Name: SOLUTIONS

GCSE (1 - 9)

Linear Equations

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Solutions by
Kenneth Stafford
MATHS TUTOR
ken@kennethstafford.co.uk

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

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1	Edexcel, GCSE, Summer 2017, Paper 1F, Q3	15	Edexcel, GCSE, Autumn 2020, Paper 3F, Q14
2	Edexcel, GCSE, Summer 2017, Paper 1F, Q19	16	Edexcel, GCSE, Autumn 2021, Paper 3F, Q25
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4	Edexcel, GCSE, Autumn 2017, Paper 2F, Q16	18	Edexcel, GCSE, Autumn 2021, Paper 1F, Q16
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Linear Equations (Questions from Edexcel GCSE Past Papers)

1

(a) Simplify $7 \times e \times f \times 8$

$56ef$

(1)

(b) Solve $\frac{x}{5} = 2\frac{1}{2}$

$x = 5 \times 2\frac{1}{2}$

$x = 12.5$

$x =$ 12.5

(1)

(Total for Question 3 is 2 marks)

[Edexcel, GCSE, Summer 2017, Paper 1F, Q3]

2

(a) Solve $4(x - 5) = 18$

$4x - 20 = 18$

$4x = 38$

$x = \frac{38}{4}$

$x = 9.5$

$x =$ 9.5

(2)

$-3 < t \leqslant 2$

t is an integer.

(b) Write down all the possible values of t.

$-2, -1, 0, 1, 2$

(2)

(Total for Question 19 is 4 marks)

[Edexcel, GCSE, Summer 2017, Paper 1F, Q19]

3

Solve $\frac{y}{4} = 10.5$

$y = 4 \times 10.5$

$y =$ 42

(Total for Question 3 is 1 mark)

[Edexcel, GCSE, Autumn 2017, Paper 1F, Q3]

4

Solve $5x - 6 = 3(x - 1)$

$5x - 6 = 3x - 3$

$2x - 6 = -3$

$2x = 3$

$x = 1.5$

$x =$ 1.5

(Total for Question 16 is 3 marks)

[Edexcel, GCSE, Autumn 2017, Paper 2F, Q16]

5

$P = 4x + 3y$

$x = 5$
$y = -2$

(a) Work out the value of P.

$P = 4(5) + 3(-2) = 20 - 6 = 14$

14

(2)

(b) Expand $4e(e + 2)$

$4e^2 + 8e$

(2)

(c) Solve $3(m - 4) = 21$

$3m - 12 = 21$

$3m = 33$

$m = \frac{33}{3}$

$m =$ 11

(2)

(Total for Question 16 is 6 marks)

[Edexcel, GCSE, Summer 2018, Paper 1F, Q16]

6

(a) Solve $x + x + x = 51$

$3x = 51$

$x = \frac{51}{3} = 17$

$x =$ 17

(1)

(b) Solve $\frac{y}{4} = 3$

$y = 4 \times 3$

$y = 12$

$y =$ 12

(1)

(c) Solve $2f + 7 = 18$

$2f = 11$

$f = \frac{11}{2}$

$f = 5.5$

$f =$ 5.5

(1)

(Total for Question 11 is 3 marks)

[Edexcel, GCSE, Summer 2018, Paper 2F, Q11]

7

Solve $\frac{5-x}{2} = 2x - 7$

$5 - x = 2(2x - 7)$

$5 - x = 4x - 14$

$5 = 5x - 14$

$19 = 5x$

$\frac{19}{5} = x$

$x =$ 3·8

(Total for Question 25 is 3 marks)

[Edexcel, GCSE, Summer 2018, Paper 3F, Q25]

8

(a) Solve $3(x - 4) = 12$

$3x - 12 = 12$

$3x = 24$

$x = \frac{24}{3}$

$x = 8$

$x =$ 8

(2)

(b) Factorise fully $9b - 3b^2$

$3b(3 - b)$

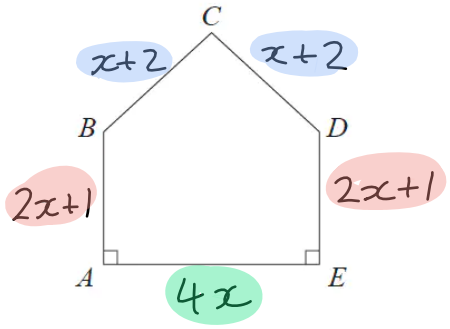
(2)

(Total for Question 19 is 4 marks)

[Edexcel, GCSE, Autumn 2018, Paper 2F, Q19]

9

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



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

All these measurements are given in centimetres.

The perimeter of the pentagon is 18 cm.

$P = 4x + 2x+1 + 2x+1 + x+2 + x+2$

$P = 10x + 6$

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

$10x + 6 = 18$

(3)

(b) Find the value of x.

$10x + 6 = 18$

$10x = 12$

$x = \frac{12}{10} = 1.2$

$x =$ 1.2

(2)

(Total for Question 17 is 5 marks)

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

10

(a) Solve $t + t + t = 12$

$3t = 12$

$t = \frac{12}{3}$

$t = 4$

$t =$ 4

(1)

(b) Solve $x - 2 = 6$

$x = 6 + 2$

$x = 8$

$x =$ 8

(1)

(c) Solve $6w + 2 = 20$

$6w = 20 - 2$

$6w = 18$

$w = \frac{18}{6}$

$w = 3$

$w =$ 3

(2)

(Total for Question 10 is 4 marks)

[Edexcel, GCSE, Summer 2019, Paper 1F, Q10]

11

$x - 1 = 2$

Work out the value of $2x^2$

$x - 1 = 2$

$x = 2 + 1$

$x = 3$

$2(3)^2 = 2 \times 27$

$= 54$

54

(Total for Question 17 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 1F, Q17]

12

Solve $4(x - 6) = 44$

$4x - 24 = 44$

$4x = 44 + 24$

$4x = 68$

$x = 17$

$x =$ 17

(Total for Question 19 is 2 marks)

[Edexcel, GCSE, Autumn 2019, Paper 3F, Q19]

13

(a) Expand $x(x - 4)$

$x^2 - 4x$

$x^2 - 4x$

(1)

(b) Factorise $15y - 10$

$5(3y - 2)$

(1)

(c) Solve $7(f - 5) = 28$

$\div 7$ $\div 7$

$f - 5 = 4$

$f = 4 + 5$

$f = 9$

$f =$ 9

(2)

(Total for Question 19 is 4 marks)

[Edexcel, GCSE, Autumn 2020, Paper 1F, Q19]

14

(a) Solve $3m = 36$

$m = \frac{36}{3}$

$m = 12$

$m =$ 12

(1)

(b) Solve $7 - x = 3$

$+x \quad +x$

$7 = x + 3$

$7 - 3 = x$

$4 = x$

$x =$ 4

(1)

(Total for Question 10 is 2 marks)

[Edexcel, GCSE, Autumn 2020, Paper 2F, Q10]

15

(a) Simplify $3x + 5y + 2x - 4y$

$5x + y$

$5x + y$

(2)

(b) Solve $5p + 7 = 22$

$5p = 22 - 7$

$5p = 15$

$p = \frac{15}{5}$

$p = 3$

$p =$ 3

(2)

(Total for Question 14 is 4 marks)

[Edexcel, GCSE, Autumn 2020, Paper 3F, Q14]

16

add on the previous term

The first four terms of a Fibonacci sequence are

a $\quad 2a \xrightarrow{+a} 3a \xrightarrow{+2a} 5a \xrightarrow{+3a} 8a$

The sum of the first five terms of this sequence is 228

Work out the value of a.

$a + 2a + 3a + 5a + 8a = 19a$

$19a = 228$

$\div 19$ $\quad a = 12$ $\quad \div 19$

12

(Total for Question 25 is 3 marks)

[Edexcel, GCSE, Autumn 2021, Paper 3F, Q25]

17

(a) Expand $y(y + 5)$

$y^2 + 5y$

$y^2 + 5y$

(1)

(b) Factorise $4a - 6$

$= 2(2a - 3)$

$2(2a - 3)$

(1)

(c) Solve $2(5x - 4) = 21$

$10x - 8 = 21$

$10x = 29$ ÷10

$x = 2.9$ ÷10

$x = 2.9$

(3)

(d) Simplify $4e^2f \times 5ef^3$

$= 20e^3f^4$

$20e^3f^4$

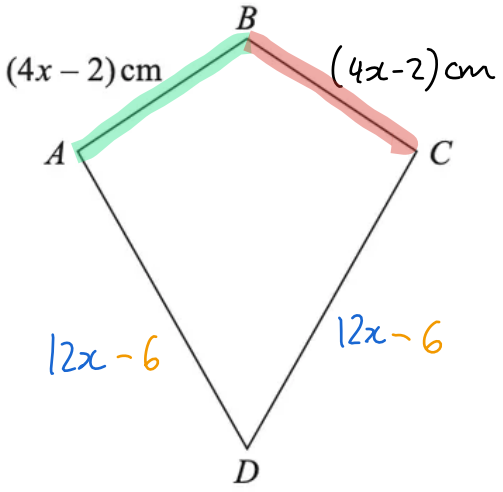
(2)

(Total for Question 17 is 7 marks)

[Edexcel, GCSE, Autumn 2021, Paper 3F, Q17]

18

ABCD is a kite.



$AB = (4x - 2)$ cm $= BC$

Jasper says that x could be 0.5

(a) Explain why Jasper cannot be correct.

If $x = 0.5$ $\quad 4 \times 0.5 - 2 = 0$ $\quad$ AB would then be zero.

Which isn't possible.

(1)

$AD = 3AB$

The kite has a perimeter of 64 cm.

(b) Find the value of x.

$AD = 3(4x - 2) = 12x - 6$

$$P = (4x - 2) + (4x - 2) + (12x - 6) + (12x - 6) = 32x - 16$$

$$32x - 16 = 64$$
$$32x = 80$$
$$x = \frac{80}{32} = 2.5$$

$x =$ 2.5

(3)

(Total for Question 16 is 4 marks)

[Edexcel, GCSE, Autumn 2021, Paper 1F, Q16]

19

(a) Expand $2(a + d)$

$2a + 2d$

$2a + 2d$

(1)

(b) Factorise $6y^2 - 5y$

$y(6y - 5)$

$y(6y - 5)$

(1)

(c) Solve $4x - 7 = 37$

$4x - 7 = 37$

$4x = 44$

$x = 11$

$x = 11$

(2)

(Total for Question 15 is 4 marks)

[Edexcel, GCSE, Autumn 2021, Paper 1F, Q15]

20

(a) Expand $3(4 - 2x)$

$12 - 6x$

(1)

(b) Solve $\frac{3y}{4} = 12$

$3y = 4 \times 12$

$3y = 48$

$y = \frac{48}{3}$

$y =$ 16

(2)

(c) Factorise $4p + 6$

$2(2p + 3)$

(1)

(Total for Question 17 is 4 marks)

[Edexcel, GCSE, Summer 2022, Paper 2F, Q17]

21

Solve $p - 2 = 3$

$p = 3 + 2$

$p =$ 5

(Total for Question 5 is 1 mark)

[Edexcel, GCSE, Summer 2023, Paper 1F, Q5]

22

Solve $4(2x - 3) = 20$

$8x - 12 = 20$

$8x = 32$

$x = 4$

$x =$ 4

(Total for Question 18 is 3 marks)

[Edexcel, GCSE, Summer 2023, Paper 3F, Q18]

23

(a) Solve $m - 3 = 4$

$m =$ $4+3=7$

(1)

(b) Solve $3n + n = 24$

$4n = 24$

$n = \frac{24}{4}$

$n =$ 6

(2)

(Total for Question 8 is 3 marks)

[Edexcel, GCSE, November 2022, Paper 1F, Q8]

24

(a) Simplify $4c + 7d + 3c - d$

$7c + 6d$

(2)

(b) Solve $5(2m - 6) = 40$

$10m - 30 = 40$

$10m = 70$

$m = 7$

$m =$ 7

(3)

There are x sweets in a box.

There are y sweets in a packet.

(c) Write an expression, in terms of x and y, for the total number of sweets in 3 boxes and 2 packets.

$3x + 2y$

(2)

(Total for Question 14 is 7 marks)

[Edexcel, GCSE, November 2022, Paper 2F, Q14]