Year 9

Mathematics

Higher: No calculator allowed
Time allowed: 45 minutes

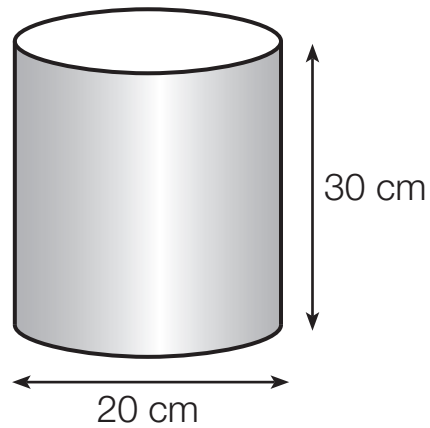| First name	
Middle name	
Last name	
Date of birth	Day ___ Month ___ Year ___
Teacher	

These assessments have been designed by White Rose Maths.
For more information, please visit **www.whiterosemaths.com**

White Rose Maths

1 A waste paper basket is an open cylinder of height 30 cm and diameter 20 cm.

Find the total surface area of the waste paper basket.

Give your answer in terms of π.

	cm²

3 marks

2

Ms Kowal invests £6000 in a simple interest account.

After 5 years her investment has earned £450 interest.

What rate of interest does the account pay?

$$\boxed{ \%}$$

3 marks

Ms Smith invests £6000 in an account that pays 3.5% compound interest account.

Which calculation works out the value of her investment after 5 years?

Circle your answer

$6000 \times 1.05^{3.5}$　　　　　　6000×1.35^{5}

$6000 \times 1.5^{3.5}$　　　　　　6000×1.035^{5}

1 mark

White Rose Maths

3 Value Added Tax (VAT) is charged at 20% on watches.

The amount of VAT charged on a watch is £180

Find the total cost of the watch.

£

4

F   G

65°

D →   E

56°

Diagram NOT
accurately drawn
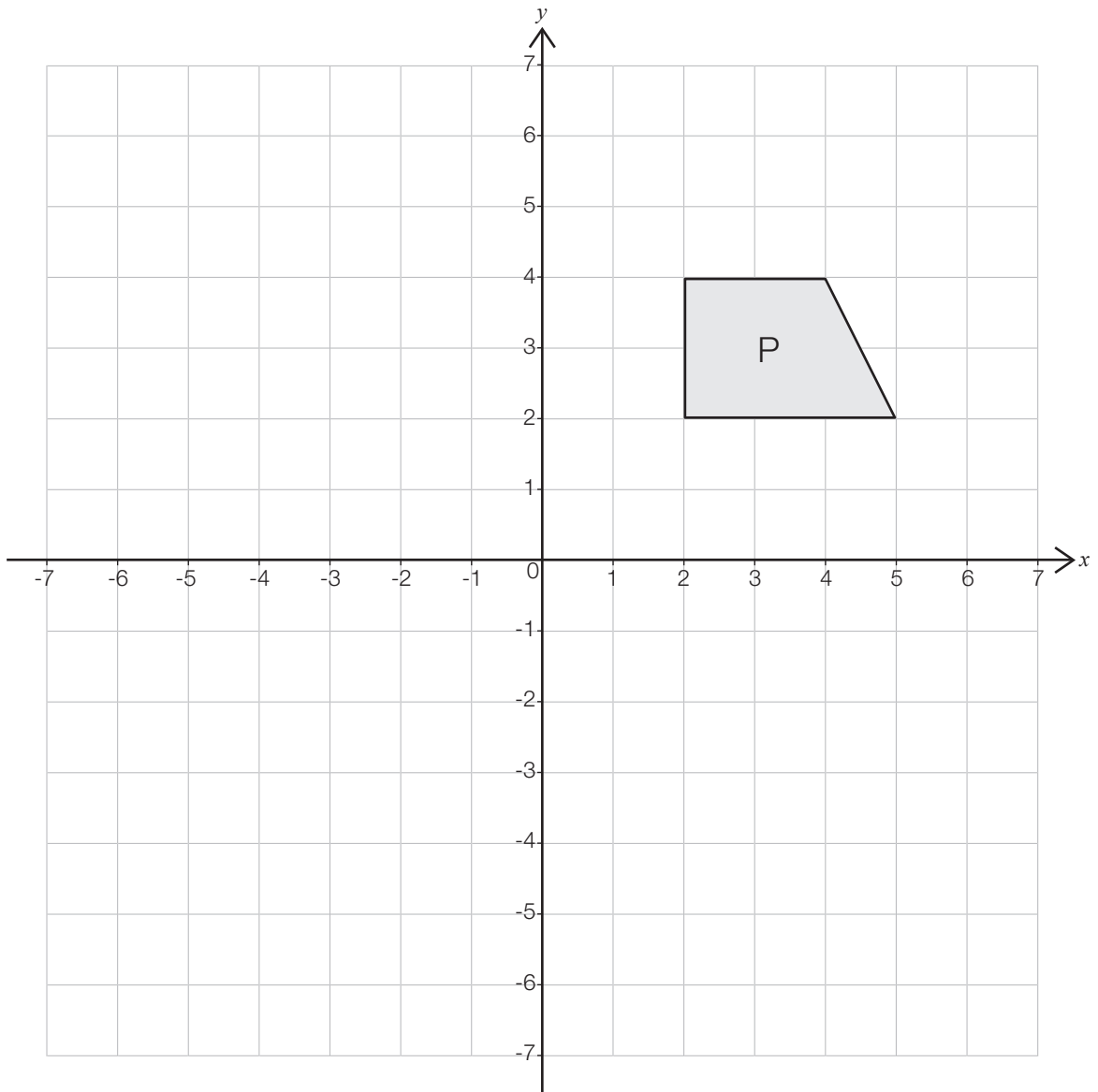
x

A   B   C
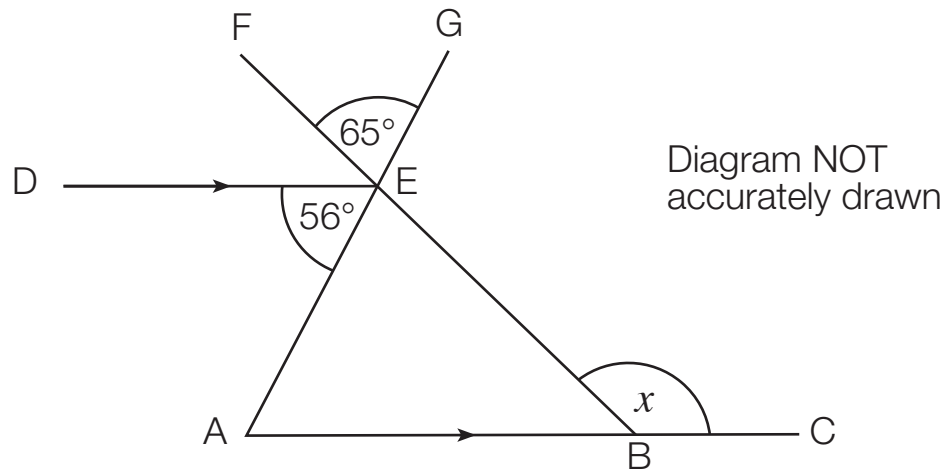
Work out the size of the angle marked x.

Give a reason for each stage of your working.

°

3 marks

5

Shape **P** is reflected in the line $x = -1$ to give shape **Q**.

Shape **Q** is reflected in the line the x-axis to give shape **R**.

Describe fully the **single** transformation that maps shape **P** onto shape **R**.

3 marks

6

A car costs £15 000 when new.

The car loses 20% of its value its first year and 10% of its value every year after that.

Work out the value of the car after 2 years.

£ [   ]

3 marks

A van costs £20 000 when new.

After 2 years the van is worth £13 000

What percentage of its value has the van lost?

[   ] %

2 marks

7 The kinetic energy K of an object mass m travelling at velocity v is given by the formula

$$K = \tfrac{1}{2}mv^2$$

Find the value of K when $m = 10$ and $v = 4$

2 marks

Rearrange the formula to make m the subject.

2 marks

8 a is a prime number.

b is an even number.

Are the statements always true, sometimes true or never true?

Circle your answers.

ab is odd

Always
True

Sometimes
True

Never
True

$a(b + 1)$ is even

Always
True

Sometimes
True

Never
True

9 Show that the line with equation $4x + 2y = 10$ is parallel to the line with equation $y = 6 - 2x$.

10 Using a ruler and a pair of compasses, construct an angle of 60° from the point A.

A ×————————————
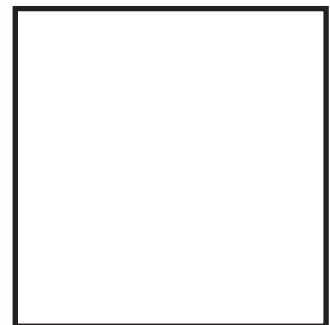
11 Work out

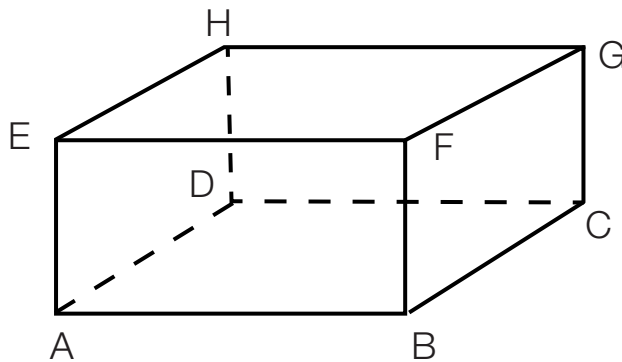$$1.6 \times 10^6 \div 4.8 \times 10^5$$

Give your answer as a mixed number.

12 Show that $\sqrt{0.25}$ is a rational number.

13 ABCDEFGH is a cuboid.

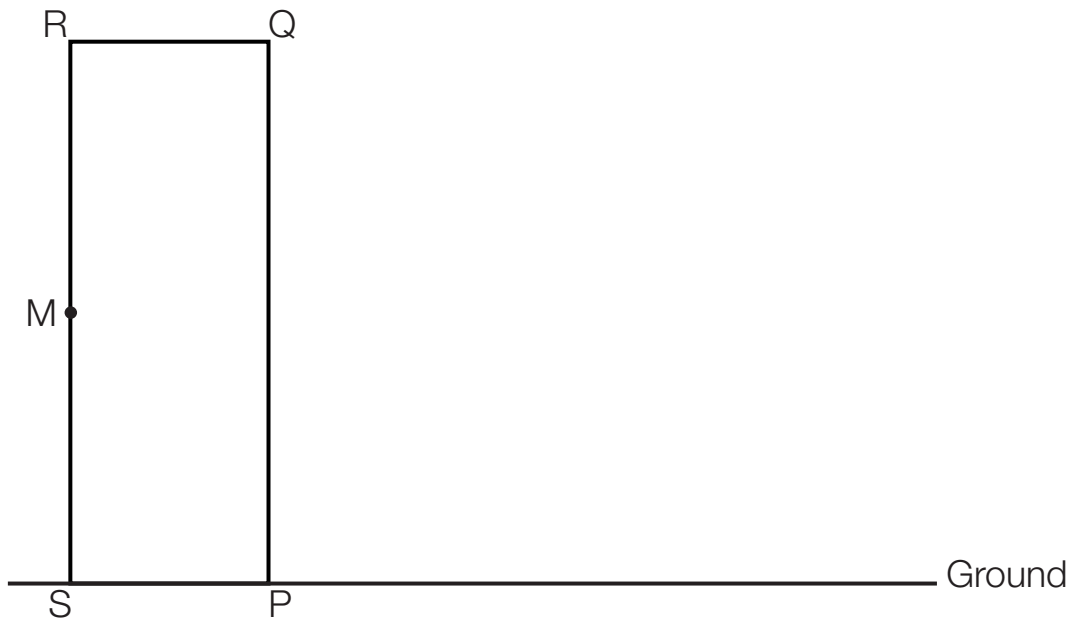AB = 12 cm, BC = 5 cm and CG = 5 cm.

Show that AG < 14 cm.

14

PQRS represents the rectangular side of a box.

M id the midpoint of RS.

The box is rotated clockwise about point P until Q meets the ground.

Draw the new position of PQRS and the locus of the point M
as the box rotates about P.

3 marks