

MYSTERY PICTURE

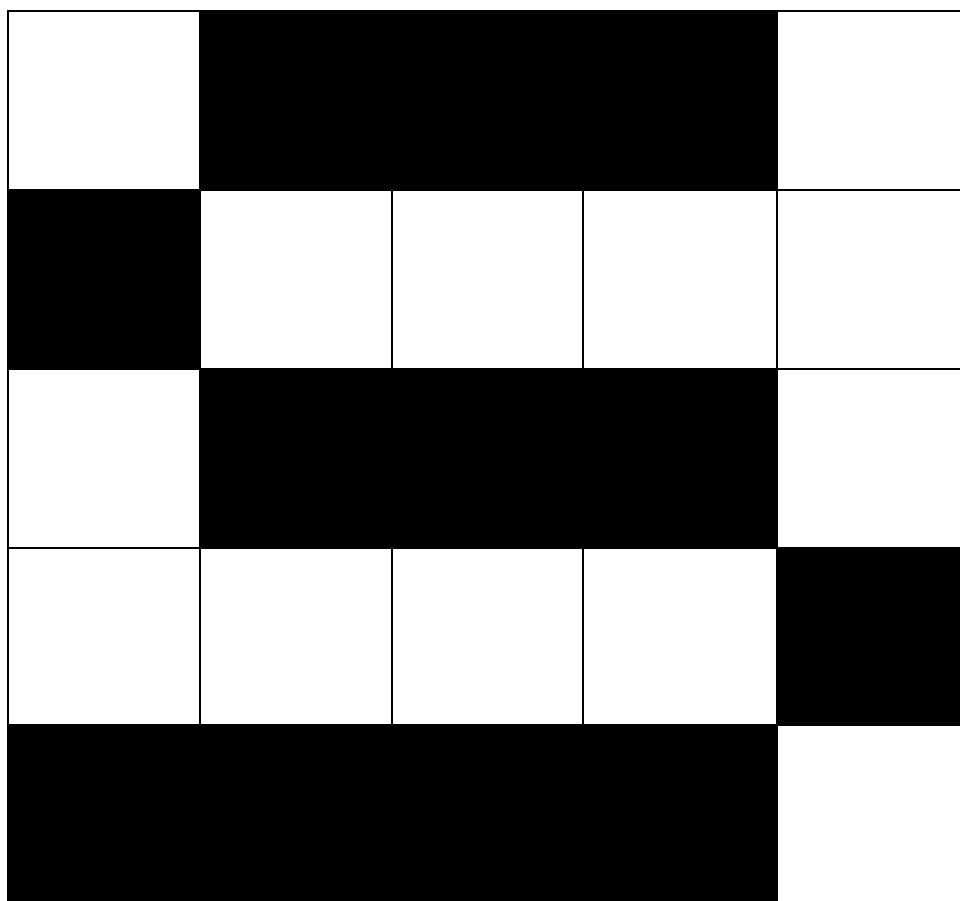


CONGRUENT SEGMENTS AND SEGMENT BISECTORS

Is M the Midpoint? Read the Marks, Not
the Picture

25 figures · ticks, numbers and none · a wrong square spoils the picture

FREE



1. **Hand out page 3.** That is the whole preparation.
2. **Say this once:** *“Read the marks, not the picture. A point can sit dead in the middle and still not be the midpoint. Check the marks to be sure.”*
3. **Fill a square with slanted lines if the marks make M the midpoint of AB. Leave it white if they do not, or if there is no way to tell.** A picture appears. 12 of the 25 are filled.

Student sheet	page 3, one per student. Same ticks, different ticks and no marks are printed on it as pictures.
Answers	page 4 — the finished picture and the reason for every square.

The eye is not enough. Every drawing is to scale. In every filled square, M looks halfway, and it is. But eight of the white squares also have M exactly in the middle. Three of them have no marks at all. The others have marks that do not make M the midpoint. A student who fills every square where M looks halfway gets eight squares wrong, and the picture shows the holes.

The white squares show the common ways a midpoint is misread. Some have no marks. Some have one tick on one half and two ticks on the other. Different ticks do not say the lengths are equal, but they do not say the lengths are different either. Some pair one half with a separate segment. In another, the ticks pair across two crossing segments. Others have two different numbers, a right-angle mark and no ticks, a path that bends at M, or M past B, so that B is the midpoint. White covers two cases: four squares where M cannot be the midpoint, and nine where there is no way to tell. The student sheet says so.

The filled squares change things that do not matter. Some halves have one tick and some have two. Some have numbers instead of ticks. Some have a line or a second segment through M, a tick carried to a third segment, or AB drawn as part of a longer line. None of the segments is drawn horizontal.



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.

Mystery Picture

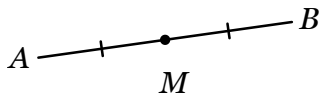
Read the marks, not the picture

Name _____

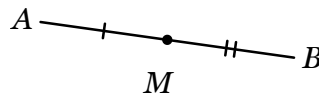
Period _____

Date _____

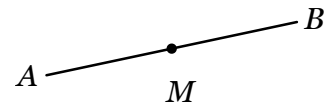
Do the marks make M the midpoint of AB ? If yes, fill the square with slanted lines. If no, or if there is no way to tell, leave it white. Looking halfway is not enough. Only ticks or numbers make two lengths equal. **When you finish, look at the picture.** If it does not look right, one square is wrong.



Same ticks
 $AM \cong MB$, so $AM = MB$: M is the midpoint



Different ticks
nothing is said about AM and MB



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

1 	2 	3 	4 	5
6 	7 	8 	9 	10
11 	12 	13 	14 	15
16 	17 	18 	19 	20
21 	22 	23 	24 	25

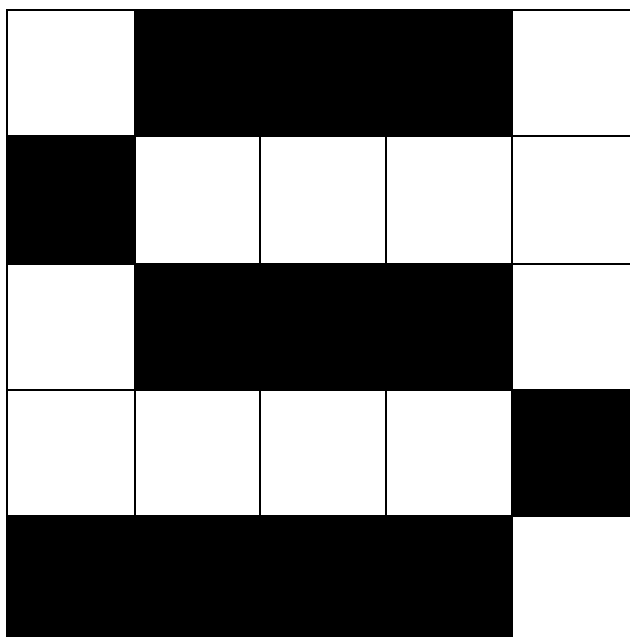


135 free geometry lessons — worksheets, worked answers and lesson plans.
chooseyourlesson.com

Mystery Picture — answers

For the teacher

The finished picture is **the letter S**. The table reads left to right, the way the sheet is read. The squares are numbered on the student's sheet.



1–5	white There are no marks, so there is no way to tell.	FILL The two halves have matching ticks.	FILL Both halves have the same number.	FILL The halves have matching ticks. The line changes nothing.	white Different ticks do not say the halves are equal.
6–10	FILL The two halves of AB have matching ticks.	white Only one half is ticked, and it is paired with CD.	white The path bends at M, so M is not on segment AB.	white The ticks say $MA = MC$ and $MB = MD$, not $MA = MB$.	white The halves are 7 and 8, so M cannot be the midpoint.
11–15	white A right-angle mark is not a tick.	FILL AM, MB and CD all have one tick, so $AM = MB$.	FILL The ticks are on AM and MB.	FILL The two halves have matching ticks.	white M is past B. B is the midpoint of AM.
16–20	white There are no marks, so there is no way to tell.	white Different ticks do not say the halves are equal.	white Only one half is ticked, and it is paired with CD.	white The path bends at M, so M is not on segment AB.	FILL Both halves have the same number.
21–25	FILL The two halves of AB have matching ticks.	FILL The two halves have matching ticks.	FILL Both halves have the same number.	FILL The two halves have matching ticks.	white There are no marks, so there is no way to tell.