Name: SOLUTIONS

GCSE (1 - 9)

Forming and Solving Equations

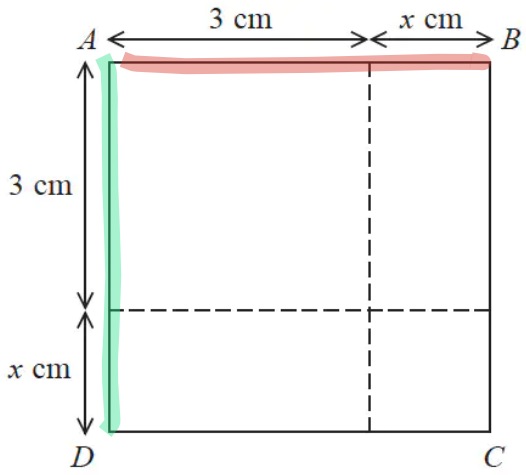
Buy me a coffee

Solutions by
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These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***Summer 2023*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk

Question	Where the question appeared
1	Edexcel, GCSE, Summer 2017, Paper 1F, Q24
2	Edexcel, GCSE, Summer 2017, Paper 2F, Q9
3	Edexcel, GCSE, Summer 2017, Paper 3F, Q13
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1



The area of square $ABCD$ is $10\ cm^2$.

Show that $x^2 + 6x = 1$

Area $= (x+3)(x+3) = x^2 + 6x + 9$

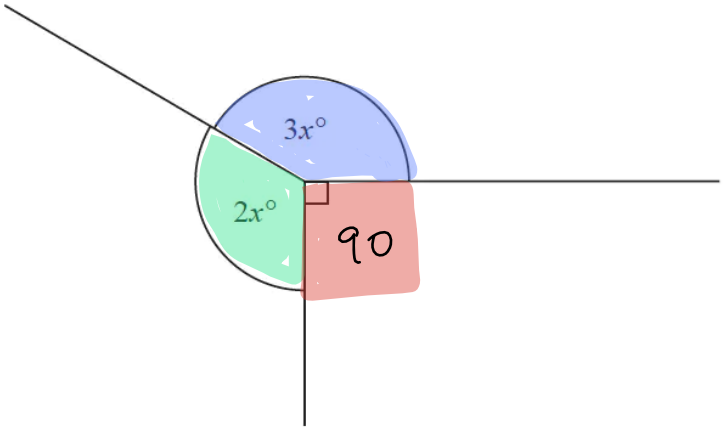
$x^2 + 6x + 9 = 10$

$x^2 + 6x = 1$

(Total for Question 24 is 3 marks)

[Edexcel, GCSE, Summer 2017, Paper 1F, Q24]

2



Angles around a point sum to 360°

Find the value of x.

$2x + 3x + 90 = 360$

$5x + 90 = 360$

$5x = 270$

$x = \frac{270}{5}$

$x = 54$

$x = 54°$

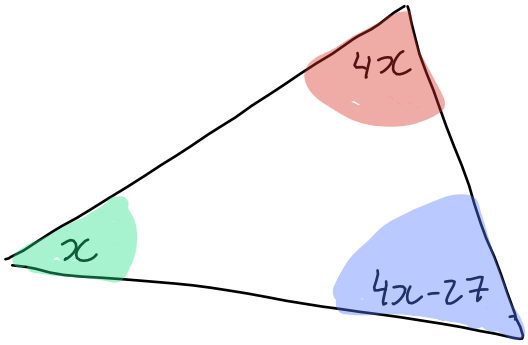
(Total for Question 9 is 3 marks)

[Edexcel, GCSE, Summer 2017, Paper 2F, Q9]

3

The size of the largest angle in a triangle is 4 times the size of the smallest angle.
The other angle is 27° less than the largest angle.

Work out, in degrees, the size of each angle in the triangle.
You must show your working.



$x + 4x + 4x - 27 = 180$

$9x - 27 = 180$

$9x = 207$

$x = \frac{207}{9}$

$x = 23$

Angles in a triangle sum to 180°

23 °, 92 °, 65 °

(Total for Question 13 is 5 marks)

[Edexcel, GCSE, Summer 2017, Paper 3F, Q13]

4

Kiaria is 7 years older than Jay.
Martha is twice as old as Kiaria.
The sum of their three ages is 77

Find the ratio of Jay's age to Kiaria's age to Martha's age.

Jay = x

Kiaria = $x + 7$

Martha = $2(x+7) = 2x+14$

$x + x+7 + 2x+14 = 77$

$4x + 21 = 77$

$4x = 56$

$x = \frac{56}{4}$

$x = 14$

Jay = 14
Kiara = 21
Martha = 42

14 : 21 : 42

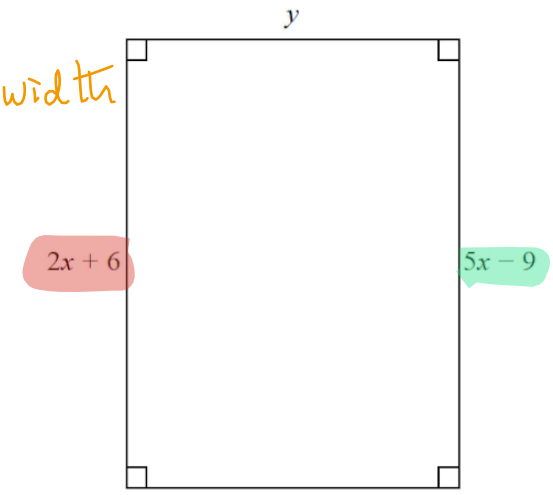
2 : 3 : 6

(Total for Question 24 is 4 marks)

[Edexcel, GCSE, Autumn 2017, Paper 1F, Q24]

5 Here is a rectangle.

opposite sides are equal in length.



Area = length x width

$5x - 9 = 2x + 6$

$3x - 9 = 6$

$3x = 15$

$x = 5$

All measurements are in centimetres.

The area of the rectangle is 48 cm^2.

Show that $y = 3$

$2(5) + 6 = 16$

Area $= 16 \times y = 48$

$16y = 48$

$y = \frac{48}{16}$

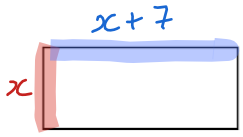
$y = 3$

(Total for Question 28 is 4 marks)

[Edexcel, GCSE, Autumn 2017, Paper 1F, Q28]

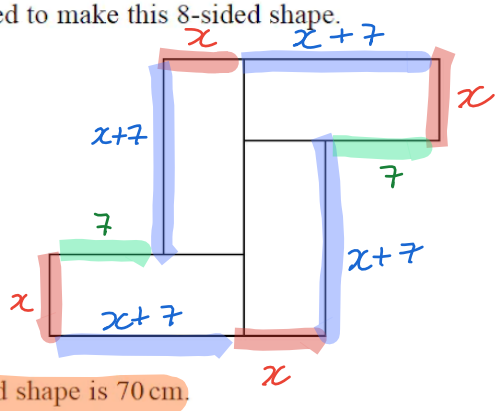
6

Here is a rectangle.



The length of the rectangle is 7 cm longer than the width of the rectangle.

4 of these rectangles are used to make this 8-sided shape.



The perimeter of the 8-sided shape is 70 cm.

Work out the area of the 8-sided shape.

$4 \times (x+7) + 4 \times (x) + 7 + 7 = 4x + 28 + 4x + 14$

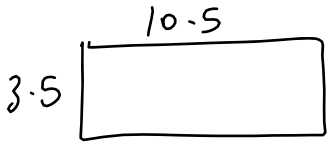
Perimeter $= 8x + 42$

$8x + 42 = 70$

$8x = 28$

$x = \frac{28}{8}$

$x = 3.5$



Area $= 3.5 \times 10.5$

$= 36.75$

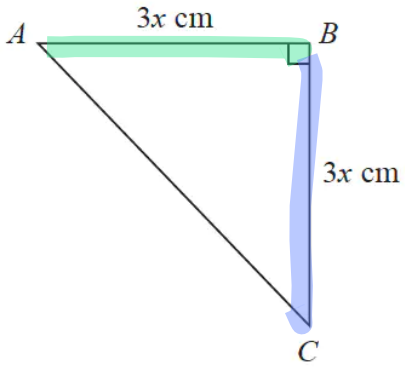
$36.75 \times 4 = 147$ cm²

(Total for Question 24 is 5 marks)

[Edexcel, GCSE, Autumn 2017, Paper 3F, Q24]

7

ABC is an isosceles right-angled triangle.



The area of the triangle is $162\,\text{cm}^2$

Work out the value of x.

$$\frac{(3x)(3x)}{2} = 162$$

$$\frac{9x^2}{2} = 162$$

$$9x^2 = 324$$

$$x^2 = \frac{324}{9}$$

$$x^2 = 36$$

$$x = 6$$

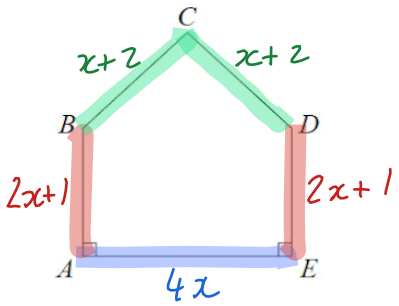
$x =$ 6

(Total for Question 17 is 3 marks)

[Edexcel, GCSE, Summer 2018, Paper 3F, Q17]

8

The diagram shows a pentagon.
The pentagon has one line of symmetry.



$AE = 4x$
$AB = 2x + 1 = DE$
$BC = x + 2 = DE$

$4x + 2x+1 + 2x+1 + x+2 + x+2$

All these measurements are given in centimetres.

The perimeter of the pentagon is 18 cm.

Perimeter $= 10x + 6$

(a) Show that $10x + 6 = 18$

$10x + 6 = 18$

(3)

(b) Find the value of x.

$10x + 6 = 18$

$10x = 12$

$x = \frac{12}{10}$

$x = 1.2$

$x =$ 1.2

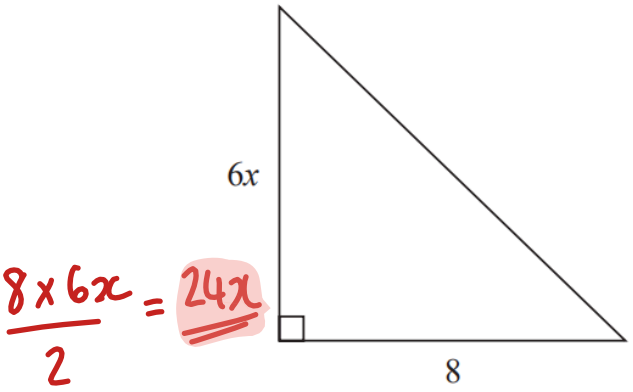
(2)

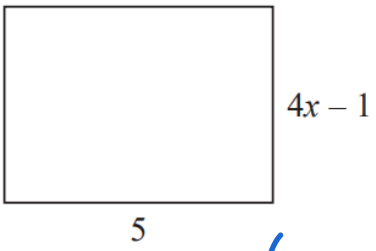
(Total for Question 17 is 5 marks)

[Edexcel, GCSE, Autumn 2018, Paper 3F, Q17]

9

Here is a triangle and a rectangle.





$\frac{8 \times 6x}{2} = 24x$

$5(4x-1) = 20x-5$

All measurements are in centimetres.

The area of the triangle is $10\,cm^2$ greater than the area of the rectangle.

Work out the value of x.

$24x = 20x - 5 + 10$

$24x = 20x + 5$

$4x = 5$

$x = \frac{5}{4}$

$x = 1.25$

$x =$ 1.25

(Total for Question 24 is 4 marks)

[Edexcel, GCSE, Summer 2023, Paper 2F, Q24]

10

Gabriel thinks of a number. x

He multiplies his number by 5 and then adds 7
His answer is 72

What number did Gabriel think of?

$5x + 7 = 72$

$5x = 65$

$x = 13$

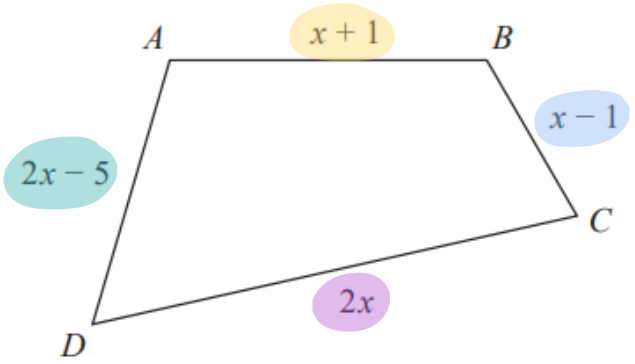
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(Total for Question 11 is 3 marks)

[Edexcel, GCSE, Summer 2023, Paper 3F, Q11]

11

Here is a quadrilateral $ABCD$.



All the measurements are in centimetres.

The perimeter of $ABCD$ is 52 centimetres.

Work out the length of DC.

$2x - 5$

$x + 1$

$x - 1$

$+ 2x$

$6x - 5 = 52$

$6x - 5 = 52$

$6x = 57$

$x = \frac{57}{6}$

$x = 9.5$

$DC = 2x$

$= 2 \times 9.5$

$= 18$

..... centimetres

(Total for Question 16 is 4 marks)

[Edexcel, GCSE, November 2022, Paper 1F, Q16]