## Linear Equations

# GCSE MATHS

**Name: _____**

**Teacher: _____**

**Learning objectives**

**By the end this pack you will be able to:**

1) Solve equations with variables on one side

2) Solve equations with brackets

3) Solve equations with variables on both sides

4) Solve equations with negative coefficients

5) Use equations to solve problems

# How much can you do???

| 1)  3n + 4 = 19 | 2)  4n + 5 = 13 | 3)  4n - 3 = 25 |
| --- | --- | --- |
| 4)  2n + 6 = 18 | 5)  3n - 2 = 16 | 6)  5n + 4 = 34 |
| 7)  3n + 7 = 19 | 8)  5n - 6 = 14 | 9)  3n - 3 = 21 |
| 10)   3n + 2 = 17 | 11)   4n + 6 = 14 | 12)  6n + 5 = 41 |
| 13)   5n - 3 = 7 | 14)   3n - 4 = 11 | 15)   7n + 3 = 24 |

# Algebra– Grade E - Solve Equations GCSE Questions

**1.** Solve.

(a)  $2x - 3 = 2$

...................................

[2]

(b)  $15 = 4x + 3$

...................................

[2]

**2.** Solve.

(a)  $2x = 15$

...................................

[1]

(b)  $15 = 6 + x$

...................................

[1]

(c)  $4x - 7 = 13$

...................................

[2]

**3.** Solve.

(a) $\dfrac{x}{5} = 12$

.....................................
[1]

(b) $2x + 7 = 19$

.....................................
[2]

**4.** Solve.

(i) $2 = p - 8$

...............................
[1]

(ii) $20y + 1 = 11$

...............................
[2]

## Algebra– Grade E - Solve Equations GCSE Questions - Homework

**1.** Solve.

(a) $9 = x - 6$

...................................

[1]

(b) $4x = 20$

...................................

[1]

(c) $2x - 7 = 8$

...................................

[2]

**2.** Solve.

(a) $11 = x + 3$

...................................

[1]

(b) $5x = 60$

...................................

[1]

# Solving Grade D Equations - How much can you do

| | | |
|---|---|---|
| 1) $7n + 3 = 3n + 27$ | 2) $7n + 5 = 5n + 25$ | 3) $10n + 2 = 7n + 14$ |
| 4) $5n + 4 = 2n + 22$ | 5) $6n + 8 = 2n + 36$ | 6) $7n - 3 = 4n + 12$ |
| 7) $5n - 2 = n + 10$ | 8) $9n - 7 = 5n + 13$ | 9) $11n - 9 = 5n + 27$ |
| 10)  $5n - 10 = 3n + 50$ | 11)  $8n - 3 = 2n + 39$ | 12) $9n + 14 = 6n + 29$ |
| 13)  $10n + 17 = 3n + 52$ | 14)  $5n - 16 = n + 20$ | 15)  $3n + 3 = 2n + 8$ |

## Algebra — Solving Equations with x on both sides of equation

1. Solve these equations.
   Show your working.

   ✏️

   $8k - 1 = 17$

   $k$ = ...........................

   $2m + 5 = 10$

   $m$ = ...........................

   $3t + 4 = t + 13$

   $t$ = ...........................

**2.**   **Solving**

(a)   When **x = 5**, work out the values of the expressions below.

   $2x + 13 =$ ........................

   $5x - 5 =$ ........................

   $3 + 6x =$ ........................

2 marks

(b)   When $2y + 11 = 17$, work out the value of $y$
Show your working.

   $y =$ .................

2 marks

(c)   Solve the equation $9y + 3 = 5y + 13$
Show your working.

   $y =$ ................

2 marks

8

3. **Thinking Equations**

   (a) Solve this equation.

   $7 + 5k = 8k + 1$

   $k =$ ......................

   (b) Solve this equation. Show your working.

   $10y + 23 = 4y + 26$

   $y =$ ......................

4. **Solving**

   Solve these equations.

   Show your working.

   (a) $4y = 2y + 13$

   $y =$ . . . . . . . .

(b)     $3y + 10 = 2y + 7$

.$y$ = . . . . . . . .

**5.**   **Solving**

Solve this equation to find the value of $y$

Show your working.

$4y - 3 = 2y + 27$

$y$ = . . . . .

2 marks

**<u>Unit 2 - Solving Equations GCSE Questions - Homework</u>**

**1.** Solve.

$$3x - 4 = x + 5$$

.........................................

[3]

**2.** (a) Solve.

(i) $\dfrac{x}{5} = 15$

...............................

[1]

(ii) $3x + 13 = 2(x + 9)$

...............................

[3]

**3.** Solve.

$$5x - 2 = 3x + 12$$

.......................................

[3]

**4.** Solve.

(a)   $2(2x + 3) = x - 13$

....................................
[3]

(b)   $\dfrac{10 + 2x}{3} = 4$

....................................
[3]

**5.** Solve.

(a)   $\dfrac{9x - 15}{4} = 3$

....................................
[3]

## Algebra Solving Equations GCSE Questions

**1.** Solve $\quad 3(2x - 5) = 2(x - 4)$

........................................

[3]

**2.** Solve.

(a) $\quad \dfrac{x}{5} = 7$

...............................

[3]

(b) $\quad \dfrac{10 + 2x}{3} = 7$

...............................

[3]

(c) $\quad 3(2x + 4) = x - 13$

...............................

[2]

13

**3.** Solve.

(a) $\dfrac{9x - 15}{4} = x$

........................................
[3]

(b) $3(2x - 1) - 2(x - 4) = 19$

........................................
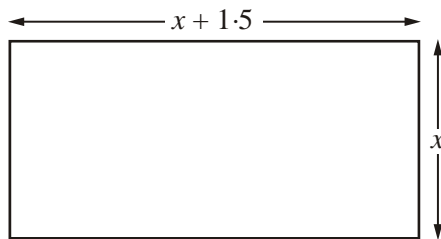[4]

**1.** (a) Solve.

$3x - 4 = x + 5$

.........................................

[3]

(b)



The width of a rectangle is $x$ cm.
The length is 1·5 cm more than the width.
The perimeter of the rectangle is 17 cm.

Write down an equation satisfied by $x$
and solve it to find $x$.

...................................

[4]

15

**2.** (a) Solve.

(i) $\dfrac{x}{5} = 15$

............................

[1]

(ii) $3x + 13 = 2(x + 9)$

............................

[3]

16

**3.** Solve.

$$5x - 2 = 3x + 12$$

.........................................

[3]

**4.** Solve.

(a) $2(2x + 3) = x - 13$

.................................

[3]

(b) $\dfrac{10 + 2x}{3} = 4$

.................................

[3]

17

**5.** Solve.

(a) $\dfrac{9x-15}{4} = 2x + 3$

..................................... 
[3]

(b) $4(2x - 3) = 2(x - 4)$

..................................... 
[3]

## Homework Questions

**Q1.**

(a) Solve $e + e + e + e + e = 45$

.............................................

**(1)**

(b) Solve $18 - x = 13$

.............................................

**(1)**

(c) Solve $2(y - 5) = 24$

.............................................

**(2)**

(d) Factorise $15p + 40$

.............................................

**(1)**

**(Total for Question is 5 marks)**

**Q2.**

(a)  Solve    $5x = 45$

$x =$ ..............................................................

**(1)**

(b)  Solve    $w - 8 = 20$

$w =$ ..............................................................

**(1)**

(c)  Solve    $\dfrac{t}{7} = 5$

$t =$ ..............................................................

**(1)**

(d)  Solve    $4x - 9 = 41$

$x =$ ..............................................................

**(2)**

**(Total for Question is 5 marks)**

**Q3.**

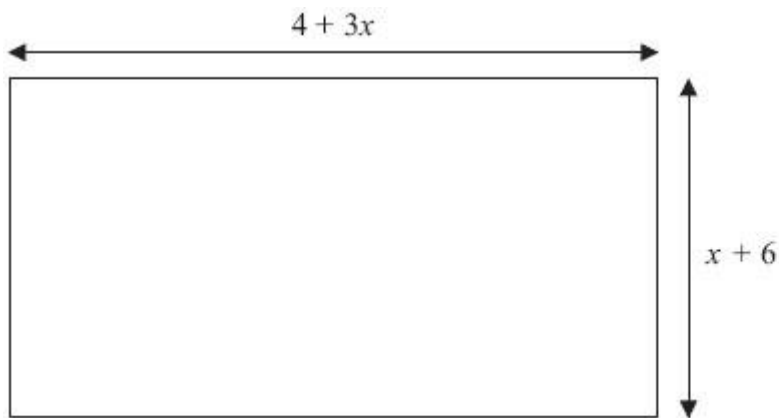The diagram shows a garden in the shape of a rectangle.

$$4 + 3x$$

Diagram **NOT** accurately drawn

$$x + 6$$

All measurements are in metres.
The perimeter of the garden is 32 metres.

Work out the value of $x$

. . . . . . . . . . . . . . . . . . . . .

**(Total for Question is 4 marks)**

**Q4.**

Solve $3(x - 2) = x + 7$

$x = $ . . . . . . . . . . . . . . . . . . . . .

**(Total for Question is 3 marks)**

**Q5.**

(a) Solve $x - 5 = 17$

$x = $ ...........................................................

**(1)**

(b) Solve $\frac{m}{3} = 6$

$m = $ ...........................................................

**(1)**

(c) Solve $5y + 7 = 24$

$y = $ ...........................................................

**(2)**

**(Total for Question is 4 marks)**