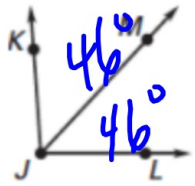
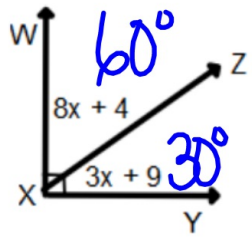
Directions: Use the figure at right to complete each of the following statements.



1. If $\angle KJM \cong \angle MJL$, then $\overrightarrow{JM}$ is an angle bisector.
2. If $\overrightarrow{JM}$ bisects $\angle KJL$, then $m\angle KJM = m\angle MJL$.
3. If $\overrightarrow{JM}$ bisects $\angle KJL$ and $m\angle MJL = 48°$, then $m\angle KJM = 48°$.
4. $\overrightarrow{JM}$ bisects $\angle KJL$ and $m\angle KJM = 46°$, then $m\angle KJL = 92°$.

5. Find the value of x and then find $m\angle WXZ$ and $m\angle ZXY$.



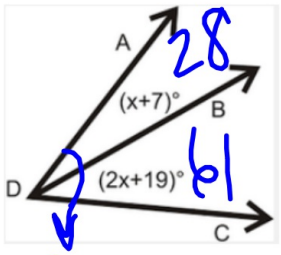
$8x + 4 + 3x + 9 = 90$

$11x + 13 = 90$

$11x = 70$

$x = 7$

6. Find the value of x if $m\angle ADC = 89°$.
Then find $m\angle ADB$ and $m\angle BDC$.

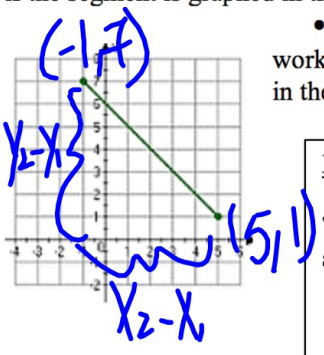


28
61
89

$x+7+2x+19=89$
$3x+26=89$
$3x=63$
$x=21$

Objective 1: Finding the length of a segment in the x-y plane. Sect. 1-8

So far we have seen how to use the segment addition postulate to find the length of several segments. But what if the segment is graphed in the x-y coordinate plane, like below?



- You can't just count the squares to see how long it is…that only works with horizontal and vertical figures. When a segment is graphed in the x-y plane, we use the dist formula to find its length.

DISTANCE FORMULA IN THE X-Y PLANE

To find the distance between two points (x_1, y_1) and (x_2, y_2), use the formula below:

$$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

Ex 1: Find the distance of the segment in the diagram above.

*First, write the coord of the segment's endpts.

* Label the points (x_1, y_1) and (x_2, y_2) if that helps

$$d = \sqrt{(+5 - -1)^2 + (1-7)^2}$$

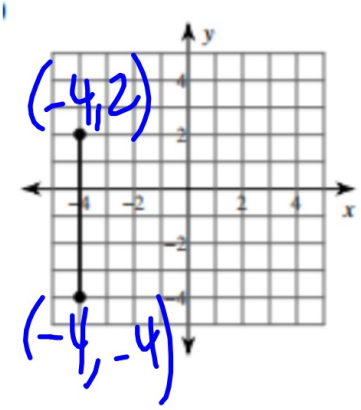
*Now plug the numbers into the distance formula.

$$d = \sqrt{36 + 36}$$

$$= \sqrt{72}$$

$$\approx 8.49$$

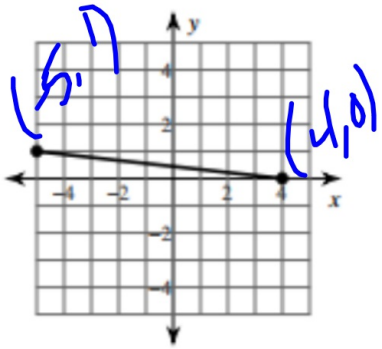
Ex 2: Find the distance between the two points.



$$d = \sqrt{(-4 - -4)^2 + (-4 - 2)^2}$$

$$= \sqrt{36} = 6$$

Ex 3: Find the distance between the two points.



(-5, 1) (4, 0)

$$d = \sqrt{(-5-4)^2 + (1-0)^2}$$

$$= \sqrt{81+1} = \sqrt{82}$$

$$\approx 9.1$$

Did we need to use the distance formula for this example? Why or why not?

Ex 4: Find the distance between the points (-1, 4) and (5, -3).

$$d = \sqrt{85} \approx 9.2$$

Ex 5: Find the distance between the points (-2, -8) and (7, 9).

$d = \sqrt{370} \approx 19.2$

Ex 6: Find the distance between the points (0, 1) and (-4, -2).

$d = \sqrt{25} = 5$

Objective 2: Finding the midpoint of segment in the x-y plane.

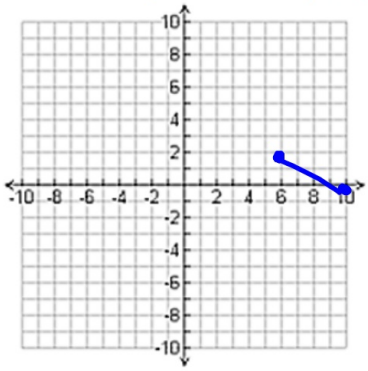
Recall from earlier in this unit, that the midpoint of a segment cuts the segment into 2 equal parts. Now we will see how to find the midpoint of a segment in the x-y plane. We will also learn to find an endpoint if given an endpoint and a midpoint of segment.

MIDPOINT FORMULA IN THE X-Y PLANE

To find the midpoint of a segment whose endpoints are (x_1, y_1) and (x_2, y_2) use the formula:

$$m = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Ex 7: Find the midpoint of the segment whose endpoints are (6, 2) and (10, 0).



$$m = \left(\frac{6+10}{2}, \frac{2+0}{2} \right)$$

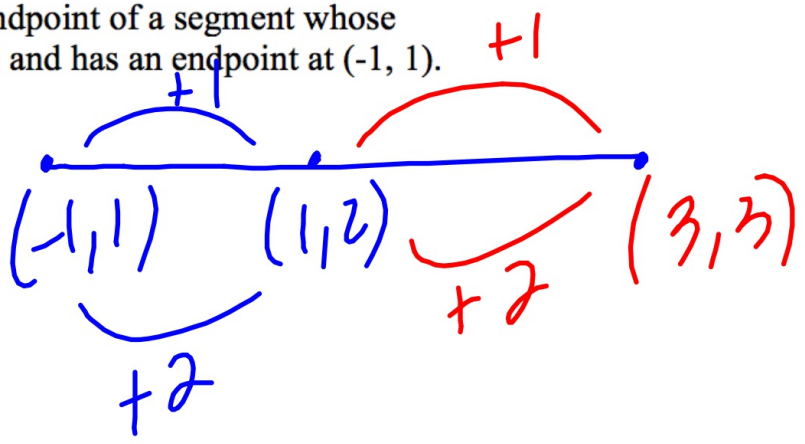
$$= (8, 1)$$

(6,2) 2 (8,1) 2 (10,0)

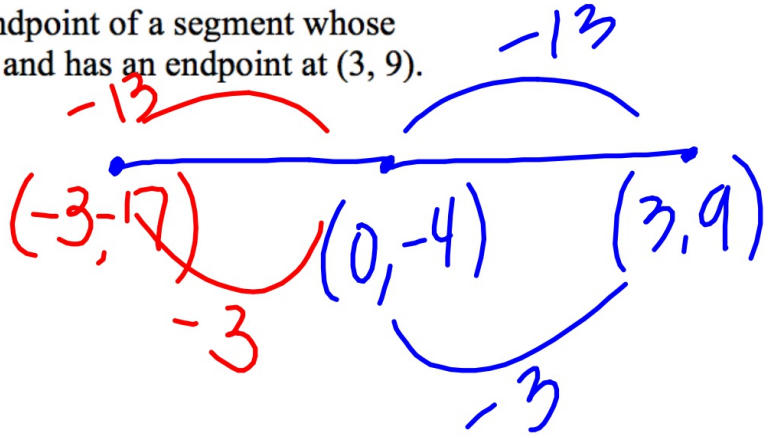
Ex 8: Find the midpoint of the segment whose endpoints are (-3, 4) and (5, 8).

$M = (1, 6)$

Ex 9: Find the endpoint of a segment whose midpoint is (1, 2) and has an endpoint at (-1, 1).



Ex 10: Find the endpoint of a segment whose midpoint is (0, -4) and has an endpoint at (3, 9).



HW #7 - due tomorrow

Sect. 1-8

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Problems: 1, 3, 4, 6, 9, 13, 14, 19, 20

IXL #2 - due Friday at 4pm

C.1 & C.5