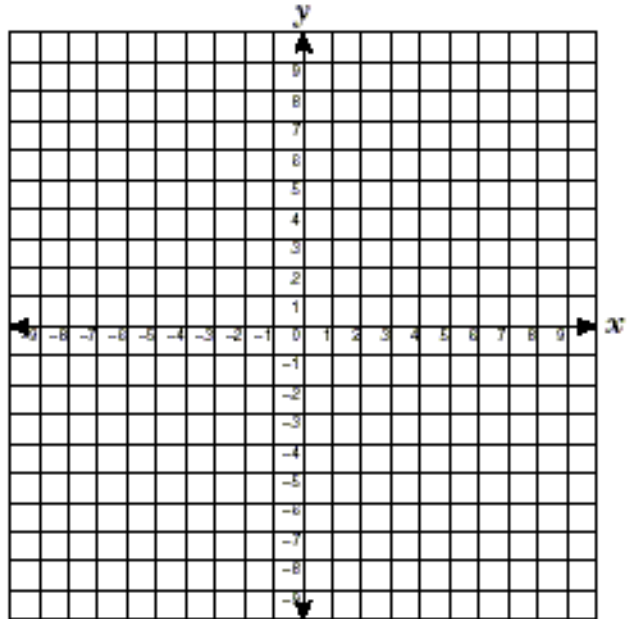


# Level 8 Study Guide

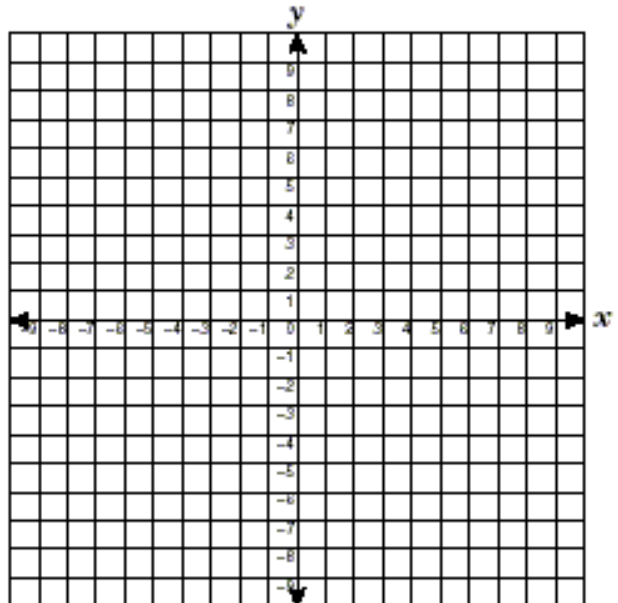
Time to put those thinking caps on!

Given:  $A(-2, 2)$ ,  $B(6, 5)$ ,  $C(4, 0)$ ,  $D(-4, -3)$

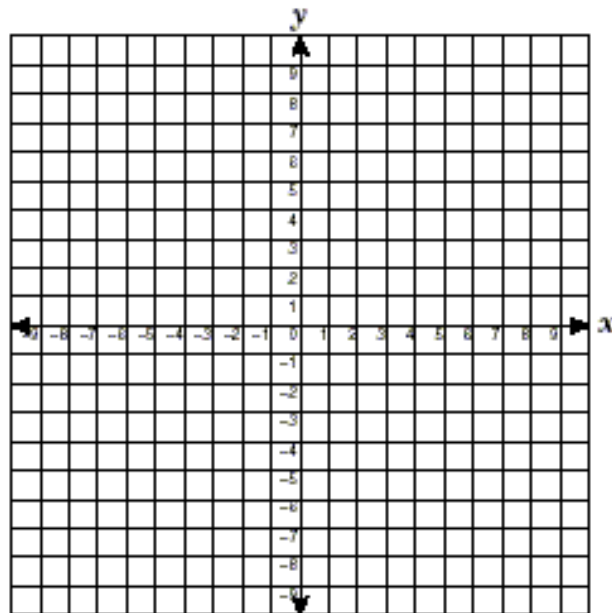
Prove:  $ABCD$  is a parallelogram but not a rectangle. [The use of the grid is optional.]



Ashanti is surveying for a new parking lot shaped like a parallelogram. She knows that three of the vertices of parallelogram  $ABCD$  are  $A(0, 0)$ ,  $B(5, 2)$ , and  $C(6, 5)$ . Find the coordinates of point  $D$  and sketch parallelogram  $ABCD$  on the accompanying set of axes. Justify mathematically that the figure you have drawn is a parallelogram.

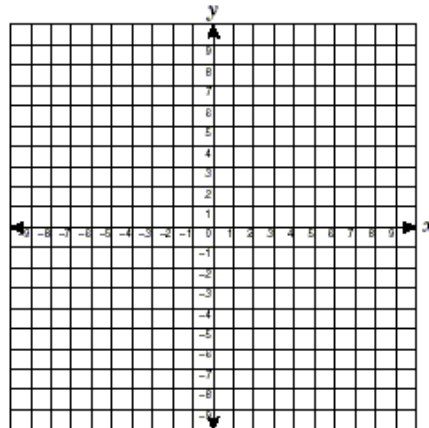


Quadrilateral  $MATH$  has coordinates  $M(1,1)$ ,  $A(-2,5)$ ,  $T(3,5)$ , and  $H(6,1)$ . Prove that quadrilateral  $MATH$  is a rhombus and prove that it is *not* a square. [The use of the grid is optional.]

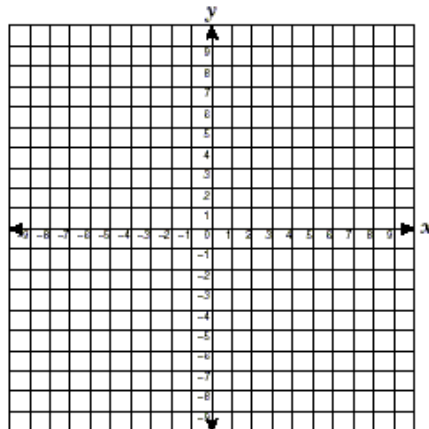


What are the coordinates of the point on the directed line segment from  $K(-5,-4)$  to  $L(5,1)$  that partitions the segment into a ratio of 3 to 2?

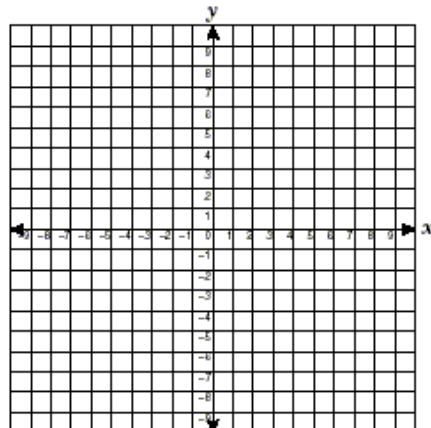
- (1)  $(-3,-3)$
- (2)  $(-1,-2)$
- (3)  $(0,-\frac{3}{2})$
- (4)  $(1,-1)$



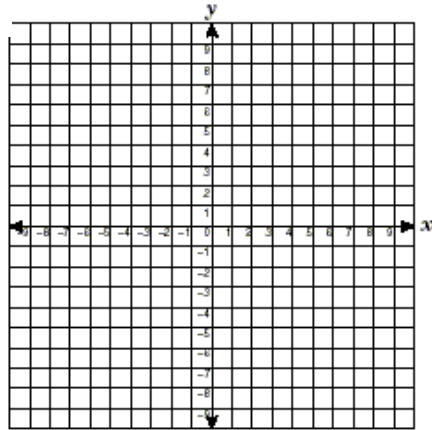
In the coordinate plane, the vertices of  $\triangle ABC$  are  $A(x,5)$ ,  $B(-2,3)$  and  $C(-4,7)$ . Find the value of  $x$  that makes  $\triangle ABC$  a right triangle. Justify your answer.



Which equation represents the perpendicular bisector of  $\overline{AB}$  whose endpoints are  $A(8,2)$  and  $B(0,6)$ ?

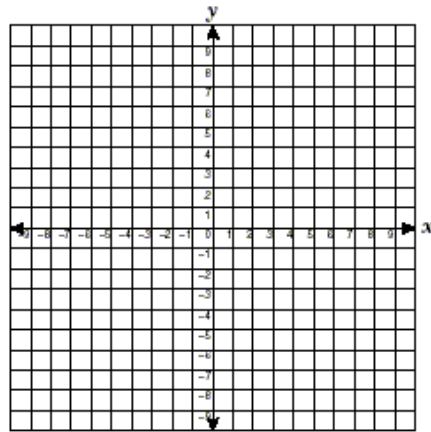


In the coordinate plane, the points  $(2,2)$  and  $(2,12)$  are the endpoints of a diameter of a circle. What is the length of the radius of the circle?



The vertices of square  $RSTV$  have coordinates  $R(-1,5)$ ,  $S(-3,1)$ ,  $T(-7,3)$ , and  $V(-5,7)$ . What is the perimeter of  $RSTV$ ?

- 1)  $\sqrt{20}$
- 2)  $\sqrt{40}$
- 3)  $4\sqrt{20}$
- 4)  $4\sqrt{40}$



Given:  $J(-4,1)$ ,  $E(-2,-3)$ ,  $N(2,-1)$   
 Prove:  $\triangle JEN$  is an isosceles right triangle.  
 [The use of the grid is optional.]

