

ANSWER MAZE



UNKNOWN ANGLES WITH PARALLEL LINES

Unknown Angles with Parallel Lines

Two steps at a time · one page · nothing to prepare

FREE

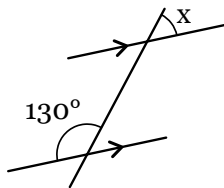
1

Find the angle marked x .

$50^\circ \rightarrow$ go to 6

$130^\circ \rightarrow$ go to 4

Two steps, not one:
find an angle you were
not asked for, and then
use it.



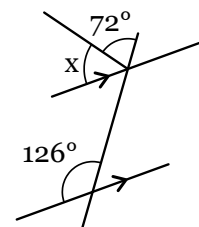
2

Find the angle marked x .

$126^\circ \rightarrow$ go to 7

$54^\circ \rightarrow$ you are out

Name the relationship you
are using before you write
any number down.



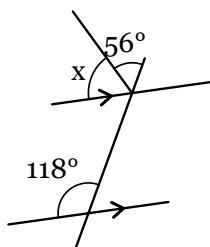
3

Find the angle marked x .

$62^\circ \rightarrow$ go to 8

$118^\circ \rightarrow$ go to 4

The ray cuts the angle in
two. Which of the two
pieces is the one marked
 x ?



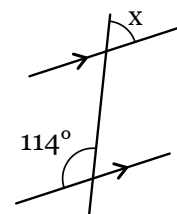
4

Find the angle marked x .

$114^\circ \rightarrow$ go to 1

$66^\circ \rightarrow$ go to 6

The angle you find on the
way is not the angle marked
 x . There is one more thing to
do.



1. **Hand out page 3.** That is the whole preparation.
2. **Say this once:** *“Every one of these takes two steps. When you have found a number, write it on the picture. Then find x.”*
3. **Start at step 1.** Write every step number in the row at the bottom as you go. You are out after six steps.

Student sheet page 3, one per student. Nothing to cut, nothing to set up.
Answers page 4, with the second step of every chase written out.

The route is $1 \rightarrow 6 \rightarrow 3 \rightarrow 8 \rightarrow 5 \rightarrow 2 \rightarrow \text{out}$. Boxes 4 and 7 are not on it: they are where a wrong answer goes. **They do not look any different, and that is deliberate** — a figure, the same question, two answers, two destinations and a hint, like every other box, and both of their branches lead back on to the route. When they were bare dead ends saying “not this one”, they were the only boxes on the page with nothing printed under them, and avoiding the branch that pointed at them walked the whole sheet with no geometry at all.

The wrong answer at every step is the number you get by stopping one step early. That is the mistake this lesson exists to stop, and it is documented on real scripts: the student carries out the first step correctly, writes that number down, and stops. It is also always the supplement of the right answer, so a student who has a relationship the wrong way round lands in the same place — and either way the hint on the box they land on is something true about their own work.

And the right one is not always the top line. It is printed first on some steps and second on others, deliberately, so that taking whichever answer is on top does not walk the maze.

Steps 5 and 6 and 7 have nothing crossing both parallel lines, and that is the one place a student may be stuck with nothing to try. The move is to draw the line through the bend parallel to the other two — and then the bend is simply the two given angles added. If a student is stuck there, do not give them the sum: put a ruler on the page through the bend, parallel to the other two, and say nothing else.

What the row at the foot tells you in one glance, and it is the whole check. A sheet whose row reads $1 \rightarrow 6 \rightarrow 3 \rightarrow 8 \rightarrow 5 \rightarrow 2$ is right. **A clean run is 6 numbers,** and a wrong turn always makes the row longer and never shorter: no box can put a student further along the route than the step after the one they left. A longer row shows the exact box where it went wrong, which is worth a word rather than a mark.



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 step 1

Name _____

Period _____

Date _____

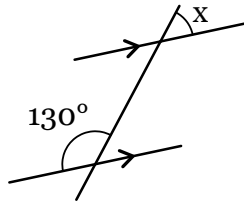
Lines with arrowheads are parallel. **Every step takes two moves: find another angle first, then finish.** Do not measure. Write each number you find on the picture.

1

Find the angle marked **x**.

$50^\circ \rightarrow$ **go to 6**
 $130^\circ \rightarrow$ **go to 4**

Two steps, not one: find an angle you were not asked for, and then use it.

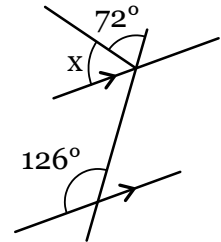


2

Find the angle marked **x**.

$126^\circ \rightarrow$ **go to 7**
 $54^\circ \rightarrow$ **you are out**

Name the relationship you are using before you write any number down.

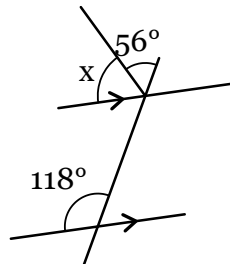


3

Find the angle marked **x**.

$62^\circ \rightarrow$ **go to 8**
 $118^\circ \rightarrow$ **go to 4**

The ray cuts the angle in two. Which of the two pieces is the one marked x?

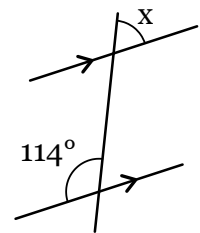


4

Find the angle marked **x**.

$114^\circ \rightarrow$ **go to 1**
 $66^\circ \rightarrow$ **go to 6**

The angle you find on the way is not the angle marked x. There is one more thing to do.

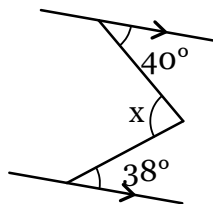


5

Find the angle marked **x**.

$78^\circ \rightarrow$ **go to 2**
 $102^\circ \rightarrow$ **go to 4**

A bend has two angles at it, and the one marked x is made out of both of them.

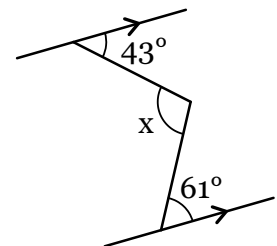


6

Find the angle marked **x**.

$76^\circ \rightarrow$ **go to 7**
 $104^\circ \rightarrow$ **go to 3**

Which angle do the parallel lines carry across, and where does it land?

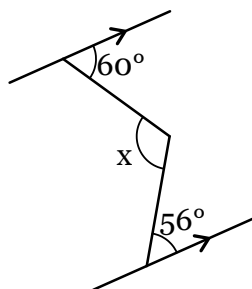


7

Find the angle marked **x**.

$64^\circ \rightarrow$ **go to 6**
 $116^\circ \rightarrow$ **go to 3**

Say out loud which relationship you are using. If you cannot name one, it is not a move.

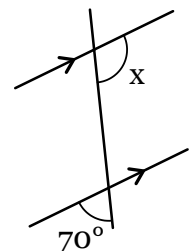


8

Find the angle marked **x**.

$70^\circ \rightarrow$ **go to 7**
 $110^\circ \rightarrow$ **go to 5**

Find the angle sitting beside x first: what is left of a straight line is x.



Write every box number here as you go. It shows you the way back if you get lost. A clean run is 6 numbers.

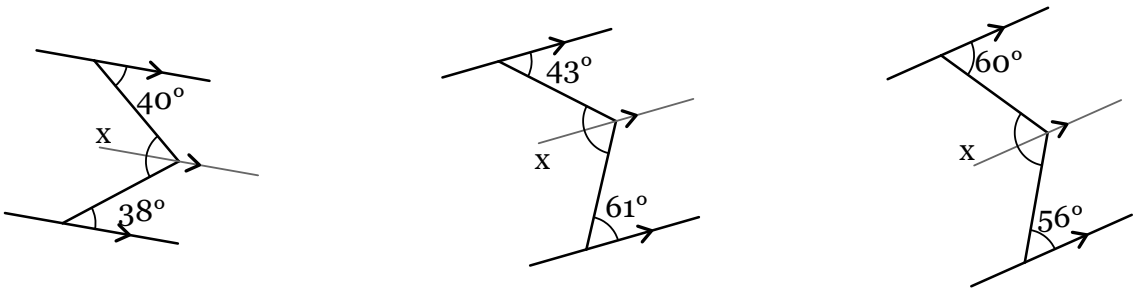
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The route, in order. Boxes 4 and 7 are off the route and are on nobody's correct route.

1 → 6 → 3 → 8 → 5 → 2 → out

	Step	First move	Then	Answer	Dead end	Sends them to
1	Step 1	corresponding angles	linear pair	50°	130°	step 6
2	Step 6	alternate interior angles	the two parts make the whole	104°	76°	step 3
3	Step 3	corresponding angles	the two parts make the whole	62°	118°	step 8
4	Step 8	corresponding angles	linear pair	110°	70°	step 5
5	Step 5	alternate interior angles	the two parts make the whole	78°	102°	step 2
6	Step 2	corresponding angles	the two parts make the whole	54°	126°	out

Steps 5 and 6 and 7, with the line drawn in. It is the line through the bend parallel to the other two, and it is the whole of the argument: it cuts the bend into two angles, each of which is an alternate interior angle with one of the two that are given. So the bend is $40 + 38 = 78$, and $43 + 61 = 104$, and $60 + 56 = 116$.



The wrong option is never a slip of arithmetic. On every step it is a real angle in the picture — the one the student meets on the way — and it is the supplement of the right answer. A student who lands on one of the two boxes off the route has either stopped one step early or read a relationship backwards, and there is no third way to get there. That is what makes the hint on those boxes worth reading.