LESSON MAKER PRO

Angle Equation Quest

Use angle relationships to find unknowns.

GRADE 8 · 8.GR.A.1

8.GR.A.1 "Use the relationships between supplementary, complementary, vertical, and adjacent angles to write and solve equations for an unknown angle."

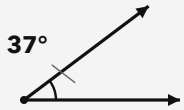
NAME _____ DATE _____

ANGLE RULES

Complementary angles add to 90°, and supplementary angles add to 180°. Vertical angles are equal. Adjacent angles share a side, and those that form a straight line add to 180°.

WORKED EXAMPLE

The angle shown and an angle measuring x° are complementary. Find x.



1. x + 37 = 90
2. x = 90 - 37
3. x = 53

Answer: 53°

PRACTICE 4 problems

1 Complementary angles measure (2x + 12)° and 30°. Find x.

ANSWER _____

2 A linear pair measures (3x + 5)° and 70°. Find x.

ANSWER _____

3 Vertical angles measure (4x - 6)° and 58°. Find x.

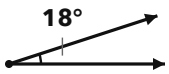
ANSWER _____

4 Two adjacent angles form a right angle. They measure (x + 8)° and 51°. Find x.

ANSWER _____

APPLY IT Show your work

1 A skateboard ramp makes the shown angle with level ground. A wall is perpendicular to the ground. Write an equation and find x, the acute angle between the ramp and wall.



ANSWER _____

2 A game character turns through the angle shown. It keeps turning in the same direction until it faces the opposite way. Write an equation and find the additional turn x.



ANSWER _____

CHALLENGE One step up

Two adjacent angles form a straight angle. They measure (5x + 7)° and (3x + 13)°. Find x and both angle measures.

WORK SPACE AND ANSWER

ANSWER KEY

Angle Equation Quest

GRADE 8 · 8.GR.A.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Complementary angles measure (2x + 12)° and 30°. Find x.	**24**
2	A linear pair measures (3x + 5)° and 70°. Find x.	**35**
3	Vertical angles measure (4x - 6)° and 58°. Find x.	**16**
4	Two adjacent angles form a right angle. They measure (x + 8)° and 51°. Find x.	**31**

PART 2 · APPLY IT

1. **72°** The angles are complementary: x + 18 = 90, so x = 72.
2. **62°** The total turn is 180°: 118 + x = 180, so x = 62.

CHALLENGE

x = 20; the angles measure 107° and 73°.

For the challenge, (5x + 7) + (3x + 13) = 180. Accept the two angle measures in either order.