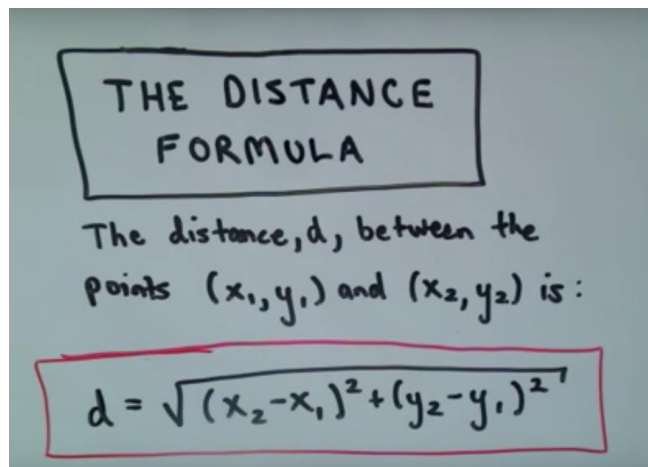


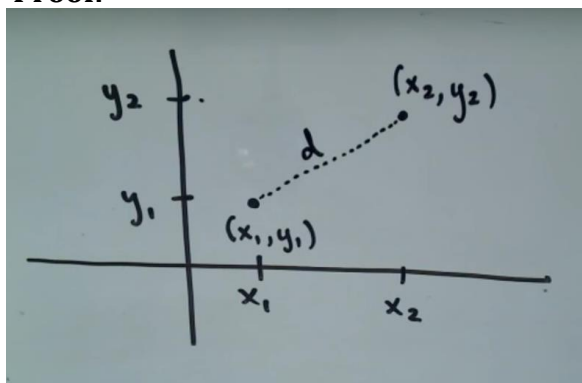
Write your questions here!

Intro Video:

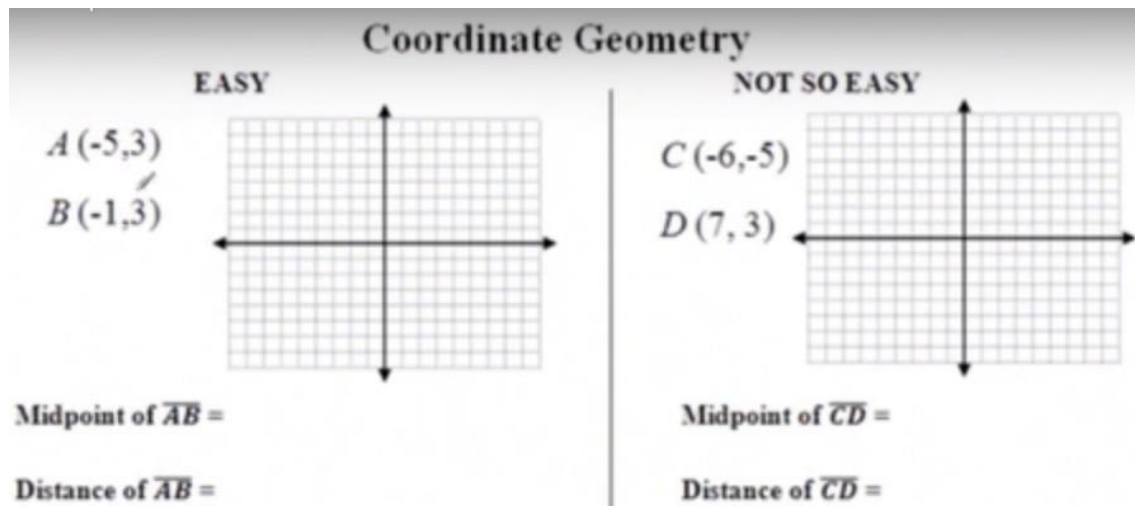
The distance formula helps on find the distance between 2 points on the coordinate plane. The distance formula is really just an extension of the _____ theorem (i.e. $a^2 + b^2 = \underline{\hspace{1cm}}$).



Proof:



Example: Find the distance between the points (2,3) and (7,9).



The Midpoint Formula

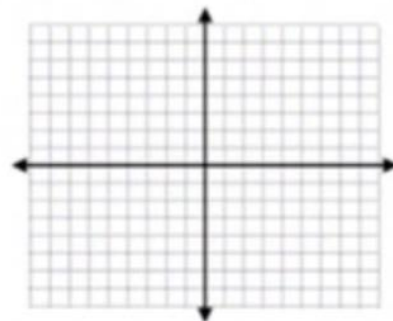
The Distance Formula

Example

\overline{ME} has the endpoints of $M(-6, 4)$ and $E(5, -2)$. Find the midpoint and distance of \overline{ME} .

Midpoint of \overline{ME} =

Distance of \overline{ME} =



Summarize your notes:

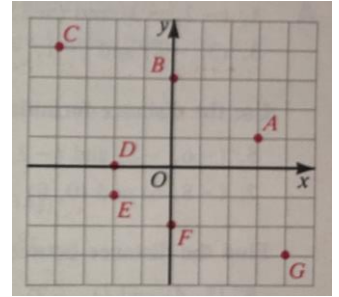
Now,
summarize
your notes
here!

Practice Problems

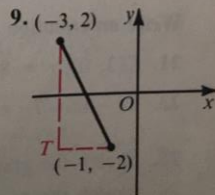
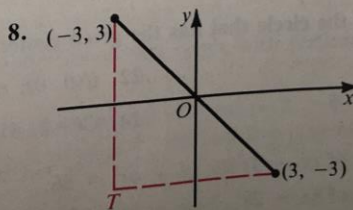
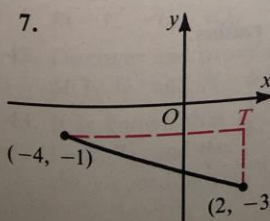
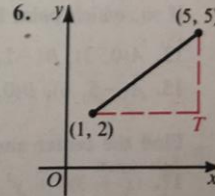
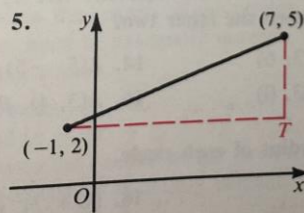
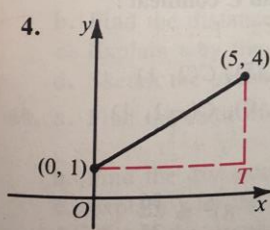
- What is the x-coordinate of every point that lies on a vertical line through point C?
- Which of the following points line on a horizontal line through point C?

(2, 4) (2, -4) (0, 4) (4, 3) (15, 4) (-4, 3)

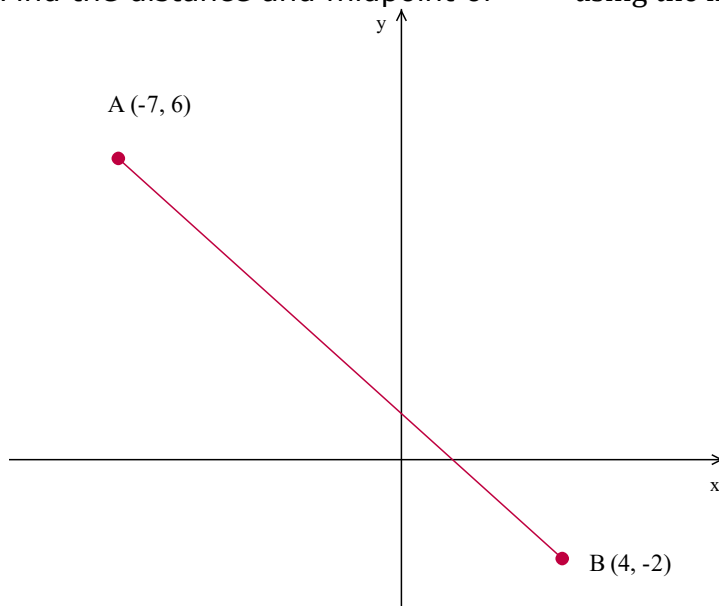
- Find \overline{OD} and \overline{BF} .



In Exercises 4–9 state: a. the coordinates of T
b. the lengths of the legs of the right triangle
c. the length of the segment shown



- Find the distance and midpoint of \overline{AB} using the information in the diagram below.



Find the distance between the two points.

11. (x_1, y_1) and (x_2, y_2)	12. $(-3, 6)$ and $(3, -6)$	13. $(-3, -1)$ and $(-5, -8)$
14. $(3, -4)$ and $(6, 0)$	15. $(-1, 0)$ and $(4, 2)$	16. $(-3, 2)$ and $(6, 2)$
17. $(0.5, -2.5)$ and $(4, -4)$	18. $(12, -10)$ and $(0, -6)$	19. $(2.3, 4.5)$ and $(-3.4, -5.2)$

Skillz Review:

Find x.	Factor	
1. $(x - 4)^2 = 121$	2. $6x^2 + 17x + 5$	3. $x^2 - 81$
Factor out the GCF	Find the area of a rectangle as an expresion.	
4. $21ab^4$ and $15a^7b^2$	5. Length: $(16 + 2m)$ Width: $(12 + 2m)$.	

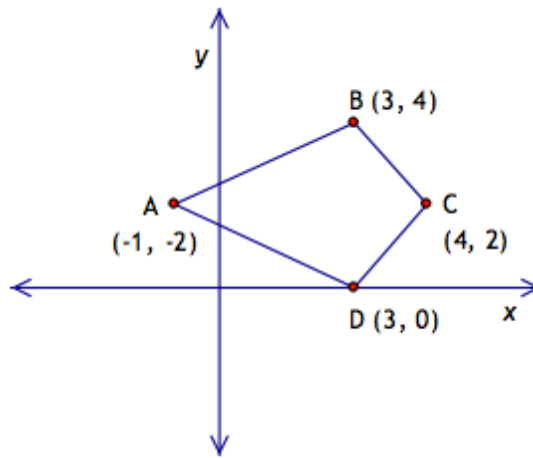
Application:

1. Find the distance between:
 $(15, 37)$ and $(42, 73)$.

2. Find the distance between:
 $(-19, -16)$ and $(-3, 14)$.

3. What is the perimeter of triangle ABC given: A(2, 4), B(8, 12), C(24, 0)?

4. Given: ABCD is a kite
Find the perimeter of the kite.



5. Find all points having an x-coordinate of -4 and whose distance from point $(4, 2)$ is 10.
6. Find all points having a y-coordinate of 3 and whose distance from point $(-2, 5)$ is 8.
7. Earlier, you were told that on a scavenger hunt, starting out from the same place, you walked 5 blocks east and 3 blocks north and your friend walked 7 blocks west and 2 blocks south. Each block is a tenth of a mile long. How far apart were you and your friend?
(Hint: starting point would be at the origin of the coordinate plane)

8.

Becky, Lia, and Marian are friends who all live in the same neighborhood. Becky lives 5 miles north of Lia, and Marian lives 12 miles east of Lia. How many miles away do Becky and Marian live from each other?

- A. 11 miles
- B. 12 miles
- C. 13 miles
- D. 14 miles
- E. 15 miles

9. What is the distance between coordinates (4, -2) and (-4, -6)?

- A. $4\sqrt{5}$
- B. $5\sqrt{3}$
- C. 8
- D. $9\sqrt{3}$
- E. 14