MATHEMATICS · GRADES 7-9

Vertically Opposite Angles

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you fill in the missing angle when two straight lines cross, like at a road junction or where two fences meet, because the angle opposite the one you know is always equal to it. When two lines cross, they make four angles, and the ones opposite each other match exactly. Knowing one angle therefore gives you its opposite for free, and the other two follow as well. That is how you work out angles at a crossing, a junction, or any place where two straight lines meet.



Rule

Vertically opposite angles: when two straight lines cross, the angles opposite each other are equal.

Find the angle directly across the crossing point, and it is the same size.

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Worked examples

EXAMPLE 1

Q Two lines cross. One angle is 60 degrees. Find the angle opposite it.

SOLUTION

Look for the angle on the far side of the crossing point, straight across from this one.

Vertically opposite angles are equal.

The opposite angle is 60 degrees.

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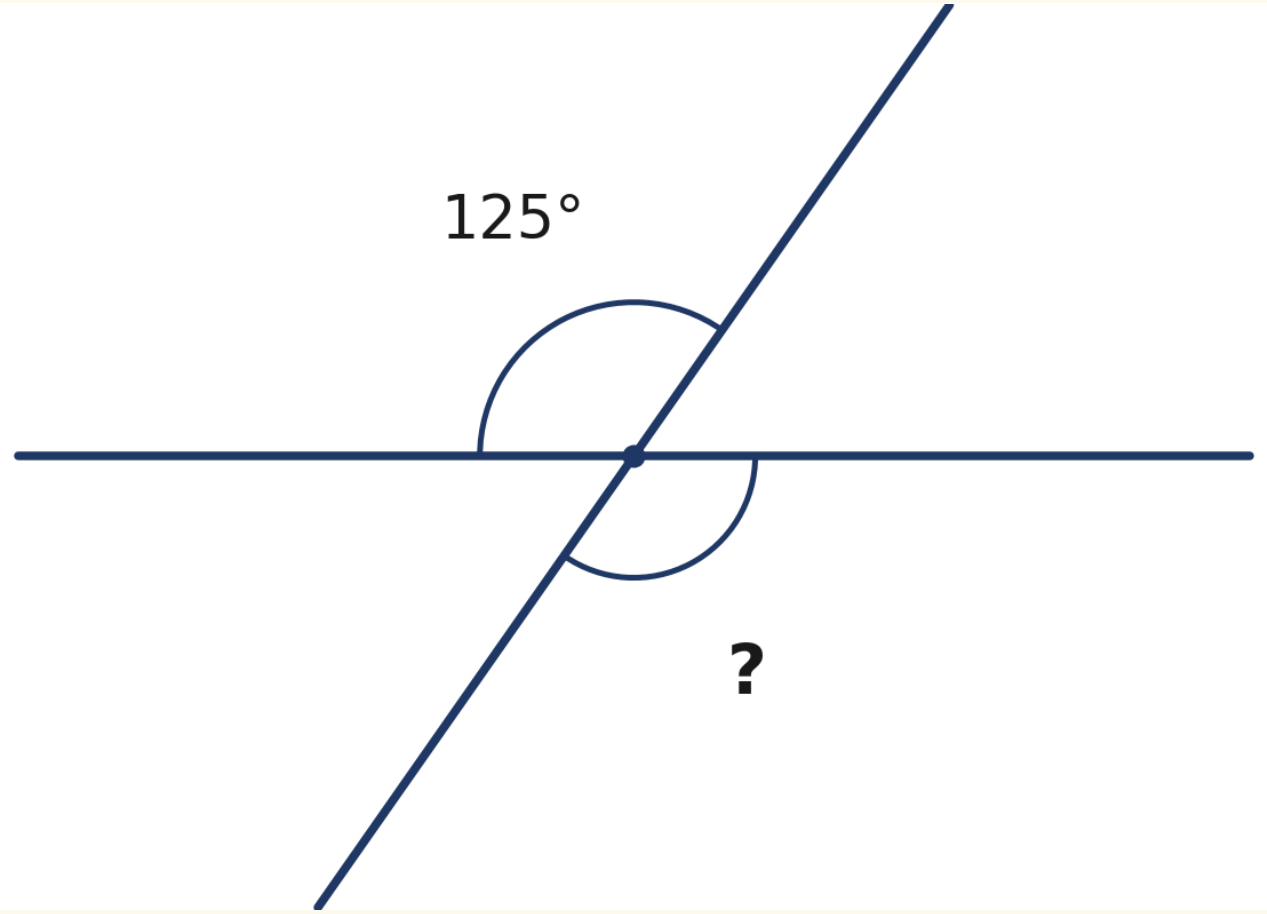
EXAMPLE 2

Q Two lines cross. One angle is 125 degrees. Find the angle opposite it.



SOLUTION

Look for the angle on the far side of the crossing point, straight across from this one.

Vertically opposite angles are equal.

The opposite angle is 125 degrees.

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Practice questions

1. Two sticks cross like a pair of scissors. One angle is 75 degrees. Find the angle opposite it.

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2. Two roads cross. One angle is 140 degrees. Find the angle opposite it.

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3. Two lines cross. One angle is 80 degrees. Find the angle opposite it.

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4 Two lines cross like the letter X. One angle is 35 degrees. Find the angle opposite it.

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5 Two lines cross at a right angle. One angle is 90 degrees. Find the angle opposite it.

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6 Two lines cross. One angle is 150 degrees. Find the angle opposite it.

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7 Two lines cross. One angle is 45 degrees. What is the vertical opposite of the 45 degree angle?

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8 One angle is 110 degrees. Find the angle beside it on a straight line.

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9 Two lines cross. One angle is 110 degrees. What is the vertical opposite of the 110 degree angle?

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10

Four angles are made where two lines cross: 70, 110, 70 and 110 degrees. Which pairs are opposite?

A 70 with 70, and 110 with 110

B 70 with 110, and 70 with 110

C 110 with 110 only

D 70 with 70 only

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ANSWER KEY

1. 75

2. 140

3. 80

4. 35

5. 90

6. 150

7. 45

8. 70

9. 110

10. 70 with 70, and 110 with 110

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