MATHEMATICS · GRADES 7-9

Angle Relationships

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you work out a missing angle without a protractor. The angle of a folded piece of paper or the corner where two roads cross can be found from the angles you already know, because angles in certain positions are always equal or always add to a fixed total. Once you know the relationships, a lot of angle problems become one quick subtraction.



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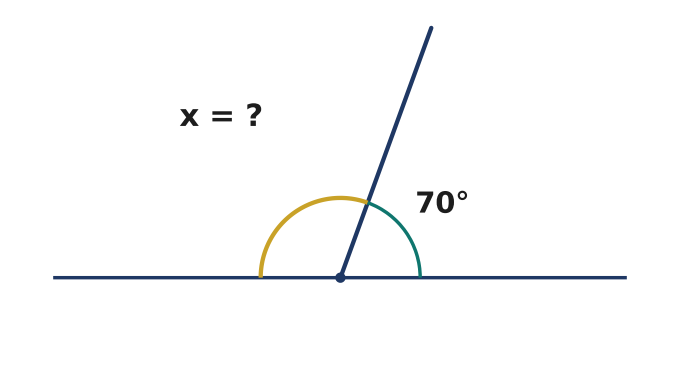
Worked examples

EXAMPLE 1

Q Two angles on a straight line are 70 degrees and an unknown. Find the unknown.



SOLUTION

Angles on a straight line add to 180 degrees.

Subtract: 180 - 70 = 110

The unknown angle is 110 degrees.

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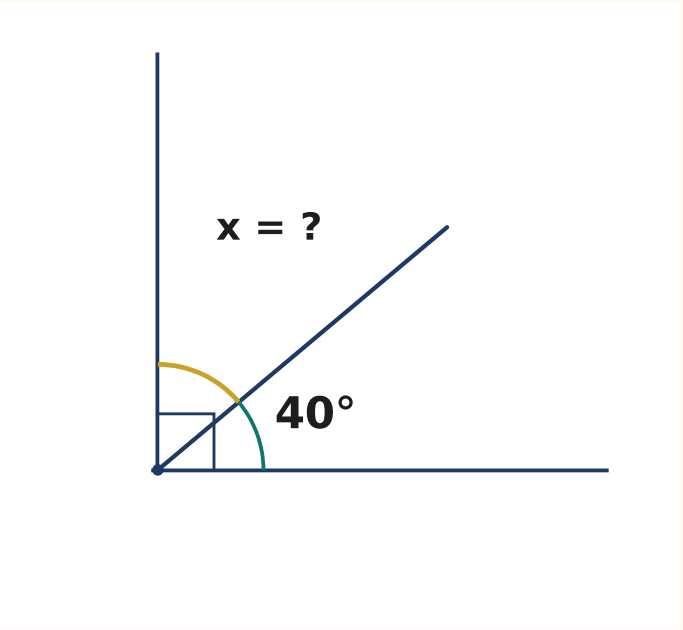
EXAMPLE 2

Q Two angles make a right angle. One is 40 degrees. Find the unknown.



SOLUTION

Angles making a right angle add to 90 degrees.

Subtract: 90 - 40 = 50

The unknown angle is 50 degrees.

Practice questions

1 Angles on a straight line add to what?

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2 **Angles around a point add to what?**

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3 **Angles that make a right angle add to what?**

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4 **A straight-line pair: one is 120 degrees. The other?**

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5 A straight-line pair: the larger angle is 90 degrees more than the smaller angle. What is the smaller angle?

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6 Around a point: three angles are 90, 90, 90 degrees. The fourth?

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7 A right-angle pair: one is 25 degrees. The other?

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8 **A right-angle pair: one angle is 20 degrees more than the other. What is the smaller angle?**

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9 **Angles on a straight line: 100 degrees and what makes 180?**

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10 **Angles around a point: 180 degrees and what makes 360?**

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ANSWER KEY

1. 180 degrees

2. 360 degrees

3. 90 degrees

4. 60 degrees

5. 45 degrees

6. 90 degrees

7. 65 degrees

8. 35 degrees

9. 80 degrees

10. 180 degrees

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