

ANSWER MAZE



PERPENDICULAR LINES AND THEIR ANGLES

Perpendicular Lines: Which Theorem?

One page · 10–15 minutes · nothing to prepare

FREE

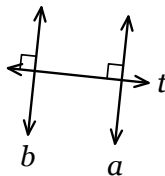
1

Why is $a \parallel b$?

T1 → go to 7

T2 → go to 6

Read what you are given first, and then what is being concluded from it.



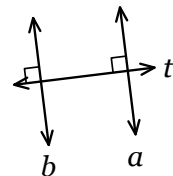
2

Why is $a \perp b$?

T1 → go to 4

No — those marks make them parallel → go to 8

Two right angles on one line: ask what that forces before you name anything.



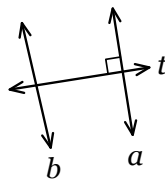
3

Why is $a \parallel b$?

T1 → go to 6

Nothing on the figure says so → go to 5

How many right angles does the figure actually carry?



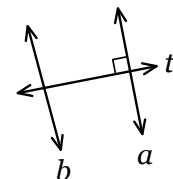
4

Why is $a \perp b$?

T2 → go to 7

Nothing on the figure says so → go to 3

T1 ends at parallel lines. T2 starts from them. Which of the two sentences is this?



1. **Hand out page 3.** That is the whole preparation. The page prints two sentences. **T1:** if two lines are perpendicular to the same line, they are parallel. **T2:** if a line is perpendicular to one of two parallel lines, it is perpendicular to the other.
2. **Say this once:** *“T1 ends at parallel lines. T2 starts from them. Read what you were given before you pick a sentence.”*
3. **Start at step 1.** Read the marks. Pick the sentence. Go where it sends you. You are out after six boxes. **Write every box number in the row at the foot as you go.**

Student sheet	page 3, one per student. The two sentences are printed on it, each with a drawing.
Answers	page 4.

The route is 1 → 7 → 3 → 5 → 2 → 8 → out. Boxes 4 and 6 are not on it: they are where a wrong answer goes. **They do not look any different, and that is deliberate** — they carry a figure, a claim, two reasons and two destinations like every other box, both of their branches lead back onto the route, and nothing a student can read says which two they are.

The two boxes off the route answer two different mistakes. Two steps send a wrong answer to box 4: those are the ones where the two sentences have been swapped. Four send it to step 6: those are the ones where a sentence has been used on half of what it asks for — one right angle where T1 wants two, a pair of arrowheads where T2 wants a right angle as well.

No box on this sheet says “wrong”. A wrong turn shows in the row at the foot. It always makes the row longer, because no box can put a student further along the route than the step after the one they left.

On two of the six steps the honest answer is that nothing says so. Those figures are drawn a few degrees off parallel or off square, so a student who reads the picture instead of the marks is wrong.

What the row at the foot tells you in one glance. A row reading 1 → 7 → 3 → 5 → 2 → 8 is right, and **a clean run is six numbers.** Any longer row shows the exact box where it went 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.
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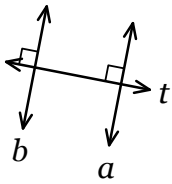
Answer Maze

Start at step 1 · the marks decide, not the drawing

Name _____

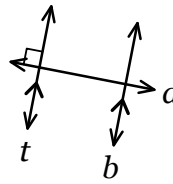
Period _____

Date _____



T1

If two lines are perpendicular to the same line, they are **parallel**.



T2

If a line is perpendicular to **one of two parallel lines**, it is **perpendicular to the other**.

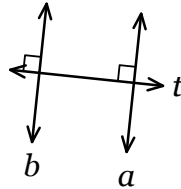
1

Why is $a \parallel b$?

T1 → go to 7

T2 → go to 6

Read what you are given first, and then what is being concluded from it.



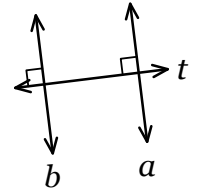
2

Why is $a \perp b$?

T1 → go to 4

No – those marks make them parallel → go to 8

Two right angles on one line: ask what that forces before you name anything.



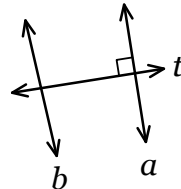
3

Why is $a \parallel b$?

T1 → go to 6

Nothing on the figure says so → go to 5

How many right angles does the figure actually carry?



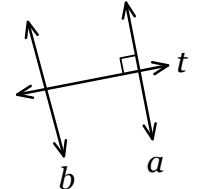
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T1 ends at parallel lines. T2 starts from them. Which of the two sentences is this?



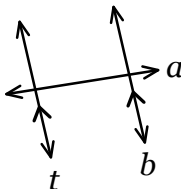
5

Why is $a \perp b$?

Nothing on the figure says so → go to 2

T2 → go to 6

Arrowheads on their own force nothing about a right angle.



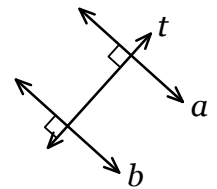
6

Why is $a \perp b$?

T2 → go to 1

No – those marks make them parallel → go to 7

Count what the figure gives you: two right angles, or a right angle and a pair of arrowheads?



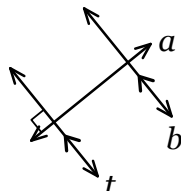
7

Why is $a \perp b$?

T1 → go to 4

T2 → go to 3

Which is the given here: the arrowheads, or the right angle?



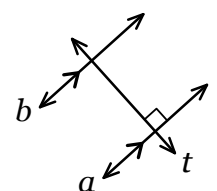
8

Why is $a \parallel b$?

It is marked on the figure → you are out

T1 → go to 6

Some figures state the answer outright, and then no theorem is being used at all.



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

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The route, in order. Boxes 4 and 6 are off the route and are on nobody's correct route. The column before the last is the mistake that sends a student there.

1 → 7 → 3 → 5 → 2 → 8 → out

	Step	The claim	Why	The mistake it catches	Sends them to
1	Step 1	$a \parallel b$	T1	reaching for T2 because the words match, when nothing was given parallel	step 7
2	Step 7	$a \perp b$	T2	T1 named where parallelism was the given and not the conclusion	step 3
3	Step 3	$a \parallel b$	Nothing on the figure says so	T1 on one right angle — it wants two	step 5
4	Step 5	$a \perp b$	Nothing on the figure says so	T2 on a pair of arrowheads alone — it wants a right angle as well	step 2
5	Step 2	$a \perp b$	No — those marks make them parallel	T1 named for a conclusion T1 does not reach — it ends at parallel lines	step 8
6	Step 8	$a \parallel b$	It is marked on the figure	a theorem named for something the figure states outright	out

The two sentences, side by side, which is the only way they are ever learnt. *T1 — if two lines are perpendicular to the same line, they are parallel.* The two right angles are corresponding angles at the third line, and congruent corresponding angles make lines parallel. *T2 — if a line is perpendicular to one of two parallel lines, it is perpendicular to the other.* The marked right angle and the angle at the other crossing are corresponding angles, and parallel lines make corresponding angles congruent. **T1 ends at parallel lines; T2 starts from them.**

Four of the six steps name no theorem at all, and that is deliberate: a sheet on which every answer is one of two theorems teaches that one of them always applies. Two of them have marks that never reach from one line to the other, so the honest answer is that nothing on the figure says so; one is marked outright, with the arrowheads on a and b themselves, so nothing has to be deduced; and on one the marks settle it the other way. A student who will not write *nothing follows* is the student this lesson is for.