

1.

[4 marks]

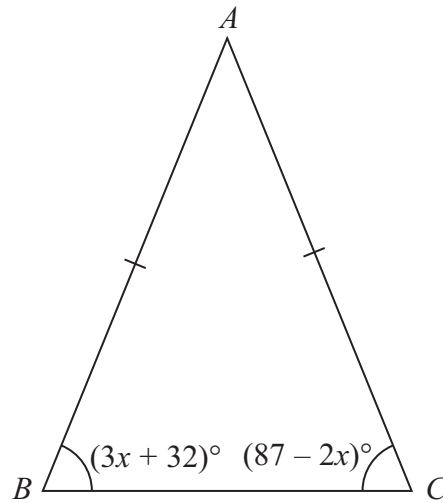


Diagram **NOT**
accurately drawn

In the isosceles triangle ABC ,

$$AB = AC$$

$$\text{angle } B = (3x + 32)^\circ$$

$$\text{angle } C = (87 - 2x)^\circ$$

Work out the value of x .

Show clear algebraic working.

$$x = \dots\dots\dots$$

Rectangle **A** has a width of x metres and a height of $(x + 2)$ metres.
Rectangle **B** has a width of $2x$ metres and a height of $4x$ metres.

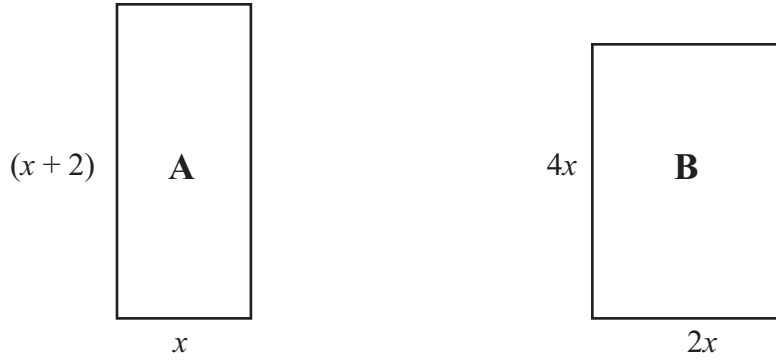


Diagram **NOT**
accurately drawn

The perimeter of rectangle **A** is equal to the perimeter of rectangle **B**.

(i) Use this information to write down an equation in x .

.....

(ii) Find the value of x .

$x =$

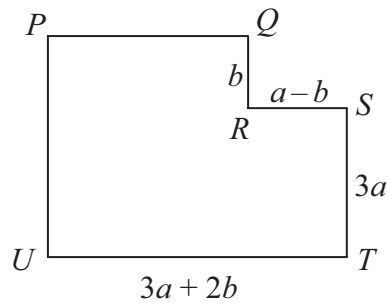
3.

[3 marks]

The diagram shows a shape, $PQRSTU$.

All the corners are right angles.

The lengths of four of the sides are given in terms of a and b .



Find an expression, in terms of a and b , for

(i) PU ,

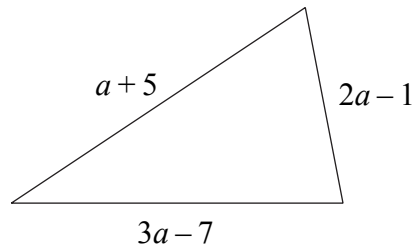
.....

(ii) PQ .

.....

4.

[3 marks]



The lengths, in cm, of the sides of a triangle are $(a + 5)$, $(3a - 7)$ and $(2a - 1)$.

The perimeter of the triangle is 24 cm.

Work out the value of a .

$a = \dots\dots\dots$

Angelou has x sweets.
He eats 5 of these sweets.
He puts all the sweets he has left into a bag.

- (i) Nina has 3 times as many sweets as the number that Angelou put into the bag.
Nina has 39 sweets.

Use this information to write down an equation in x .

.....

- (ii) Solve your equation to find the value of x .

$x =$

Paper clips are sold in small boxes and in large boxes.
There is a total of 1115 paper clips in 4 small boxes and 5 large boxes.
There is a total of 530 paper clips in 3 small boxes and 2 large boxes.
Work out the number of paper clips in each small box and in each large box.

.....

Rectangular tiles have width x cm and height $(x + 7)$ cm.

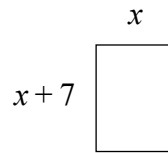


Diagram **NOT**
accurately drawn

Some of these tiles are used to form a shape.
The shape is 6 tiles wide and 4 tiles high.

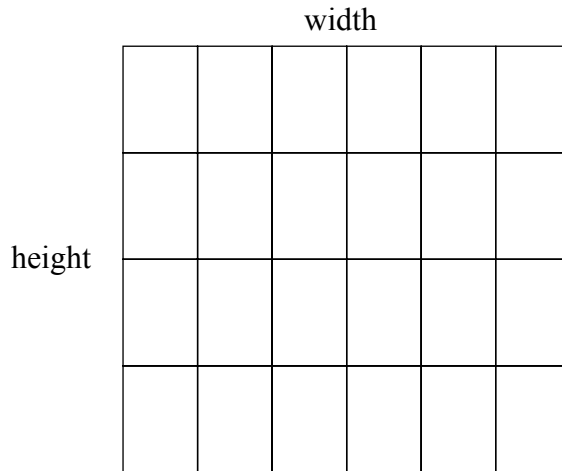


Diagram **NOT**
accurately drawn

(a) Write down expressions, in terms of x , for the width and height of this shape.

width = cm

height = cm
(2)

(b) The width and the height of this shape are equal.

(i) Write down an equation in x .

.....

(ii) Solve your equation to find the value of x .

$x = \dots\dots\dots$

(4)

Arul had x sweets.

Nikos had four times as many sweets as Arul.

(a) Write down an expression, in terms of x , for the number of sweets Nikos had.

.....
(1)

Nikos gave 6 of his sweets to Arul.

Now they both have the same number of sweets.

(b) Use this information to form an equation in x .

.....
(2)

(c) Solve your equation to find the number of sweets that Arul had at the start.

.....
(2)

Cups cost x dollars each.

Mugs cost $(x + 2)$ dollars each.

(a) Write down an expression, in terms of x , for the total cost of 12 cups and 6 mugs.

..... dollars
(2)

(b) The total cost of 12 cups and 6 mugs is 57 dollars.

Work out the cost of 1 cup.

..... dollars
(2)

Rectangular tiles have width $(x + 1)$ cm and height $(5x - 2)$ cm.

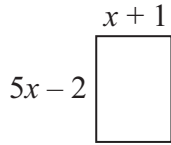


Diagram **NOT**
accurately drawn

Some of these tiles are used to form a large rectangle.
The large rectangle is 7 tiles wide and 3 tiles high.

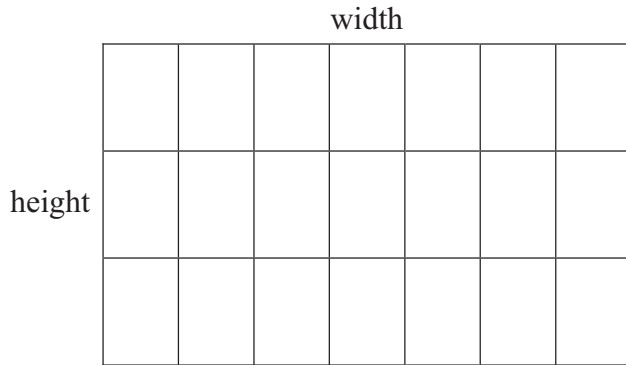


Diagram **NOT**
accurately drawn

The perimeter of the large rectangle is 68 cm.

(a) Write down an equation in x .

.....
(3)

(b) Solve this equation to find the value of x .

$x = \dots\dots\dots$
(3)

11.

[4 marks]

The diagram shows a parallelogram $ABCD$.
In the diagram, all the angles are in degrees.

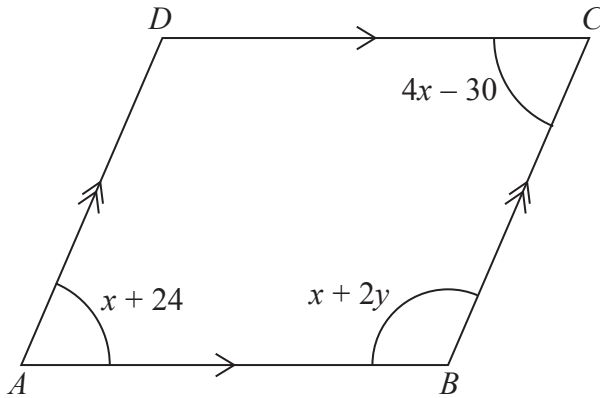


Diagram **NOT**
accurately drawn

Work out the value of x and the value of y .

$x = \dots\dots\dots$

$y = \dots\dots\dots$

12.

[3 marks]

Ben is x cm tall.

Kieran is 8 cm taller than Ben.

Bianca is 2 cm shorter than Ben.

Write an expression, in terms of x , for the mean of their heights in centimetres.

Give your answer in its simplest form.

.....

The diagram shows a right-angled triangle and a rectangle.

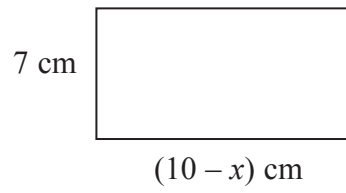
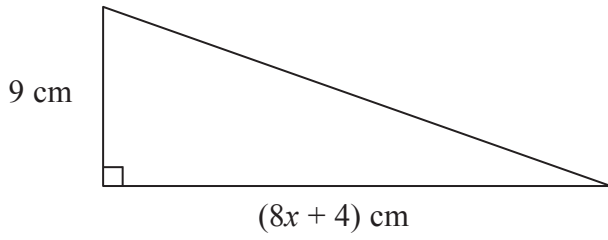


Diagram **NOT**
accurately drawn

The area of the triangle is twice the area of the rectangle.

(i) Write down an equation for x .

(ii) Find the area of the rectangle.
Show clear algebraic working.

..... cm^2

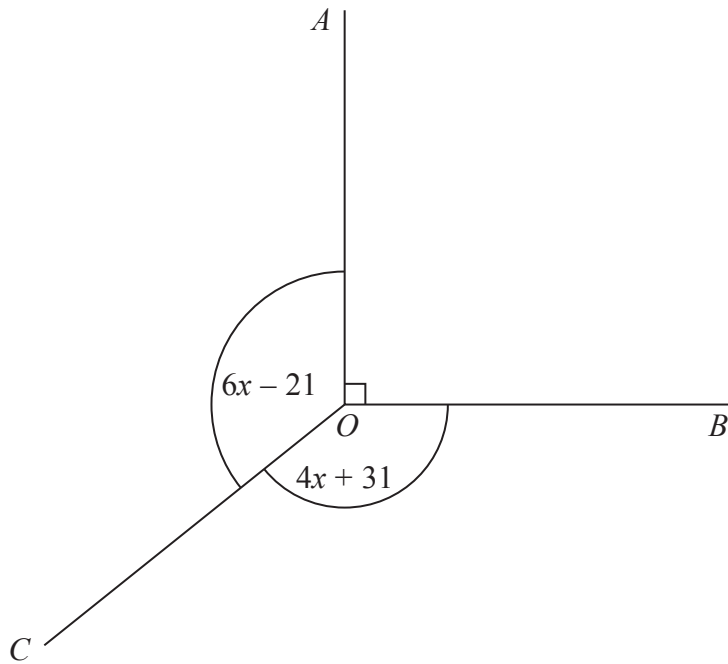


Diagram **NOT**
accurately drawn

In the diagram, all angles are in degrees.

Angle AOB is a right angle.

Angle $AOC = \text{Angle } BOC$.

Work out the value of x .

$$x = \dots\dots\dots$$

Tara has 3 dogs and 4 cats.

The dogs have a mean weight of x kg.

The cats have a mean weight of y kg.

Write down an expression, in terms of x and y , for the mean weight of all 7 of Tara's pets.

..... kg

Here is a rectangle.

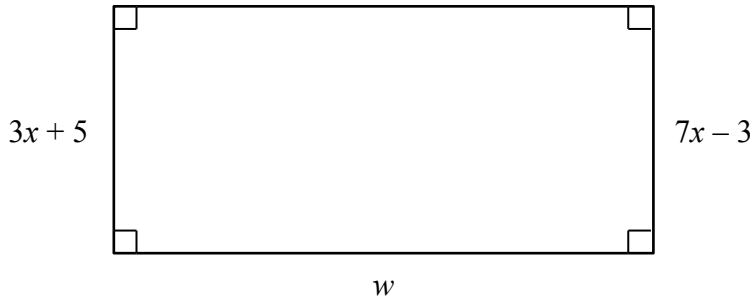


Diagram **NOT**
accurately drawn

All measurements are in centimetres.

The area of the rectangle is 242 cm^2 .

Find the value of w .

..... cm

17.

[4 marks]

Barney has the same number of sweets as Millie.
Barney gives 15 of his sweets to Millie.
Millie now has 4 times as many sweets as Barney.
Work out the total number of sweets that Barney and Millie have.

.....

18.

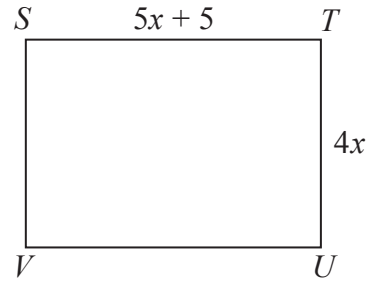
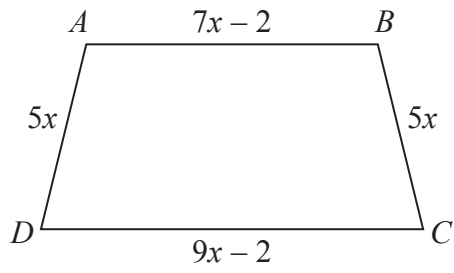
[4 marks]

Vicky makes 8 purses and 9 key rings to sell for charity.
The price of a purse will be twice as much as the price of a key ring.
Vicky wants to get a total of exactly £40 when she sells all the purses and all the key rings.
Work out the price Vicky needs to charge for each purse and for each key ring.

purse key ring

$ABCD$ is a trapezium.
 $STUV$ is a rectangle.

Diagram **NOT**
accurately drawn

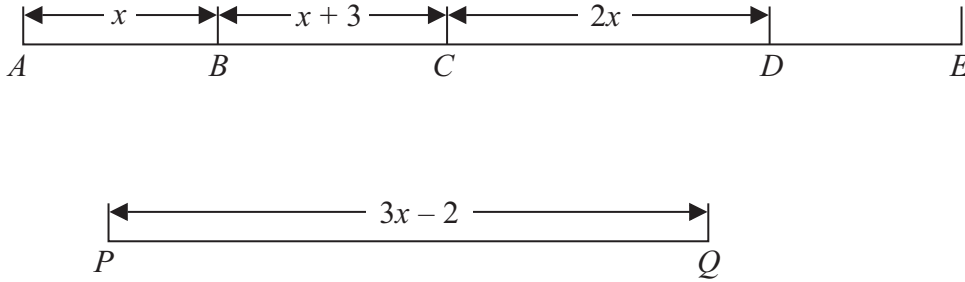


All measurements are in centimetres.
The two shapes have the same perimeter.
Work out the length of ST .

..... cm

Here are two straight lines, $ABCDE$ and PQ

Diagram **NOT**
accurately drawn



In the diagrams all the lengths are in cm.

$$AE = 2PQ.$$

Find an expression, in terms of x , for the length of DE .

Give your answer in its simplest form.

..... cm

There are 30 sweets in a box.

x of the sweets are blue.

The rest of the sweets are green.

Aaron takes at random a sweet from the box.

Write down an expression, in terms of x , for the probability that Aaron takes a green sweet.

.....

22.

[3 marks]

Amita, Monica and Rita are three sisters.

Monica is x years old.

Amita is 3 years older than Monica.

Rita is twice the age of Amita.

If the mean age of the three sisters is 15, how old is Amita?

..... years

23.

[4 marks]

Asha and Lucy are selling pencils in a school shop.

They sell boxes of pencils and single pencils.

Asha sells 7 boxes of pencils and 22 single pencils.

Lucy sells 5 boxes of pencils and 2 single pencils.

Asha sells twice as many pencils as Lucy.

Work out how many pencils there are in a box.

.....