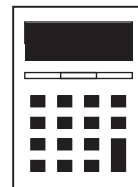


GCSE MATHEMATICS

Set Up & Solve



AQA  These questions have been taken or modified from previous AQA GCSE Mathematics Papers.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer all questions.
- You must answer the questions in the spaces provided.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

Information

- The marks for questions are shown in brackets.
- The quality of your written communication is specifically assessed in questions that are indicated with an asterisk (*).

Advice

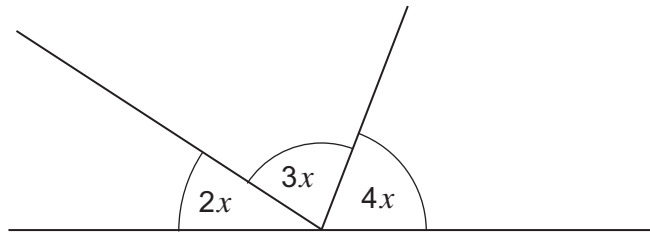
- Read each question carefully before you start to answer it.
- In all calculations, show clearly how you work out your answer.
- Use the number of marks for the question as a guide to the amount of time you need to spend.
- Look at previous parts of the question, e.g. a), b), c) i) as there may be information there you need to answer later parts.
- Check your answer is realistic and appropriate.
- For calculator decimal numbers always write your full calculator display in the working out area and then, if you need to, round the answer on the answer line.

This booklet was curated and modified using AQA examination papers between 2010-2016, for thecalculatorguide.com, where you can find many more booklets on further topics. All questions used are reproduced for educational purposes only.



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*1 The diagram shows three angles on a straight line.



Not drawn accurately

Set up and solve an equation in x to help you work out the size of the smallest angle.

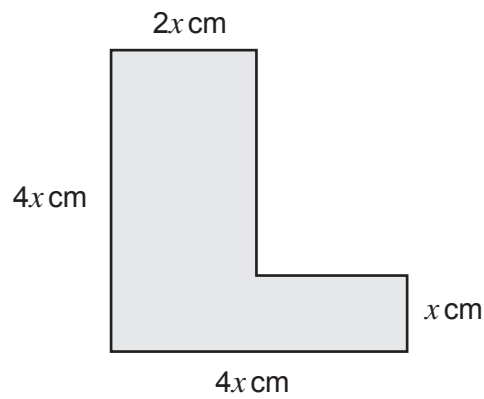
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Answer degrees (4 marks)

2 The perimeter of this L-shape is 56 cm.



Not drawn accurately

Set up and solve an equation to work out the value of x .

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$x =$ (4 marks)

- 3 Suki has four parcels.
Each parcel weighs x kg
Suki weighs 57.6 kg

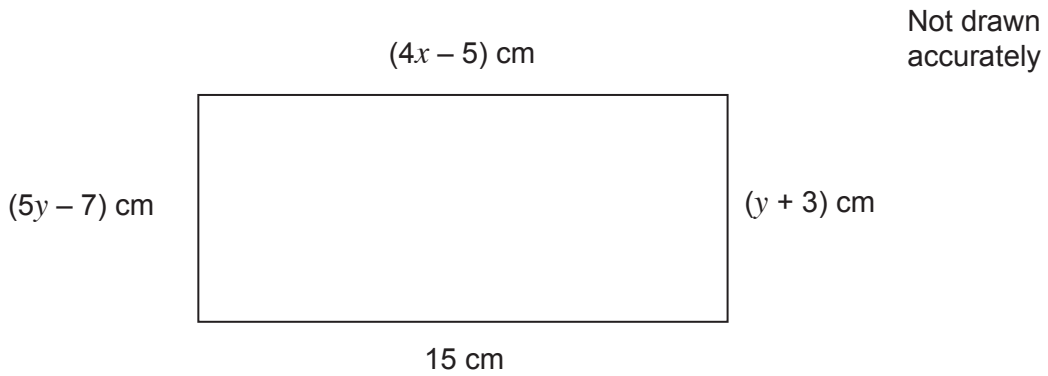
Suki and the four parcels weigh a total of 67.2 kg

Set up and solve an equation to work out the value of x .

[3 marks]

$x =$ _____

- 4 The diagram shows a rectangle.



Set up and solve an equation to work out the value of x .

[3 marks]

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$x =$

5 A sequence increases by 5 each time.
The first term is x .

5 (a) Write down an expression for the second term.

Answer (1 mark)

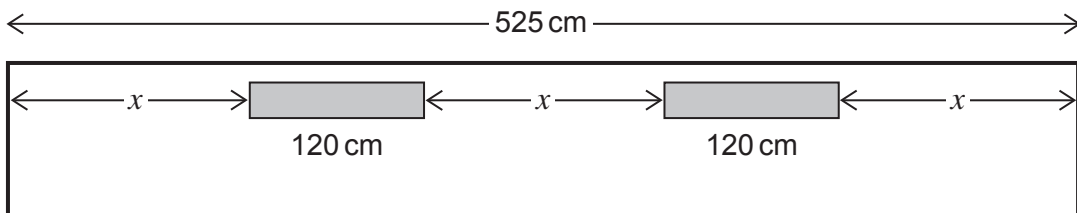
5 (b) The sum of the first four terms is 54.

Set up and solve an equation to work out the value of x .

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$x =$ (4 marks)

*6 A wall is 525 centimetres long.
Two radiators, each 120 centimetres long, are fitted to the wall as shown.



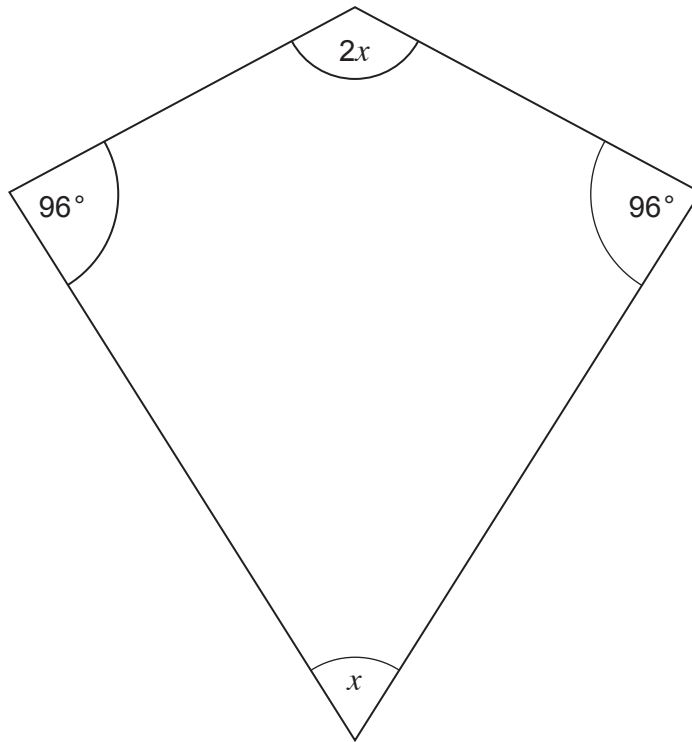
Not drawn accurately

Set up and solve an equation to find the value of x .

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Answer $x =$ cm (4 marks)

7 Here is a metal badge in the shape of a kite.



Not drawn accurately

Set up and solve an equation to work out the value of x

[3 marks]

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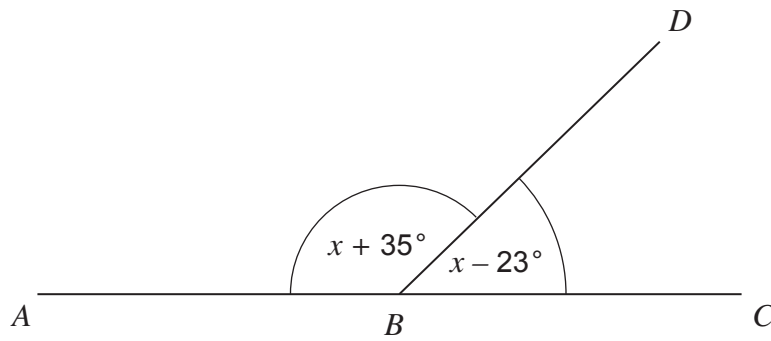
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$x =$

8

ABC is a straight line.



Not drawn accurately

8 (a) How much bigger is angle ABD than angle CBD ?

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Answer degrees (2 marks)

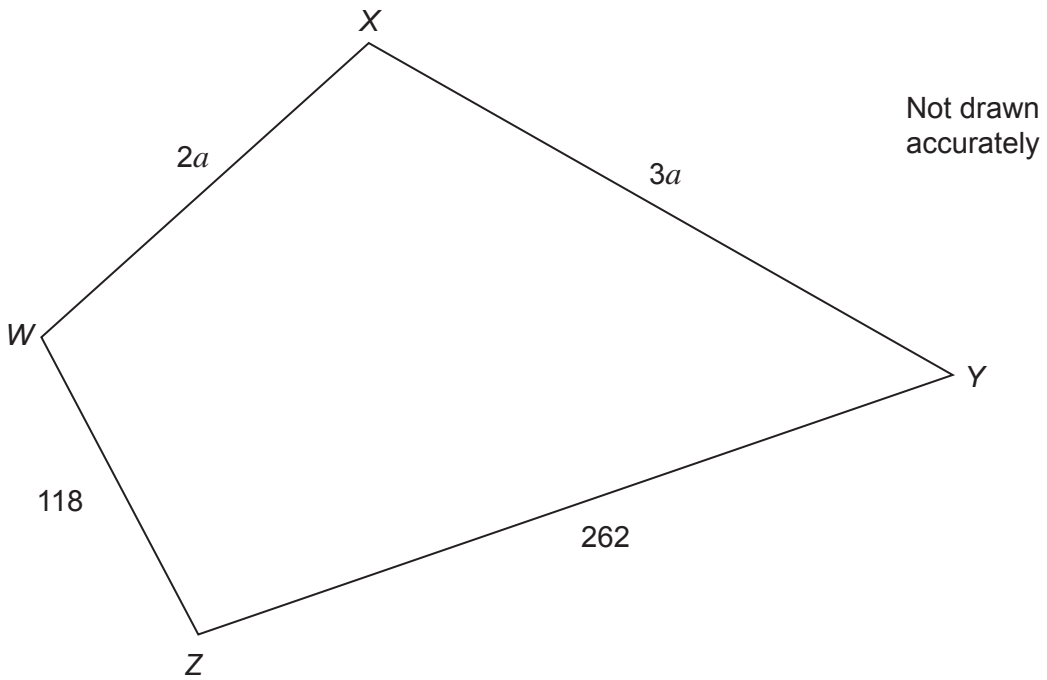
*8 (b) Set up and solve an equation to work out the size of angle ABD .

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Answer degrees (4 marks)

*9

Four straight paths with distances, in metres, are shown.



Amir walks along paths WX and XY .
Cath walks along paths WZ and ZY .
They both walk the same distance.

Set up and solve an equation to find the value of a .

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$a =$ (4 marks)

10 The length of a rectangle is x cm

The width of the rectangle is 3 cm **less** than the length.

10 (a) Write down an expression for the width of the rectangle in terms of x .

[1 mark]

Answer cm

***10 (b)** The perimeter of the rectangle is 40 cm

Set up and solve an equation to work out the length of the rectangle.

[4 marks]

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Answer cm

***11** Three sisters do a sponsored swim.

11 (a) Altogether they swim a total of 575 metres divided in the ratio of their ages.

Chloe is 10 years old.
Danni is 8 years old.
Ella is 5 years old.

Work out the distance Ella swims.

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Answer m (3 marks)

11 (b) The three sisters collect their sponsor money.

Chloe collects £5 more than Ella.
Danni collects twice as much as Chloe.

The total collected is £65.

Set up and solve an equation to work out the amount Ella collects.

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Answer £ (5 marks)

12 Pam has 80 beads.
Ellie has 44 beads.

Ellie gives x beads to Pam.

12 (a) How many beads do Pam and Ellie now have?
Tick a box.

[1 mark]

Pam has $(80 + x)$ beads
Ellie has $(44 + x)$ beads

Pam has $(80 + x)$ beads
Ellie has $(44 - x)$ beads

Pam has $(80 - x)$ beads
Ellie has $(44 + x)$ beads

Pam has $(80 - x)$ beads
Ellie has $(44 - x)$ beads

***12 (b)** Pam now has three times as many beads as Ellie.

Set up and solve an equation to work out how many beads Ellie gives to Pam.

[4 marks]

Answer _____

*13 Andrew, Nigel and Sam are picking oranges.

Andrew picks x oranges.

Nigel picks $2x$ oranges.

Sam picks 12 oranges more than Andrew.

Altogether they pick 84 oranges.

Set up and solve an equation to find the number of oranges Sam picks.

[5 marks]

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Answer

14 Mr and Mrs Bell have twin daughters and a son.

Mr Bell is four years older than Mrs Bell.
Mrs Bell is three times older than their twin daughters.
The twin daughters are seven years older than the son.

The sum of the five ages is 150.

Let x be the age of the twin daughters.

Set up and solve an equation to work out the age of the twin daughters.

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Answer $x =$ (4 marks)

***15**

In a school election there are three candidates, Amir, Beth and Carla.

Amir gets x votes.

Beth gets $2x$ votes.

Carla gets 40 votes fewer than Beth.

500 pupils vote in the election.

Set up and solve an equation to work out how many votes Beth gets.

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Answer (5 marks)

16 Dwayne Pipes uses this formula to work out the cost of a plumbing job in pounds.

$$\text{Cost of job} = 35 \times \text{number of hours} + 40$$

Ivor Wrench uses this formula to work out the cost of a plumbing job in pounds.

$$\text{Cost of job} = 40 \times \text{number of hours} + 17.5$$

A job of x hours costs the same with Dwayne and Ivor.

Set up and solve an equation to work out x .

[4 marks]

$$x = \underline{\hspace{10cm}}$$

*17

Grace wants to hire a taxi from home to the railway station. She normally uses Ace Taxis or Best Cars.

	Fixed charge	Rate per kilometre
Ace Taxis	£2.20	£1.60
Best Cars	£4.00	£1.40

Here is an advert for a new taxi firm, Cozycabs.

<p style="text-align: center;">Cozycabs</p> <p style="text-align: center;">No fixed charge £1.70 per kilometre</p>

The cost of this journey is the same using Ace Taxis and Best Cars. Let the distance from home to the railway station be x kilometres.

Use this information to set up and solve an equation in x .

Decide whether it is cheaper for Grace to hire a taxi from Cozycabs for the journey.

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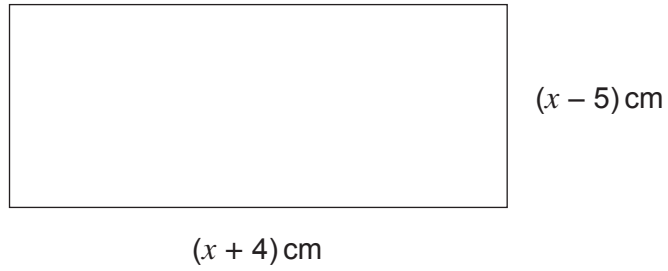
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(6 marks)

18 The diagram shows a rectangle.



The area of the rectangle is 90 cm^2 .

Set up and solve a quadratic equation to work out the value of x .

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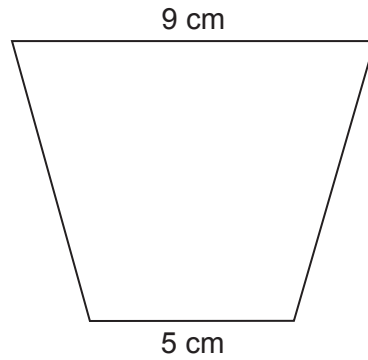
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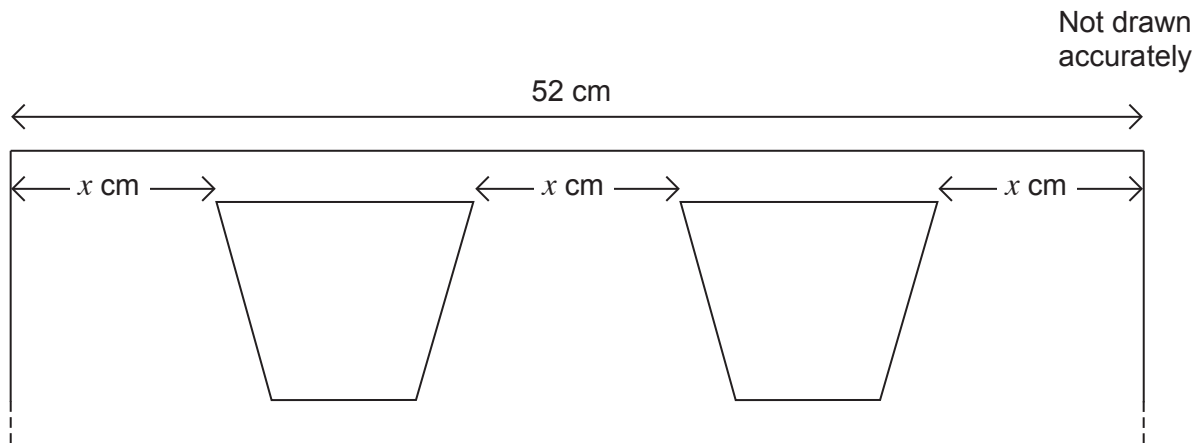
$x =$ cm (5 marks)

19 A designer uses this trapezium to make patterns.



Not drawn accurately

*19 (a) The diagram shows part of a rectangular sheet of wallpaper. The top edges of the two trapeziums are parallel to the top of the wallpaper. The two trapeziums are equally spaced across the wallpaper.



Not drawn accurately

Set up and solve an equation to find the value of x .

[4 marks]

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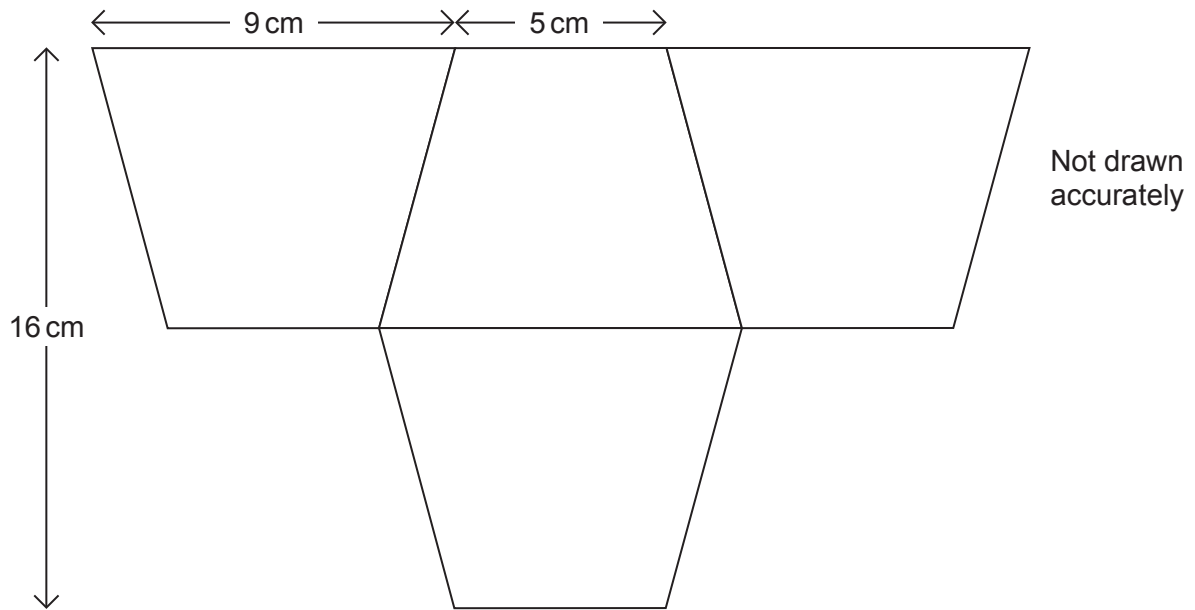
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$x =$

- 19 (b) Four of the trapeziums are put together to make a different pattern. The trapeziums do **not** overlap.



Work out the area of this pattern.

[3 marks]

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Answer cm^2