

Lines and Angles

CBSE Class 9 Maths · Knowledge organiser



KEY DEFINITIONS

Complementary angles

Two angles that add up to 90° .

Supplementary angles

Two angles that add up to 180° .

Transversal

A line that crosses two or more lines; with parallel lines it makes equal corresponding and alternate angles.

KEY FORMULAS

Linear pair sums to 180° ; vertically opposite angles are equal; reflex angle of θ is $360^\circ - \theta$

Parallel lines: corresponding and alternate angles equal, co-interior angles sum to 180° (and conversely);

$$l \parallel m, m \parallel n \Rightarrow l \parallel n$$

Angle sum 180° ; exterior angle = sum of the two interior opposite angles; at least two angles of a triangle are acute

YOU SHOULD BE ABLE TO...

- Classify angles and use linear pairs, vertically opposite angles and parallel-line angle facts.
- Find unknown angles with reasons and prove the basic theorems on intersecting lines.
- Write complete proofs with parallel lines and the angles of a triangle.
- Argue by contradiction about the angles of a triangle and solve multi-step angle problems.

WORKED EXAMPLE

Lines AB and CD meet at O , and $\angle AOC = 48^\circ$. Find $\angle BOD$, $\angle AOD$ and $\angle BOC$.

$$\angle BOD = 48^\circ \text{ (vertically opposite);}$$

$$\angle AOD = 180^\circ - 48^\circ = 132^\circ \text{ (linear pair); } \angle BOC = 132^\circ \text{ (vertically opposite).}$$

COMMON MISTAKES

- ✗ Calling co-interior angles equal: they are supplementary.
- ✗ Using parallel-line facts when the lines are not given as parallel.
- ✗ Taking the reflex angle of θ as $180^\circ + \theta$ instead of $360^\circ - \theta$.
- ✗ Writing angle facts without the reason in brackets.