

# Angle Link Lab

Use angle relationships to find missing measures.

HIGH SCHOOL • MA.912.GR.1.1

**MA.912.GR.1.1** "Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles."

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## ANGLE RULES

Vertical angles are equal, and angles in a linear pair add to 180 degrees. When parallel lines are cut by a transversal, corresponding angles and alternate interior angles are equal.

## WORKED EXAMPLE

A linear pair has one angle measuring 47 degrees. Find the other angle.

1. A linear pair totals 180 degrees.

2.  $180 - 47 = 133$ .

**Answer: 133 degrees**

## PRACTICE 5 problems

- 1** At an intersection,  $\angle 1$  and  $\angle 2$  are vertical angles.  $m\angle 1 = 68$  degrees. Find  $m\angle 2$ .

ANSWER \_\_\_\_\_

- 2**  $\angle A$  and  $\angle B$  form a linear pair.  $m\angle A = 121$  degrees. Find  $m\angle B$ .

ANSWER \_\_\_\_\_

- 3** Two angles are complementary. One angle measures 36 degrees. Find the other angle.

ANSWER \_\_\_\_\_

- 4** Two parallel lines are cut by a transversal. One corresponding angle measures 73 degrees. Find its matching corresponding angle.

ANSWER \_\_\_\_\_

- 5** Two vertical angles measure  $(3x + 14)$  degrees and  $(5x - 22)$  degrees. Find  $x$ .

ANSWER \_\_\_\_\_

## APPLY IT Show your work

- 1** During a robotics club build, two metal support bars cross. One marked angle measures 154 degrees. What is the measure of the vertical angle across from it?

WORK SPACE

ANSWER \_\_\_\_\_

- 2** Two parallel bike lanes are crossed by the same street. One alternate interior angle measures 112 degrees. What is the measure of its alternate interior partner?

WORK SPACE

ANSWER \_\_\_\_\_

## CHALLENGE One step up

### CHALLENGE

Three angles around a point measure  $(2x + 10)$  degrees,  $(3x + 20)$  degrees, and  $(4x + 6)$  degrees. Find  $x$  and all three angle measures. Explain why.

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## PART 1 • PRACTICE

| # | PROBLEM                                                                                                                          | ANSWER                     |
|---|----------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 1 | At an intersection, $\angle 1$ and $\angle 2$ are vertical angles. $m\angle 1 = 68$ degrees. Find $m\angle 2$ .                  | <b>68 degrees</b>          |
| 2 | $\angle A$ and $\angle B$ form a linear pair. $m\angle A = 121$ degrees. Find $m\angle B$ .                                      | <b>59 degrees</b>          |
| 3 | Two angles are complementary. One angle measures 36 degrees. Find the other angle.                                               | <b>54 degrees</b>          |
| 4 | Two parallel lines are cut by a transversal. One corresponding angle measures 73 degrees. Find its matching corresponding angle. | <b>73 degrees</b>          |
| 5 | Two vertical angles measure $(3x + 14)$ degrees and $(5x - 22)$ degrees. Find $x$ .                                              | <b><math>x = 18</math></b> |

## PART 2 • APPLY IT

- 154 degrees** Vertical angles are equal, so the angle across from the marked angle also measures 154 degrees.
- 112 degrees** Alternate interior angles formed by parallel lines are equal, so the partner angle measures 112 degrees.

## CHALLENGE

**$x = 36$ ; the angle measures are 82 degrees, 128 degrees, and 150 degrees. Angles around a point total 360 degrees.**

Accept degree symbols or the word degrees. For the challenge, accept equivalent reasoning that uses the 360-degree angle sum.