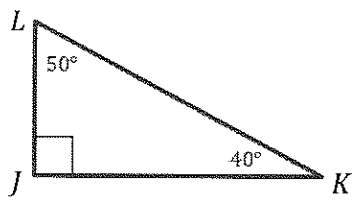
G5-M6-Lesson 16

1. In the right triangle below, the measure of angle L is $50°$. What is the measure of angle K?



$\angle K = 40°$

The sum of the interior angles of *all* triangles is $180°$. Triangle JKL is a right triangle. Since $\angle J$ is $90°$, and $\angle L$ is $50°$, $\angle K$ must be $40°$.

$180° - 90° - 50° = 40°$

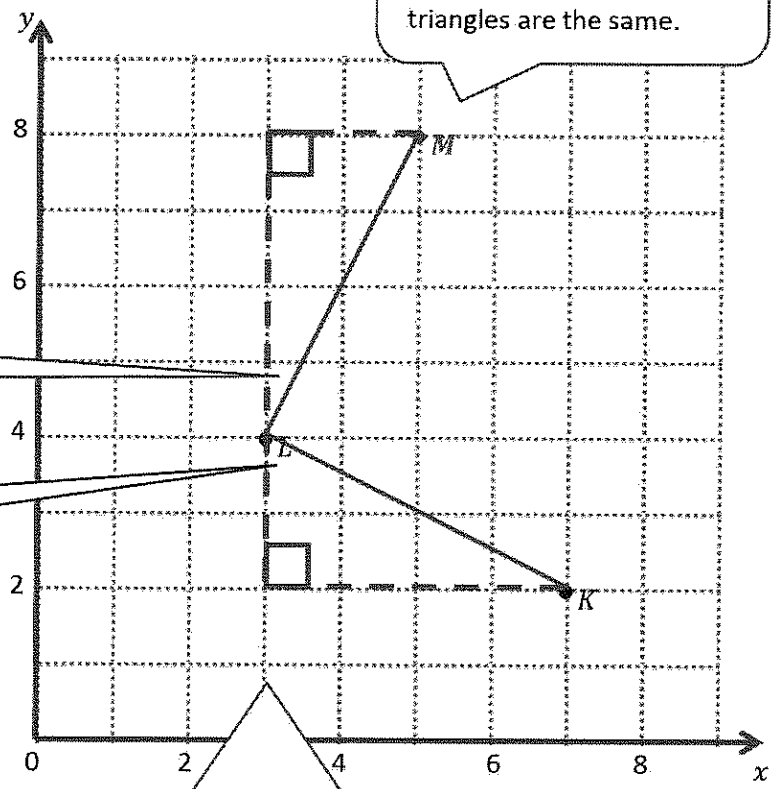
2. Use the coordinate plane below to complete the following tasks.

   a. Draw $\overline{KL}$.

   b. Plot point $(5, 8)$.

   c. Draw $\overline{LM}$.

After I sketch the right triangle, I can visualize it sliding and rotating. These triangles are the same.



This is an acute angle, like $\angle K$, in Problem 1.

This is an acute angle, like $\angle L$, in Problem 1.

The two triangles I sketched are aligned to create a $180°$, or straight angle, along the vertical grid line. So if the two acute angles of the triangles add up to $90°$, the angle in between them, $\angle MLK$, must also be $90°$.

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d. Explain how you know $\angle MLK$ is a right angle without measuring it.

I used the grid lines to sketch a right triangle with side $\overline{LK}$, just like in Problem 1. Then I visualized sliding and rotating the triangle so side $\overline{LK}$ matched up with side $\overline{LM}$.

I know that the measures of the 2 acute angles of a right triangle add up to $90°$. So when the long side of the triangle and the short side of the triangle form a straight angle, $180°$, the angle in between them, $\angle MLK$, is also $90°$.

e. Compare the coordinates of points L and K. What is the difference of the x-coordinates? The y-coordinates?

$L\ (3, 4)$ and $K\ (7, 2)$

The difference of the x-coordinates is 4.

The difference of the y-coordinates is 2.

f. Compare the coordinates of points L and M. What is the difference of the x-coordinates? The y-coordinates?

$L\ (3, 4)$ and $M\ (5, 8)$

The difference of the x-coordinates is 2.

The difference of the y-coordinates is 4.

g. What is the relationship of the differences you found in parts (e) and (f) to the triangles of which these two segments are a part?

The difference in the value of the coordinates is either 2 or 4. That makes sense to me because the triangles that these two segments are part of have a height of either 2 or 4 and a base of either 2 or 4.

When I visualize the triangle sliding and rotating, it makes sense that the x-coordinates and y-coordinates will change by a value of 2 or 4 because that's the length of the triangle's height and base.

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