Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

MATHEMATICS **0580/23**

Paper 2 (Extended) **October/November 2015**

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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **12** printed pages.

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CAMBRIDGE International Examinations

1 Write 168.9 correct to 2 significant figures.

View solution

Answer ..... [1]

---

2 Calculate $\dfrac{2.07 - 1.89}{5.71 - 3.92}$.

View solution

Answer ..... [1]

---

3 Write 1.7×10^{-4} as an ordinary number.

View solution

Answer ..... [1]

---

4 The probability that it will rain on any day is $\frac{1}{5}$.

View solution

Calculate an estimate of the number of days it will rain in a month with 30 days.

Answer ..... [1]

---

5 11 12 13 14 15 16

From the list of numbers, write down

(a) the factors of 60,

View solution

Answer(a) ..... [1]

(b) the prime numbers.

View solution

Answer(b) ..... [1]

---

6 Simplify.

$1 - 2u + u + 4$

View solution

Answer ..... [2]

---

7 Factorise completely.

$2x - 4x^2$

View solution

Answer ..... [2]

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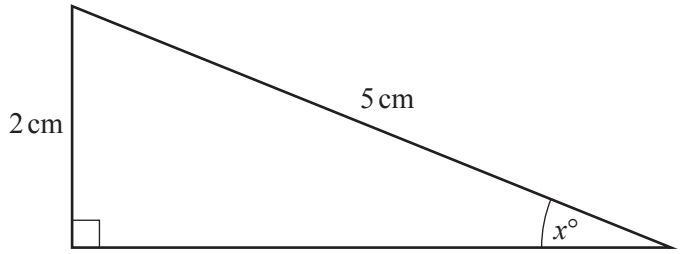
8 Find the sum of the interior angles of a 25-sided polygon.

View solution

Answer ..... [2]

9

View solution



NOT TO SCALE

Calculate the value of x.

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

---

10 Find the value of

(a) $(\sqrt{5})^8$,

View solution

Answer(a) ..... [1]

(b) $\left(\frac{1}{27}\right)^{-\frac{2}{3}}$.

View solution

Answer(b) ..... [1]

---

11 Write the following as single fractions.

(a) $x + \frac{x}{2}$

View solution

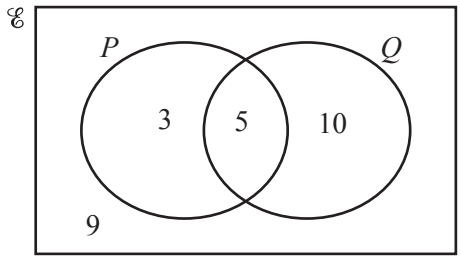
Answer(a) ..... [1]

(b) $x + \frac{2}{x}$

View solution

Answer(b) ..... [1]

12



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

(a) Find $\mathrm{n}(P' \cap Q)$.

View solution

Answer(a) ..... [1]

(b) Complete the statement $\mathrm{n}(\ldots\ldots\ldots\ldots\ldots\ldots) = 17$.

View solution [1]

---

13 $\mathbf{M} = \begin{pmatrix} 7 & u \\ 2 & 3 \end{pmatrix}$ and $|\mathbf{M}| = 1$.

View solution

Find the value of u.

Answer $u =$ ..... [2]

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14 Two containers are mathematically similar.
Their volumes are $54\,\text{cm}^3$ and $128\,\text{cm}^3$.
The height of the smaller container is 4.5 cm.

Calculate the height of the larger container.

View solution

Answer ..... cm [3]

---

15 Work out $\frac{2}{3} + \frac{1}{6} - \frac{1}{4}$, giving your answer as a fraction in its lowest terms.

Do not use a calculator and show all the steps of your working.

View solution

Answer ..... [3]

---

16 Make a the subject of the formula $s = ut + \frac{1}{2}at^2$.

View solution

Answer $a =$ ..... [3]

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17 Simplify.

$$\left(\frac{x^{64}}{16y^{16}}\right)^{\frac{1}{4}}$$

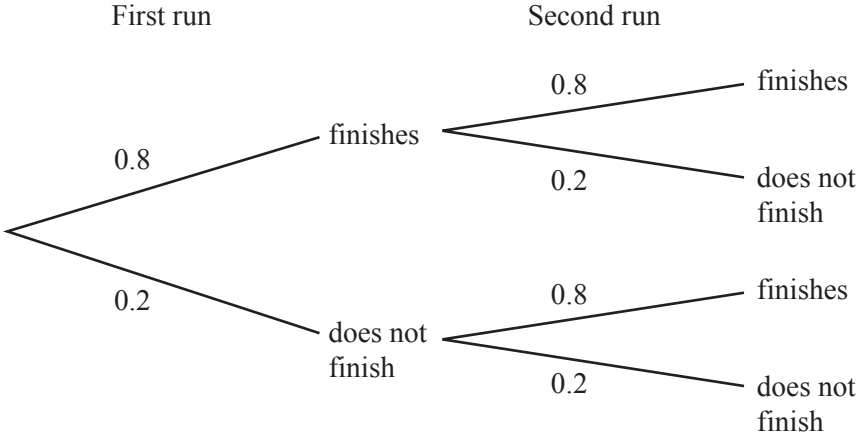
View solution

Answer ..... [3]

---

18 Samira takes part in two charity runs.
The probability that she finishes each run is 0.8 .

View solution



Find the probability that Samira finishes at least one run.

Answer ..... [3]

---

19 y is inversely proportional to $(x + 2)^2$.
When $x = 1$, $y = 2$.

View solution

Find y in terms of x.

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

---

20 The volume of a cuboid is 878 cm^3, correct to the nearest cubic centimetre.
The length of the base of the cuboid is 7 cm, correct to the nearest centimetre.
The width of the base of the cuboid is 6 cm, correct to the nearest centimetre.

View solution

Calculate the lower bound for the height of the cuboid.

Answer ..... cm [3]

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21 Solve the equation $3x^2 + 4x - 5 = 0$.
Show all your working and give your answers correct to 2 decimal places.

View solution

Answer $x =$ ..... or $x =$ ..... [4]

---

22 Simplify.

$$\frac{4 + 10w}{8 - 50w^2}$$

View solution

Answer ..... [4]

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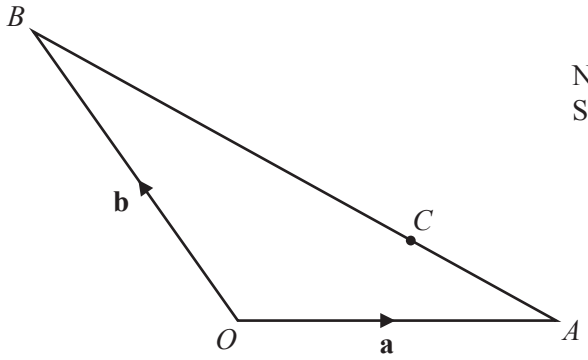
23



NOT TO SCALE

In the diagram, O is the origin, $\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.
C is on the line AB so that $AC : CB = 1 : 2$.

Find, in terms of **a** and **b**, in its simplest form,

(a) $\overrightarrow{AC}$,

View solution

Answer(a) $\overrightarrow{AC}$ = ... [2]

(b) the position vector of C.

View solution

Answer(b) ..... [2]

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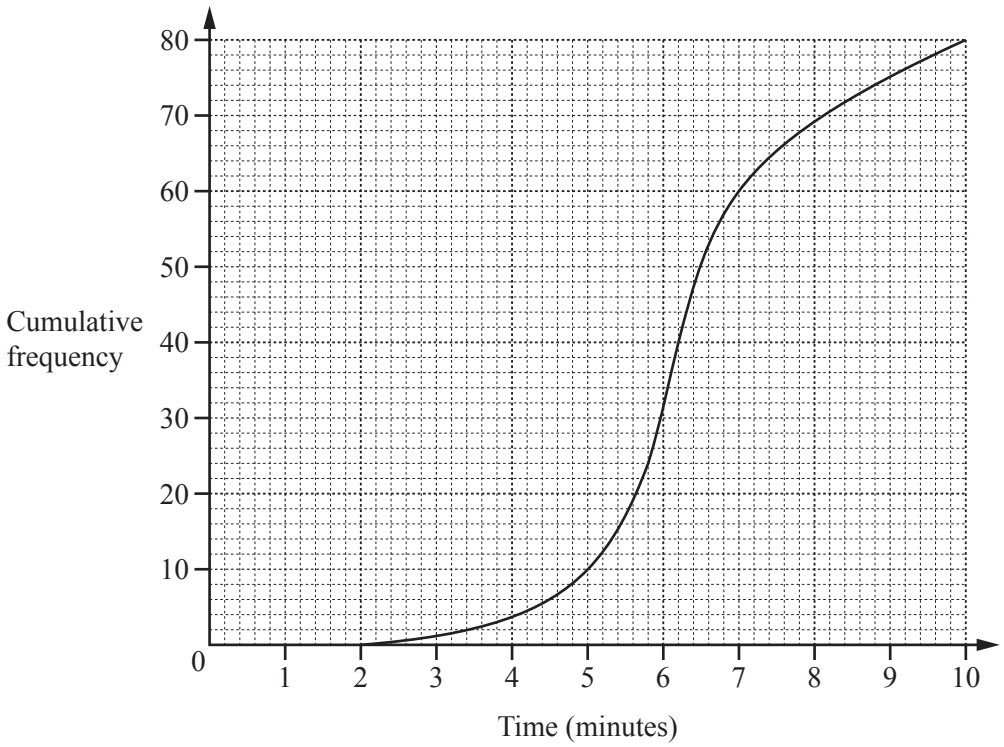


The cumulative frequency diagram shows information about the times, in minutes, taken by 80 students to complete a short test.

Find

(a) the median,

View solution

Answer(a) ..... min [1]

(b) the 30th percentile,

View solution

Answer(b) ..... min [2]

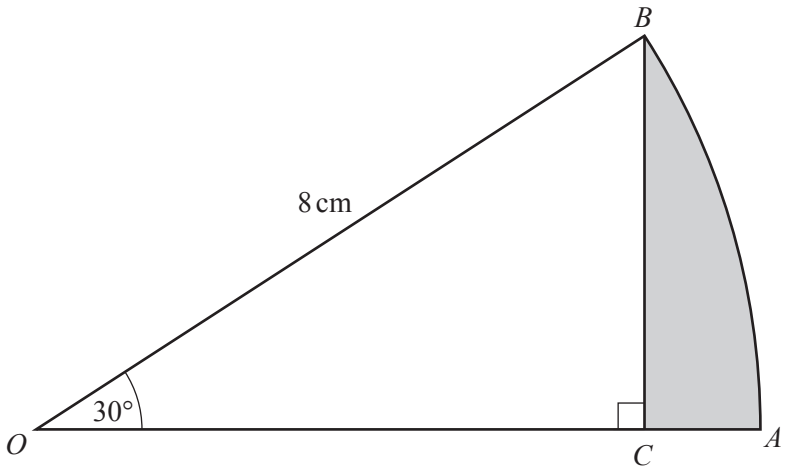
(c) the number of students taking more than 5 minutes.

View solution

Answer(c) ..... [2]

25

View solution



NOT TO SCALE

OAB is the sector of a circle, centre *O*, with radius 8 cm and sector angle 30°.
BC is perpendicular to *OA*.

Calculate the area of the region shaded on the diagram.

Answer ..... cm^2 [5]

Question 26 is printed on the next page.

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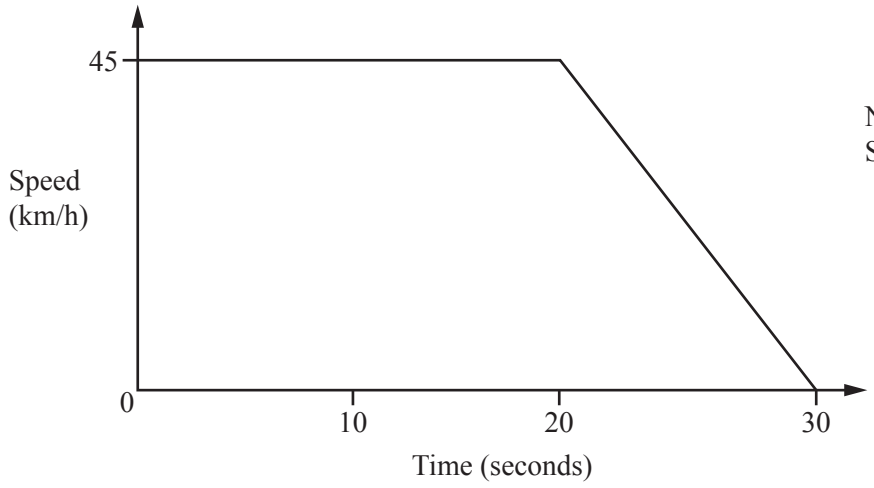
26



The diagram shows the speed-time graph of a car.
The car travels at 45 km/h for 20 seconds.
The car then decelerates for 10 seconds until it stops.

(a) Change 45 km/h into m/s.

View solution

Answer(a) ..... m/s [2]

(b) Find the deceleration of the car, giving your answer in m/s^2.

View solution

Answer(b) ..... m/s^2 [1]

(c) Find the distance travelled by the car during the 30 seconds, giving your answer in metres.

View solution

Answer(c) ..... m [3]

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