MATHEMATICS · GRADES 7-9

Complementary and Supplementary Angles

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you work out a missing angle from its partner. The two angles a folded corner makes, or the angles on either side of a door frame, add to a fixed total, so one quick subtraction finds the missing one. It is a fast fact that turns a lot of angle problems into a single subtraction.



Rule

Complementary angles add to 90 degrees.

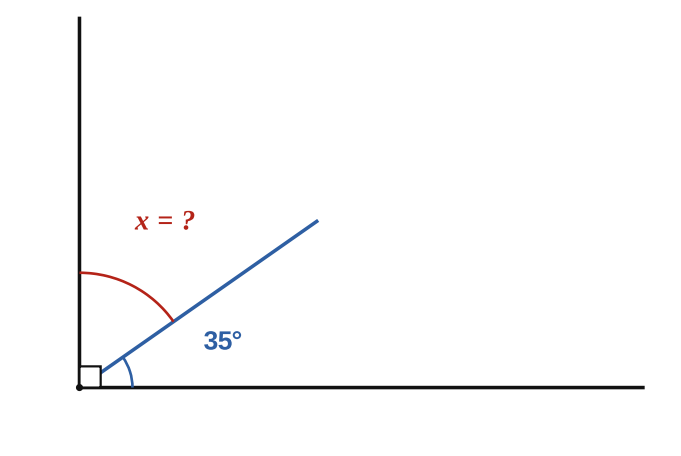
Supplementary angles add to 180 degrees. If you know one angle of a pair, subtract it from 90 or 180 to find the other.

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Worked examples

EXAMPLE 1

Q Find the complement of 35 degrees



SOLUTION

Put two complementary angles together and you get a right angle.

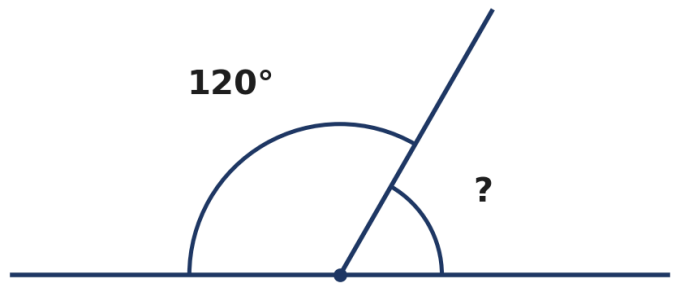
Subtract: 90 - 35 = 55

The complement is 55 degrees.

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EXAMPLE 2

Q Find the supplement of 120 degrees



SOLUTION

Put two supplementary angles together and you get a straight line.

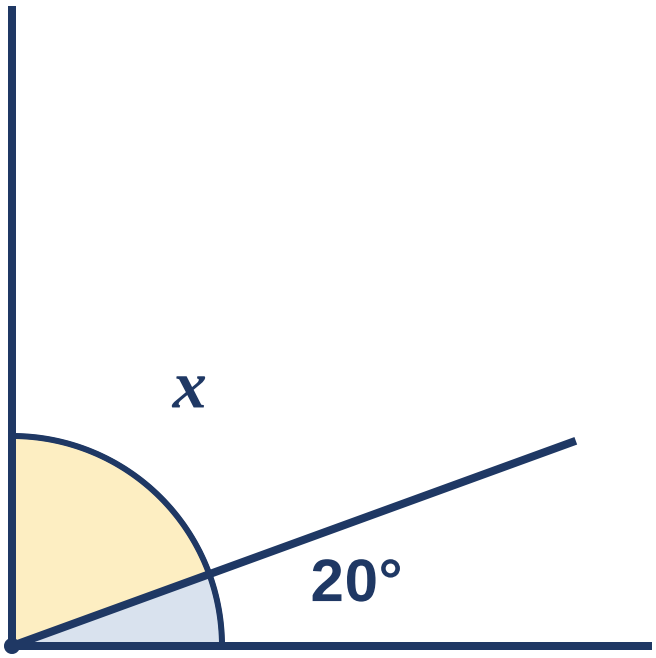
Subtract: 180 - 120 = 60

The supplement is 60 degrees.

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Practice questions

1 Find the angle marked x.

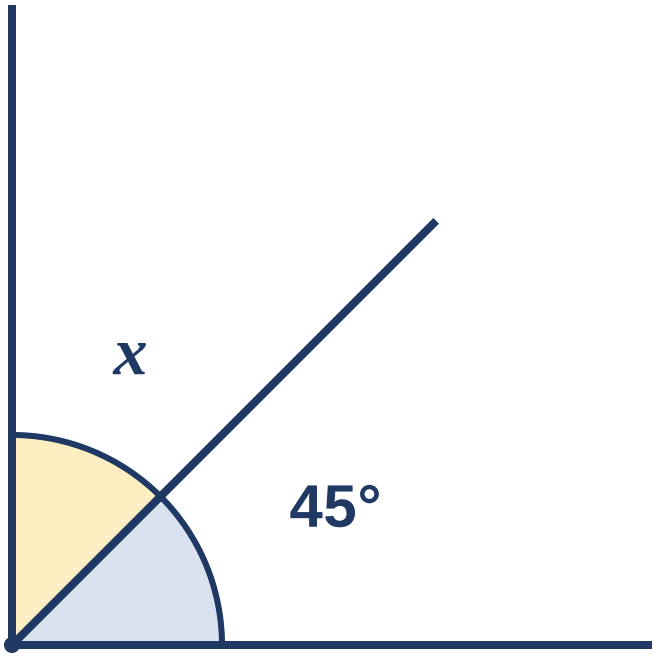


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2

Find the angle marked x.

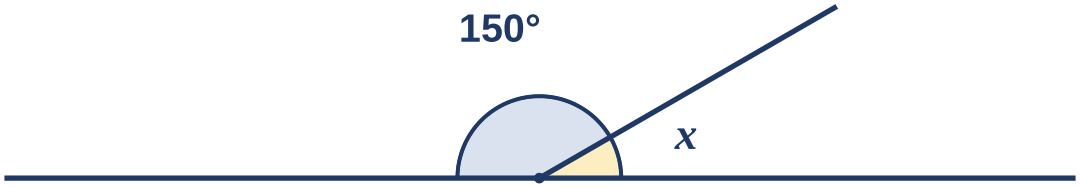


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3 Find the angle marked x.



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4 The complement of an angle is 65 degrees. What is the angle?

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5

Which of these pairs are complementary?

A 20 degrees and 70 degrees

B 20 degrees and 160 degrees

C 45 degrees and 135 degrees

D 80 degrees and 100 degrees

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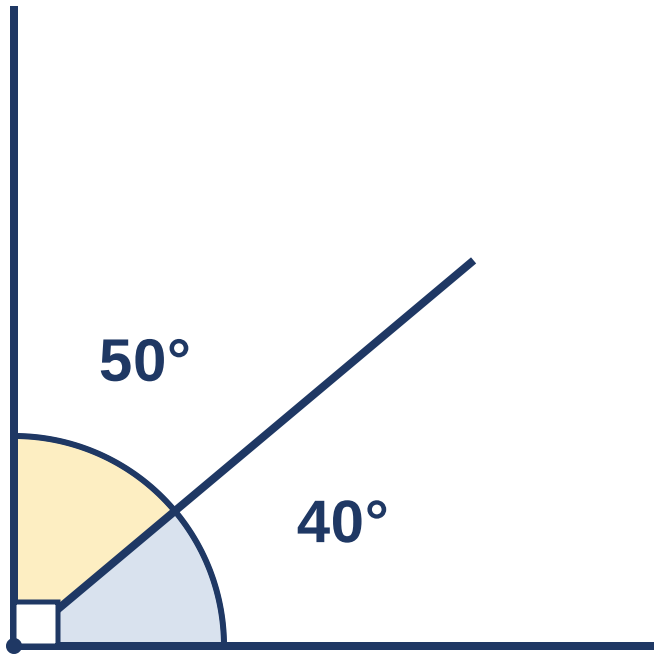
6

What is the supplement of the complement of 30 degrees?

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7 **Are the two angles complementary? Answer yes or no, and give the sum.**



A Yes, 90 degrees

B Yes, 180 degrees

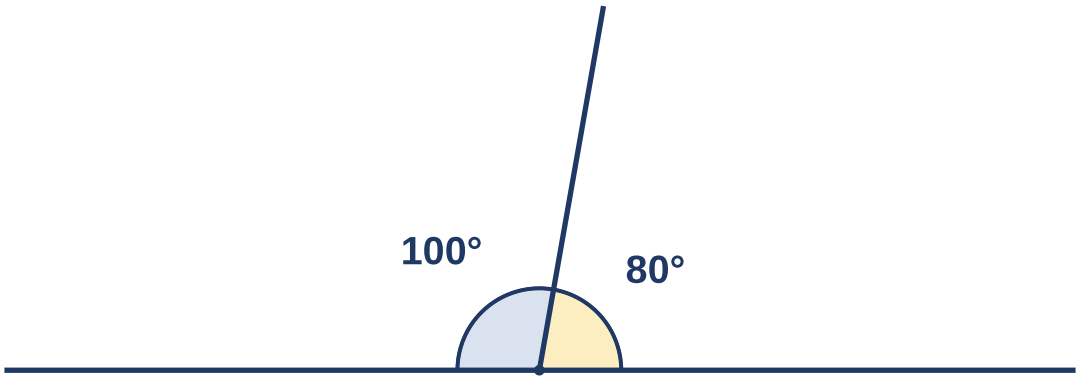
C No, 90 degrees

D No, 180 degrees

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8 **Are the two angles supplementary? Answer yes or no, and give the sum.**



A No, 180 degrees

B Yes, 180 degrees

C Yes, 90 degrees

D No, 90 degrees

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9 **Two supplementary angles: one is twice the other. What is the smaller angle?**

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10 **A ladder leans against a wall, making 70 degrees with the ground. The angle between the ladder and the wall is complementary to it. What is that angle?**

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ANSWER KEY

1. 70 degrees

2. 45 degrees

3. 30 degrees

4. 25 degrees

5. 20 degrees and 70 degrees

6. 120 degrees

7. Yes, 90 degrees

8. Yes, 180 degrees

9. 60 degrees

10. 20 degrees

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