

ANSWER MAZE



COMPLEMENTARY, SUPPLEMENTARY AND VERTICAL ANGLES

Angle Pairs: Equal, 180° , or 90° ?

One page · 10–15 minutes · nothing to prepare

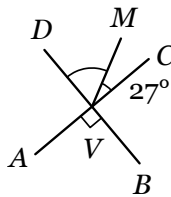
FREE

1

$m\angle CVM = 27^\circ$. Find
 $m\angle MVD$.

$63^\circ \rightarrow$ go to 8
 $153^\circ \rightarrow$ go to 5

*A small square makes all four
angles at the crossing right
angles.*

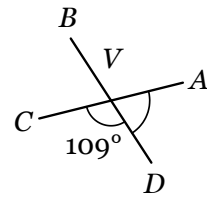


2

$m\angle CVD = 109^\circ$.
Find $m\angle DVA$.

$109^\circ \rightarrow$ go to 6
 $71^\circ \rightarrow$ go to 3

*Put a finger on each outer
arm. Do they make one
straight line?*

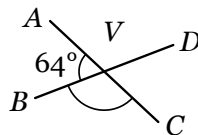


3

$m\angle AVB = 64^\circ$. Find
 $m\angle BVC$.

$116^\circ \rightarrow$ go to 6
 $64^\circ \rightarrow$ go to 2

*Circle the angle you are
asked for before you find
the answer.*

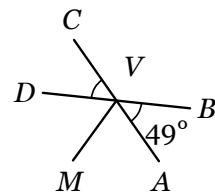


4

$m\angle AVB = 49^\circ$.
Find $m\angle CVD$.

$131^\circ \rightarrow$ go to 5
 $49^\circ \rightarrow$ go to 7

*Decide first. Are they
across from each other, or
side by side?*



1. **Hand out page 3.** That is the whole preparation.
2. **Say this once:** “Before any arithmetic, decide what kind of pair this is. Are the two angles across from each other? Then they are equal. Are they side by side on one straight line? Then they add to 180. Are they inside a marked right angle? Then they add to 90.”
3. **Start at box 3.** Six boxes and you are out. **Write every box number in the row at the foot as you go.**

Student sheet page 3, one per student. The three relationships are printed on it as pictures.
Answers page 4.

The route is 3 → 6 → 1 → 8 → 4 → 7 → out. Boxes 2 and 5 are not on it. **They look like every other box.** Each has a figure, a task, two numbers, two box numbers and a hint. Both answers in those boxes lead back to the route.

Each box off the route catches one mistake. Four boxes send a wrong answer to box 5. A student there subtracted the given angle from 180. That is wrong when the two angles are vertical, because then they are *equal*. It is also wrong when they sit inside a marked right angle, because then they add to 90. Two boxes send a wrong answer to box 2. A student there copied the printed number. But those two angles sit side by side on one straight line, so they add to 180 and are not equal.

The printed number is sometimes the answer and sometimes not. On two of the six boxes on the route, the wrong answer is the number printed on the figure. On the boxes with vertical angles, the printed number is the right answer. So a student who always copies it goes wrong, and so does a student who never copies it. Ask a student who is stuck to *circle the angle they are asked for* first.

What the row at the foot tells you in one glance. A clean run is **six numbers**. A longer row shows a mistake. The number just before 2 or 5 is the box the student got wrong.



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.
chooseyourlesson.com — 135 free geometry lessons.

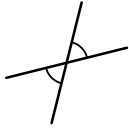
Answer Maze

Start at box 3 · decide the pair first

Name _____

Period _____

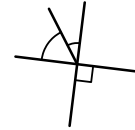
Date _____



Vertical angles
two lines · EQUAL



Linear pair
one straight line · ADD TO 180°



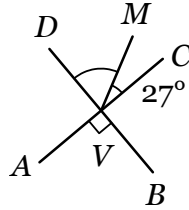
Inside a marked right angle
ADD TO 90°

1

$m\angle CVM = 27^\circ$. Find $m\angle MVD$.

$63^\circ \rightarrow$ go to 8
 $153^\circ \rightarrow$ go to 5

A small square makes all four angles at the crossing right angles.

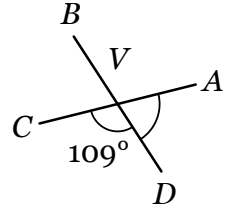


2

$m\angle CVD = 109^\circ$. Find $m\angle DVA$.

$109^\circ \rightarrow$ go to 6
 $71^\circ \rightarrow$ go to 3

Put a finger on each outer arm. Do they make one straight line?

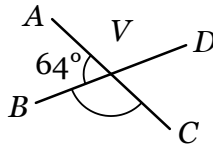


3

$m\angle AVB = 64^\circ$. Find $m\angle BVC$.

$116^\circ \rightarrow$ go to 6
 $64^\circ \rightarrow$ go to 2

Circle the angle you are asked for before you find the answer.

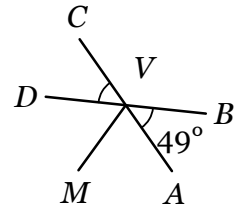


4

$m\angle AVB = 49^\circ$. Find $m\angle CVD$.

$131^\circ \rightarrow$ go to 5
 $49^\circ \rightarrow$ go to 7

Decide first. Are they across from each other, or side by side?

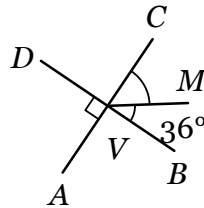


5

$m\angle BVM = 36^\circ$. Find $m\angle MVC$.

$54^\circ \rightarrow$ go to 6
 $144^\circ \rightarrow$ go to 1

Add your answer to the given. Does it make 90, make 180, or match?

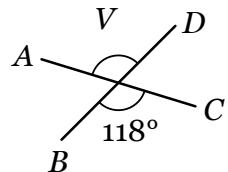


6

$m\angle BVC = 118^\circ$. Find $m\angle DVA$.

$62^\circ \rightarrow$ go to 5
 $118^\circ \rightarrow$ go to 1

Two lines crossing make two pairs of equal angles and four pairs that make 180.

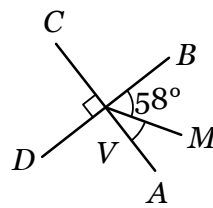


7

$m\angle MVB = 58^\circ$. Find $m\angle AVM$.

$32^\circ \rightarrow$ you are out
 $122^\circ \rightarrow$ go to 5

Only the arms on the outside of the two angles decide what they add to.

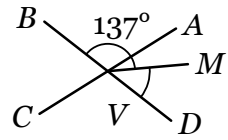


8

$m\angle MVB = 137^\circ$. Find $m\angle DVM$.

$137^\circ \rightarrow$ go to 2
 $43^\circ \rightarrow$ go to 4

The number on the figure is sometimes the answer, and sometimes it is not.



Write every box number here as you go. This helps you find your way back if you lose your place. **A clean run is six numbers.**

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Answer Maze — answers

For the teacher

The route, in order. Boxes 2 and 5 are not on the route. They are at the bottom of the table. A student reaches them only with a wrong answer.

3 → 6 → 1 → 8 → 4 → 7 → out

	Box	The task	How the two angles are related	Answer	Wrong answer, and the box it goes to	Right answer goes to
1	Box 3	$\angle AVB = 64^\circ$, find $\angle BVC$	linear pair, so they add to 180°	116°	$64^\circ \rightarrow 2$	box 6
2	Box 6	$\angle BVC = 118^\circ$, find $\angle DVA$	vertical, so equal	118°	$62^\circ \rightarrow 5$	box 1
3	Box 1	$\angle CVM = 27^\circ$, find $\angle MVD$	inside a marked right angle, so they add to 90°	63°	$153^\circ \rightarrow 5$	box 8
4	Box 8	$\angle MVB = 137^\circ$, find $\angle DVM$	linear pair, so they add to 180°	43°	$137^\circ \rightarrow 2$	box 4
5	Box 4	$\angle AVB = 49^\circ$, find $\angle CVD$	vertical, so equal	49°	$131^\circ \rightarrow 5$	box 7
6	Box 7	$\angle MVB = 58^\circ$, find $\angle AVM$	inside a marked right angle, so they add to 90°	32°	$122^\circ \rightarrow 5$	out
	Box 2	$\angle CVD = 109^\circ$, find $\angle DVA$	linear pair, so they add to 180°	71°	$109^\circ \rightarrow 6$	box 3
	Box 5	$\angle BVM = 36^\circ$, find $\angle MVC$	inside a marked right angle, so they add to 90°	54°	$144^\circ \rightarrow 1$	box 6

The wrong answers come from two common mistakes. A student who thinks vertical angles add to 180 gets 180 minus the given angle. A student who thinks a linear pair is equal gets the given angle back. Neither is an arithmetic slip. Three checks are worth saying aloud. Vertical angles come out equal. A linear pair adds back to 180. The two parts of a marked right angle add back to 90.