Set Builder Notation

Recap from GCSE:

* We use curly braces to list the values in a set, e.g. $A=\left\{1,4,6,7\right\}$
* If $A$ and $B$ are sets then $A∩B$ is the **intersection** of $A$ and $B$, giving a set which has the elements in $A$ **and** $B$.
* $A∪B$ is the **union** of $A$ and $B$, giving a set which has the elements in $A$ **or** in $B$.
* $∅$ is the empty set, i.e. the set with nothing in it.
* Sets can also be infinitely large. $N$ is the set of natural numbers (all positive integers), $Z$ is the set of all integers (including negative numbers and 0) and $R$ is the set of all real numbers (including all possible decimals).
* We write $x\in A$ to mean “$x$ is a member of the set A”. So $x\in R$
* ould mean “$x$ is a real number”.

 **Examples:**

Example

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1. $\left\{2x :x\in Z\right\}$

2. $\left\{2^{x} :x\in N\right\}$

3. $\left\{xy: x,y are prime\right\}$

Solving Inequalities

Linear inequalities Examples

2. $ 3\left(x-5\right)\geq 5-2(x-8)$

$2x+1>5$

1.

$$-x\geq 2$$

3.

Combining Inequalities

When combining inequalities always draw a number line to help!

Example

Example:

If $x<3$ and $2\leq x<4$, what is the combined solution set?