Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

MATHEMATICS **0580/22**

Paper 2 (Extended) **October/November 2017**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 70.

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1 One day, at noon, in Maseru, the temperature was 17 °C.
At midnight the temperature was 20 °C lower.

View solution

Work out the temperature at midnight.

..... °C [1]

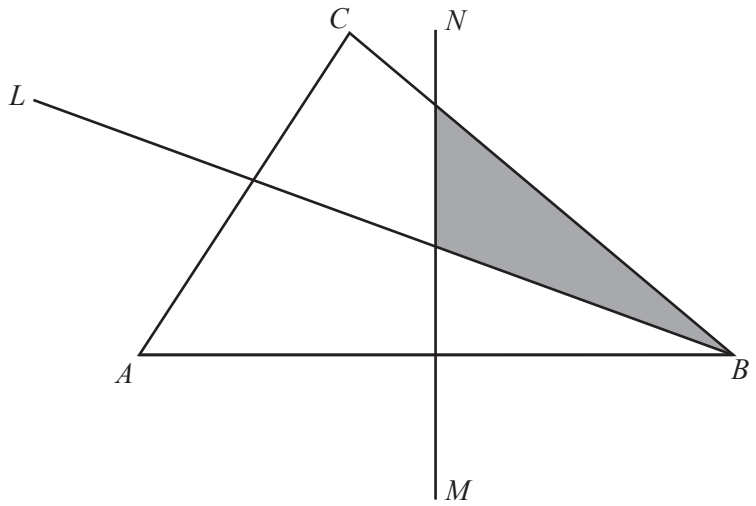
2 Write 5.17×10^{-3} as an ordinary number.

View solution

..... [1]

3

View solution



In the diagram, *BL* is the bisector of angle *ABC* and *MN* is the perpendicular bisector of *AB*.

Complete the statement.

The shaded region contains the points, inside triangle *ABC*, that are

- nearer to *B* than to *A*

and

- nearer to ..... than to ..... [1]

4 **(a)** 1 and 12 are factors of 12.

View solution

Write down all the other factors of 12.

..... [1]

(b) Write down the multiples of 9 between 20 and 40.

View solution

..... [1]

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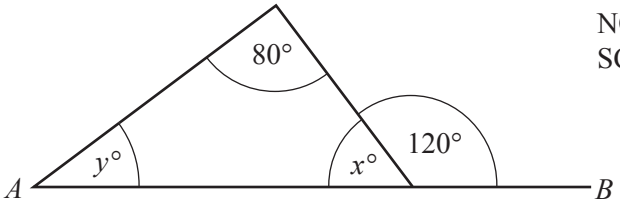
5



NOT TO SCALE

View solution

In the diagram, AB is a straight line.

Find the value of x and the value of y.

$x =$ .....

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

6 Write 55 g as a percentage of 2.2 kg.

View solution

..... % [2]

7 The area of a triangle is 528 cm^2.
The length of its base is 33 cm.

View solution

Calculate the perpendicular height of the triangle.

..... cm [2]

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8 Amar cycles at a speed of 18 km/h.
It takes him 55 minutes to cycle between two villages.

View solution

Calculate the distance between the two villages.

..... km [2]

9 Work out, giving your answer in standard form.

View solution

$$1.2 \times 10^{40} + 1.2 \times 10^{41}$$

..... [2]

10 The sides of a triangle are 5.2 cm, 6.3 cm and 9.4 cm, each correct to the nearest millimetre.

View solution

Calculate the lower bound of the perimeter of the triangle.

..... cm [2]

11 Write the recurring decimal $0.\dot{4}\dot{8}$ as a fraction.
Show all your working.

View solution

..... [2]

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12 Expand the brackets and simplify.

$$(5-n)(3+n)$$

View solution

..... [2]

13 **(a)** Write $\frac{11}{3}$ as a mixed number.

View solution

..... [1]

(b) **Without using a calculator**, work out $\frac{1}{4}+\frac{5}{12}$.
Show all the steps of your working and give your answer as a fraction in its lowest terms.

View solution

..... [2]

14 Find the integers which satisfy the inequality.

View solution

$$-5 < 2n-1 \leqslant 5$$

..... [3]

15 Write as a single fraction in its simplest form.

$$\frac{x+1}{x} - \frac{y-1}{y}$$

View solution

..... [3]

16 Here are the first four terms of a sequence.

23 17 11 5

(a) Find the next term.

View solution

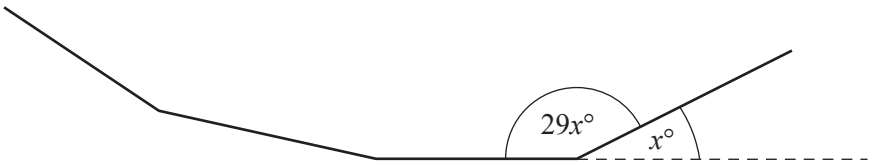
..... [1]

(b) Find the nth term.

View solution

..... [2]

17



View solution

The diagram shows part of a regular polygon.
The exterior angle is $x°$.
The interior angle is $29x°$.

Work out the number of sides of this polygon.

..... [3]

18 Solve the simultaneous equations.
You must show all your working.

View solution

$$y = \frac{x}{2}$$
$$2x - y = 1$$

$x =$ .....

$y =$ ..... [3]

19 Make x the subject of the formula.

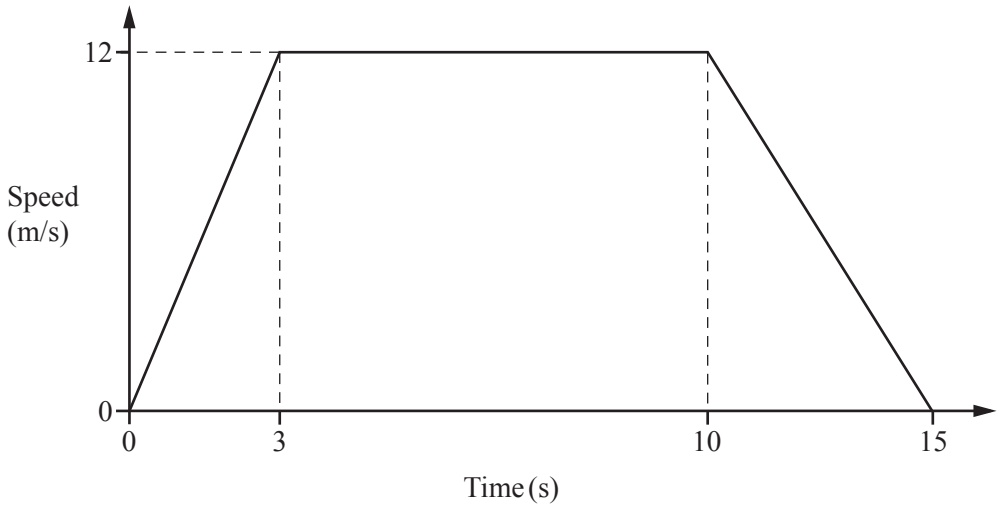
View solution

$$y = \sqrt{x^2 + 1}$$

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

20

View solution



NOT TO SCALE

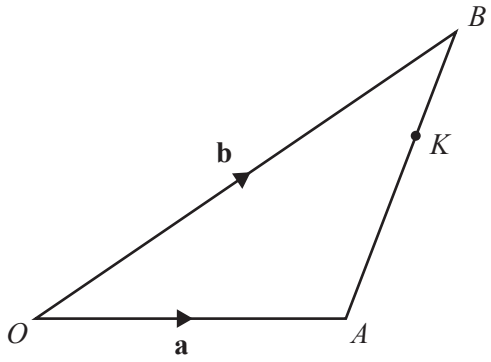
The diagram shows a speed-time graph.

Calculate the total distance travelled.

..... m [3]

21

View solution



NOT TO SCALE

O is the origin and K is the point on AB so that $AK : KB = 2 : 1$.
$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.

Find the position vector of K.
Give your answer in terms of **a** and **b** in its simplest form.

..... [3]

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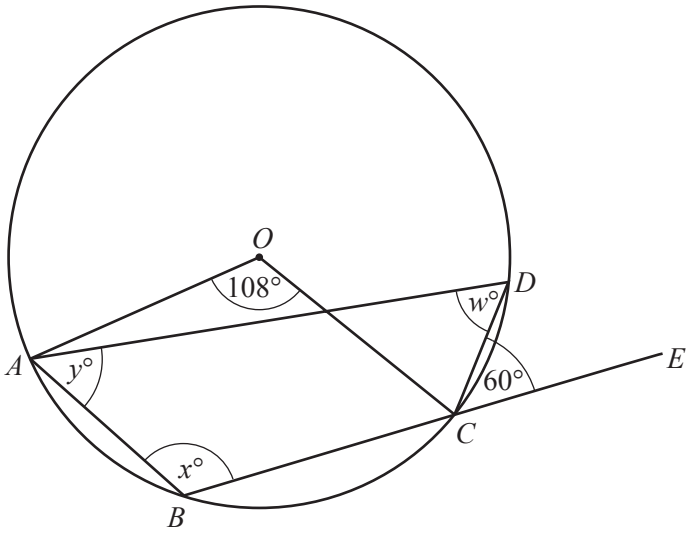
22

View solution



NOT TO SCALE

A, B, C and D are points on the circle, centre O.
BCE is a straight line.
Angle $AOC = 108°$ and angle $DCE = 60°$.

Calculate the values of w, x and y.

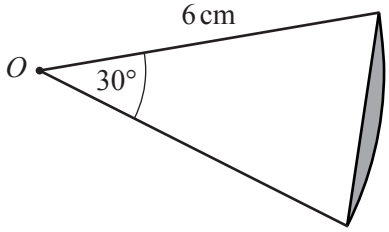
$w =$ .....

$x =$ .....

$y =$ ..... [3]

23

View solution



NOT TO SCALE

The diagram shows a sector of a circle, centre O and radius 6 cm.
The sector angle is 30°.
The area of the shaded segment is $(k\pi - c)$ cm^2, where k and c are integers.

Find the value of k and the value of c.

$k =$ .....

$c =$ ..... [3]

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24 Solve the equations.

(a) $7-3n=11n+2$

View solution

$n =$ ..... [2]

(b) $\frac{p-3}{5}=3$

View solution

$p =$ ..... [2]

25 Factorise completely.

(a) $x^2-x-132$

View solution

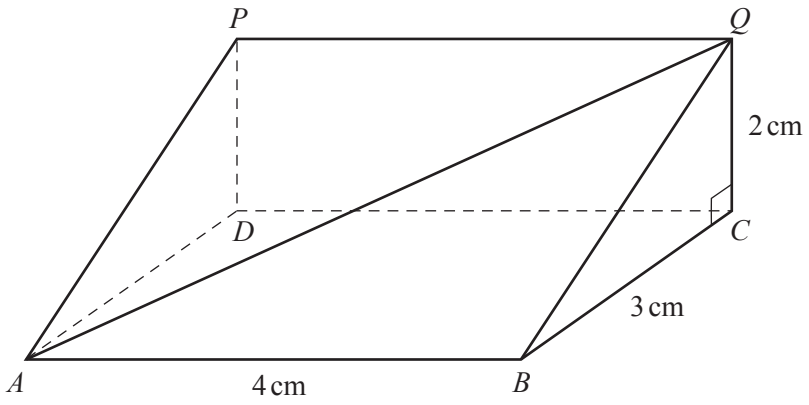
..... [2]

(b) x^3-4x

View solution

..... [2]

26



NOT TO SCALE

View solution

The diagram shows a prism of length 4 cm.
The cross section is a right-angled triangle.
$BC = 3$ cm and $CQ = 2$ cm.

Calculate the angle between the line AQ and the base, $ABCD$, of the prism.

..... [4]

27 Simplify.

(a) $81^{\frac{3}{4}}$

View solution

..... [1]

(b) $x^{\frac{2}{3}} \div x^{-\frac{4}{3}}$

View solution

..... [1]

(c) $\left(\frac{8}{y^6}\right)^{-\frac{1}{3}}$

View solution

..... [2]

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