5. The endpoints of $\overline{AB}$ are $A(1, 2)$ and $B(7, 8)$. Find the coordinates of the midpoint M.

6. The endpoints of $\overline{CD}$ are $C(-4, 3)$ and $D(-6, 5)$. Find the coordinates of the midpoint M.

7. The midpoint of $\overline{TU}$ is $M(2, 4)$. One endpoint is $T(1, 1)$. Find the coordinates of endpoint U.

8. The midpoint of $\overline{VW}$ is $M(-1, -2)$. One endpoint is $W(4, 4)$. Find the coordinates of endpoint V.

5. The endpoints of $\overline{AB}$ are $A(1, 2)$ and $B(7, 8)$. Find the coordinates of the midpoint M. $(4, 5)$

6. The endpoints of $\overline{CD}$ are $C(-4, 3)$ and $D(-6, 5)$. Find the coordinates of the midpoint M. $(-5, 4)$

7. The midpoint of $\overline{TU}$ is $M(2, 4)$. One endpoint is $T(1, 1)$. Find the coordinates of endpoint U. $(3, 7)$

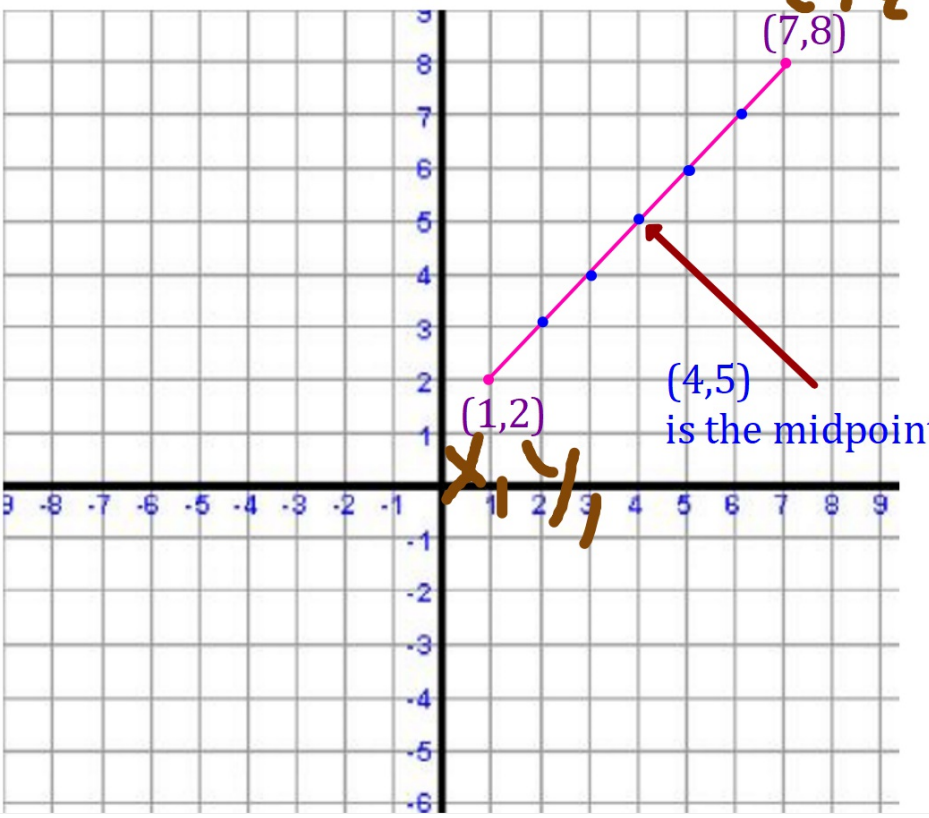
8. The midpoint of $\overline{VW}$ is $M(-1, -2)$. One endpoint is $W(4, 4)$. Find the coordinates of endpoint V. $(-6, -8)$

*See next pages for work shown.

5. The endpoints of $\overline{AB}$ are $A(1, 2)$ and $B(7, 8)$. Find the coordinates of the midpoint M.

Since your slope is 6/6 or 1 add points to each part of the line.

Now you can visualize the midpoint would be in the middle at (4,5)



Prove by using the midpoint formula.

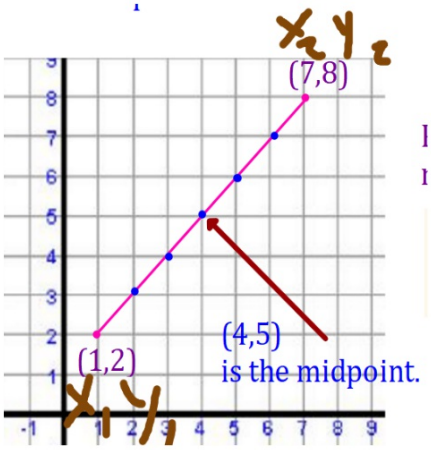
$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

$\frac{1+7}{2}$ $\frac{2+8}{2}$

$\frac{8}{2}$ $\frac{10}{2}$

(4,5)

Also find the distance between the points.



use the same labeled ordered pairs

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

$(7-1)^2 + (8-2)^2$

$6^2 + 6^2$

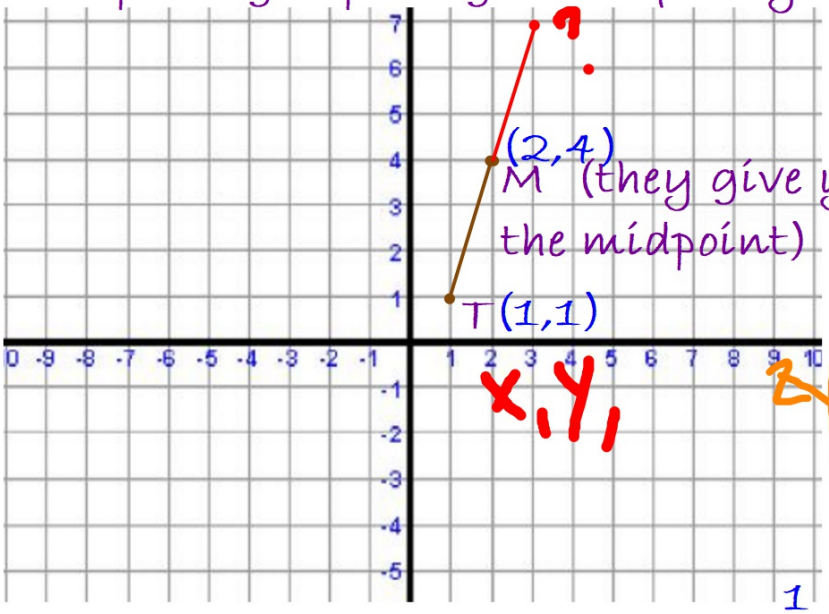
$36 + 36$

$\sqrt{72} = \sqrt{36} \cdot \sqrt{2}$

$8.5 = 6\sqrt{2}$

7. The midpoint of $\overline{TU}$ is $M(2, 4)$. One endpoint is $T(1, 1)$. Find the coordinates of endpoint U.

First find your slope from T to M. It is 3/1 so now from the midpoint go up 3 right 1 to find your other endpoint. (3,7)



Algebra Way:

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

$\frac{1 + x_2}{2} = 2$ $\quad$ $\frac{1 + y_2}{2} = 4$

$1 + x_2 = 4$ $\quad$ $1 + y_2 = 8$

$-1 \quad -1$ $\quad$ $-1 \quad -1$

$x_2 = 3$ $\quad$ $y_2 = 7$

Also find the distance between the points.

Use the same labeled ordered pairs

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

$(3-1)^2 + (7-1)^2$

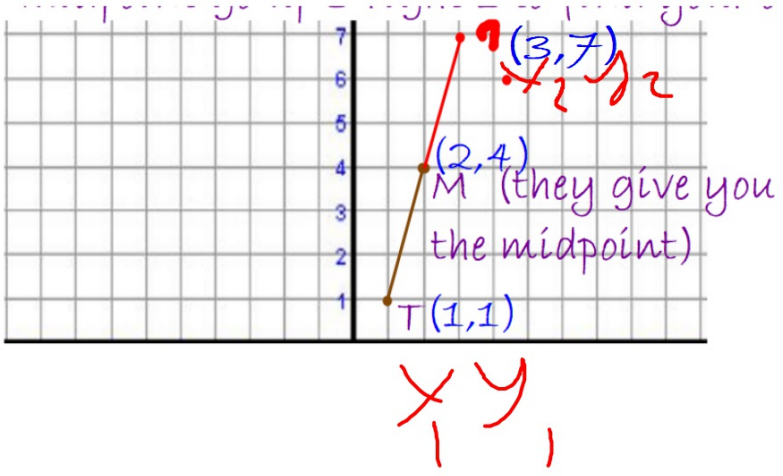
$2^2 + 6^2$

$4 + 36$

$\sqrt{40} = 6.3$

$\sqrt{4} \cdot \sqrt{10}$

$2\sqrt{10}$



$x_1 \; y_1$

$x_2 \; y_2$

*you could also find the distance between T and M and then double it.