Cambridge Assessment International Education

Cambridge IGCSE™ (9–1)

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

MATHEMATICS **0980/22**

Paper 2 (Extended) **May/June 2020**

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 [ ].

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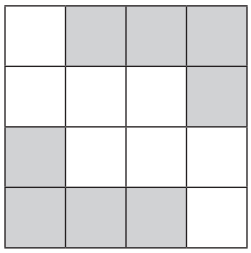
1



Write down the order of rotational symmetry of the diagram.

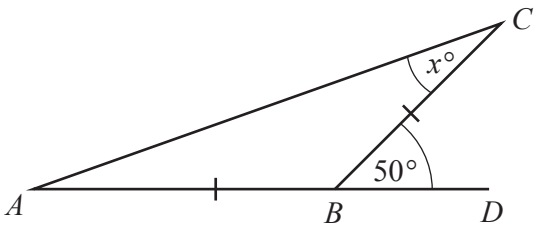
..... [1]

2 At noon the temperature in Maseru was 21 °C.
At midnight the temperature had fallen by 26 °C.

Work out the temperature at midnight.

..... °C [1]

3



NOT TO SCALE

$AB = BC$ and ABD is a straight line.

Find the value of x.

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

4 Write down

(a) a square number greater than 10,

..... [1]

(b) an irrational number.

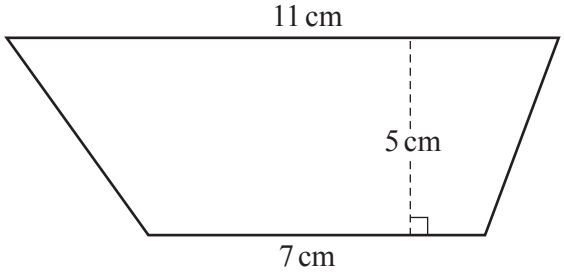
..... [1]

5 $y = mx + c$

Find the value of y when $m = -3$, $x = -2$ and $c = -8$.

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

6

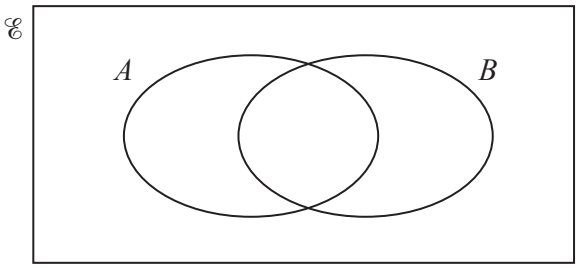


NOT TO SCALE

Calculate the area of the trapezium.

..... cm^2 [2]

7

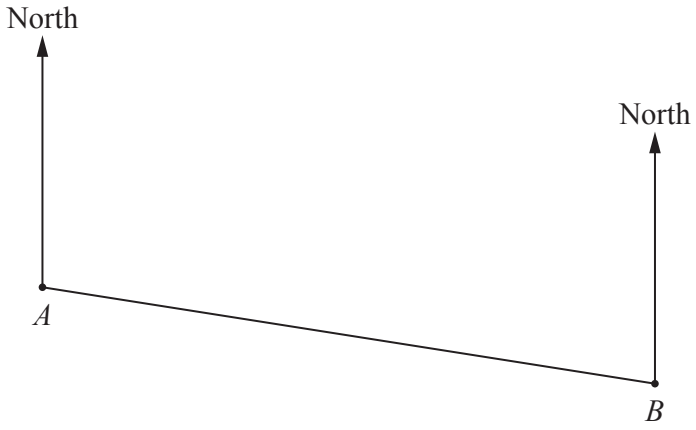


On the Venn diagram, shade the region $A \cap B$. [1]

8 Write 2^{-4} as a decimal.

..... [1]

9



The bearing of B from A is 105°.

Find the bearing of A from B.

..... [2]

10 Simplify.

$$\frac{p}{2q} \times \frac{4pq}{t}$$

..... [2]

11 **Without using a calculator**, work out $1\frac{3}{4} - \frac{11}{12}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

12 Roberto buys a toy for \$5.00 .
He then sells it for \$4.60 .

Calculate his percentage loss.

..... % [2]

13 Simplify $8t^8 \div 4t^4$.

..... [2]

14 Solve the equation.

$$\frac{1-x}{3} = 5$$

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

15 Ella's height is 175 cm, correct to the nearest 5 cm.

Write down the upper bound of Ella's height.

..... cm [1]

16 Calculate $(3 \times 10^{-3})^3$.
Give your answer in standard form.

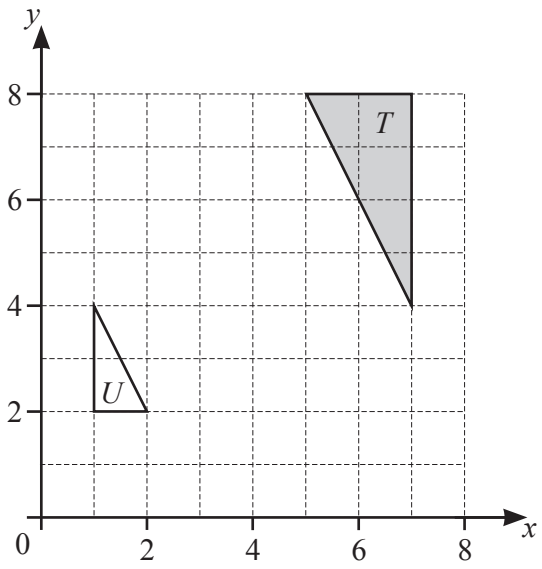
..... [1]

17 A train of length 105 m takes 11 seconds to pass completely through a station of length 225 m.

Calculate the speed of the train in km/h.

..... km/h [3]

18



Describe fully the **single** transformation that maps triangle T onto triangle U.

.....

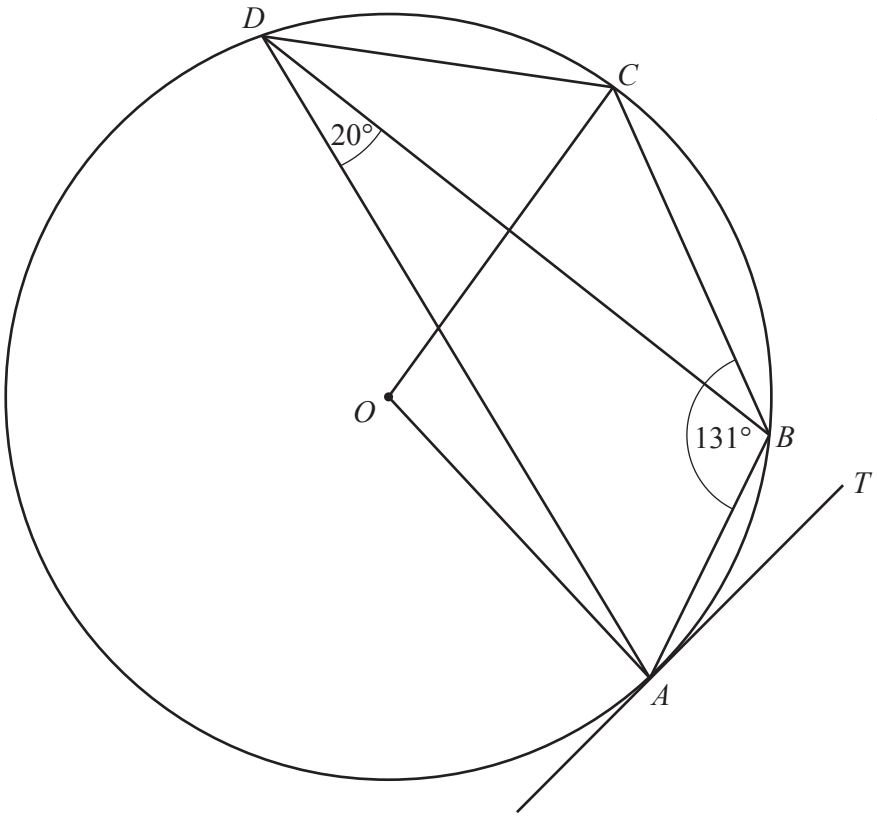
..... [3]

19 Make y the subject of the formula.

$$h^2 = x^2 + 2y^2$$

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

20



NOT TO SCALE

A, B, C and D lie on the circle, centre O.
TA is a tangent to the circle at A.
Angle $ABC = 131°$ and angle $ADB = 20°$.

Find

(a) angle ADC,

Angle $ADC =$ ..... [1]

(b) angle AOC,

Angle $AOC =$ ..... [1]

(c) angle BAT,

Angle $BAT =$ ..... [1]

(d) angle OAB.

Angle $OAB =$ ..... [1]

21 Simplify.

(a) $(5x^4)^3$

..... [2]

(b) $(256x^{256})^{\frac{3}{8}}$

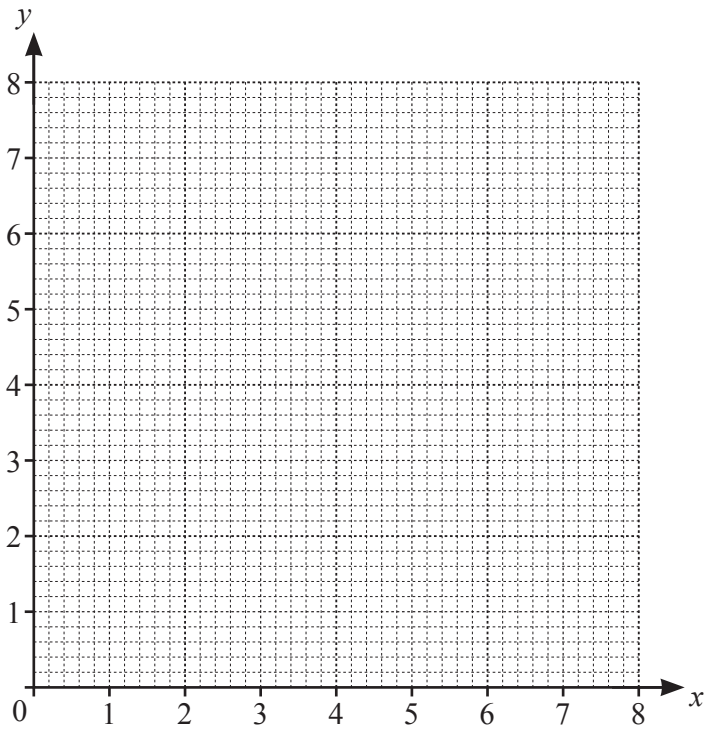
..... [2]

22 p is directly proportional to $(q+2)^2$.
When $q = 1$, $p = 1$.

Find p when $q = 10$.

$p =$ ..... [3]

23



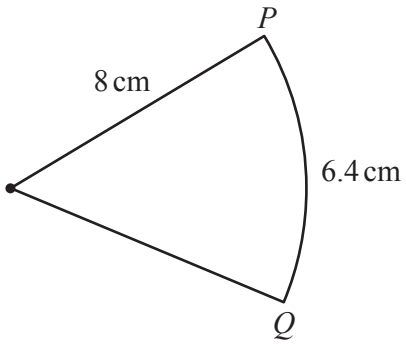
(a) By drawing suitable lines and shading unwanted regions, find the region, R, where

$$x \geqslant 2, \quad y \geqslant x \text{ and } 2x+y \leqslant 8.$$ [5]

(b) Find the largest value of $x+y$ in the region R.

..... [1]

24



NOT TO SCALE

The diagram shows a sector of a circle of radius 8 cm.
The length of the arc PQ is 6.4 cm.

Find the area of the sector.

..... cm^2 [4]

25 Simplify.

$$\frac{2x^2+x-15}{ax+3a-2bx-6b}$$

..... [5]

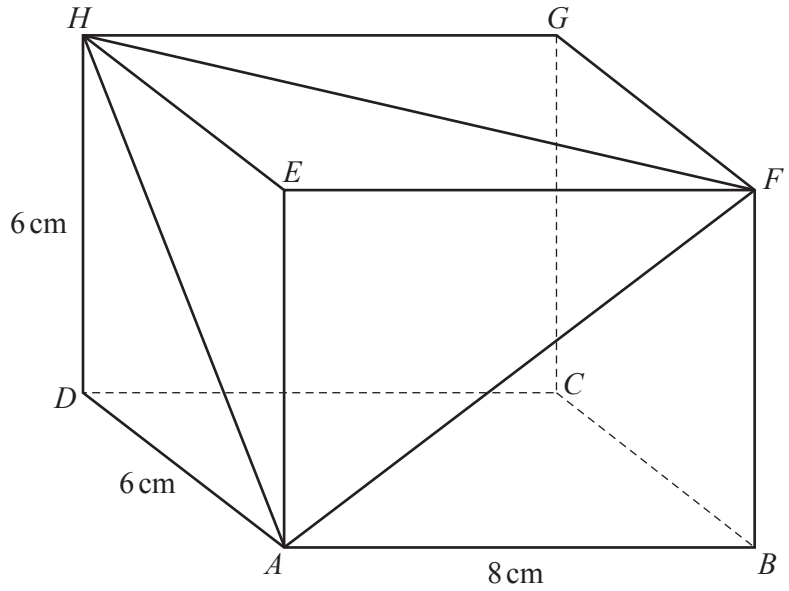
26 $\sqrt[3]{y^2} = \sqrt[6]{x}$ and $y = \sqrt[n]{x}$.

Find the value of n.

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

Question 27 is printed on the next page.

27



NOT TO SCALE

The diagram shows a cuboid.
$AB = 8\,\text{cm}$, $AD = 6\,\text{cm}$ and $DH = 6\,\text{cm}$.

Calculate angle HAF.

Angle $HAF =$ ..... [6]