

Angle Detectives

Use benchmark angles and addition to find missing measures.

GRADE 4 • 4.GSR.7

4.GSR.7 "Investigate the concepts of angles and angle measurement to estimate and measure angles."

NAME _____

DATE _____

ANGLE CLUES

Angles are measured in degrees. A right angle measures 90 degrees, a straight angle measures 180 degrees, and angles in a full turn total 360 degrees. Add angle parts to find a whole angle, or subtract a known part to find a missing part.

WORKED EXAMPLE

One part of a right angle measures 47 degrees. What is the other part?

1. A right angle measures 90 degrees.
2. Subtract the known part: $90 - 47 = 43$.
3. The other part measures 43 degrees.

Answer: 43 degrees

PRACTICE 6 problems

- 1** An angle is made of a 34-degree part and a 29-degree part. What is the measure of the whole angle?

ANSWER _____

- 2** One part of a right angle measures 26 degrees. What is the measure of the other part?

ANSWER _____

- 3** One part of a straight angle measures 115 degrees. What is the measure of the other part?

ANSWER _____

- 4** Three angles meet at a point. Two angles measure 120 degrees and 155 degrees. What is the measure of the third angle?

ANSWER _____

- 5** A student estimates an angle as a right angle. Its actual measure is 92 degrees. Is the estimate reasonable?

ANSWER _____

- 6** Which angle is closest to a straight angle: 172 degrees, 101 degrees, or 268 degrees?

ANSWER _____

APPLY IT Show your work

- 1** In a coding game, a robot turns 72 degrees. It needs its next turn to make a straight angle altogether. How many more degrees should the robot turn?

WORK SPACE

ANSWER _____

- 2** At a skate park, Maya plans three turns that together make one full turn. Her first turn is 138 degrees and her second turn is 76 degrees. What is the measure of her third turn?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Four angles meet at one point. Three angles measure 128 degrees, 97 degrees, and 54 degrees. What is the measure of the fourth angle? Explain how you know.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	An angle is made of a 34-degree part and a 29-degree part. What is the measure of the whole angle?	63 degrees
2	One part of a right angle measures 26 degrees. What is the measure of the other part?	64 degrees
3	One part of a straight angle measures 115 degrees. What is the measure of the other part?	65 degrees
4	Three angles meet at a point. Two angles measure 120 degrees and 155 degrees. What is the measure of the third angle?	85 degrees
5	A student estimates an angle as a right angle. Its actual measure is 92 degrees. Is the estimate reasonable?	Yes
6	Which angle is closest to a straight angle: 172 degrees, 101 degrees, or 268 degrees?	172 degrees

PART 2 • APPLY IT

- 108 degrees** A straight angle measures 180 degrees. Subtract: $180 - 72 = 108$.
- 146 degrees** First add the two known turns: $138 + 76 = 214$. Then subtract from 360: $360 - 214 = 146$.

CHALLENGE

81 degrees. Angles around a point total 360 degrees, and $128 + 97 + 54 = 279$. Then $360 - 279 = 81$.

Accept answers written with or without the word degrees. For the challenge, accept any clear explanation that adds the known angles and subtracts their total from 360 degrees.