



MATH WITH MR DJ

GRADE 7 · GEOMETRY

ANGLE RELATIONSHIPS

Today's goal: I can find an unknown angle, including by writing and solving equations and write equations for multi-step problems to find an unknown angle.



Tan



Digit



Blaze



Pi



WARM-UP

Turn & talk · 1 min

Two lines cross. One angle is 62° .

1 What are the other three?

TURN & TALK

are they all 90° ?



Three relationships

- 1 Complementary $\rightarrow$ sum 90°
- 2 Supplementary $\rightarrow$ sum 180°
- 3 Vertical (opposite at a crossing) $\rightarrow$ EQUAL



BIG IDEA 2

$62^\circ, 118^\circ, 62^\circ, 118^\circ$

- 1 Opposite angles are equal. Adjacent angles make a straight line.
- 2 All four sum to 360° .

REMEMBER

**All 90° only if the lines are perpendicular.
That's a special case.**



Write it as an EQUATION

1 Angles x , x and $(x + 30)$ on a straight line:

2 $x + x + (x + 30) = 180 \rightarrow 3x + 30 = 180 \rightarrow x = 50$



BIG IDEA 4

Then convert BACK

1 $x = 30$ is not the answer. The angles are 30° and 60° .

2 Check: $30 + 60 = 90$.

REMEMBER

x is a step. The angles are the answer.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

Find the supplement of 20° .

WHAT A STUDENT DID

Answered 70° .

YOUR MISSION

What went wrong? What's the right answer?



Find the supplement of 20° .

1 $180 - 20 = 160^\circ$.

Answer: 160°



YOUR TURN

Whiteboards up!

Pick your pepper!



🌶️ MILD

Find the complement of 20° .

#1 on your practice sheet



🌶️🌶️ MEDIUM

Three equal angles sit on a straight line... actually they meet at a point on one side of a line, and $3x = 90$. Find x .

#2 on your practice sheet



🌶️🌶️🌶️ SPICY

Find the complement of 45° . What is special about this angle?

#5 on your practice sheet



How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help



MATH WITH MR DJ

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Watch “Angles and Parallel Lines Explained Step by Step” on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

