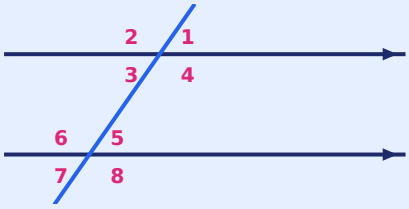
Unit 2 · Angles and Parallel Lines Cheat Sheet

Unit 2 focus: angle pairs and parallel lines cut by a transversal

1 KEY VOCABULARY

transversal	A line that crosses two or more lines.	line t
corresponding	Same position at each intersection.	$\angle 1$, $\angle 5$
alternate interior	Between the lines, opposite sides of t.	$\angle 3$, $\angle 5$
alternate exterior	Outside the lines, opposite sides of t.	$\angle 1$, $\angle 7$
same-side interior	Between the lines, same side of t.	$\angle 4$, $\angle 5$

2 PARALLEL LINES & A TRANSVERSAL



If the lines are parallel…	Angles are
corresponding $\angle 1, \angle 5$	congruent
alternate interior $\angle 3, \angle 5$	congruent
alternate exterior $\angle 1, \angle 7$	congruent
same-side interior $\angle 4, \angle 5$	supplementary (180°)

3 BASIC ANGLE PAIRS

Pair	Rule
complementary	sum 90°
supplementary	sum 180°
vertical	congruent
linear pair	supplementary

If one angle is 118°, its vertical angle is 118° and each neighbor is 62°.

4 SOLVING ANGLE EQUATIONS

Use the relationship: congruent → set equal; supplementary → add to 180.

Example: Corresponding angles $(3x + 15)^\circ$ and $(5x - 25)^\circ$
Set equal: $3x + 15 = 5x - 25$
Solve: $40 = 2x,\ x = 20$

Answer: $x = 20$; each angle 75°

5 SAME-SIDE INTERIOR EXAMPLE

Same-side interior angles of parallel lines are supplementary.

Example: $(x + 30)^\circ$ and $(2x)^\circ$
Add to 180: $3x + 30 = 180,\ x = 50$

Answer: 80° and 100°

6 QUICK REMINDERS & COMMON MISTAKES

✓ Do remember

- These rules need parallel lines.
- Name the pair before writing an equation.
- Check: do your angles add correctly?

✗ Common mistakes

- Same-side interior are congruent: they are supplementary
- Mixing alternate interior and exterior: interior = between the lines
- Using the rules on non-parallel lines: not allowed

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More practice: proving lines parallel, triangle angle sums and angle chasing

1 CONVERSES: PROVING LINES PARALLEL

Corresponding angles are congruent	$r \parallel s$
Alternate interior angles are congruent	$r \parallel s$
Alternate exterior angles are congruent	$r \parallel s$
Same-side interior angles are supplementary	$r \parallel s$

2 TRIANGLE ANGLE SUM

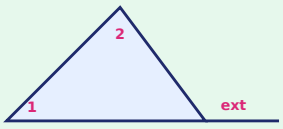
The interior angles of a triangle add to 180°.

Example: Angles 47°, 63°, x°
Add: $110 + x = 180$
Answer: $x = 70^\circ$

3 EXTERIOR ANGLE THEOREM

An exterior angle equals the sum of the two remote interior angles: $ext = \angle 1 + \angle 2$.

Example: Exterior 125°, one remote angle 52°
Equation: $125 = 52 + x$
Answer: $x = 73^\circ$



4 ANGLE CHASING

Chain the relationships one step at a time and give a reason for each.

Example: A corresponding angle is 108°.
Corresponding: 108°
Vertical: 108°
Linear pair: $180 - 108 = 72^\circ$
Answer: 108° **and** 72°

5 REASONS FOR PROOFS

Vertical angles are congruent.	**Vertical Angles Thm.**
$\parallel$ lines → corresponding angles $\cong$	**Corresponding Angles Post.**
$\parallel$ lines → alternate interior angles $\cong$	**Alt. Interior Angles Thm.**
Two angles that form a line add to 180°.	**Linear Pair Post.**

6 CHECK YOURSELF

- Are the lines marked parallel (arrows)?
- Which pair is it: corresponding, alternate or same-side?
- Congruent → set equal; supplementary → add to 180.
- Did I find the angle measures, not just x?