Parallel lines: conditions and reasoning

Year 7, lower volume • text pp. 9–24 • textbook lessons 5–12 • 1/2

Name: _____ Class: _____ Date: _____

Worked example 1

Coplanar lines a and b are cut by a transversal. A pair of corresponding angles are both 64°. Prove that a is parallel to b.

Guided attempt 2

Two parallel coplanar lines are cut by a transversal. One angle is 68°. Find its same-side interior angle; state the reason.

1. Parallel lines give same-side interior sum $68 + x = \square^\circ$.
2. Complete $x = 180 - \square$.
3. Write $x = \square^\circ$ and name the parallel-line property.

Prerequisite 3

In “If two lines are parallel, their corresponding angles are equal”, identify the hypothesis.

A. The corresponding angles are equal.

B. The angles are supplementary.

C. The two lines are parallel.

Prerequisite 4

One angle is 72°. Find its vertically opposite angle; state the reason.

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Name: _____ Class: _____ Date: _____

Independent practice 5

Two parallel coplanar lines are cut by a transversal. One angle is 57°. Find its corresponding angle; state the reason.

Independent practice 6

Two parallel coplanar lines are cut by a transversal. One angle is 113°. Find its alternate interior angle; state the reason.

Independent practice 7

Two parallel coplanar lines are cut by a transversal. One angle is 124°. Find its same-side interior angle; state the reason.

Independent practice 8

Two coplanar lines are cut by a transversal. A pair of same-side interior angles are 72° and 108°. Write a short proof that the lines are parallel.

Exit question 9

Without a parallel condition, which statement remains always valid for two intersecting straight lines?

A. All corresponding angles at two intersections are equal.

B. Every pair of interior angles is supplementary.

C. Vertically opposite angles are equal.

Exit question 10

Two parallel coplanar lines are cut by a transversal. One angle is 39°. Find its same-side interior angle; state the reason.