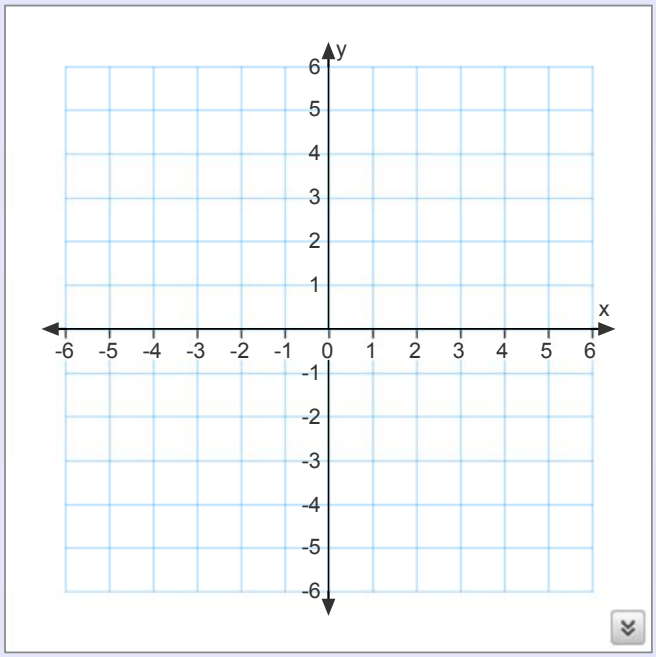
Formulas and the Coordinate Plane

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

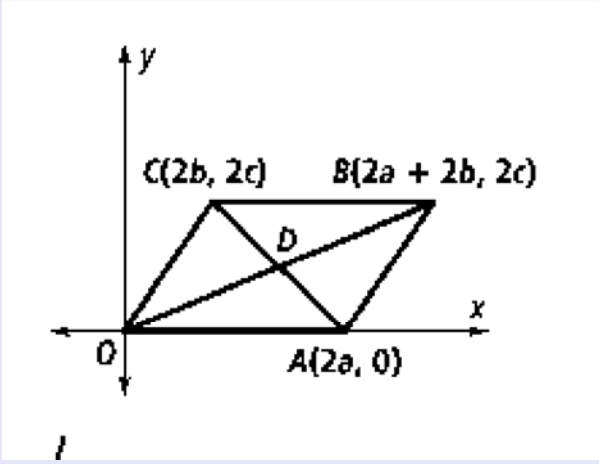
Midpoint Formula $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Slope Formula $\frac{y_2 - y_1}{x_2 - x_1}$

Ex. 1) Is the triangle *scalene, isosceles,* or *equilateral?* The vertices are A(0,1), B(4,4) and C(7,0).



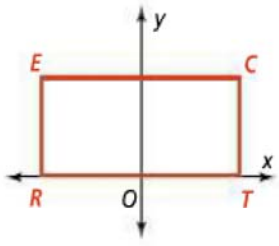
Ex. 2) The diagram shows a general parallelogram with a vertex at the origin and one side along the x-axis. What are the coordinates of D, the point of intersection of the diagonals of parallelogram ABCO? How do you know?



Ex. 3)

What are the coordinates of the vertices of each figure?

a. *RECT* is a rectangle with height a and length $2b$. The y-axis bisects $\overline{EC}$ and $\overline{RT}$.



b. *KITE* is a kite where $IE = 2a$, $KO = b$, and $OT = c$. The x-axis bisects $\overline{IE}$.