

SIGNS - MEANING

- $<$ less than
 $x < 3$
 x is less than 3
- $>$ more than
 $x > 7$
 x is more than 7
- \leq less than or equal to
 $x \leq 1$
 x is less than or equal to 1.
- \geq more than or equal to
 $x \geq 2$
 x is more than or equal to 2.

SOLVING

- Normal solving but remember to use the inequality symbol!

Solve

$$2x + 1 \leq 7$$

$$-1 \quad -1$$

$$2x \leq 6$$

$$x \leq 3$$

so, x is less than or equal to 3
 so: 3, 2, 1, ...

Double Inequality

$$2 \leq 4x - 6 < 10$$

$$+6 \quad +6$$

$$8 \leq 4x < 16$$

$$\div 4 \quad \div 4$$

$$2 \leq x < 4$$

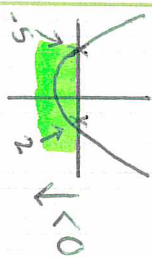
x is less than 4 and more than or equal to 2

$$x = 2 \text{ OR } 3.$$

SATISFYING

- Satisfies means adheres to the rules

- Write down all integers that satisfy $1 \leq x < 7$. 1, 2, 3, 4, 5, 6



- Quadratic inequality
 Solve $x^2 + 3x - 10 < 0$
 Factorise $\rightarrow (x+5)(x-2) < 0$
 solve \rightarrow
 $(x+5)=0 \quad (x-2)=0$
 $x = -5 \quad x = 2$
 Final Answer
 $-5 < x < 2$

- Use a sketch to help decide which signs

INEQUALITIES

$$\leq > = 0$$

$$\leq \geq = 0$$

- x lines are vertical \downarrow
- y lines are horizontal \rightarrow

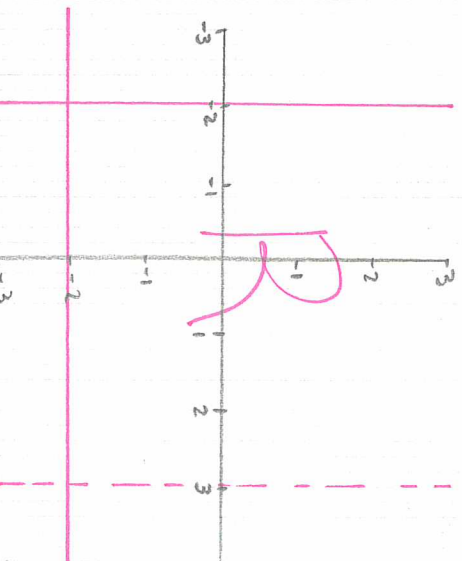
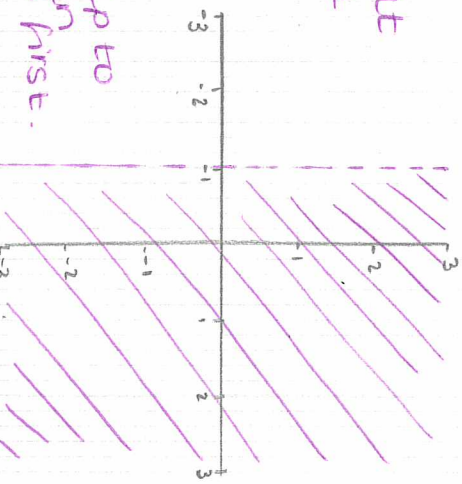
$<$ dotted line
 $>$ dotted line

GRAPHICAL

$\leq \geq$ solid line

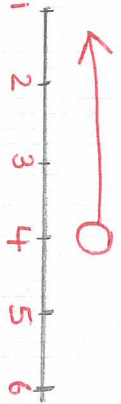
Mark the region that satisfies
 $-2 \leq x < 3$ and $y \geq -2$

Shade the region that satisfies the inequality
 $x > -1$
 x is bigger than -1
 can help to write in words first.



NUMBER LINE

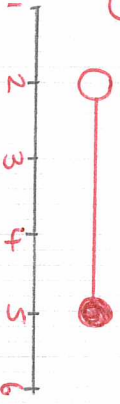
$$x < 4$$



$$y \geq 8$$



$$2 < x \leq 5$$



- single inequality requires arrow
- double inequality is joined.