Geometry Name: _____

Unit 1: Lesson 1.3 Date: _____ Period: _____

Distance and Midpoint Formula

Essential Questions:

- How do algebra and geometry work together within the coordinate plane?

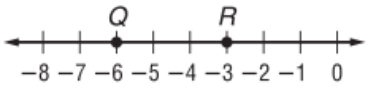
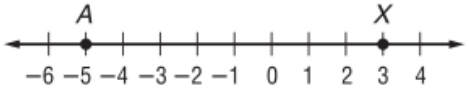
Goal:

- I can find the distance and midpoint on the coordinate plane, as well as algebraically.

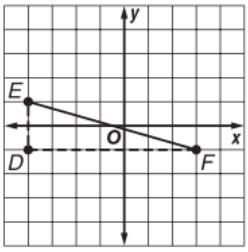
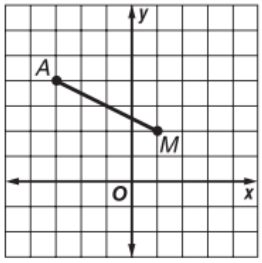
Key Ideas/Vocabulary:

- **Distance Formula →** $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
  - Number Line - distance is found using _____ _____.
- **Midpoint Formula →** $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
  - is the point halfway between the _____ of the segment.
- **Segment Bisector** – any segment, line, or plane that intersects a segment at the _____.

Section 1: Find Distance on a Number Line

1) Use the number line to find *QR*.  ***Answer:***	**YT 1)** Use the number line to find *AX*.  ***Answer:***

Section 2: Find Distance on a Coordinate Plane

2) Find the distance between E(-4, 1) and F(3, -1). Algebraically:  Geometric: **Answer:**	**YT2)** Find the distance between A(-3, 4) and M(1, 2). Algebraically:  Geometric: **Answer:**

Section 3: Find the Midpoint

5) *A*(5, 1) and *B*(-1, 5) ***Answer:***	**YT 5)** *C*(-7, -2) and *D*(11, 3) ***Answer:***

6) (-2, -6) and (x + 2, y + 3) ***Answer:***	**YT 6)** (-1.8, 1.9) and (1.1, 2.8) ***Answer:***

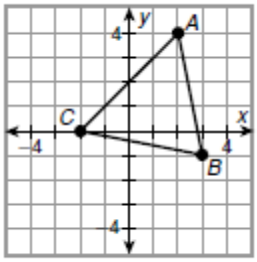
Section 4: Find the Midpoint and Distance

7) the line through (1.5, -1.5) and (2.5, -1**)** **Answer:** Distance =_____Midpoint=_____	**YT 7)** Line l contains A(8, 7) and B(1, 7) **Answer:** Distance =_____Midpoint=_____

Section 5: Find Coordinate Of An Endpoint

8) Find the coordinates of D if E (-6, 4) is the midpoint of $\overline{DF}$ and F has coordinates (-5, -3). **Answer:**	**YT 8)** Find the coordinates of R if N(8, -3) is the midpoint of $\overline{RS}$ and S has coordinates (-1, 5). **Answer:**

Section 6: Triangles in the Coordinate Grid

9) **Answers:** Find AB. _____ Find BC. _____ Find CA. _____ Name a pair of congruent segments._____ 	**YT 9)** Find the perimeter of triangle ABC to the nearest tenth if the coordinates are A(1, 4), B (-2, -1), and C(-3, -2). **Answer:**

Homework: Distance and Midpoint Formula – Supplement Worksheet # 5

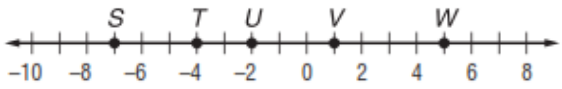
Lesson Summary:

Find the distance and the midpoint of the endpoints. A(5, -1) and B(-9, 7)

Name_____Period_____Date_____

DISTANCE AND MIDPOINT FORMULA - SUPPLEMENT WORKSHEET # 5

Use the number line to find each measure.

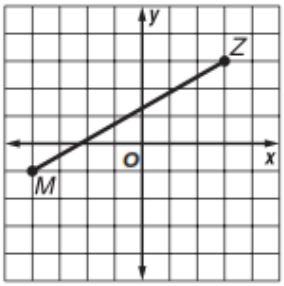


1. VW **2.** TV

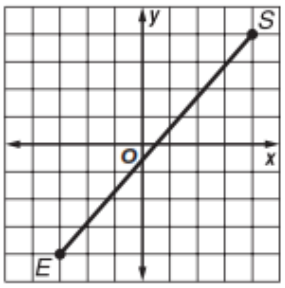
3. ST **4.** SV

Use the Pythagorean Theorem to find the distance between each pair of points.

5.



6.



Use the Distance Formula to find the distance between each pair of points.

7. $L(-7, 0)$, $Y(5, 9)$ **8.** $U(1, 3)$, $B(4, 6)$

Use the number line to find the coordinate of the midpoint of each segment.

9. $\overline{RT}$ **10.** $\overline{QR}$

11. $\overline{ST}$ **12.** $\overline{PR}$

Find the coordinates of the midpoint of a segment having the given endpoints.

13. $K(-9, 3)$, $H(5, 7)$ **14.** $W(-12, -7)$, $T(-8, -4)$

Find the coordinates of the missing endpoint given that E is the midpoint of $\overline{DF}$.

15. $F(5, 8)$, $E(4, 3)$ **16.** $F(2, 9)$, $E(-1, 6)$ **17.** $D(-3, -8)$, $E(1, -2)$

18. PERIMETER The coordinates of the vertices of a quadrilateral are $R(-1, 3)$, $S(3, 3)$, $T(5, -1)$, and $U(-2, -1)$. Find the perimeter of the quadrilateral. Round to the nearest tenth.