

**Year Group:** Year 8  
**Term:** Spring 1  
**Subject:** Mathematics  
**Topic:** Equations & inequalities



*Climbing Higher*

|                                     |   |
|-------------------------------------|---|
| <b>Name:</b> _____                  | <b>Form:</b> _____                        |
| <b>Subject Teacher:</b> _____       | <b>Group (if known):</b> _____            |
| <b>Date given:</b> 4th January 2020 | <b>Date to hand in:</b> 11th January 2020 |

|   |                                       |  |
|---|---------------------------------------|--|
| Level achieved in this Home Learning Booklet: | Effort in this Home Learning Booklet: | Achievement Points this Home Learning Booklet: |
|   | <b>A</b>                              | <b>A for Effort = 3 Achievement Points</b>     |
|   | <b>B</b>                              | <b>B for Effort = 2 Achievement Points</b>     |
|   | <b>C</b>                              | <b>C for Effort = 1 Achievement Points</b>     |
|   | <b>D</b>                              | <b>D for Effort = 0 Achievement Points</b>     |

**Teacher feedback:** Teachers will tick the appropriate boxes and highlight the appropriate terms when giving feedback on the work completed

| WWW (what went well)   | EBI (even better if)  |
|--|---|
| <input type="checkbox"/> I understand what an equation is.   | <input type="checkbox"/> I need to work on knowing what an equation is.   |
| <input type="checkbox"/> I can solve equations.  | <input type="checkbox"/> I need to work on solving equations.   |
| <input type="checkbox"/> I understand what an inequality is.                                       | <input type="checkbox"/> I need to work on knowing what an inequality is.   |
| <input type="checkbox"/> I can find possible integers and represent inequalities on a number line. | <input type="checkbox"/> I need to work on finding integers from inequalities and representing them on a number line. |

**Other Feedback:**

**Student response:**

**Literacy target achieved?** Yes / No / Partly

**Comments:**

## Linear equations

### Equations

$$y = ax + b$$

$$y = 6x + 8$$

$$y = -5x + 4$$

$$y = mx + b$$

1. Write a mathematical definition of an equation.

2. What is the difference between an equation and an expression?

3. Who invented equations?

4. Solve the following equations:

$$6 + x = 9$$

$$x - 6 = 4$$

$$4x = 20$$

$$7x + 3 = 80$$

$$10x - 2 = 108$$

$$\frac{x}{8} + 2 = 1$$

$$\frac{6x+114}{6} = 9$$

$$5x + 15 = 9x + 3$$

## Inequalities

1. Who invented inequalities?

2. What are the different symbols used to represent inequalities?

3. Write a mathematical definition of an integer and give examples.

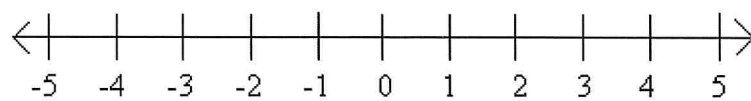
4. What are all the possible integers of  $x$ :

a)  $-5 \leq x < 1$

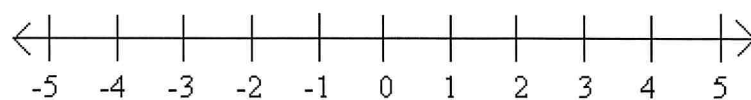
b)  $0 < x < 6$

5. Represent the following inequalities on the number line:

a)  $-1 < x \leq 4$



b)  $-4 \leq x$



6) Design an information poster which shows a step by step guide of how to solve equations.

**You can show examples of equations like:**

1 step equations:

$$x + 8 = 10$$

$$x - 10 = 15$$

2 step equations:

$$4x + 9 = 21$$

$$6x - 7 = 23$$

involving brackets:

$$5(x + 8) = 20$$

$$3(2x - 7) = 42$$

unknowns on both sides:

$$3x + 12 = x - 9$$

$$14 - 2x = 6x - 10$$

involving brackets:

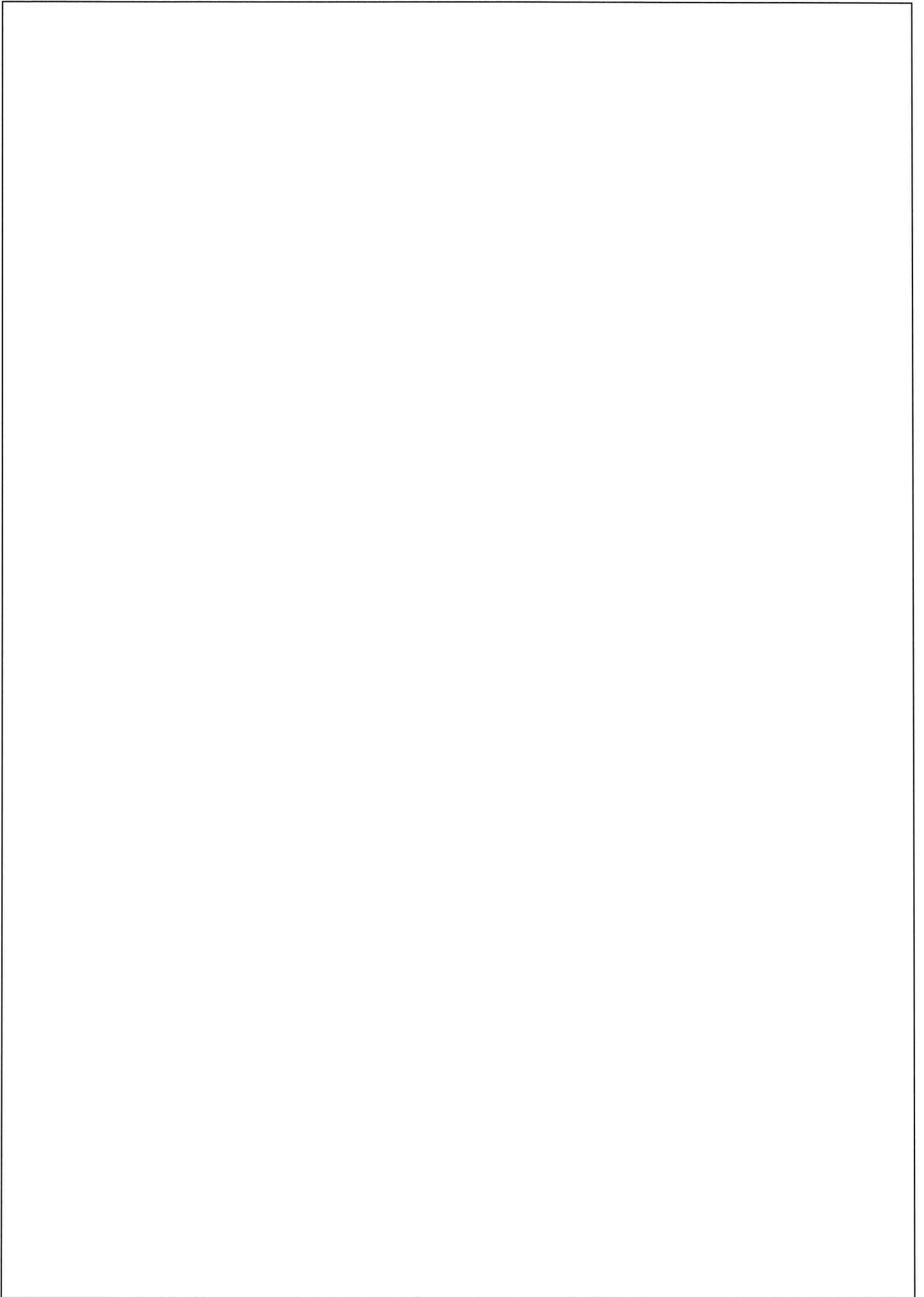
$$7(x + 2) = 3(x + 4)$$

$$5(2x + 10) = 6(x - 2)$$

**Set 1 only:**

On your poster include what a simultaneous equation is and what they mean and an example of how to solve a pair of simultaneous equations.

[NOTE: You will not be able to achieve an effort grade of a A or B without the poster.]



## Revise, revisit and recall

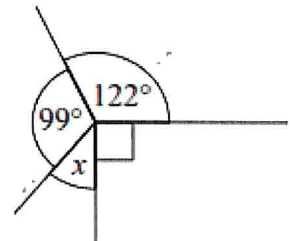
Two packs of toilet rolls are available in the supermarket

9 toilet rolls for £3.15

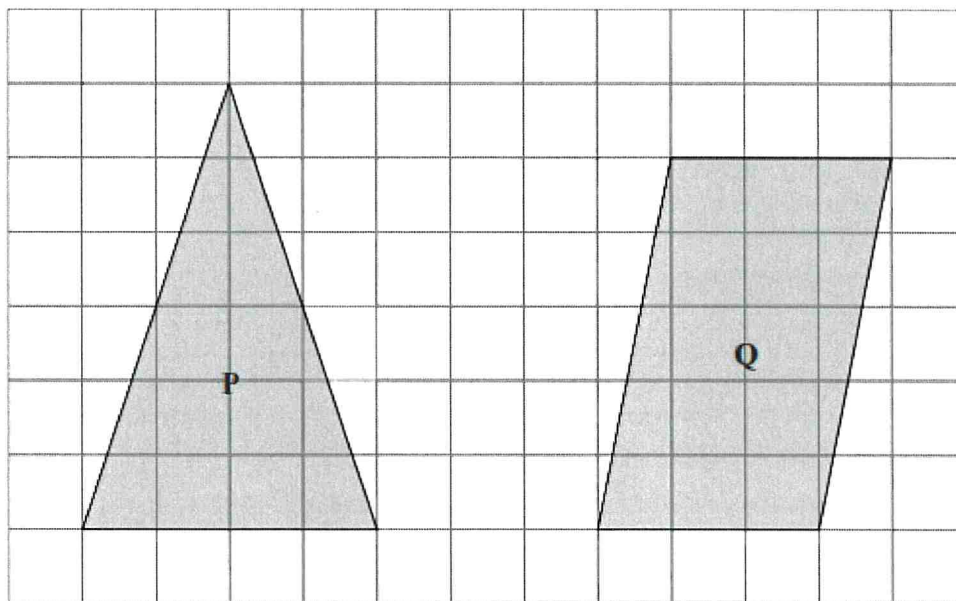
4 toilet rolls for £1.36

Work out which pack offers the best value for money.  
You must show your working.

Find  $x$



The diagram shows two shapes on a centimetre grid.



- Find the area of shape **P**
- Write down the mathematical name for shape **Q**.
- Find the area of shape **Q**.

Work out  $7 \times 2 - 3 \times 4$

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Work out  $(5 + 2)^2$

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Work out  $6 + 15 \div 3$

Write down two multiples of 20

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Write down all the factors of 16

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