1

Write down the order of rotational symmetry of the diagram.
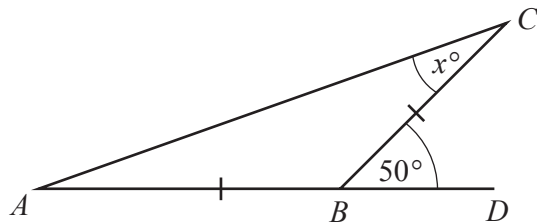
.... [1]

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

$AB = BC$ 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]
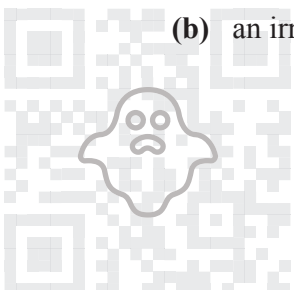
5    $y = mx + c$

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

$y =$ .... [2]

6

11 cm

NOT TO
SCALE

5 cm

7 cm
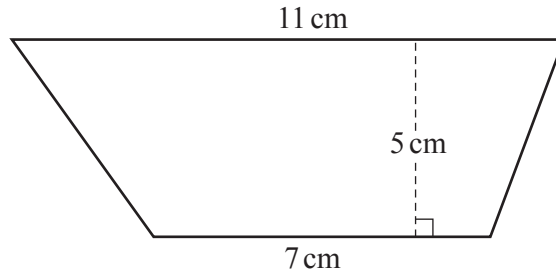
Calculate the area of the trapezium.

.... cm^2 [2]

7

$\mathscr{E}$

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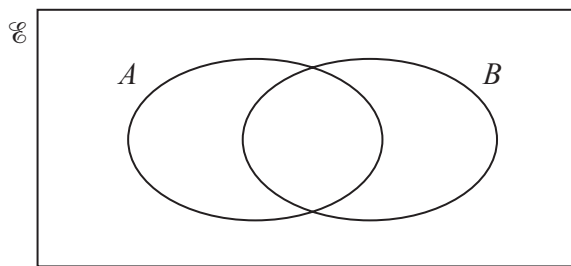
On the Venn diagram, shade the region $A \cap B$.   [1]

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

.... [1]

9

North

NOT TO
SCALE

North

A

B
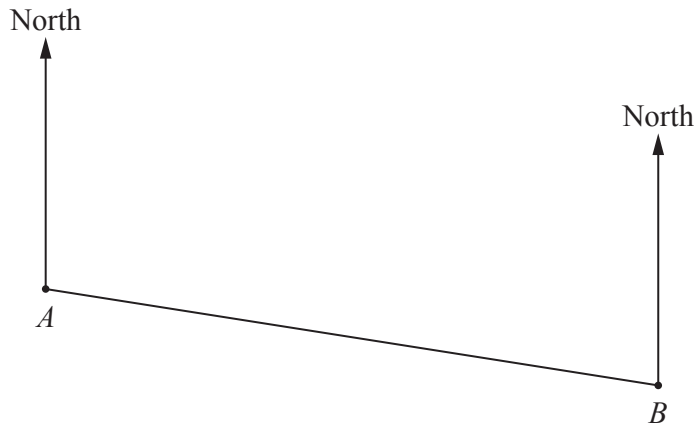
The bearing of *B* from *A* is 105°.

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.

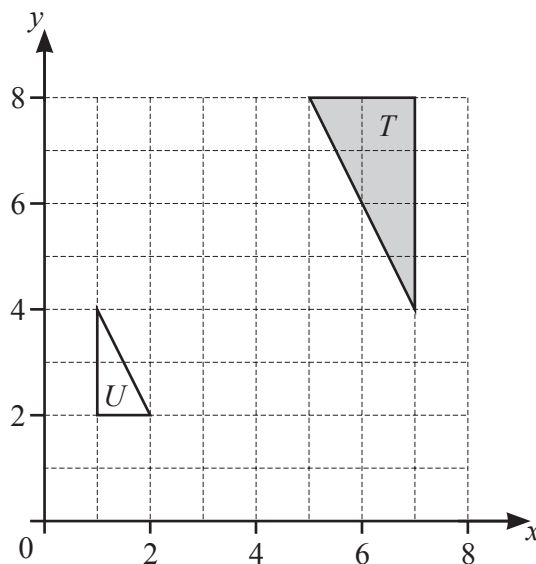... [1]

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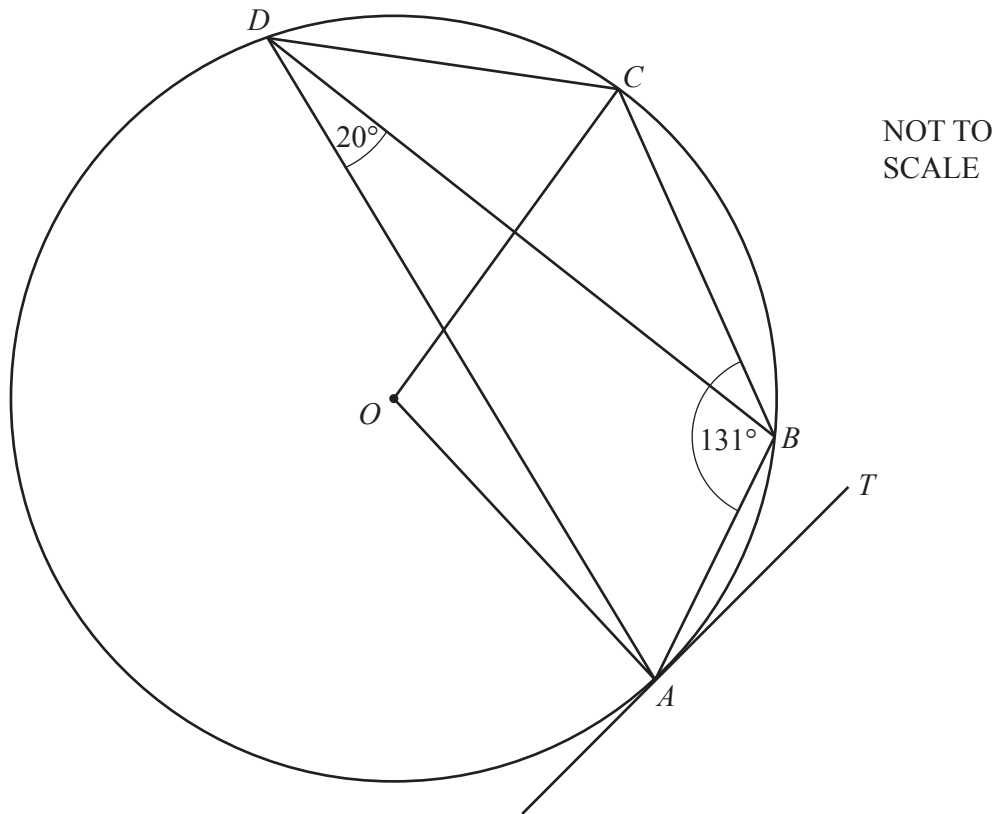
A, B, C and D lie on the circle, centre O.
TA is a tangent to the circle at A.
Angle $ABC = 131°$ and angle $ADB = 20°$.

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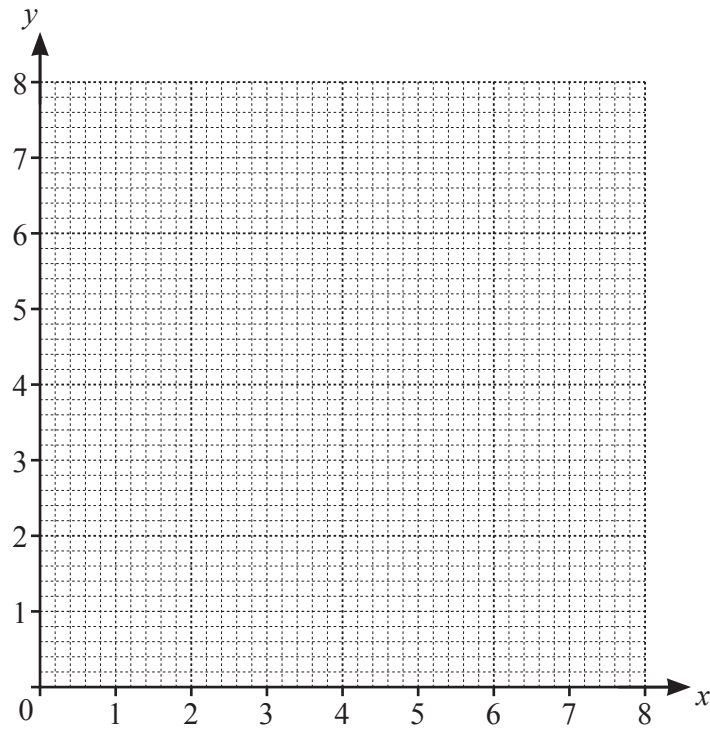
(a) By drawing suitable lines and shading unwanted regions, find the region, R, where

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

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

.... [1]

24

NOT TO
SCALE

8 cm

6.4 cm

P

Q

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
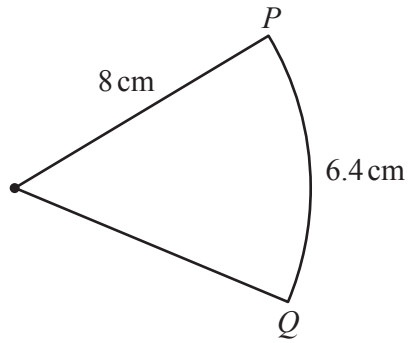
NOT TO
SCALE

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

Calculate angle *HAF*.

Angle *HAF* = ... [6]