Cracking Angle Puzzles

Write equations and solve for missing angles



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Today we will...

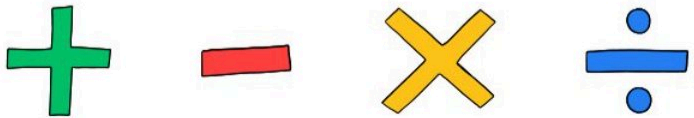
WE ARE LEARNING TO

- Spot complementary, supplementary, vertical and adjacent pairs
- Write simple equations for an unknown angle
- Solve multi-step problems and check answers

SUCCESS LOOKS LIKE

✓ I can name the angle relationship

✓ I can write and solve the equation



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$a^2+b^2=c^2$

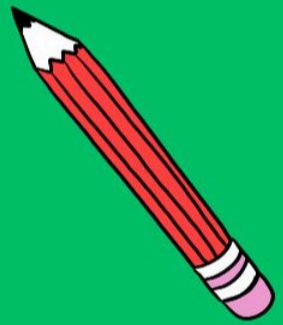
Key words

supplementary

Two angles that add to 180 degrees.

complementary

Two angles that add to 90 degrees.



vertical

Opposite angles when lines cross; they are equal.

adjacent

Next to each other; share a side and vertex.

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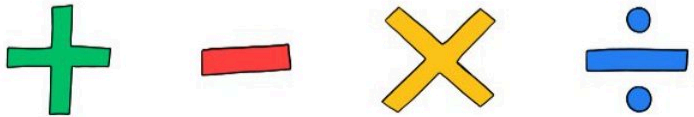
90 or 180?

Complementary

- Add to 90 degrees
- Make a corner with square mark
- Example: 35 plus 55 equals 90

Supplementary

- Add to 180 degrees
- Make a straight line together
- Example: 115 plus 65 equals 180



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$a^2+b^2=c^2$

Think, pair, share

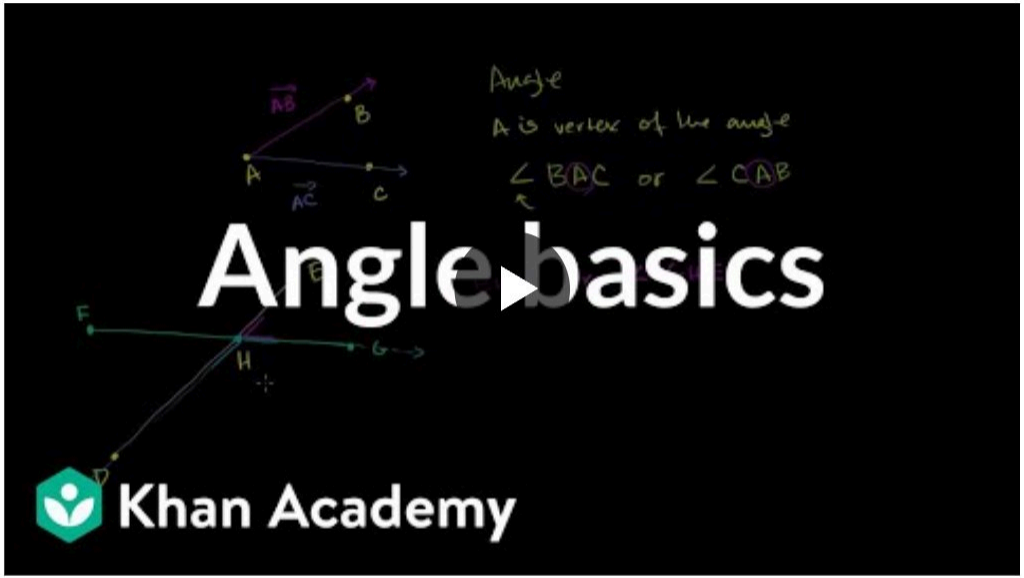
Two lines cross. One angle is 72 degrees. How can you find the other three without a protractor?





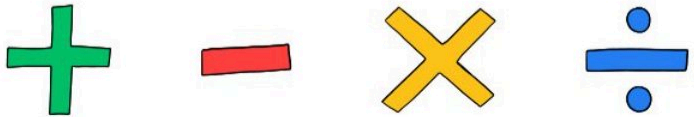
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Watch: Crossed Lines



▶ 1:50 – 6:49

- Spot which angles sit opposite and are equal
- Spot which next-door angles make 180 degrees
- Listen for how to write an equation for x



$a^2+b^2=c^2$

Solver Steps

🔍

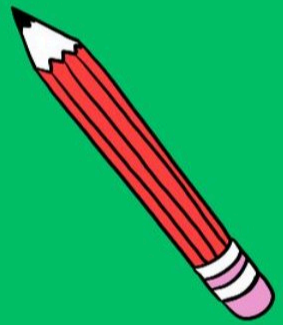
Name it

Say if the pair is vertical, adjacent, complementary or supplementary.

🔗

Link it

Link to 90 for complement, 180 for supplement, equal for vertical.



✏️

Equation it

Write a simple equation, like x + 48 = 180.

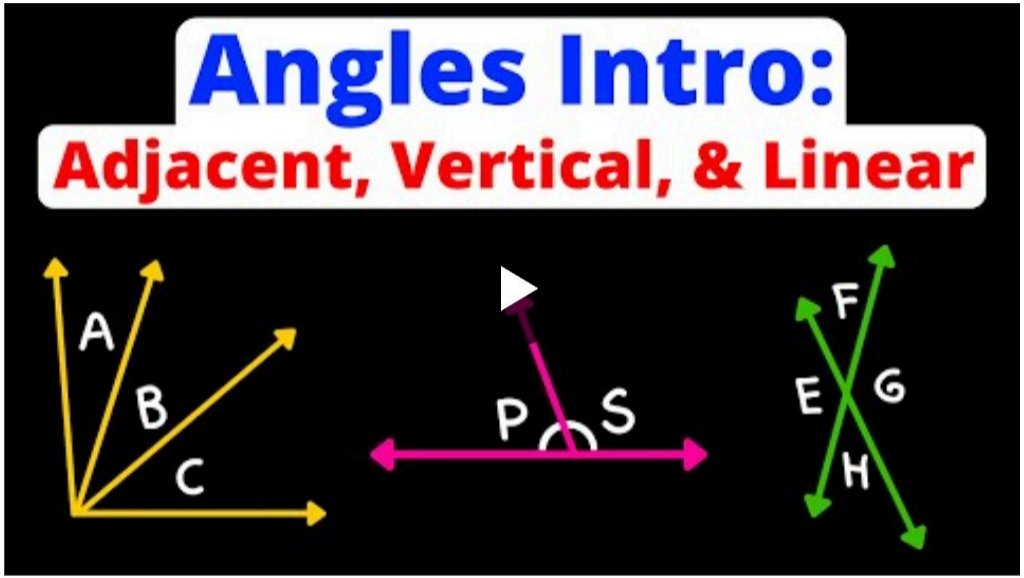
✅

Solve and check

Solve for x, then add back to check the total.

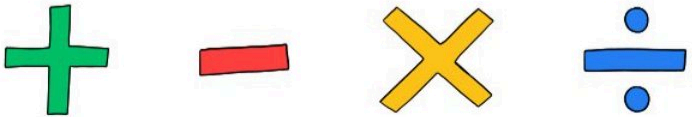
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Watch: Pairs That Add Up



▶ 0:00 – 4:50

- How adjacent angles share a side and vertex
- When a linear pair means add to 180
- How one equation finds the unknown



$a^2+b^2=c^2$

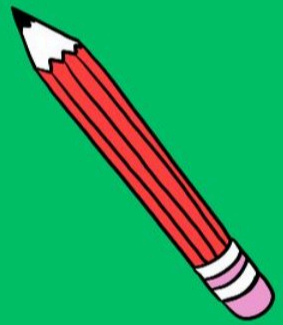
Your task

In pairs, solve Diagrams A and B by writing an equation first.

1. A: Straight line shows 38, x plus 22, and 3x. Write sum equals 180 and solve.
2. B: Lines cross. One angle 72. Opposite angle is x plus 18. Use vertical equality.
3. Check: plug x back in and confirm 180 or equal angles.

12 min

In pairs



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DID YOU KNOW?

A full circle is 360 equal degrees.

Half a turn is 180 degrees, so angles on a straight line add to 180 degrees.

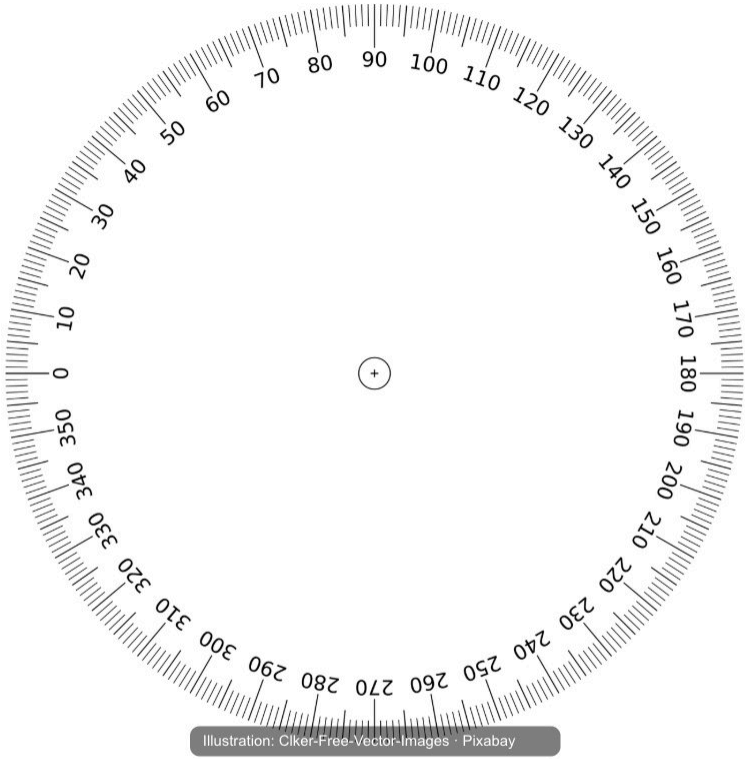
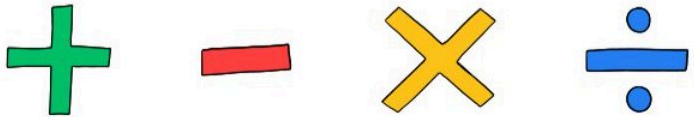


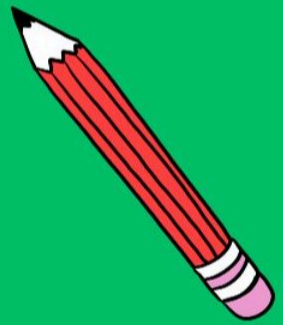
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$a^2+b^2=c^2$

Best First Move?

When stuck on an angle puzzle, what do you check first?



- **A** Look for a 90 degree corner
- **B** Look for a 180 degree straight line
- **C** Look for the X with equal opposites
- **D** Look for angles sharing a side

Vote with your hands, then explain why.

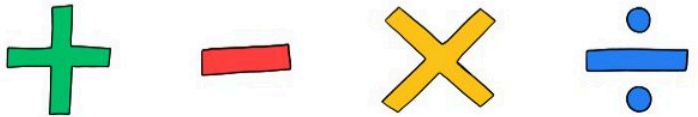
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Exit ticket

1. One thing I learned today...

2. Diagram A gave x = ? Show your equation.

3. One question I still have...



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