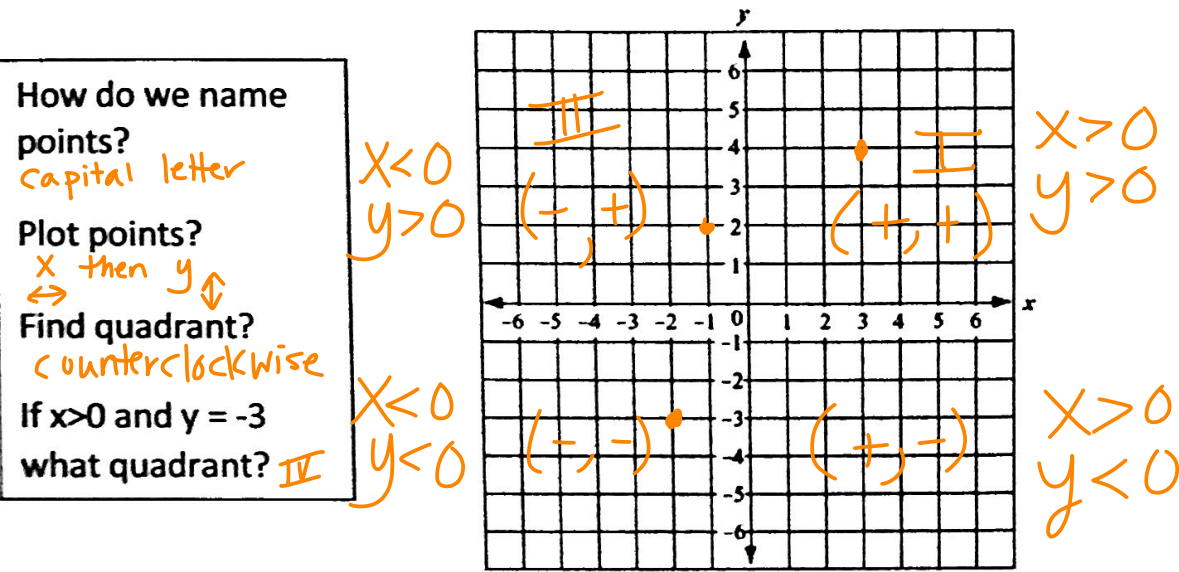


Notes: 1.1 Rectangular Coordinates

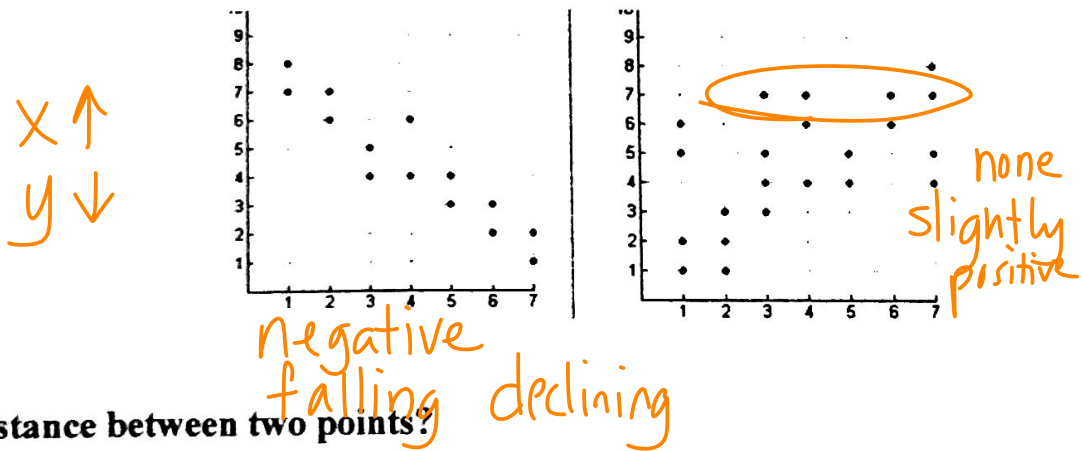
Vocab: Cartesian plane, x and y axis, origin, ordered pair, quadrants, scatterplot, distance, midpoint, translate

Example 1: Plot the points $(-1,2)$, $(3,4)$, $(-2,-3)$



What quadrant is each point in?

Scatterplots Ex. 2 What is the relationship?



How to find distance between two points?

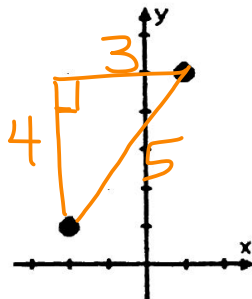
Ex. 3

Find distance between $(1,5)$ and $(-2,1)$

3, 4, 5

$$d = 5$$

$$3^2 + 4^2 = c^2$$



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

$$d = \sqrt{25}$$

$$d = 5$$

$$d = \sqrt{(-2 - 1)^2 + (1 - 5)^2}$$

$$d = \sqrt{(-3)^2 + (-4)^2}$$

$$d = \sqrt{9 + 16}$$

Warm-up

① Mentally:

$$(x-3)(x+6)$$

② $x^2 - 5x + 6$ } Factor
③ $4x^2 + 16x - 20$ }

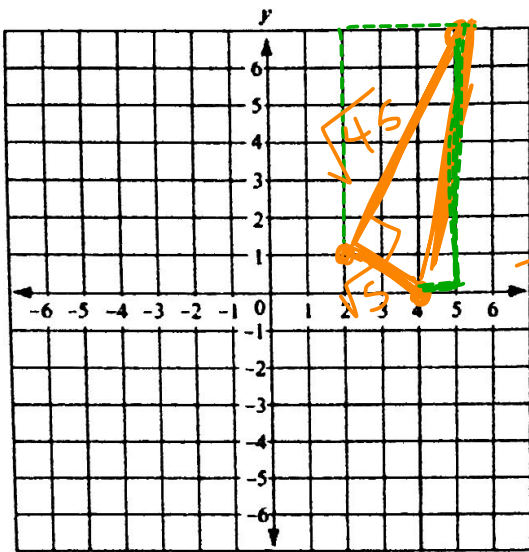
④ How many brothers do I have?

⑤ Who has a pig in this class?

⑥ Who in this class is from Nigeria?

Is the figure a right triangle?

Ex. 4 Plot (2,1), (4,0), and (5,7). Are these vertices of a right triangle?



$$6^2 + 3^2 = c^2 \quad |^2 + 2^2 = c^2$$

$$\sqrt{45} = c \quad 5 = c^2$$

$$\sqrt{5} = c$$

$$\frac{6}{3} \quad -\frac{1}{2}$$

$\frac{2}{1} \neq -\frac{1}{2}$
Opp. reciprocal slopes

$$7^2 + 1^2 = c^2$$

$$\sqrt{50} = c$$

$$\sqrt{5}, \sqrt{45}, \sqrt{50}$$

$$\sqrt{5^2} + \sqrt{45^2} = \sqrt{50^2}$$

$$5 + 45 = 50 \checkmark$$

How do you find the midpoint of 2 points?

Ex. 5 What is the midpoint of (2,1) and (4,0)?

$$M \left(\frac{2+4}{2}, \frac{1+0}{2} \right)$$

$$\left(\frac{6}{2}, \frac{1}{2} \right)$$

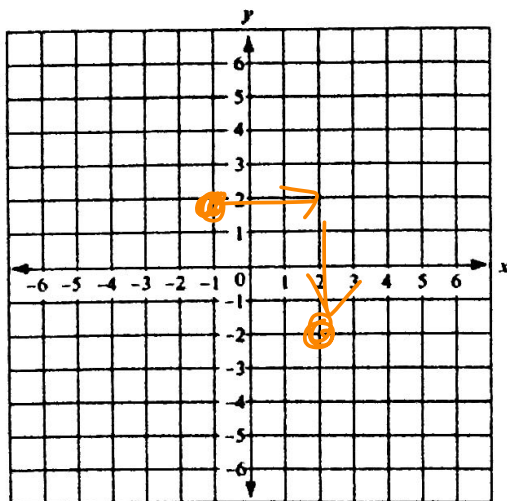
$$\left(3, \frac{1}{2} \right)$$

Mid-point Formula

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

How do you translate a point?

Plot the point (-1,2). Translate it right 3 and down 4.



What quadrant is the new point in?

IV