Level 3 Essential Application of Number Skills Sample confirmatory test 5

Maximum duration: 60 minutes

Important note
This is a sample confirmatory test, developed jointly by the four Essential Skills Wales awarding bodies (Agored Cymru, City & Guilds, Pearson and WJEC).

This sample test provides an indication of the likely format and structure of the live confirmatory tests.

A separate document, containing the answer keys (correct answers) and specification references is also available.

This confirmatory test consists of <u>30</u> multiple choice questions.
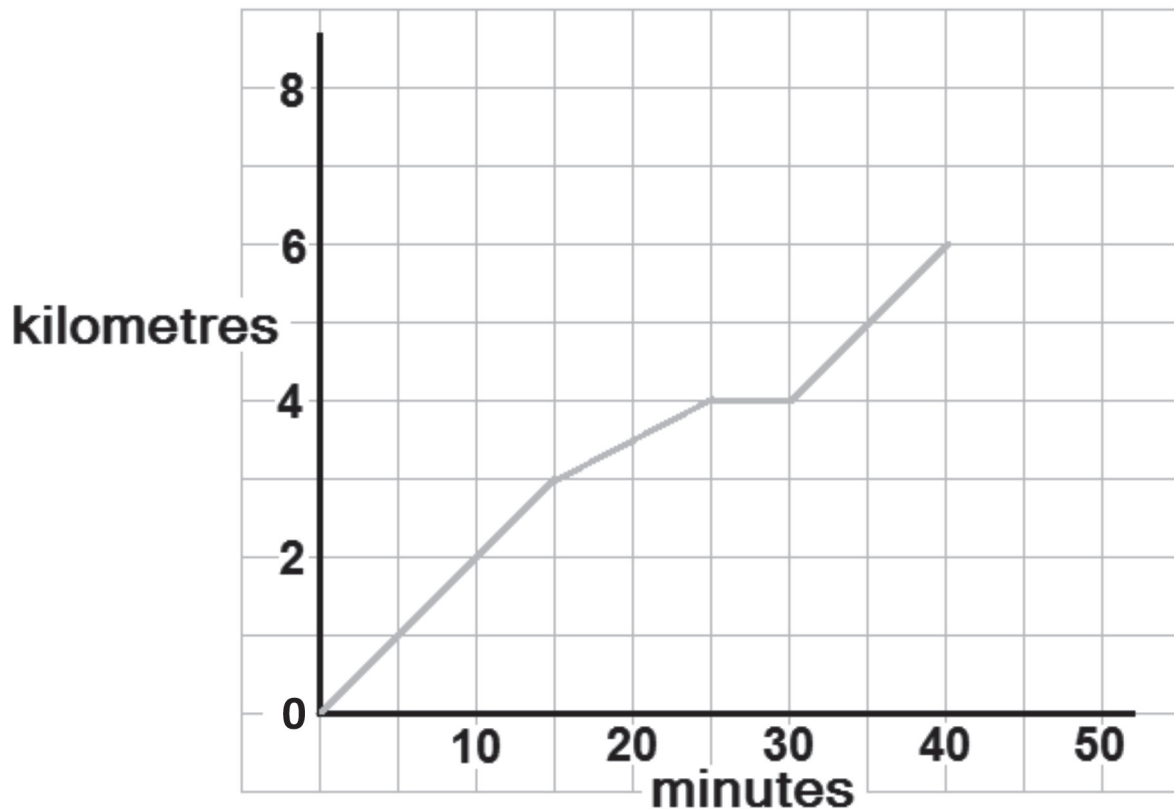
Questions 1 to 3 are about running.

1   This graph shows the distance run and the time taken by a runner.
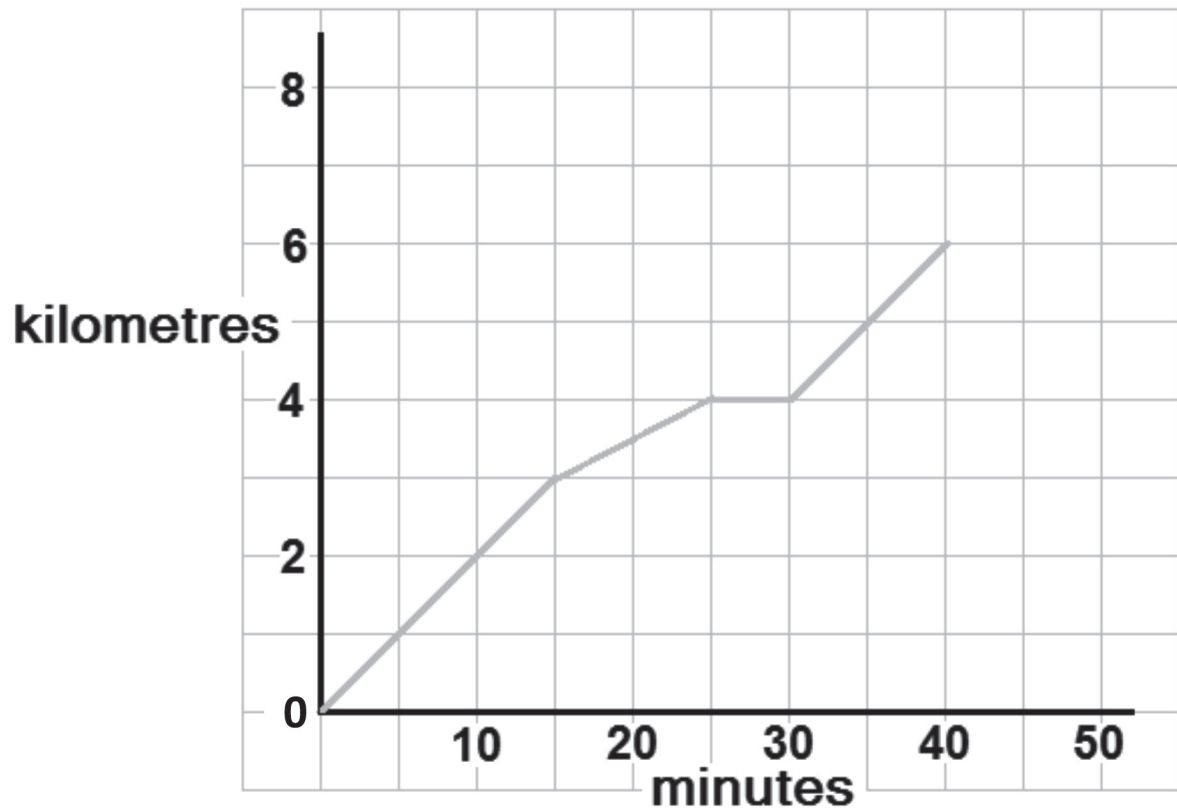
What was the average speed of the runner for the first 30 minutes?

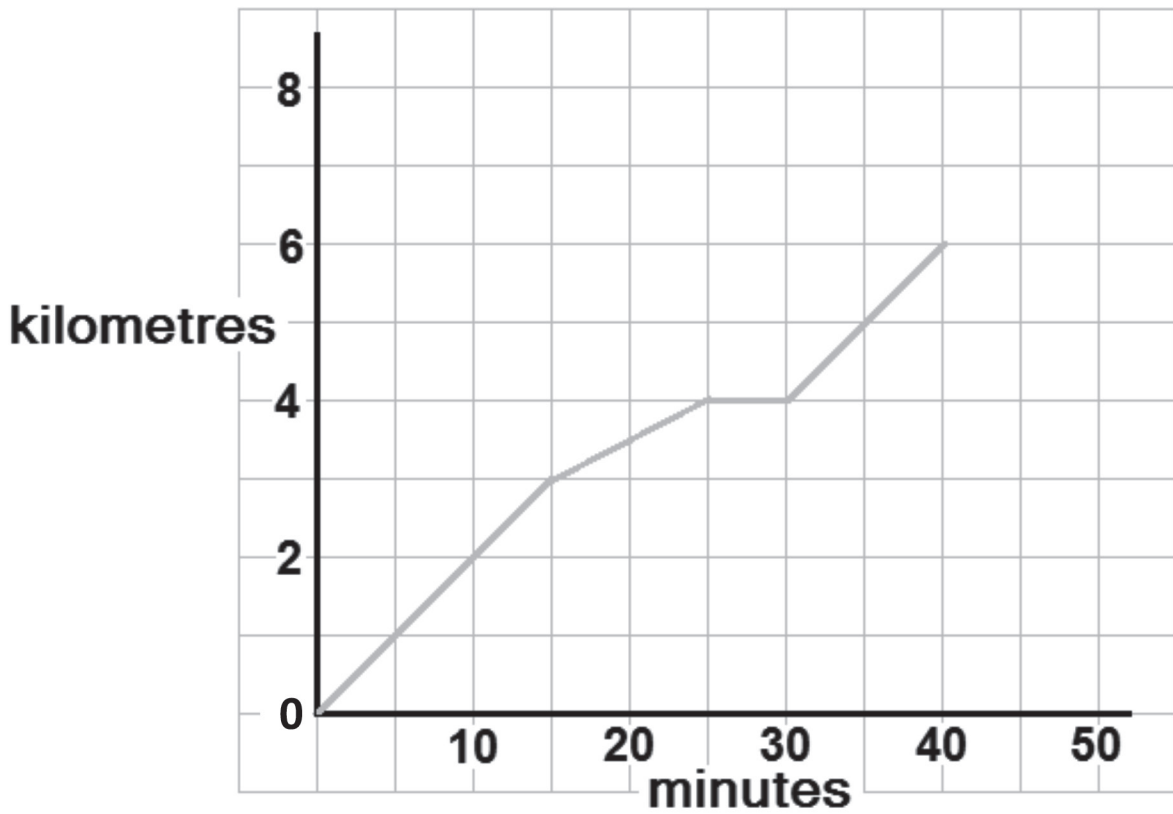a   8 km/h
b   7.5 km/h
c   5 km/h
d   2.5 km/h

2   This graph shows the distance run and the time taken by a runner.

What was the runner's fastest speed on this run, in metres per minute?

a   20 m/min
b   50 m/min
c   150 m/min
d   200 m/min

3   This graph shows the distance run and the time taken by a runner.

Between the 40th and 50th minute, the runner's speed is 9 km per hour.
He stops running at the 50th minute.
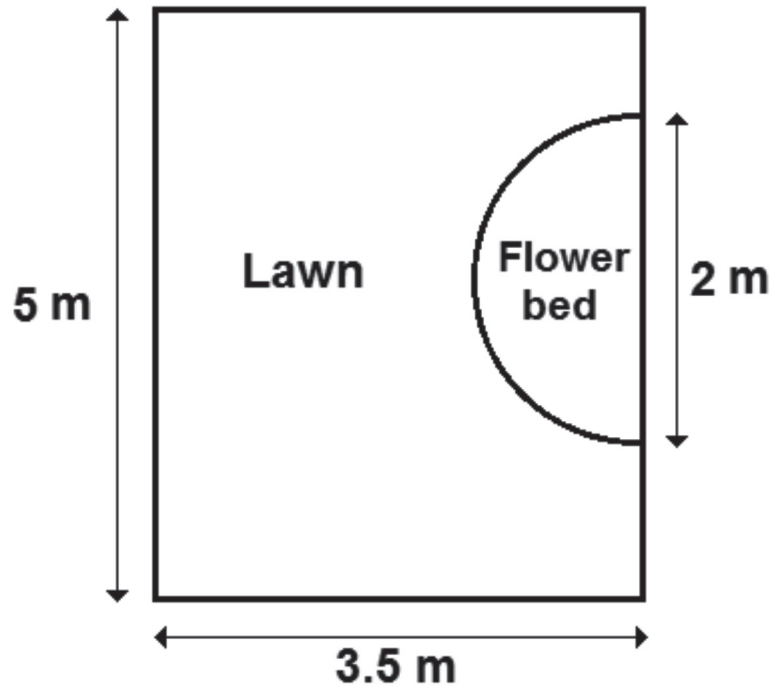
What is the total distance that he runs?

a   7.5 km
b   7.75 km
c   8 km
d   8.5 km

Questions 4 to 6 are about gardening.

4   This is a plan of a garden.

     The flower bed is a semicircle.

Diagram **NOT** accurately drawn

$$\text{Area of a circle} = \pi\, r^2$$
$$\pi = 3$$
$$r = \text{radius}$$

What is the area of the lawn?

a   13 m^2
b   14.5 m^2
c   16 m^2
d   16.5 m^2

5   This is a plan of a garden.

The flower bed is a semicircle.
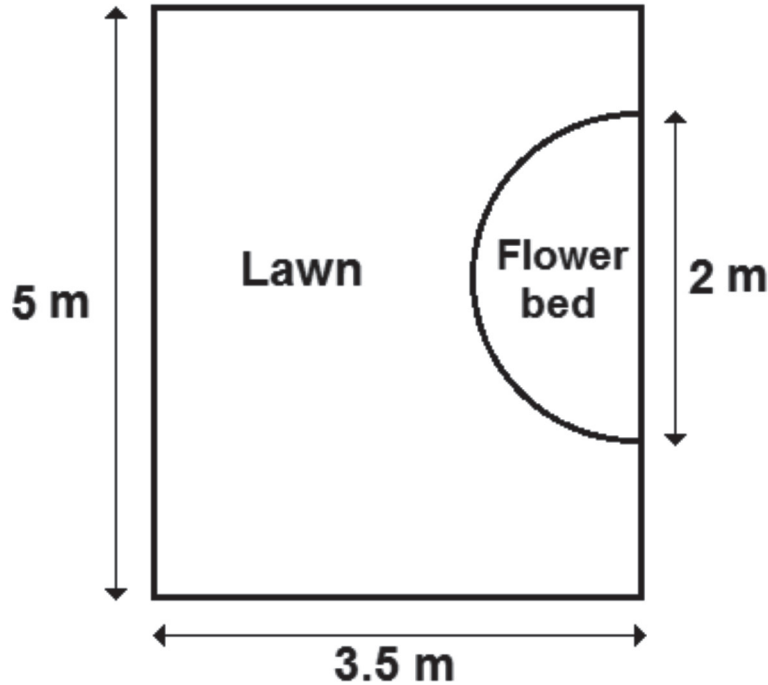
Lawn edging is needed around the curved part of the flower bed.

Perimeter of a circle = 2 π r
π = 3
r = radius

The lawn edging costs £2.25 per metre.

What is the total cost for the lawn edging?

a   £3.38
b   £6.00
c   £6.75
d   £13.50

6   The plan of the garden is drawn to a scale of 1 : 60

A garden bench is to be added to the plan.

The actual garden bench is 1.5 metres long.

Diagram **NOT** accurately drawn

Lawn

Flower bed

5 m

2 m

3.5 m
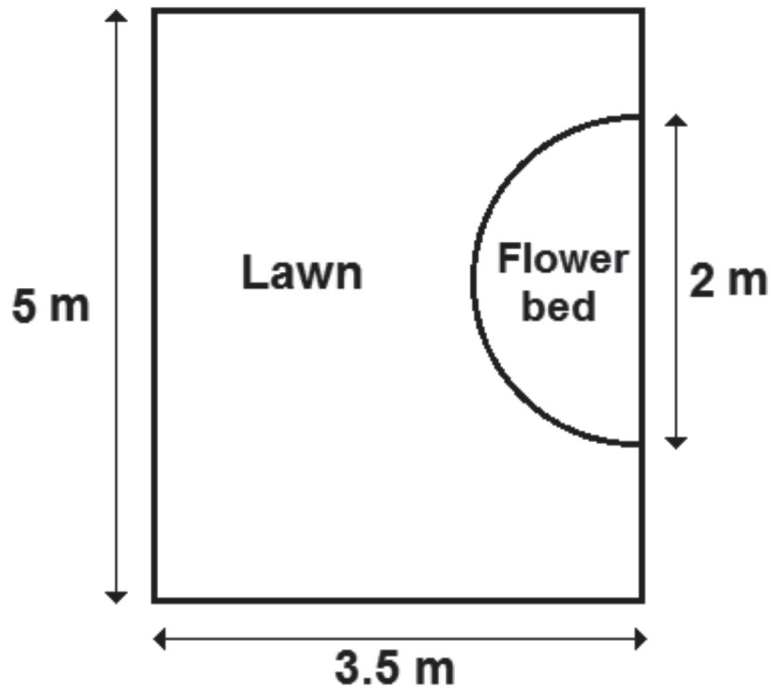
How long is the garden bench on the diagram?

a   2.5 mm
b   25 mm
c   50 mm
d   90 mm

Questions 7 to 9 are about using a ladder.

7   The ladder rests against the top of a wall.

This is the diagram of the ladder and the wall.

Diagram **NOT**
accurately drawn
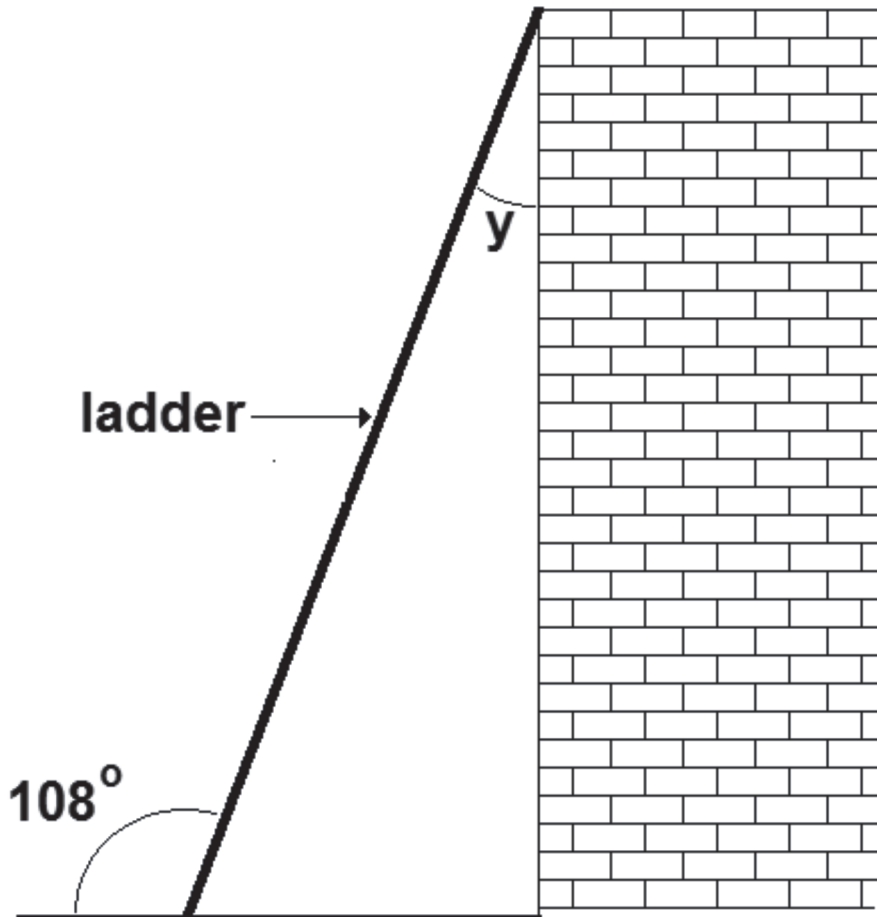
What is the angle **y**?

a   8°
b   12°
c   18°
d   28°

8   This is a diagram of a step ladder.

step ladder

Diagram **NOT** accurately drawn

1.8m   A   1.8m

B
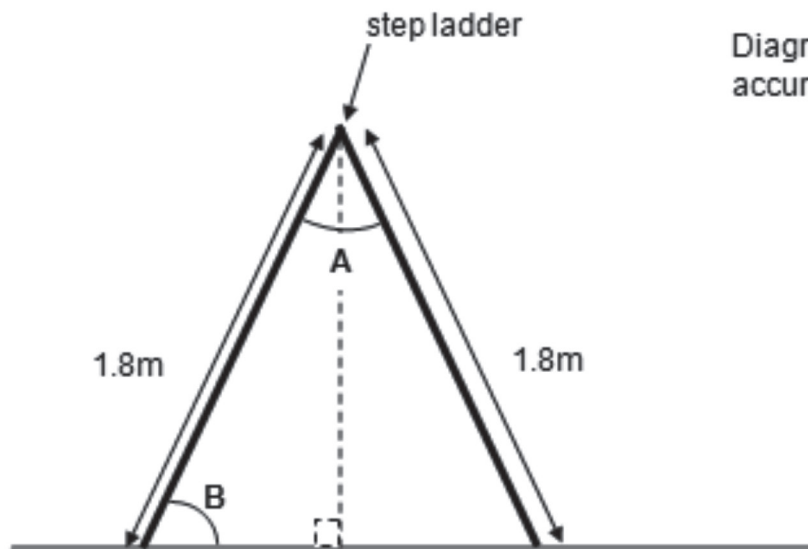
Angle A on the diagram is 40°

What is the size of angle B?

a   25°
b   50°
c   65°
d   70°

9   The ladder is put against a different wall.

ladder
5 m

h

2 m
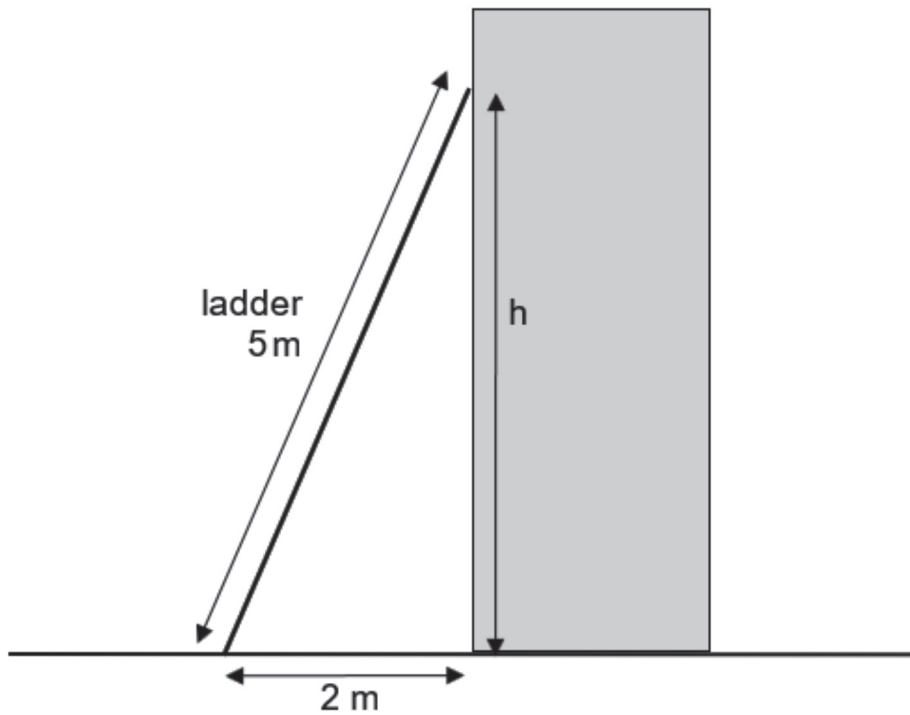
The ladder is adjusted so it is now 5 metres long.

What is the height **h** on the diagram?

a $\sqrt{20}$ m
b $\sqrt{21}$ m
c $\sqrt{23}$ m
d $\sqrt{25}$ m

Questions 10 to 12 are about the age of homeowners.

10 This chart shows information about the age of homeowners in the United Kingdom.

Percentage of people owning their own home at each age group
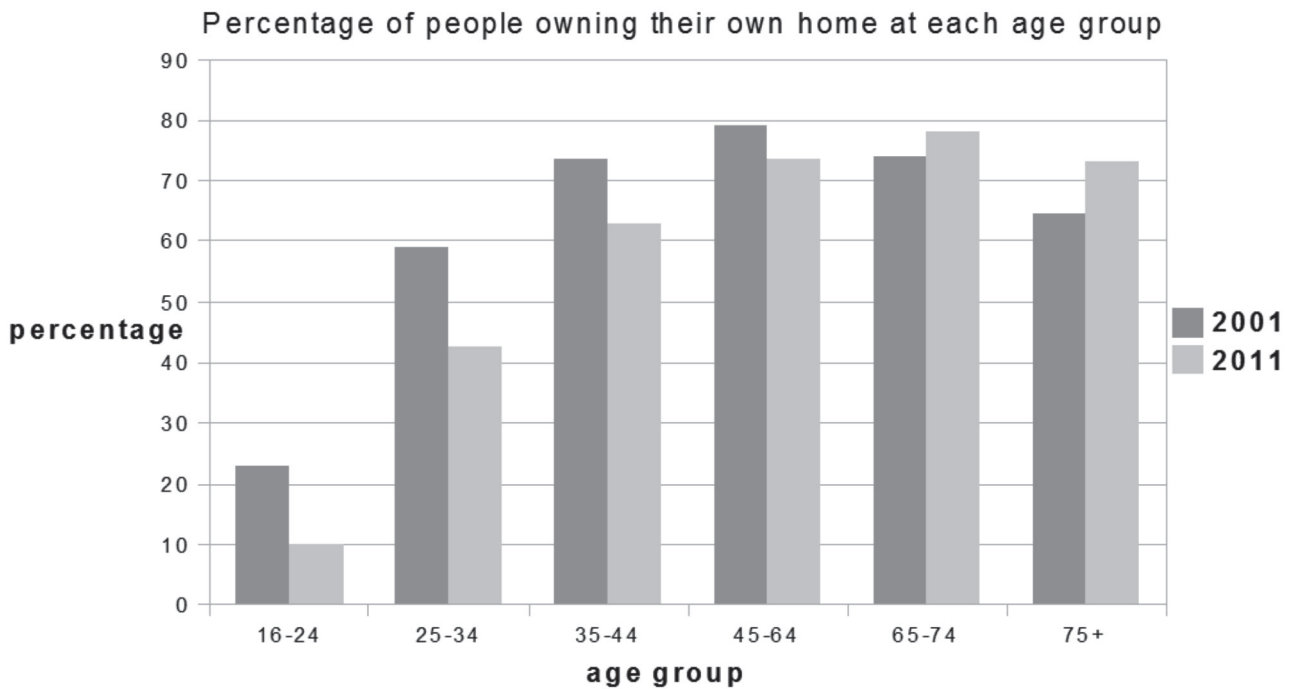
Which of these statements is true?

a   In 2011, the percentage of people aged 16 to 24 who were homeowners was more
     than half of that in 2001
b   In 2001, there was a higher percentage of people aged 65 to 74 who were homeowners
     compared to the 45 to 64 age group
c   The percentage of people over 74 who were homeowners increased between 2001 and 2011
d   The percentage of people aged 45 to 64 who were homeowners was greater than all the
     other age groups in both 2001 and 2011

11 In 2011, the UK population was 6.326×10^7

In 2015, the UK population was 6.511×10^7

What was the increase in the UK population between 2011 and 2015?

a 18 500
b 185 000
c 1 850 000
d 18 500 000

12 In 2011, 75% of people over 64 were homeowners.

In 2011 there were about 10 378 000 people aged over 64

Which is the closest estimate of the number of homeowners aged over 64 in 2011?

a 1.38×10^7
b 7.78×10^6
c 1.38×10^6
d 7.78×10^5

Questions 13 to 15 are about the properties of materials.

13 This table shows the properties of materials.

Material	Density (g/cm³)	Tensile strength (MPa)
Low Carbon Steel	7.85	257
Aluminium alloy	4.73	241
Brass	8.55	155
Cast iron	7.21	130
Copper	8.96	70

$$\text{Mass} = \text{Density} \times \text{Volume}$$
$$\text{g} \qquad \text{g/cm}^3 \qquad \text{cm}^3$$

A solid rectangular section bar is needed.
The bar needs to be 20 cm long, 1 cm high and 5 cm wide.

The bar must have a tensile strength of more than 150 MPa (Megapascals).
Its mass must be less than 750 grams.

Which of these materials should be used to make the bar?

a   Low carbon steel
b   Cast iron
c   Brass
d   Aluminium alloy

14   This table shows the properties of materials.

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Copper	8.96	70

$$\text{Mass} = \text{Density} \times \text{Volume}$$
$$\text{g} \qquad \text{g/cm}^3 \qquad \text{cm}^3$$

A solid brass bar has a cross section that is a square with sides of 2 cm.
It has a mass of 1 kilogram.

What is the length of the brass bar?

a   2.92 cm
b   29.24 cm
c   58.48 cm
d   116.96 cm

15 This table shows the properties of materials.

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Low Carbon Steel	7.85	257
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Cast iron	7.21	130
Copper	8.96	70

$$\text{Mass} = \text{Density} \times \text{Volume}$$
$$\text{g} \qquad \text{g/cm}^3 \qquad \text{cm}^3$$

There are 1000 kilograms in 1 tonne.

What is the mass of 1 m³ of aluminium alloy?

a   47.3 tonnes
b   4.73 tonnes
c   0.473 tonnes
d   0.0473 tonnes

Questions 16 to 18 are about a bank loan.

16   A man wants to borrow £2000 from a bank.

This formula gives the amount to be repaid.

$$P = L \times 1.1^n$$

P = Amount to be repaid
L = Amount to be borrowed
n = Number of years

How much is to be repaid after 3 years?

a   £2662
b   £2600
c   £2420
d   £2200

17   A loan of £2000 is repaid over 5 years.
The rate of compound interest for this loan is 20% per year.

Which is the correct calculation to find the amount repaid?

a 2000×0.2^5
b 2000×1.2^3
c 2000×1.5^2
d 2000×1.2^5

18   A loan of £2000 is taken out. The interest is 20% per annum.

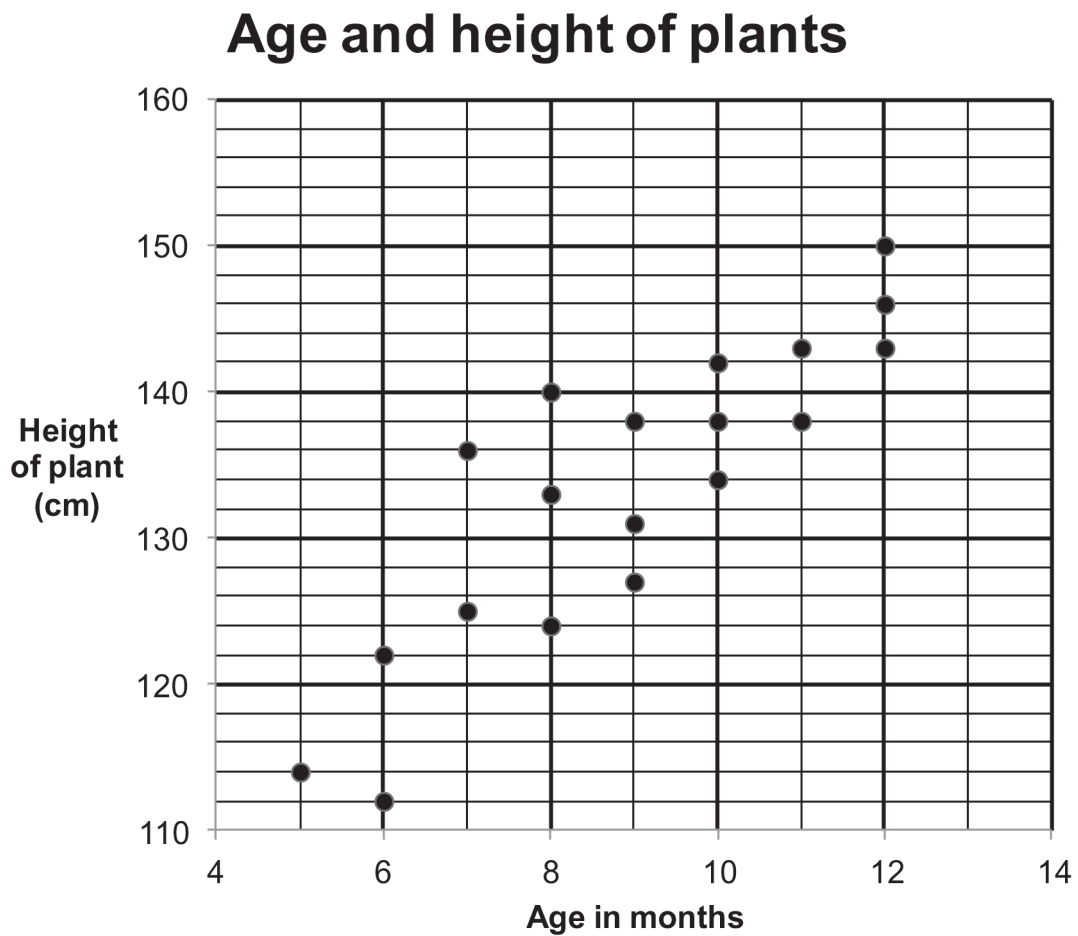The total of the loan and the interest is paid back in 12 equal instalments over one year.

How much is each instalment?

a   £175.00
b   £183.33
c   £200.00
d   £240.00

Questions 19 to 21 are about the age and height of plants.

19 This graph shows the ages and heights of some plants.

Age and height of plants
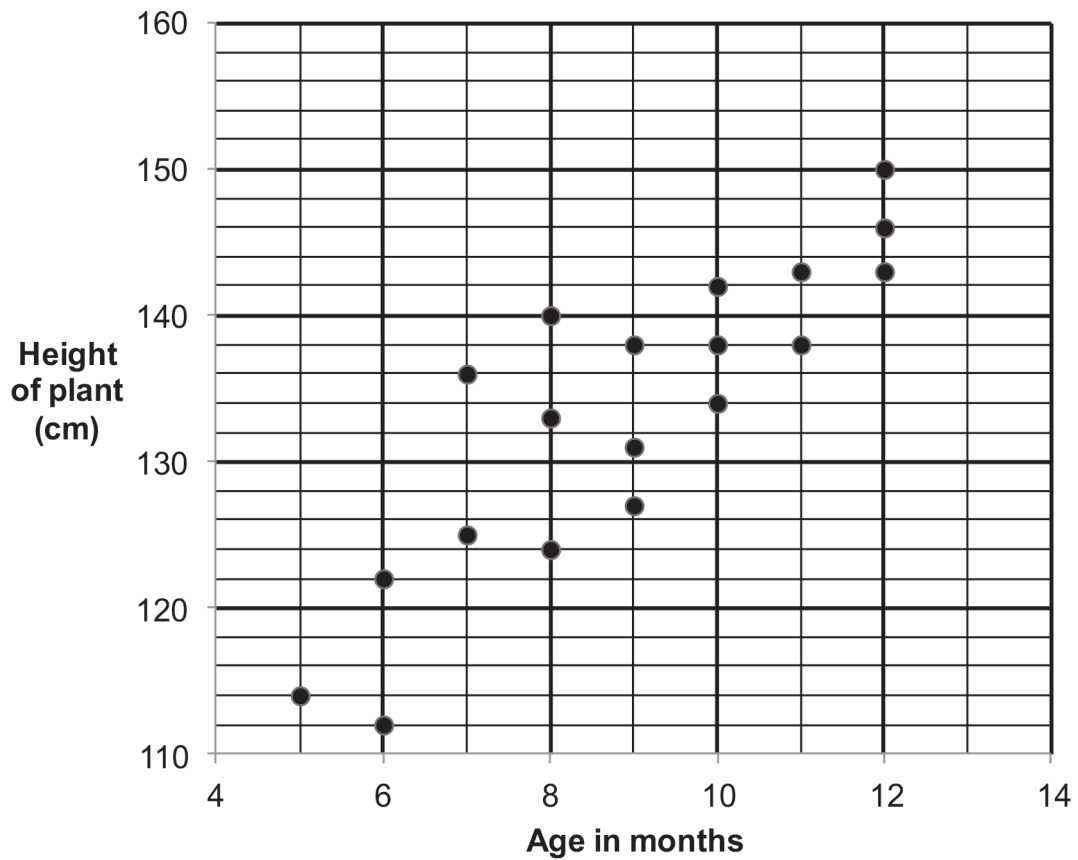

At which age is there the greatest range of heights?

a   5 months
b   7 months
c   8 months
d   12 months
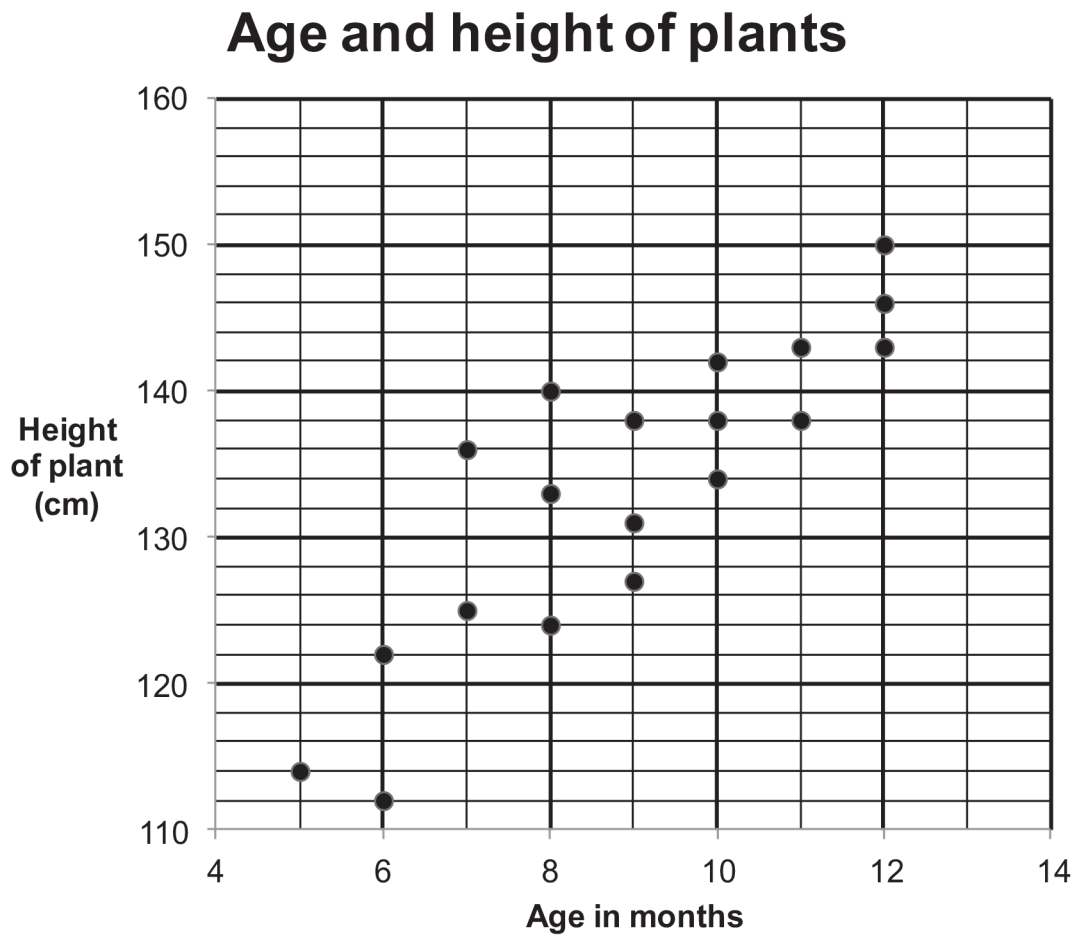
20 This graph shows the ages and heights of some plants.

Age and height of plants

How many of the plants aged 10 months or less have a height greater than 122 cm?

a 12
b 11
c 9
d 8

21 This graph shows the ages and heights of some plants.

Age and height of plants

What is the median of the heights of the plants?

a 131 cm
b 134 cm
c 136 cm
d 138 cm

Questions 22 to 24 are about making cushions.

22 A worker cuts the material for a number of cushions.

He then stitches the edges of these cushions.

Cushion making processes	
Process	**Time Taken Per Cushion (minutes)**
Cut material	5
Stitch edges	15
Add decoration	20

Cutting and stitching for these cushions takes a total of 4 hours.

How much time in total did he spend cutting the material?

a   48 minutes
b   60 minutes
c   80 minutes
d   90 minutes

23 Another worker cuts material, stitches edges and adds decoration to make cushions.

Cushion making processes	
Process	**Time Taken Per Cushion (minutes)**
Cut material	5
Stitch edges	15
Add decoration	20

The cost of wages for the worker is £9 per hour.

The cost of materials is £4.50 per cushion.

Cushions sell for £25 each.

What is the profit per cushion as a percentage of the selling price?

a   42%
b   46%
c   58%
d   64%

24 A worker uses a machine to fill cushions.

It takes 40 seconds to fill each cushion.

How many cushions can the worker fill in an 8 hour day?

a   720
b   620
c   320
d   72

Questions 25 to 27 are about walking in the country.

25   A map shows the route of a walk.

The scale of the map is 1 : 20 000
On the map, the length of one part of the route is 4 cm.

What is the actual distance of this part of the route?

a   8 kilometres
b   2 kilometres
c   0.8 kilometres
d   0.2 kilometres

26   The total distance of the route is 18.75 centimetres on the map.

The scale of the map is 1 : 20 000

It normally takes 45 minutes to complete this route.

$$\text{Speed(km/h)} = \frac{\text{distance (km)}}{\text{time (h)}}$$

What is the average walking speed on this route?

a   2.5 km/h
b   3 km/h
c   4 km/h
d   5 km/h

27 Two groups of people walk along a 10 kilometre route.

$$\text{Speed(km/h)} = \frac{\text{distance (km)}}{\text{time (h)}}$$

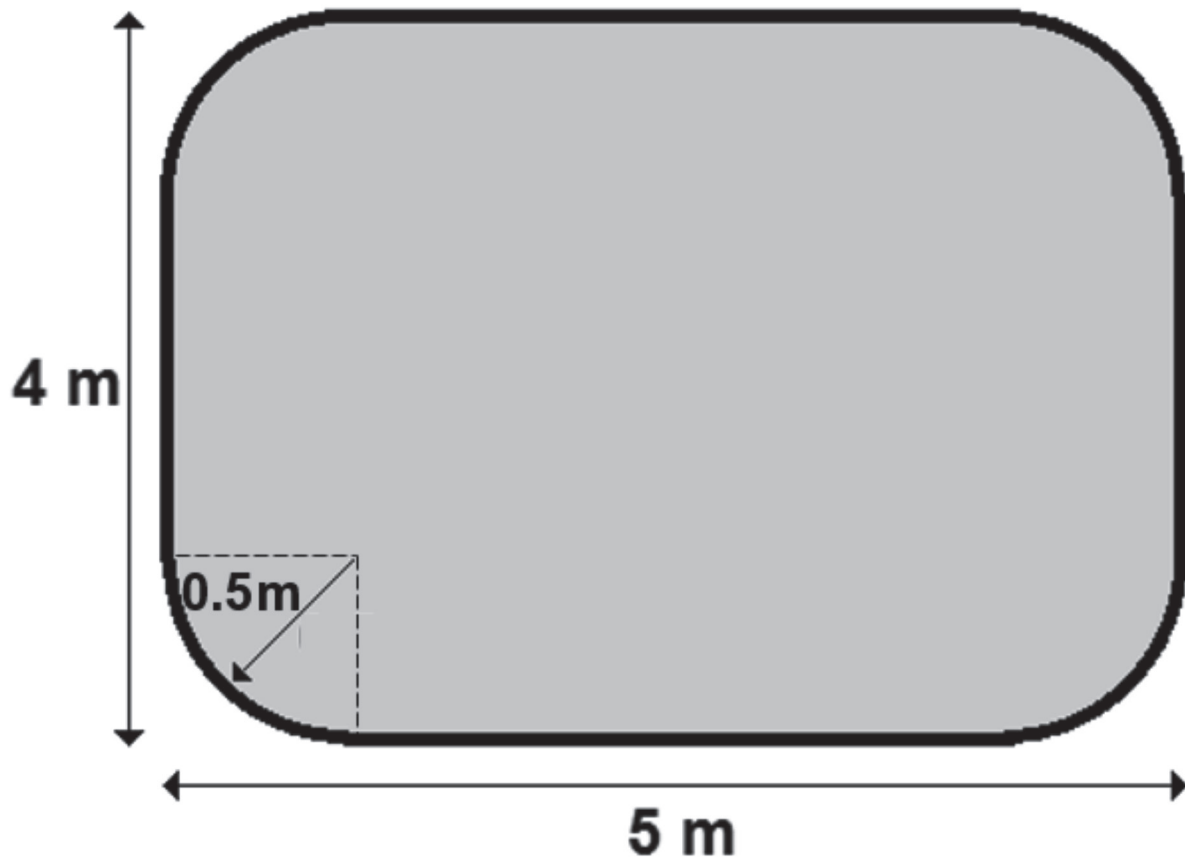Group A walks at an average speed of 3 km/h.
Group B walks at an average speed of 5 km/h.

How much longer does Group A take to complete the route than Group B?

a   12 minutes
b   20 minutes
c   80 minutes
d   133 minutes

Questions 28 to 30 are about a swimming pool.

28   This is a plan of a swimming pool.

The area of the pool is calculated using this formula

$$A = LW - r^2(4 - \pi)$$

where: A is the area in square metres
       L is the length in metres
       W is the width in metres
       r is the radius of the curve in metres
       Use $\pi = 3$

What is the area of the pool?

a 17.5 m^2
b 19.5 m^2
c 19.75 m^2
d 19.975 m^2

29   The area of the pool is calculated using this formula

$$A = LW - r^2(4 - \pi)$$

where **r** is the radius

Rearrange the formula so that the radius is the subject.

a $r = \sqrt{\dfrac{A - LW}{4 - \pi}}$

b $r = \sqrt{\dfrac{LW - A}{4 - \pi}}$

c $r = \sqrt{\dfrac{4 - \pi}{A - LW}}$

d $r = \sqrt{\dfrac{4 - \pi}{LW - A}}$

30   The pool has a capacity of 20 m^3.

The pool is filled at a rate of 8 litres of water per minute.

1 litre of water = 0.001 m^3

How long does it take to fill the pool with water?

a   4 hours 10 minutes
b   16 hours
c   41 hours 40 minutes
d   41 hours 45 minutes

NOW GO BACK AND CHECK YOUR WORK
•   IMPORTANT -
      Are the details at the top of the answer sheet correct?
      Have you filled in your answers in INK in the appropriate boxes on the answer sheet?