Geometry 1.3

Find the distance between 2 points
Find the midpoint of a segment
coordinates*
pythagorean theorem*
distance
irrational number
midpoint
segment bisector

*8th standard

Construction

Quiz 1.1-1.2
There will be (at least) one construction

GuidedPractice

Find the distance between each pair of points.

2A. $E(-5, 6)$ and $F(8, -4)$

2B. $J(4, 3)$ and $K(-3, -7)$

$a^2 + b^2 = c^2$

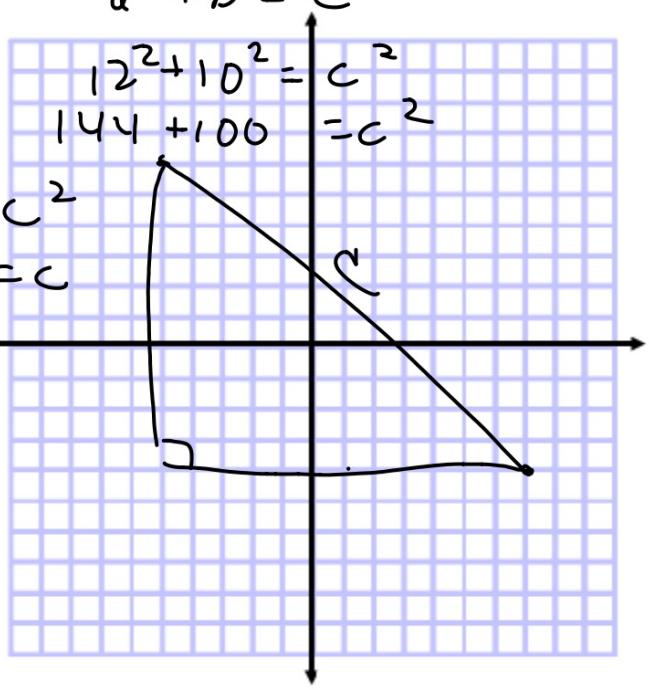
$12^2 + 10^2 = c^2$

$144 + 100 = c^2$

$244 = c^2$

$\sqrt{244} = c$

≈ 15.6



GuidedPractice

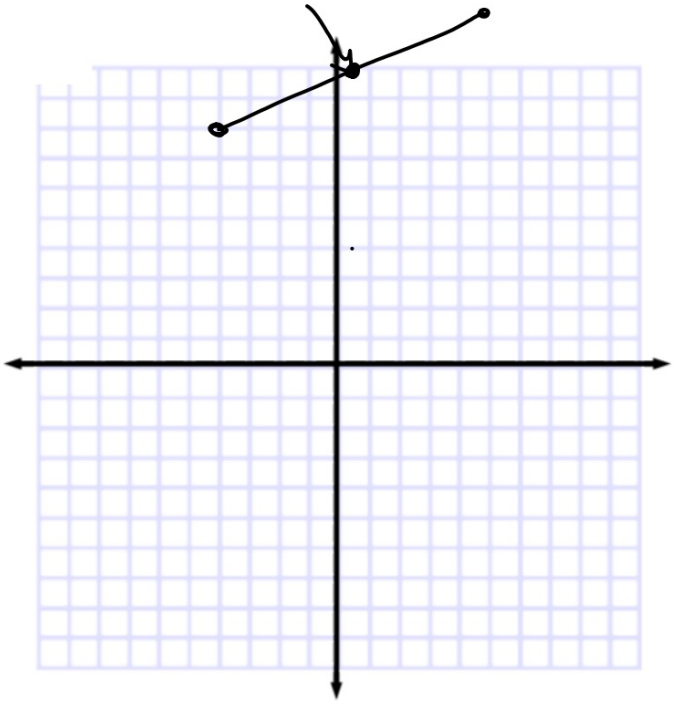
Find the coordinates of the midpoint of a segment with the given coordinates.

4A. $A(5, 12)$, $B(-4, 8)$

4B. $C(-8, -2)$, $D(5, 1)$

$\frac{5+-4}{2} \quad \frac{12+8}{2}$

$= \left(\frac{1}{2}, 10\right)$



One picture is worth 1000 words...

$2x - 3 = 27 - 4x$
$+4x \quad +3 \quad +3 \quad +4x$
$6x = 30$
$x = 5$

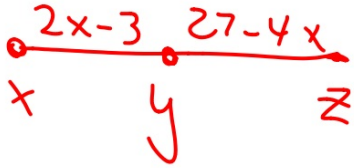
GuidedPractice

6A. Find the measure of $\overline{YZ}$ if Y is the midpoint of $\overline{XZ}$ and $XY = 2x - 3$ and $YZ = 27 - 4x$.

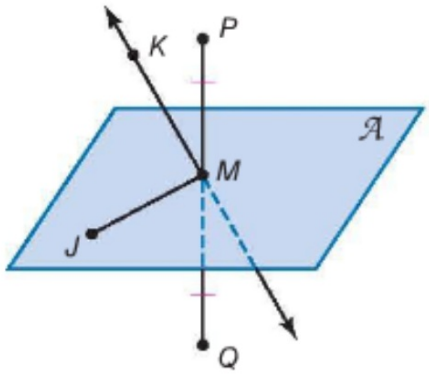
$= 7$

6B. Find the value of x if C is the midpoint of $\overline{AB}$, $AC = 4x + 5$, and $AB = 78$.

$27 - 4.5$
$27 - 20$



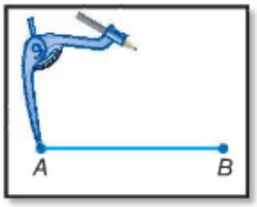
Any segment, line, or plane that intersects a segment at its midpoint is called a **segment bisector**. In the figure at the right, M is the midpoint of $\overline{PQ}$. Plane $\mathcal{A}$, $\overline{MJ}$, $\overleftrightarrow{KM}$, and point M are all bisectors of $\overline{PQ}$. We say that they *bisect* $\overline{PQ}$.



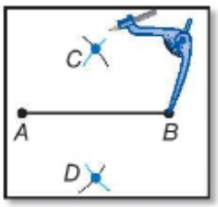
p.30 divide into 2 = parts

Construction Bisect a Segment

Step 1 Draw a segment and name it $\overline{AB}$. Place the compass at point A. Adjust the compass so that its width is greater than $\frac{1}{2}AB$. Draw arcs above and below $\overline{AB}$.



Step 2 Using the same compass setting, place the compass at point B and draw arcs above and below $\overline{AB}$ so that they intersect the two arcs previously drawn. Label the points of the intersection of the arcs as C and D.



Step 3 Use a straightedge to draw $\overline{CD}$. Label the point where it intersects $\overline{AB}$ as M. Point M is the midpoint of $\overline{AB}$, and $\overline{CD}$ is a bisector of $\overline{AB}$.