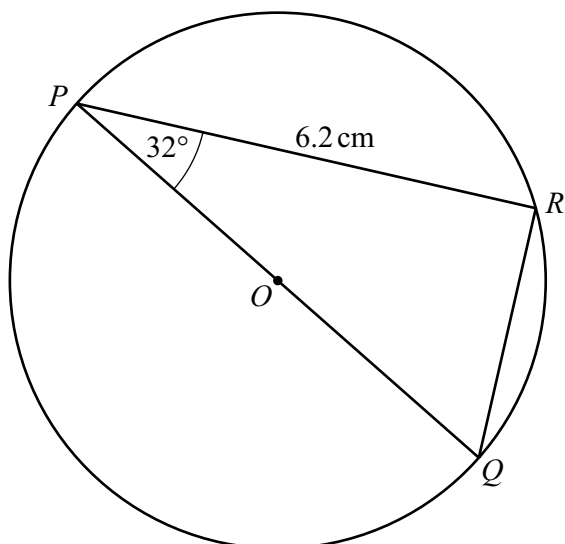
Calculate the mean score of the 28 people.

..... [3]

- 20 Luca walks at a speed of 5.4 kilometres per hour.

Write this speed in metres per second.

..... m/s [2]



NOT TO
SCALE

The diagram shows a circle, centre O , with diameter PQ .
 R is a point on the circumference.

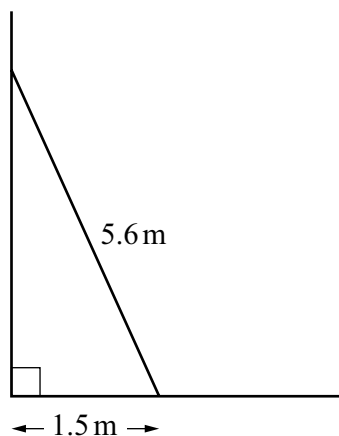
(a) Give a geometrical reason why angle PRQ is 90° .

..... [1]

(b) Calculate the length of PQ .

$PQ = \dots\dots\dots \text{ cm}$ [3]

22

NOT TO
SCALE

A ladder of length 5.6 m rests against a vertical wall.
The bottom of the ladder is 1.5 m from the bottom of the wall, on horizontal ground.

Calculate the distance from the top of the ladder to the base of the wall.

..... m [3]

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