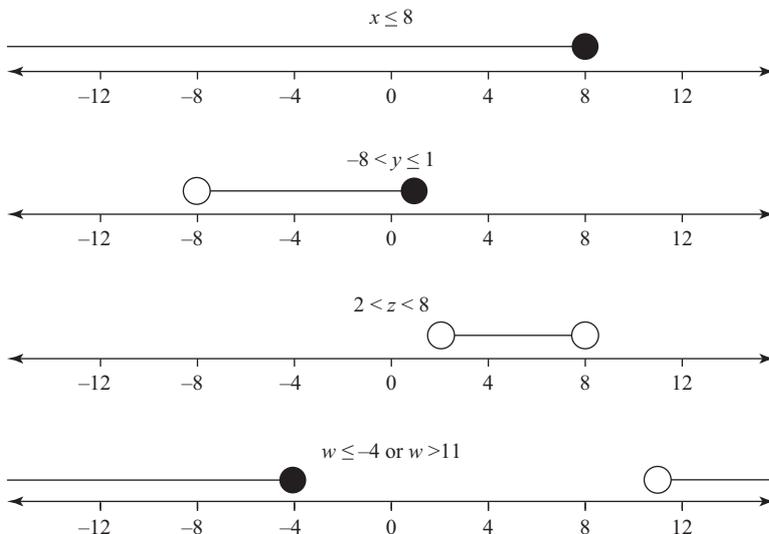


You can express **inequalities** using the symbols $<$ (less than), $>$ (greater than), \leq (less than or equal to) and \geq (greater than or equal to).

You can represent inequalities on a number line.

Key point

For example



On a number line, you use a dot, ●, when representing \leq or \geq , and you use an empty circle, ○, when representing $<$ or $>$

You can also use set notation to represent inequalities.

For example, the last inequality could be represented in any of the following ways.

- $w \in \{w: w \leq -4 \text{ or } w > 11\}$
 w is an element of the set of values that are less than or equal to -4 or greater than 11
- $w \in \{w: w \leq -4\} \cup \{w: w > 11\}$
 w is an element of the union of two sets. This means w is in one set or the other.
- $w \in (-\infty, -4] \cup (11, \infty)$
 w is in the union of two intervals. Square brackets indicate the end value is included in the interval, round brackets indicate that the end value is not included in the interval.

To solve **linear inequalities** you follow the same rules for solving linear equations, but with one exception.

When you multiply or divide an inequality by a negative number, you reverse the inequality sign.

Key point