Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

8231223107

MATHEMATICS **0580/22**

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.

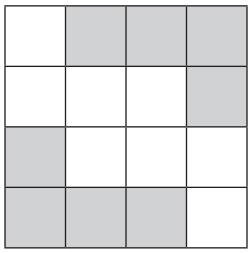
INFORMATION

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

This document has **12** pages. Blank pages are indicated.

DC (RW/FC) 186459/2
© UCLES 2020

1



Write down the order of rotational symmetry of the diagram.

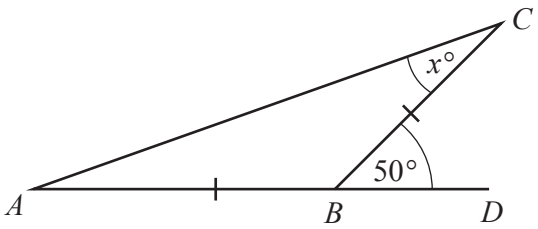
..... [1]

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]

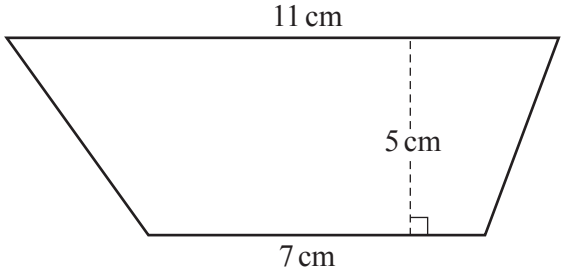
© UCLES 2020

5 $y = mx + c$

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

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

6

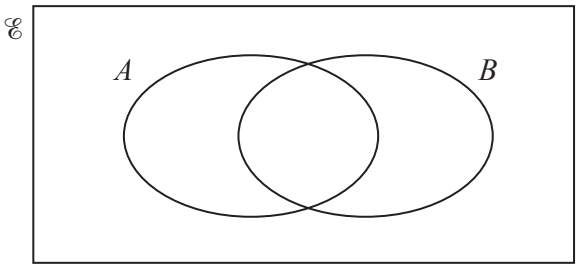


NOT TO SCALE

Calculate the area of the trapezium.

..... cm^2 [2]

7

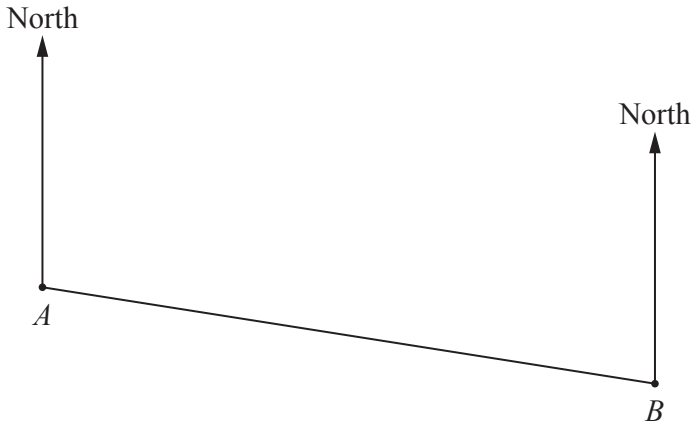


On the Venn diagram, shade the region $A \cap B$. [1]

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]

© UCLES 2020

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.

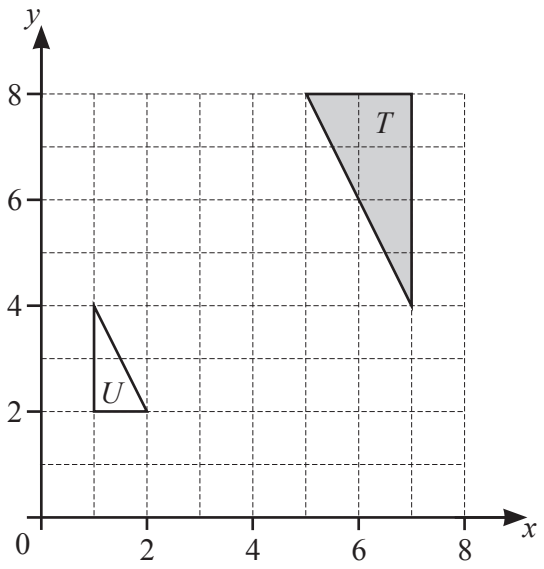
..... [1]

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]

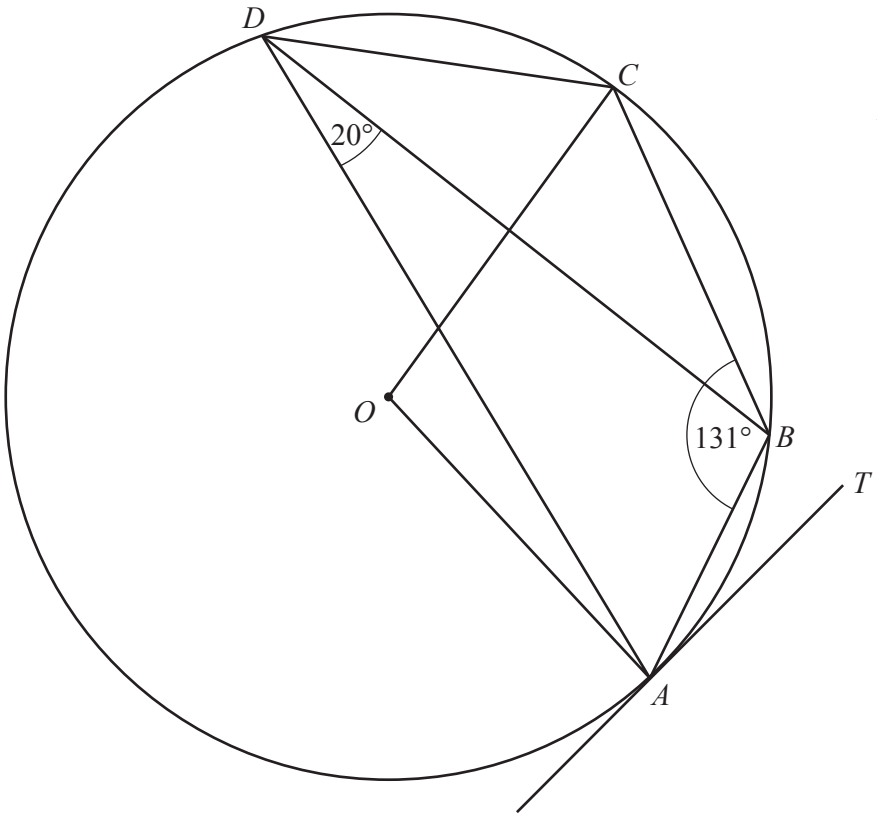
19 Make y the subject of the formula.

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

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

© UCLES 2020

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]

© UCLES 2020

21 Simplify.

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

..... [2]

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

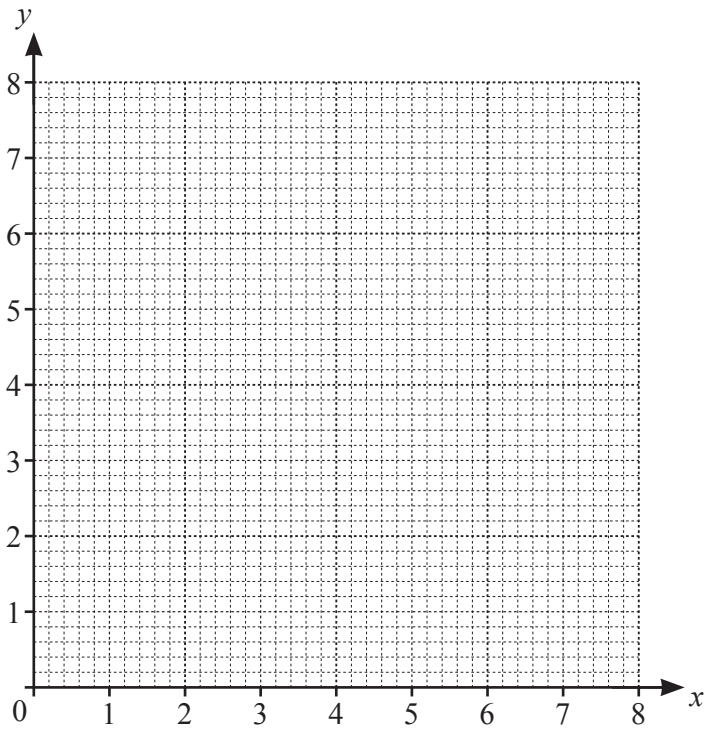
..... [2]

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

Find p when $q = 10$.

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

23



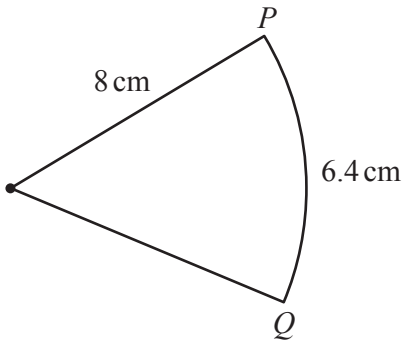
(a) By drawing suitable lines and shading unwanted regions, find the region, R, where

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

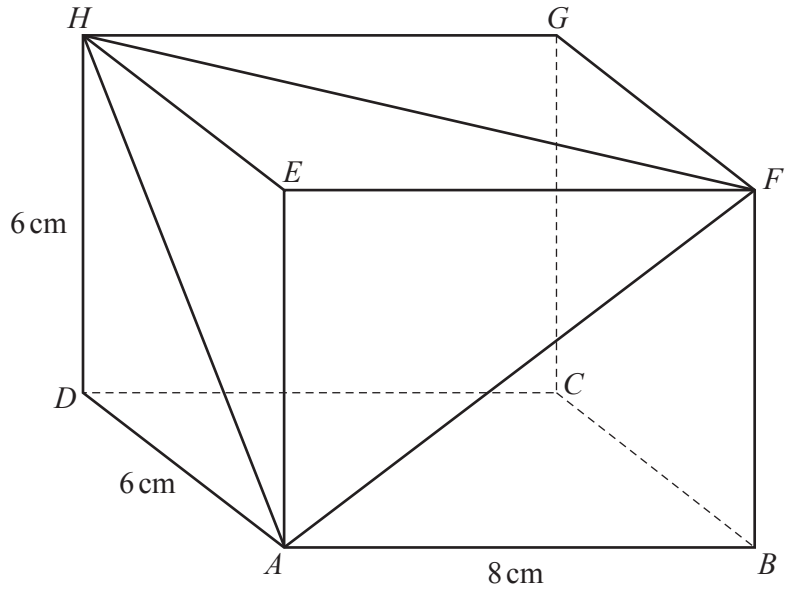
26 $\sqrt[3]{y^2} = \sqrt[6]{x}$ and $y = \sqrt[n]{x}$.

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]

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 the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

© UCLES 2020