

CUT & GLUE SORT



CONGRUENT SEGMENTS AND SEGMENT BISECTORS

Segment Bisectors: Perpendicular, Just Bisecting, or No Way to Tell?

Lines, rays and segments · read the ticks and the square, not the picture

FREE

A Does line t bisect AB?	B Does line t bisect AB?	C Does ray MR bisect AB?	D Does segment CD bisect AB?
--	--	--	--

1. **Hand out pages 3 and 4**, one of each per student, and scissors and glue.
2. **Say this once:** *“Two questions for every piece. Do the marks make M the midpoint? Then, is a right angle marked? Don't trust your eyes for either.”*
3. **Every row gets 4.** A row with more or fewer has a piece in the wrong place. That is how you mark it in ten seconds. *(This is not printed on the student's sheet. If it were, students could finish the last row without deciding anything.)*

Student sheets	pages 3 and 4, one of each per student. A segment bisector, a perpendicular bisector and a point with no ticks are on the first as pictures.
Answers	page 5.

What is being sorted. A segment bisector is any line, ray or segment that goes through the midpoint of AB. What makes it a bisector is what it does, not its shape. So lines, rays and segments appear in every row. The top row holds the perpendicular bisectors. Strictly, a perpendicular bisector is a line. The top row says only that a right angle is marked, so a ray or a segment that does the same job is not a wrong answer.

The third row is the hard one. Students can know that something bisects AB only from ticks or numbers, never by eye. Three of the four pieces in this row have M drawn exactly in the middle. The marks still do not make M the midpoint.

One piece in the second row is easy to get wrong. It is a ray drawn exactly perpendicular to AB, but no right angle is marked. So it belongs in the second row. Students must not trust their eyes for the angle, just as for the length. A student who simply trusts the drawing gets only eight of the twelve pieces right.



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.

Does it bisect AB?

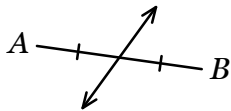
Segment bisectors

Name _____

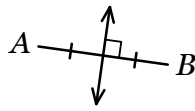
Period _____

Date _____

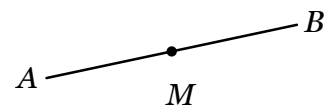
Cut out the twelve pieces on the next page. On each one a line, a ray or a segment crosses AB at M . For each piece, decide whether it bisects AB , and whether a right angle is marked. Glue it in the matching row. **Only ticks or numbers make M the midpoint. Only a square marks a right angle. Do not decide by how the drawing looks.**



Segment bisector
passes through the marked midpoint



Perpendicular bisector
marked midpoint and a marked right angle



No ticks
no way to tell, no matter how centered it looks

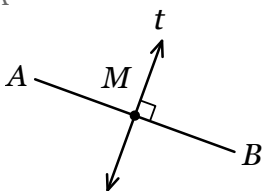
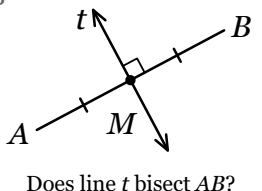
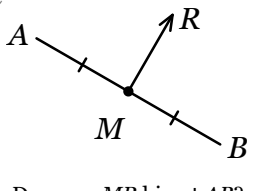
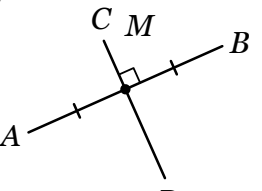
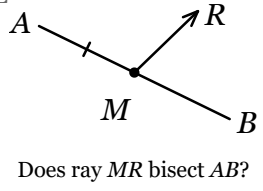
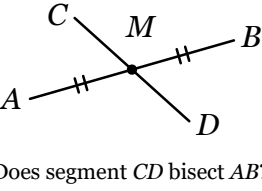
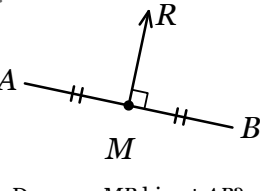
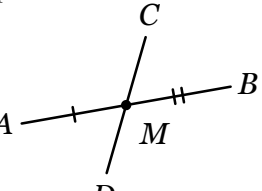
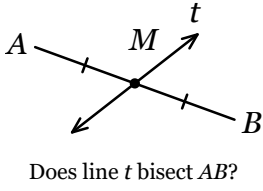
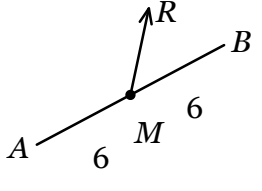
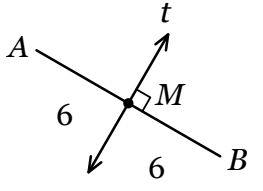
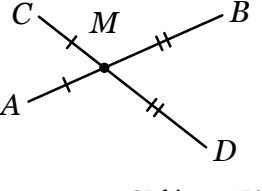
Correct: it bisects AB, and a right angle is marked.

Correct: it bisects AB, but no right angle is marked.

Cannot tell: the marks do not make M the midpoint.

The twelve pieces

Cut along the dotted lines

A  Does line t bisect AB?	B  Does line t bisect AB?	C  Does ray MR bisect AB?	D  Does segment CD bisect AB?
E  Does ray MR bisect AB?	F  Does segment CD bisect AB?	G  Does ray MR bisect AB?	H  Does segment CD bisect AB?
J  Does line t bisect AB?	K  Does ray MR bisect AB?	L  Does line t bisect AB?	M  Does segment CD bisect AB?



135 free geometry lessons — worksheets, worked answers and lesson plans.
chooseyourlesson.com

Cut & Glue Sort — answers

For the teacher

Correct: it bisects AB, and a right angle is marked.	B (line t). Both halves are ticked, and a right angle is marked.	D (segment CD). The halves of AB are ticked, and a right angle is marked. CD is not cut in half, and that does not matter.	G (ray MR). Both halves are ticked, and a right angle is marked. A ray can bisect too.	L (line t). Both halves are 6, and a right angle is marked.
Correct: it bisects AB, but no right angle is marked.	C (ray MR). Both halves are ticked. The ray looks perpendicular, but no right angle is marked.	F (segment CD). Both halves are ticked. No right angle is marked.	J (line t). Both halves are ticked. The line is slanted, and no right angle is marked.	K (ray MR). Both halves are 6. No right angle is marked.
Cannot tell: the marks do not make M the midpoint.	A (line t). A right angle is marked, but there are no ticks. The line is perpendicular, but nothing says M is the midpoint.	E (ray MR). M is drawn exactly in the middle, but only one half is ticked.	H (segment CD). One half has one tick and the other has two. Different ticks do not say the halves are equal.	M (segment CD). The ticks say $MA = MC$ and $MB = MD$. They do not say $MA = MB$.

If a class finishes early, ask about each piece in the last row: *What one mark would move it up a row?* The answer is a matching tick on the other half, or the same number on both halves.