

Unit 1 – Quiz 2 Study Guide

Algebra Nation Section 1 Topics 3 – 6

Textbook Alignment (HOLT GREEN: 1.6 & p. 515 LARSON BLUE: 1.3 & p. 410)

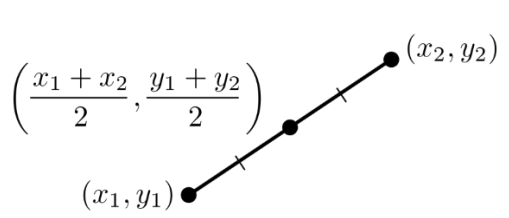
Vocabulary: midpoint, segment addition postulate, equidistant, congruent, partition, ratio, k, distance, perimeter, halfway

Segment Addition Postulate



$$AB + BC = AC$$
$$4\text{cm} + 10\text{cm} = 14\text{cm}$$

Midpoint Formula



Pythagorean Theorem

Distance Formula

Partitioning a Line Segment (can do the visual way as well)

$$(x, y) = (x_1 + k(x_2 - x_1), y_1 + k(y_2 - y_1))$$

k = a ratio of $\frac{\text{part}}{\text{whole}}$



Topic 1.3: Midpoint: Solving for (x, y) coordinate of the midpoint or endpoint on the coordinate plane.

Midpoint and Endpoint Skill-Building Drills

Find the coordinates of the midpoint of the segment with the given endpoints.

1. S $(4, -1)$ and T $(6, 0)$ Ans: _____
2. L $(4, 2)$ and P $(0, 2)$ Ans: _____
3. H $(-5, 5)$ and $(7, 3)$ Ans: _____
4. G $(-2, -8)$ and H $(-3, -12)$ Ans: _____

Answers: 1. $(5, -1/2)$ 2. $(2, 2)$ 3. $(1, 4)$ 4. $(-2.5, -10)$

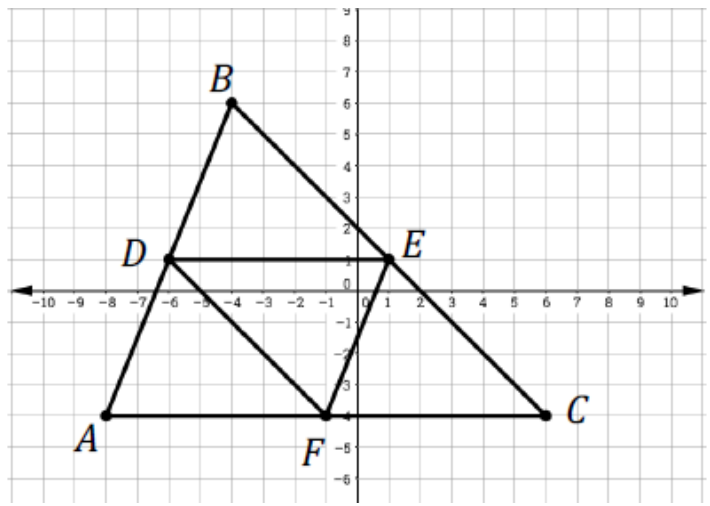
Use the given endpoint R and midpoint M of RS to find the coordinates of the other endpoint.

1. R $(6, 0)$, M $(0, 2)$ Ans: _____
2. R $(3, 4)$, M $(3, -2)$ Ans: _____
3. R $(-3, -2)$, M $(-1, -8)$ Ans: _____
4. R $(11, -5)$, M $(-4, -4)$ Ans: _____

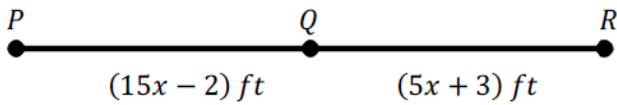
Answers: 1. $(-6, 4)$ 2. $(3, -8)$ 3. $(1, -14)$ 4. $(-19, -3)$

Application Problems

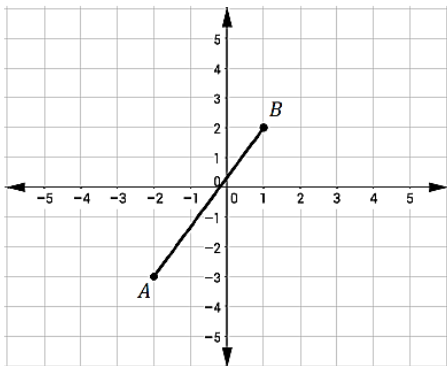
- Select all that apply:
 - E is the midpoint of BC
 - EF is longer than DE
 - BD is exactly 5 units long
 - The perimeter of $\triangle DEF$ is about 19.5
 - The perimeter of AFED is about 27



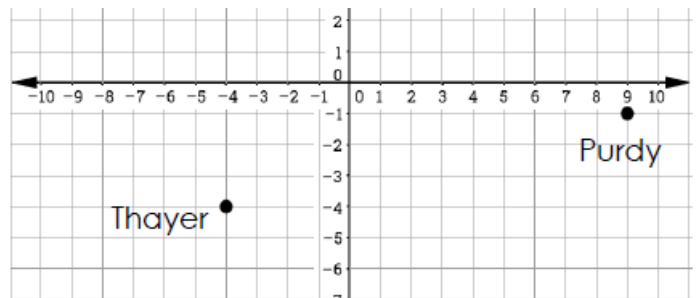
- Consider the line segment below that is 10 feet long. Determine if Q is the midpoint of PR. Justify your answer.



- If AB is extended through B creating AC and B becomes the midpoint of AC, then what are the coordinates of C?

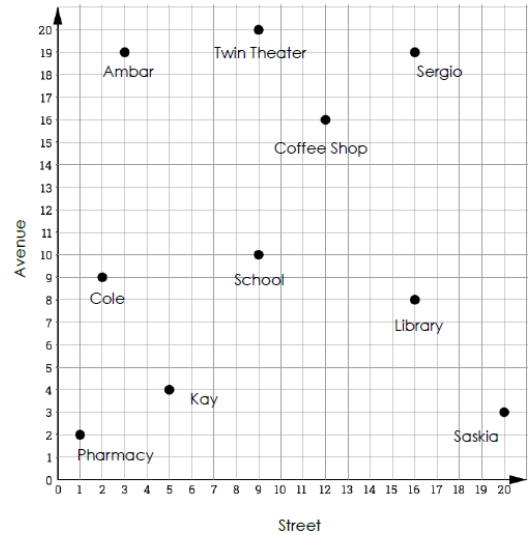


- A rest stop is located halfway between cities Thayer and Purdy. Where is the rest stop located?



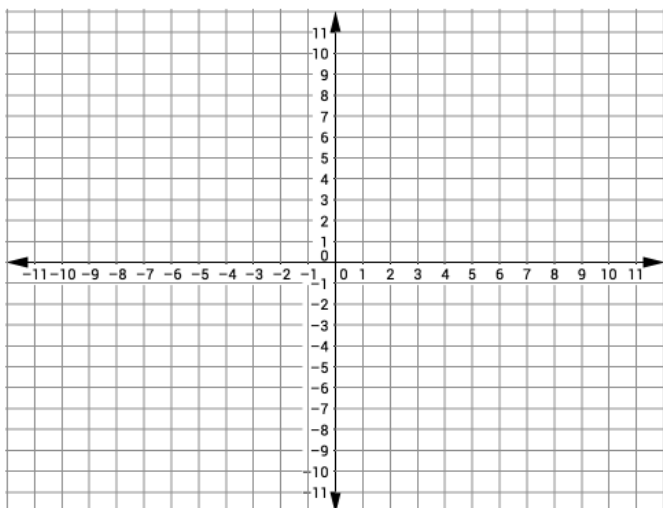
5. Find the exact distance between:

- the Twin Theater and the Library
- Cole's house and the School
- Sergio's house and the Coffee Shop

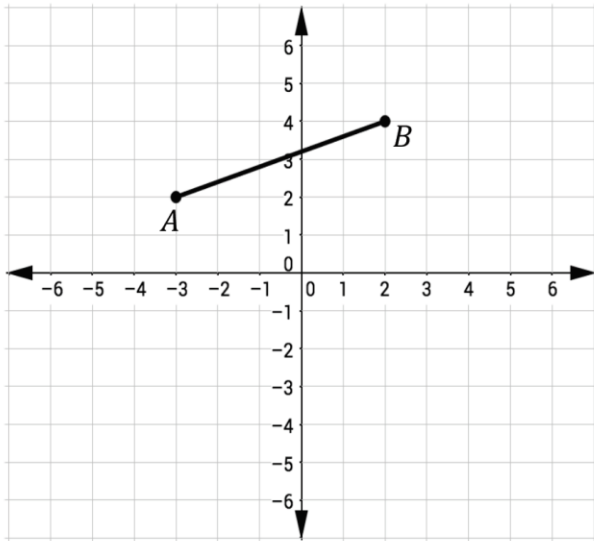


Partitioning a Line Segment (draw a visual to help you)

- Point P partitions line segment DF into the ratio 4:5, what is k?
- Points A,R,K are collinear on segment AK. The ratio of AR:AK is 2:7, what is k?
- Point T is on line segment AE. Point T will be placed on segment AE so that it partitions it into a ratio of 2:3. Draw a sketch of each location that point T can assume and write down the corresponding k value for that example.
- Point K is located on AF. The ratio of AK:KF is 7:8. What is k?
- Describe the difference between the ratio AP:PB and the ratio AP:AB?
- JK in the coordinate plane has endpoints with coordinates J (- 4, 11) and (8, - 2). M divides into two parts with lengths in the ratio of 1:3.



12. Suppose R is plotted so that it is collinear with A and B. If the ratio of AR:AB is $\frac{1}{3}$, then what are the coordinates of R?



13. Given the points $M(-3, -4)$ and $T(5, 0)$, find the coordinates of the point Q on directed line segment MT that partitions MT in the ratio 2:3.

