

Knowledge Organiser – U3 -Forming and Solving Inequalities

What is an equality?

An inequality shows the relationship between two values
 There are 4 inequalities that you need to learn:
 $<$ means less than $>$ means greater than \leq means less than or equal to \geq means greater than or equal to

How do you solve an inequality?
 An inequality is solved in exactly the same way as an equation
 Always remember to give your answer in full, including the inequality

How do you solve this inequality and show your answer on the number line?

$5x - 6 \leq 14$

$$\begin{array}{r} 5x - 6 \leq 14 \\ +6 \quad +6 \\ \hline 5x \leq 20 \\ \div 5 \quad \div 5 \\ \hline x \leq 4 \end{array}$$

Solve the inequality with the same steps as solving an equation

What do we mean by these?
 $x < 2$ means x is less than 2
 $x \leq 2$ means x is less than or equal to 2
 $x > 2$ means x is greater than 2
 $x \geq 2$ means x is greater than or equal to 2

Write down the steps of your working out to solve the following Inequality:

$4 < 3x + 1 \leq 13$

When there are two inequality signs, you must solve both sides of the inequality to give a range of answers

$$\begin{array}{r} 4 < 3x + 1 \leq 13 \\ -1 \quad -1 \\ \hline 3 < 3x \leq 12 \\ \div 3 \quad \div 3 \\ \hline 1 < x \leq 4 \end{array}$$

Possible values of x : 2, 3, 4

Solve this inequality and represent your answer on a number line:

$3(x - 2) \leq 14 - x$

Expand the bracket

$$\begin{array}{r} 3x - 6 \leq 14 - x \\ +x \quad +x \\ \hline 4x - 6 \leq 14 \\ +6 \quad +6 \\ \hline 4x \leq 20 \\ \div 4 \quad \div 4 \\ \hline x \leq 5 \end{array}$$

How can you find integer values of the x that satisfies both of the following inequalities?

$3x - 4 \leq 11$ and $2x + 3 > 9$

$3x - 4 \leq 11$	$2x + 3 > 9$
$+4 \quad +4$	$-3 \quad -3$
$3x \leq 15$	$2x > 6$
$\div 3 \quad \div 3$	$\div 2 \quad \div 2$
$x \leq 5$	$x > 3$

x ≤ 5 and x > 3 so x can be 4 or 5

Key Words

Inequality
Solve
Inverse
Integer

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 Inequalities on a number line
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