Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

MATHEMATICS **0580/23**

Paper 2 (Extended) **October/November 2024**

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 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 70.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages.

© UCLES 2024

1

61	62	63	64	65	66	67	68	69

From the list of numbers, write down

(a) a cube number

View solution

..... [1]

(b) a prime number.

View solution

..... [1]

2 A train journey starts at 23 30 and finishes at 07 15 the next day.

View solution

Find the time taken for this journey.

..... h ..... min [1]

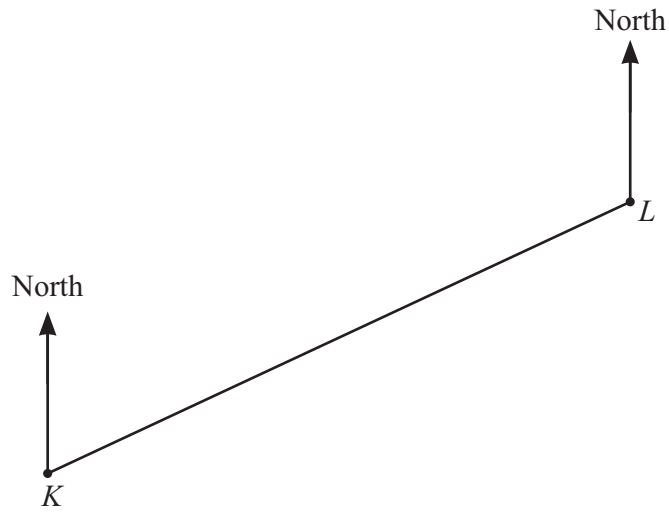
3 Simplify.

View solution

$3p - t - p - 4t$

..... [2]

4 The scale drawing shows the positions of town K and town L.
The scale is 1 cm represents 10 km.



Scale : 1 cm to 10 km

(a) Find the actual distance between town K and town L.

View solution

..... km [2]

(b) Measure the bearing of town L from town K.

..... [1]

View solution

5 Each student in a class of 20 students records the number of coins in their pockets.
The table shows the results.

Number of coins	0	1	2	3	4	5	6
Frequency	3	1	7	8	0	0	1

View solution

(a) Find the median.

..... [1]

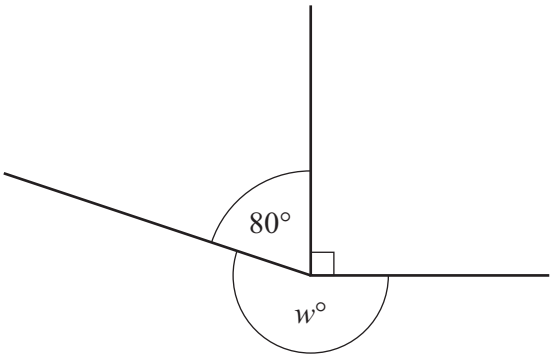
(b) Calculate the mean.

View solution

..... [3]

6

View solution



NOT TO SCALE

The diagram shows three lines meeting at a point.

Find the value of w.

$w =$ ..... [1]

7 Solve the equation.

$$7 - h = 3 - 5h$$

View solution

$h =$ ..... [2]

8 Sacha buys b books and m magazines.
The cost of each book is \$12 and the cost of each magazine is \$5.

View solution

Write an expression, in terms of b and m, for the total cost of the books and the magazines.

\$ ..... [2]

9 Find the size of an interior angle of a regular 15-sided polygon.

View solution

..... [2]

10 **Without using a calculator**, work out $2\frac{1}{4} - 1\frac{11}{12}$.

View solution

You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

© UCLES 2024

11 Solve the simultaneous equations.

View solution

$$3p - 2q = 7$$
$$p + 2q = 1$$

$p =$ .....

$q =$ ..... [2]

12 $V = \sqrt[3]{\frac{x}{y}}$

View solution

Rearrange the formula to write x in terms of V and y.

$x =$ ..... [2]

13 Find the nth term of each sequence.

(a) 21, 13, 5, −3, −11, …

View solution

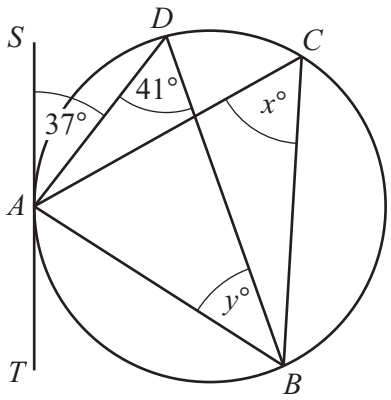
..... [2]

(b) 2.5, 5, 10, 20, 40, …

View solution

..... [2]

14 (a)



NOT TO SCALE

View solution

A, B, C and D lie on the circle.
TAS is a tangent to the circle at A.

(i) Find the value of x.

$x =$ ..... [1]

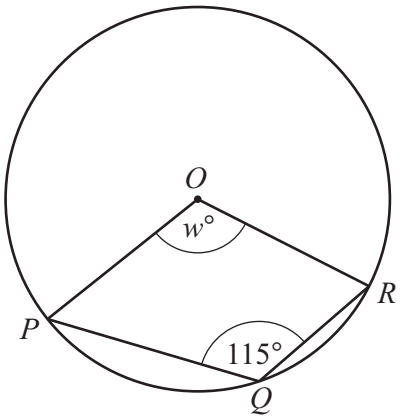
View solution

(ii) Find the value of y.

$y =$ ..... [1]

View solution

(b)



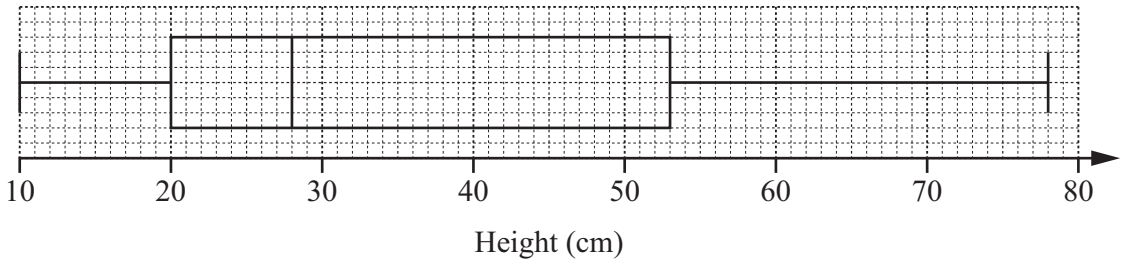
NOT TO SCALE

P, Q and R lie on the circle, centre O.

Find the value of w.

$w =$ ..... [2]

15



The box-and-whisker diagram shows information about the heights of some plants.

View solution

(a) Find the median height.

..... cm [1]

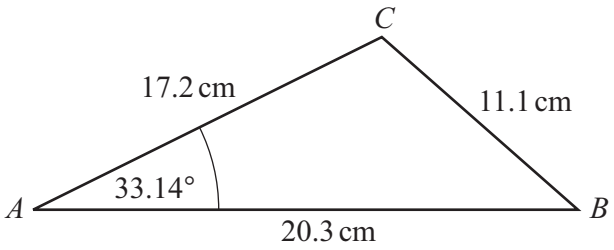
(b) Find the interquartile range of the heights.

View solution

..... cm [1]

View solution

16



NOT TO SCALE

Calculate the shortest distance from C to AB.

..... cm [3]

17 Simplify.

(a) $18x^{18} \div 3x^{3}$

View solution

..... [2]

(b) $\left(125y^{75}\right)^{\frac{2}{3}}$

View solution

..... [2]

18 Two mathematically similar solids have volumes $81\,\text{cm}^3$ and $24\,\text{cm}^3$.
The height of the smaller solid is 4.8 cm.

View solution

Calculate the height of the larger solid.

..... cm [3]

19 y is inversely proportional to $\sqrt{x+2}$.
When $x = 2$, $y = 3$.

View solution

Find y in terms of x.

$y =$ ..... [2]

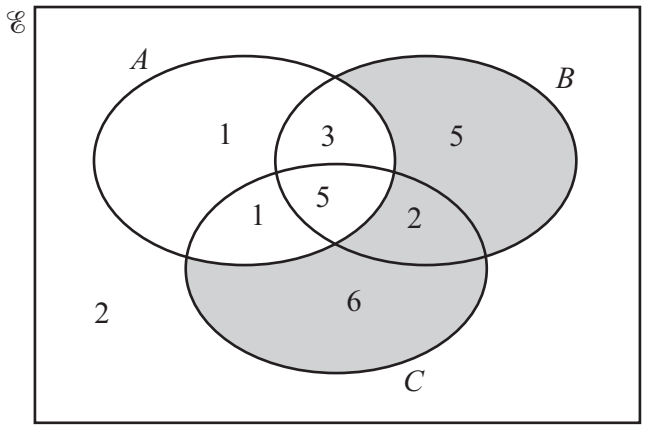
20 Solve the equation $\tan x + 2 = 0$ for $0° \leqslant x \leqslant 360°$.

View solution

$x =$ ..... or $x =$ ..... [3]

© UCLES 2024

21



The Venn diagram shows the number of elements in each region.

View solution

(a) Use set notation to describe the shaded region.

..... [1]

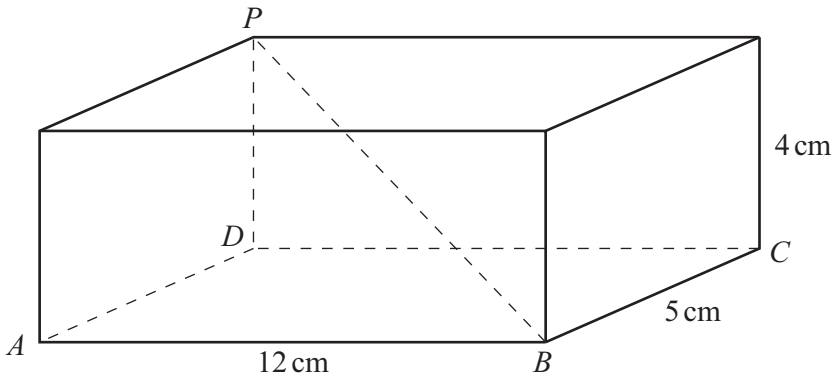
View solution

(b) Find $n(A \cap B \cap C)$.

..... [1]

22

View solution



NOT TO SCALE

The diagram shows a cuboid with a diagonal PB.

Calculate the angle between the diagonal PB and the base $ABCD$.

..... [4]

23 Write $x^2 + 8x - 7$ in the form $(x + a)^2 + b$.

View solution

..... [2]

24 A rectangle has an area of $150\,\text{m}^2$, correct to the nearest square metre.
The length of the rectangle is 22 m, correct to the nearest metre.

Calculate the upper bound of the width of the rectangle.

View solution

..... m [3]

25 Simplify.

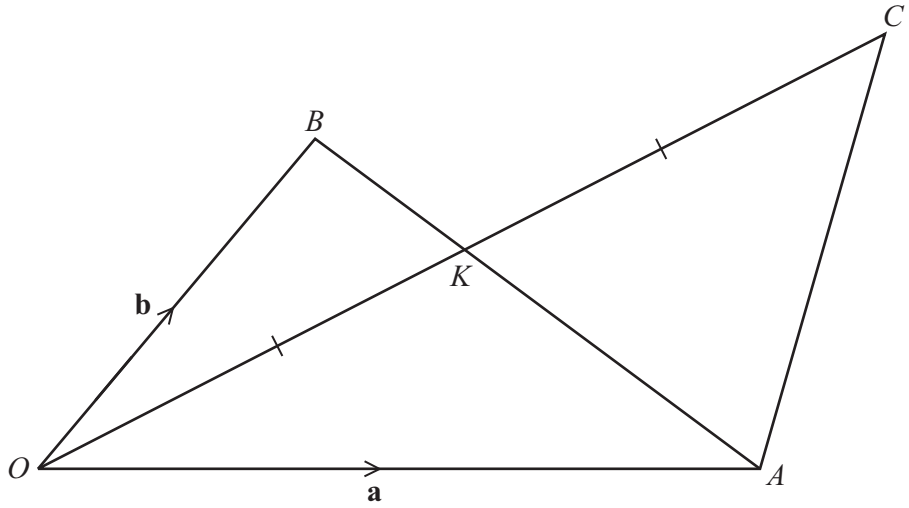
$$\frac{3x - 2 - 3xy + 2y}{1 - y^2}$$

View solution

..... [4]

26

View solution



NOT TO SCALE

In the diagram, $\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.
$AK : KB = 2 : 1$.
$OK = KC$.

Find $\overrightarrow{AC}$ in terms of **a** and **b**.
Give your answer in its simplest form.

$\overrightarrow{AC} =$ ..... [4]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

© UCLES 2024