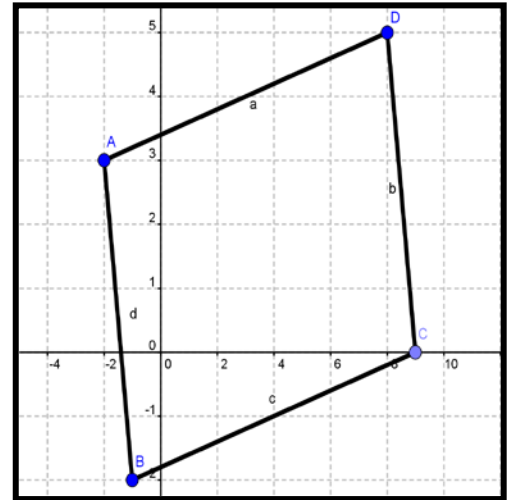


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(A) Lesson Objectives

- a. Define the term diagonals of a quadrilateral
- b. Define the term bisector of a line
- c. Write the midpoint formula
- d. Use co-ordinate geometry to discover what the characteristics of the various diagonals in quadrilaterals are

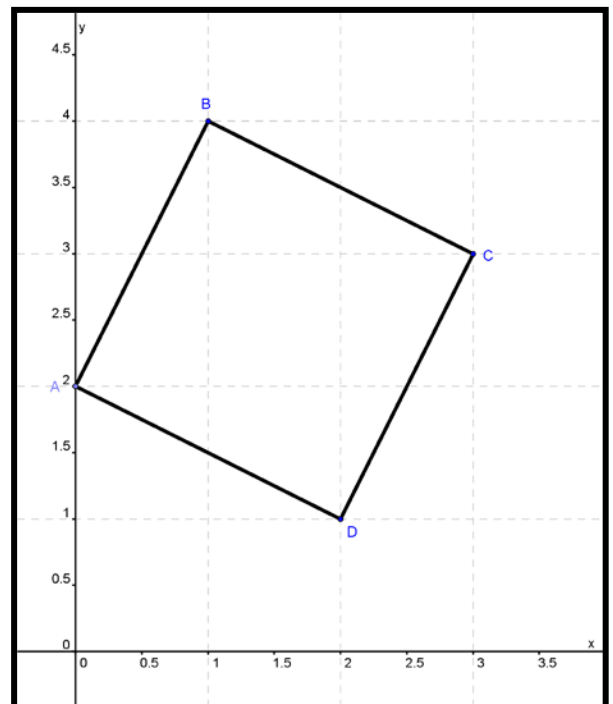


(B) Fast Five

- a. Write down the distance formula
- b. Determine the distance between A(-2,3) and B(6,-1)
- c. Determine the distance between C(0,-3.5) and D(4.5,2)
- d. Use the diagram included to classify the quadrilateral

(C) Explorations

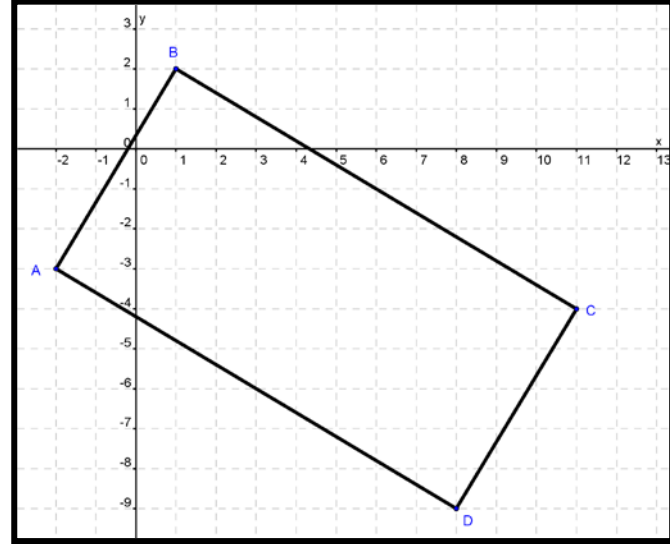
- a. Draw the following square X(0,2), Y(1,4), W(3,3), Z(2,1)
 - i. Draw the diagonal from X to W and the diagonal from Y to Z
 - ii. Determine their lengths. What do you notice?
 - iii. Determine their slopes. What do you notice?
 - iv. Determine their midpoints. What do you notice?
 - v. What can you conclude about the diagonals of a square?



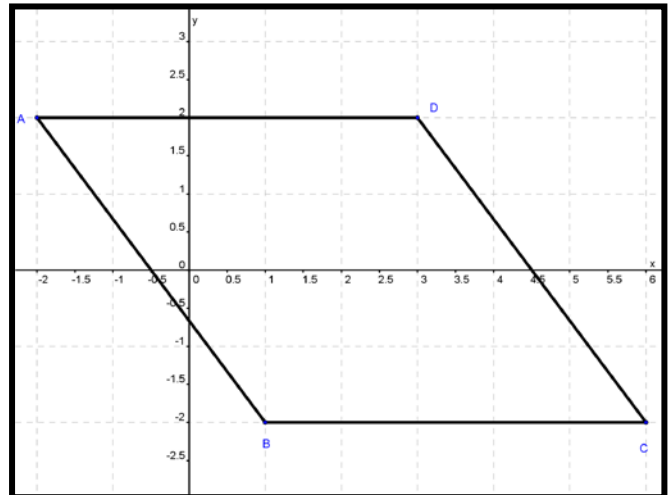
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- b. Draw the rectangle $A(-2,-3)$, $B(1,2)$, $C(11,-4)$ and $D(8,-9)$
- Draw the diagonal from A to C and the diagonal from B to D
 - Determine their lengths. What do you notice?
 - Determine their slopes. What do you notice?
 - Determine their midpoints. What do you notice?
 - What can you conclude about the diagonals of a rectangle?



- c. Draw the rhombus $A(-2,2)$, $B(1,-2)$, $C(6,-2)$ and $D(3,2)$
- Draw the diagonal from A to C and the diagonal from B to D
 - Determine their lengths. What do you notice?
 - Determine their slopes. What do you notice?
 - Determine their midpoints. What do you notice?
 - What can you conclude about the diagonals of a rhombus?



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d. Draw the parallelogram A(-1,-3), B(-4,-6), C(3,-4) and D(6,5)

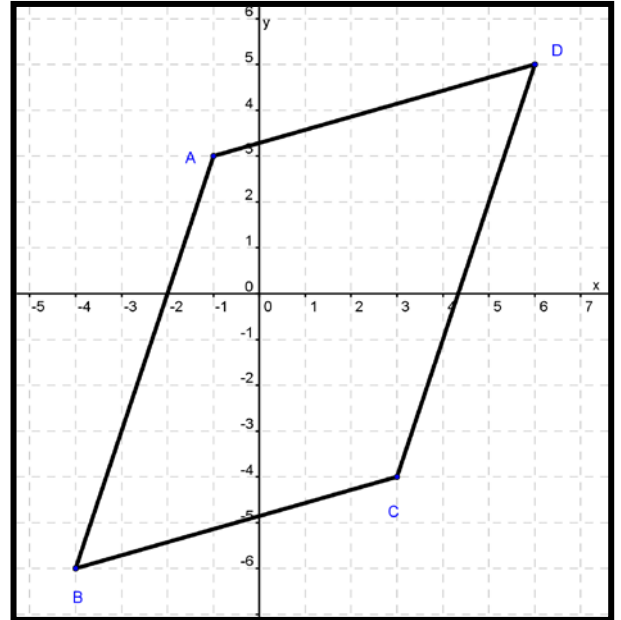
i. Draw the diagonal from A to C and the diagonal from B to D

ii. Determine their lengths. What do you notice?

iii. Determine their slopes. What do you notice?

iv. Determine their midpoints. What do you notice?

v. What can you conclude about the diagonals of a parallelogram?



e. Draw the kite A(2,4), B(4,-2), C(-4,-8) and D(-4,2)

i. Draw the diagonal from A to C and the diagonal from B to D

ii. Determine their lengths. What do you notice?

iii. Determine their slopes. What do you notice?

iv. Determine their midpoints. What do you notice?

v. What can you conclude about the diagonals of a kite

