

# Inequalities and number lines

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Pearson Edexcel GCSE Mathematics 1MA1 • L022

Foundation and Higher • Lesson resources

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## Purpose

Solve linear inequalities and represent solution sets on number lines. Explain endpoint inclusion and order reversal.

## Vocabulary

Inequality: comparison using  $<$ ,  $>$ ,  $\leq$  or  $\geq$ . Endpoint: boundary value. Solution set: all allowed values. Strict: excludes equality. Integer: whole number, possibly negative.

## Why the method works

Adding the same number preserves order. Multiplying by a negative reverses order:  $2 < 5$  becomes  $-2 > -5$ . A solution such as  $x \geq 3$  contains many values. The filled endpoint includes 3; an arrow to the right includes larger values.

## Method and checking

Solve using balanced operations. Reverse the inequality when multiplying or dividing by a negative number. Mark the endpoint and direction, then test one value inside and one outside the set.

## Common errors and next attempt

If only the boundary is reported, ask for two solutions. If  $\leq$  is drawn open, test the endpoint. If negative division is missed, compare  $-2$  and  $-5$ . Recheck  $-2x < 6$  as  $x > -3$ .