Added Value Unit

PRACTICE A TEST

Part One

Time allowed: 20 minutes

You may **not** use a calculator for this part of the test.

1. A pizza takeaway sells 500 pizzas a week.
80% of the pizzas have a cheese topping.
How many pizzas sold each week have a cheese topping?

2. Kevin got a job picking tomatoes and putting them into boxes.
Each of the 7 boxes of tomatoes he filled was weighed and the results recorded.

42 kg, 41 kg, 32 kg, 50 kg, 39 kg, 36 kg, 32 kg

Find the mean weight of a box of tomatoes.
Give your answer, in kilograms, correct to 2 decimal places.

3. 48 girls applied to go on a canoeing course.
$\frac{2}{3}$ of the girls went on the course.
How many girls went on the canoeing course?

4. A crane lifts a load 5.72 metres off the ground and stops.
The load is then lifted a further 13.8 metres higher, before being lowered by 6.47 metres.
How far is the load from the ground?

5. A calculator costs £7.95.
Find the cost of 6 calculators.

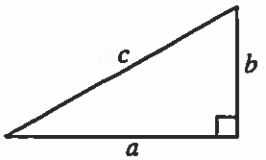
FORMULAE LIST:

Circumference of a circle: $C = \pi d$

Area of a circle: $A = \pi r^2$

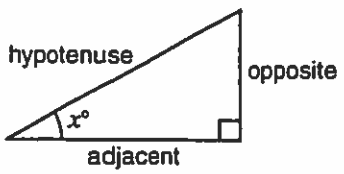
Volume of a triangular prism: $V = Ah$

THEOREM OF PYTHAGORAS:



$a^2 + b^2 = c^2$

TRIGONOMETRY RATIOS IN A RIGHT-ANGLED TRIANGLE:

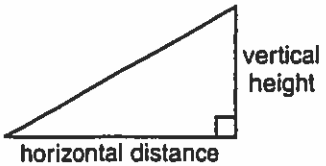


$$\tan x° = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x° = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x° = \frac{\text{adjacent}}{\text{hypotenuse}}$$

GRADIENT:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

Added Value Unit

PRACTICE A TEST

Part Two

Time allowed: 40 minutes

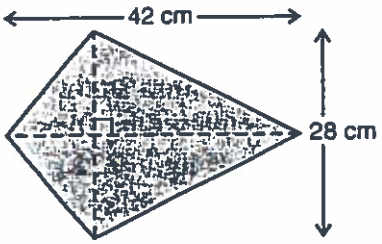
You may use a calculator for this part of the test.

6. Solve.

(a) $4x = 20 - x$

(b) $4(x + 1) = 16$

7. A badge is made in the shape of a kite.
Find the area of the badge.



8. A number sequence begins: 3, 7, 11, 15, ...

Term	1	2	3	4	5	6
Number	3	7	11	15		

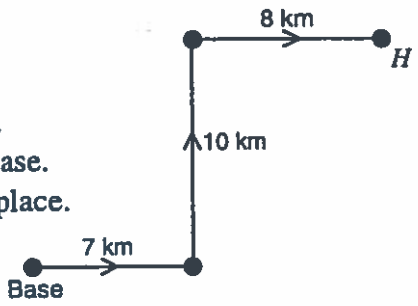
(a) Write down the next two numbers in this sequence.

(b) Write down a formula that can be used to find any term in the sequence.

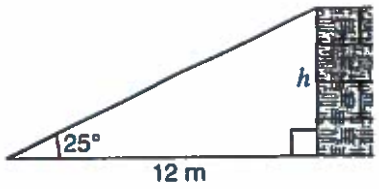
(c) Use your formula to find the 12th term in the sequence.

9. A lorry travels 100 miles in 2 hours 30 minutes.
Find its average speed in miles per hour.

10. A helicopter flies 7 km east from its base.
It then heads north for 10 km, followed by east for 8 km.
Calculate the direct distance from the helicopter to the base.
Give your answer in kilometres, correct to one decimal place.



11.



Jason is standing 12 m from a haystack.
The angle of elevation to the top of the haystack is 25°.
Calculate h, the height of the haystack.
Give your answer in metres, correct to one decimal place.

12. On squared paper, draw and label the x axis from -4 to 6 and the y axis from -4 to 3.

(a) Plot the points: $A(-4, -4)$, $B(-2, 2)$ and $D(4, -4)$.

(b) Plot point C so that $ABCD$ is a parallelogram.

PRACTICE TEST

Added Value Unit

PART 1

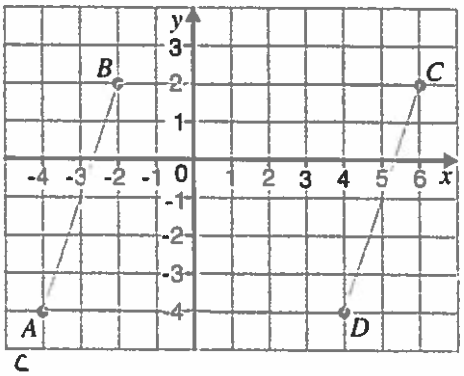
1. 400
2. $\frac{272}{7} = 38.857\ldots = 38.86$ kg, to 2 d.p.
3. 32
4. 13.05 m
5. £47.70

PRACTICE TEST

Added Value Unit

PART 2

6. (a) $x = 4$ (b) $x = 3$
7. 588 cm²
8. (a) 19, 23 (b) nth term $= 4n - 1$ (c) 47
9. 40 miles per hour
10. 18.0 km
11. 5.6 m
12. (a)



(b) (6, 2)

Added Value Unit

PRACTICE B TEST

Part One

Time allowed: 20 minutes

You may **not** use a calculator for this part of the test.

1. A packet of biscuits contains 40 biscuits.
Toby eats 5% of the biscuits.
How many biscuits are left in the packet?

2. Sarah collected 6 pine cones.
She measured the height of each cone and recorded her results.

12 cm, 17 cm, 12 cm, 18 cm, 11 cm, 10 cm

Find the mean height of a pine cone.
Give your answer, in centimetres, correct to 2 decimal places.

3. 35 boys applied to go on a catering course run by a hotel.
$\frac{2}{7}$ of the boys went on the course.
How many boys went on the catering course?

4. Harold mixes 1.25 litres of water with 7.8 litres of emulsion paint.
He calculated that 8.7 litres of the mixture are required to paint a wall.
Has Harold mixed enough water and emulsion to paint the wall?
Explain your answer.

5. A geometry set costs £4.45.
Find the cost of 8 geometry sets.

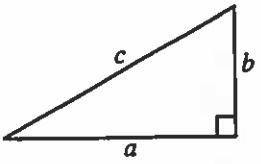
FORMULAE LIST:

Circumference of a circle: $C = \pi d$

Area of a circle: $A = \pi r^2$

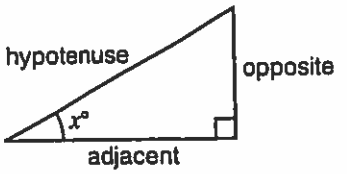
Volume of a triangular prism: $V = Ah$

THEOREM OF PYTHAGORAS:



$a^2 + b^2 = c^2$

TRIGONOMETRY RATIOS IN A RIGHT-ANGLED TRIANGLE:

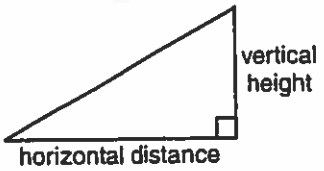


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$

GRADIENT:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

Added Value Unit

PRACTICE B TEST

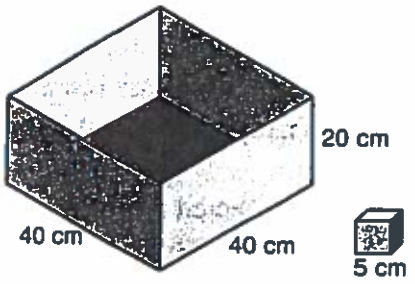
Part Two

Time allowed: 40 minutes

You may use a calculator for this part of the test.

6. Solve. (a) $3x - 10 = x$ (b) $2(x - 3) = 18$

7. How many cubes of edge 5 cm can be packed into a cuboid which has dimensions 40 cm by 40 cm by 20 cm?



8. A sequence of patterns is made using diamonds.

(a) Copy and complete the table.

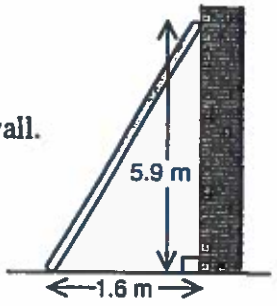
Pattern number (p)	1	2	3	4	5	6
Number of diamonds (d)	1	4	7			

(b) Write down a formula for calculating the number of diamonds (d) when you know the pattern number (p).

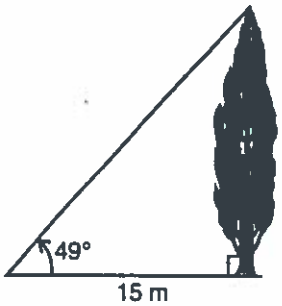
(c) How many diamonds are needed for Pattern 100?

9. A train travels 140 miles at an average speed of 80 miles per hour.
Calculate how long the journey took.
Give your answer in hours and minutes.

10. A ladder is placed on level ground, 1.6 m away from a vertical wall.
The ladder reaches 5.9 m up the wall.
Calculate the length of the ladder.
Give your answer, in metres, correct to 2 decimal places.



11.



From a point on the ground 15 m from the base of a tree, the angle of elevation to the top of a tree is 49°.
Calculate the height of the tree.
Give your answer in metres, correct to one decimal place.

12. On graph paper, draw and label x and y axes from -5 to 5.

(a) Plot the points: $P(-3, 1)$, $Q(1, 4)$ and $R(4, 0)$.

(b) $PQRS$ is a square.
Plot the position of point S on your graph.

PRACTICE B TEST

Added Value Unit

PART 1

1. 38

2. $\frac{80}{6} = 13.333\ldots = 13.33$ cm, to 2 d.p.

3. 10

4. Yes. $1.25 + 7.8 - 8.7 = 0.35$. There will be 0.35 litres of mixture left.

5. £35.60

PRACTICE B TEST

Added Value Unit

PART 2

6. (a) $x = 5$ (b) $x = 12$

7. $8 \times 8 \times 4 = 256$ cubes

8. (a)

Pattern number (p)	1	2	3	4	5	6
Number of diamonds (d)	1	4	7	10	13	16

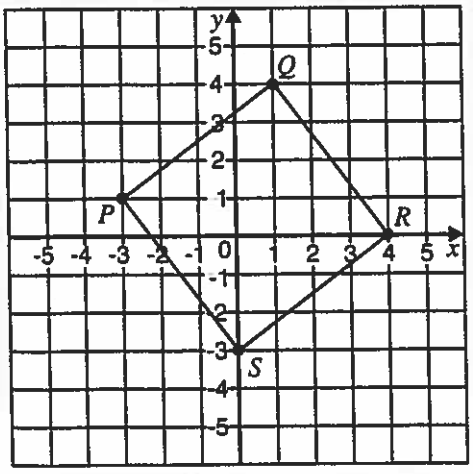
(b) $d = 3p - 2$ (c) 298

9. 1 hour 45 minutes

10. 6.11 m

11. 17.3 m

12. (a)



(b) $S(0, -3)$

ANSWERS

PRACTICE A TEST

Added Value Unit

PART 1

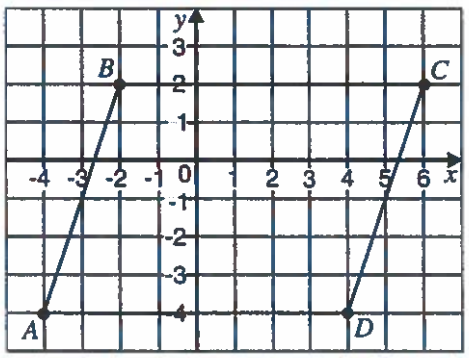
1. 400
2. $\frac{272}{7} = 38.857\ldots = 38.86$ kg, to 2 d.p.
3. 32
4. 13.05 m
5. £47.70

PRACTICE A TEST

Added Value Unit

PART 2

6. (a) $x = 4$ (b) $x = 3$
7. 588 cm^2
8. (a) 19, 23 (b) nth term $= 4n - 1$ (c) 47
9. 40 miles per hour
10. 18.0 km
11. 5.6 m
12. (a)



(b) $D(6, 2)$

Added Value Unit

PRACTICE C TEST

Part One

Time allowed: 20 minutes

You may **not** use a calculator for this part of the test.

1. Jenny is a salesperson.
Each month Jenny earns a bonus of 3% of the value of goods she sells.
In July, Jenny sold goods to the value of £4500.
How much bonus did Jenny earn in July?

2. The number of goals scored in matches played by some hockey teams are shown.

3, 1, 4, 2, 2, 3, 2, 6

Find the mean number of goals scored.
Give your answer correct to 2 decimal places.

3. A box contains 40 chocolates.
$\frac{5}{8}$ of the chocolates are soft-centred.
How many chocolates in the box are soft-centred?

4. Mary has two containers of plain flour.
One contains 2.35 kg and the other contains 1.415 kg.
Mary uses 3.2 kg of flour to bake a cake.
How much flour will Mary have left?

5. A tin of paint costs £13.85.
Find the cost of 3 tins of paint.

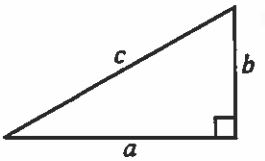
FORMULAE LIST:

Circumference of a circle: $C = \pi d$

Area of a circle: $A = \pi r^2$

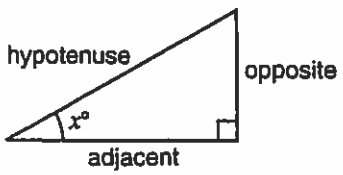
Volume of a triangular prism: $V = Ah$

THEOREM OF PYTHAGORAS:



$a^2 + b^2 = c^2$

TRIGONOMETRY RATIOS IN A RIGHT-ANGLED TRIANGLE:

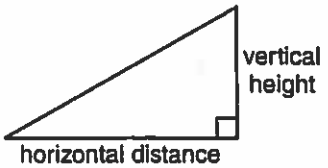


$$\tan x^\circ = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x^\circ = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x^\circ = \frac{\text{adjacent}}{\text{hypotenuse}}$$

GRADIENT:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

Added Value Unit

PRACTICE C TEST

Part Two

Time allowed: 40 minutes

You may use a calculator for this part of the test.

6. Solve. (a) $3x - 4 = x + 4$ (b) $3(2x + 1) = 15$

7. The diagram shows a plastic wedge which is a triangular prism.
Calculate the volume of the plastic wedge.

8. A number sequence begins: 2, 6, 10, 14, ...

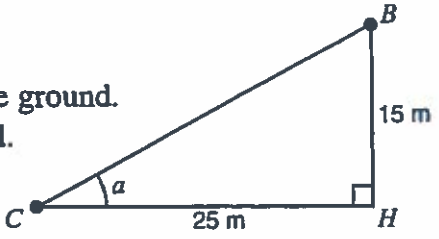
Term	1	2	3	4	5	6
Number	2	6	10	14		

(a) Write down the next two numbers in this sequence.
(b) Write a formula that can be used to find any term in the sequence.
(c) Use your formula to find the 20th term in the sequence.

9. Calculate the distance that Chris cycles in 1 hour and 15 minutes at an average speed of 24 kilometres per hour.

10. A builder marks out a rectangular building plot, *ABCD*.
He checks that the plot is rectangular by measuring the diagonals, *AC* and *BD*.
What length should they be?
Give your answer in metres, correct to 2 decimal places.

11. A cat is on the ground, 25 m from the foot of a house.
A bird is perched on the gutter of the house, 15 m from the ground.
Calculate the angle of elevation, *a*, from the cat to the bird.
Give your answer correct to the nearest degree.



12. On squared paper, draw and label the *x* axis from −4 to 6 and the *y* axis from −6 to 3.
(a) Plot the points: $B(-4, -2)$, $C(4, 2)$ and $D(6, -2)$.
(b) Plot point *A* so that *ABCD* is a kite.

Added Value Unit

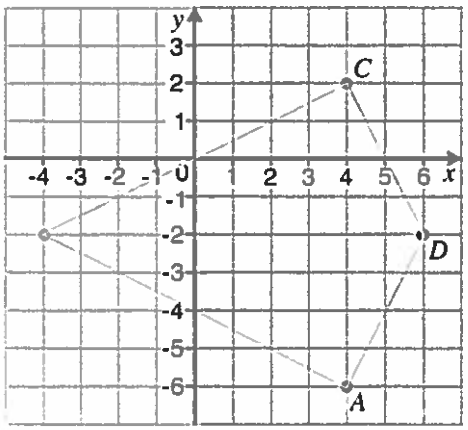
PART 1

1. £135
2. $\frac{23}{8} = 2.875 \ldots = 2.88$, to 2 d.p.
3. 25
4. 0.565 kg
5. £41.55

Added Value Unit

PART 2

6. (a) $x = 4$ (b) $x = 2$
7. 540 cm³
8. (a) 18, 22 (b) nth term $= 4n - 2$ (c) 78
9. 30 km
10. 17.37 m
11. 31°
12. (a)



(b) $A\,(4, -6)$

Added Value Unit

PRACTICE D TEST

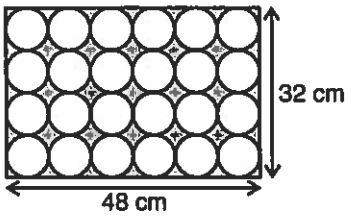
Part Two

Time allowed: 40 minutes

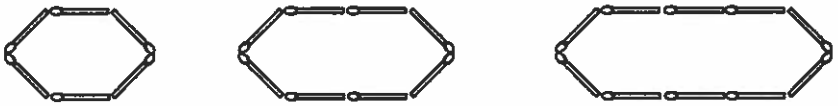
You may use a calculator for this part of the test.

6. Solve. **(a)** $7x + 3 = 2x + 28$ **(b)** $2(1 + 3x) = 38$

7. A rectangular sheet of pastry measures 48 cm by 32 cm.
Laura uses a circular pastry cutter to cut lids for mince pies.
The pastry cutter has a diameter of 8 cm.
Calculate the area of pastry **not** used.
Give your answer to the nearest square centimetre.



8. Patterns are made using matches.



Pattern 1 Pattern 2 Pattern 3

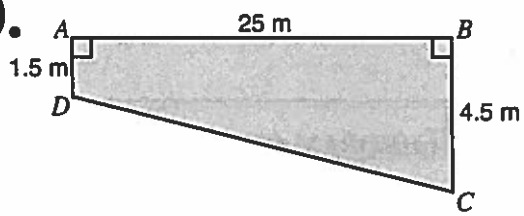
(a) Copy and complete the table for Pattern 4 and Pattern 5.

Pattern number	1	2	3	4	5
Number of matches	6	8	10		

(b) Here is a rule for working out the number of matches in a pattern:
"Multiply the pattern number by 2 and add 4."
How many matches are used to make Pattern 80?

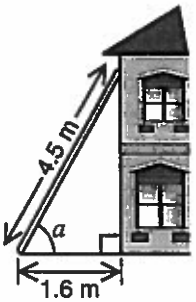
9. Kelly cycles 36 kilometres in 4 hours 30 minutes.
Calculate her average speed in kilometres per hour.

10.



The floor of a swimming pool slopes steadily from a depth of 1.5 m to 4.5 m. The pool is 25 m long.
Find the length of the sloping floor of the pool, *CD*.
Give your answer in metres, correct to 2 decimal places.

11. A ladder, 4.5 m long, is placed against the wall of a house.
The foot of the ladder is 1.6 m away from the base of the wall.
Calculate the angle, a, the ladder makes with the ground.
Give your answer correct to one decimal place.



12. On squared paper, draw and label
the x axis from -7 to 7 and the y axis from -4 to 4.
(a) Plot the points: $A(-6, -2)$, $B(-3, 3)$ and $C(6, 3)$.
(b) $ABCD$ is a parallelogram.
Plot the position of point D on your graph.

Added Value Unit

PRACTICE C TEST

Part One

Time allowed: 20 minutes

You may **not** use a calculator for this part of the test.

1. Jenny is a salesperson.
Each month Jenny earns a bonus of 3% of the value of goods she sells.
In July, Jenny sold goods to the value of £4500.
How much bonus did Jenny earn in July?

2. The number of goals scored in matches played by some hockey teams are shown.

3, 1, 4, 2, 2, 3, 2, 6

Find the mean number of goals scored.
Give your answer correct to 2 decimal places.

3. A box contains 40 chocolates.
$\frac{5}{8}$ of the chocolates are soft-centred.
How many chocolates in the box are soft-centred?

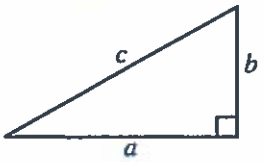
4. Mary has two containers of plain flour.
One contains 2.35 kg and the other contains 1.415 kg.
Mary uses 3.2 kg of flour to bake a cake.
How much flour will Mary have left?

5. A tin of paint costs £13.85.
Find the cost of 3 tins of paint.

FORMULAE LIST:

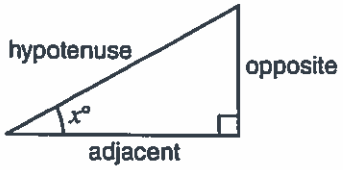
Circumference of a circle: $C = \pi d$
Area of a circle: $A = \pi r^2$
Volume of a triangular prism: $V = Ah$

THEOREM OF PYTHAGORAS:



$a^2 + b^2 = c^2$

TRIGONOMETRY RATIOS IN A RIGHT-ANGLED TRIANGLE:

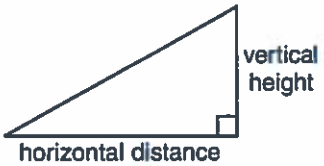


$$\tan x° = \frac{\text{opposite}}{\text{adjacent}}$$

$$\sin x° = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos x° = \frac{\text{adjacent}}{\text{hypotenuse}}$$

GRADIENT:



$$\text{Gradient} = \frac{\text{vertical height}}{\text{horizontal distance}}$$

Added Value Unit

PRACTICE G TEST

Part One

Time allowed: 20 minutes

You may **not** use a calculator for this part of the test.

1. A packet of seeds produces either blue or yellow flowers.
A label on the packet says:

75% of seeds produce blue flowers.

Each packet contains 60 seeds.
How many yellow flowers are produced from a packet of seeds?

2. The weights of three parcels were recorded in kilograms.

13, 17, 32

Find the mean weight of a parcel.
Give your answer, in kilograms, correct to 2 decimal places.

3. A bar of chocolate has 24 squares.
Grace eats $\frac{3}{4}$ of the bar.
How many squares does Grace eat?

4. In the qualifying round of a bobsleigh competition, the times of two runs are added together.
A team records times of 67.245 seconds and 66.895 seconds.
To qualify for the next round, the total time must be less than 133.5 seconds.
The team failed to qualify for the next round.
By how much did they exceed the qualifying time?
Give your answer in seconds.

5. Abigail earns £8.26 an hour.
How much is she paid for working 9 hours?

Added Value Unit

PRACTICE G TEST

Part Two

Time allowed: 40 minutes

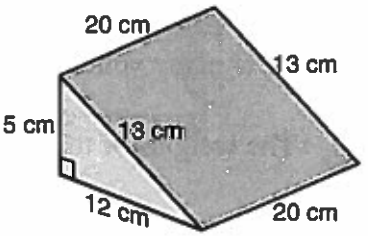
You may use a calculator for this part of the test.

6. Solve.

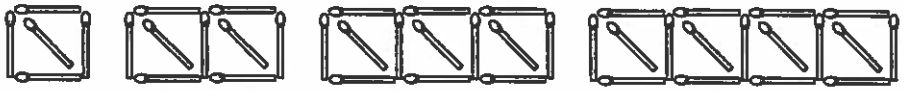
(a) $3 + 4x = 2x + 23$

(b) $5(2x + 1) = 55$

7. The diagram shows a wooden wedge which is a triangular prism.
The wedge has to be painted all over.
Calculate the total surface area of the wooden wedge.



8. Matches are used to make these patterns.



Pattern 1 Pattern 2 Pattern 3 Pattern 4

Pattern number (n)	1	2	3	4	5	6
Number of matchsticks (m)	5	9	13	17		

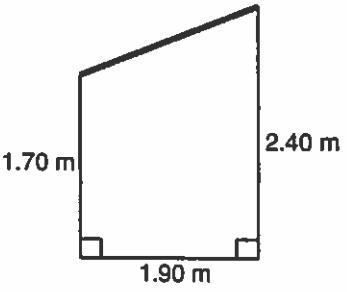
(a) Find the number of matches used to make Pattern 5 and Pattern 6.

(b) Write down a formula for calculating the number of matches (m) used to make the nth pattern.

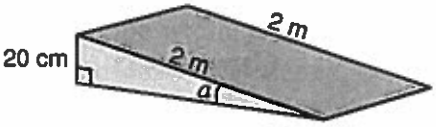
(c) How many matches are used to make Pattern 50?

9. Felicity lives 2.4 km from school.
How many minutes does she take to walk to school if her average walking speed is 4 km/h?

10. The diagram shows the side view of a garden shed.
Find the length of the sloping roof.
Give your answer in metres, correct to 2 decimal places.



11.



An access ramp has length 2 m and vertical height 20 cm.
Find the angle the ramp makes with the level ground.
Give your answer correct to one decimal place.

12. On squared paper, draw and label the x axis from -8 to 10 and the y axis from -3 to 5.

(a) Plot the points: $A(-7, -2)$, $B(-2, 4)$ and $D(4, -2)$.

(b) $ABCD$ is a parallelogram in which AD is parallel to BC and AB is parallel to DC.
Plot the position of point C.