

Unit 1 – Quiz 2 Study Guide

BRIEF
KEY

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

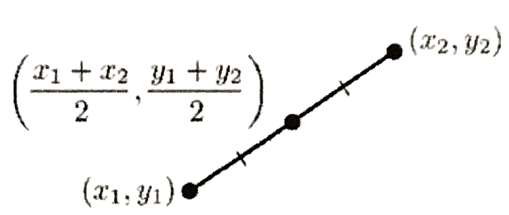
Segment Addition Postulate



$$AB + BC = AC$$

$$4\text{cm} + 10\text{cm} = 14\text{cm}$$

Midpoint Formula



Pythagorean Theorem

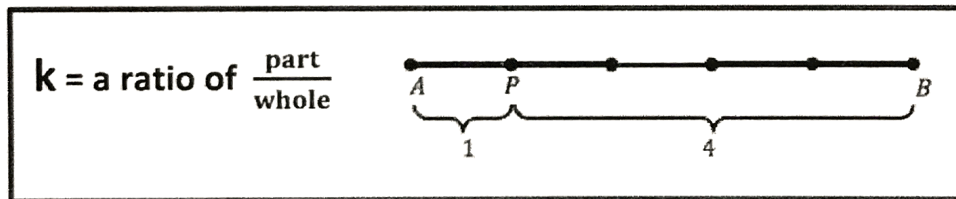
$$a^2 + b^2 = c^2$$

Distance Formula

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

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

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



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

Midpoint and Endpoint Skill-Building Drills

SHOW ALL WORK !!

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

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

1. S (4, -1) and T (6, 0) Ans: _____

1. R (6,0), M (0,2) Ans: _____

2. L (4,2) and P (0, 2) Ans: _____

2. R (3,4), M (3, -2) Ans: _____

3. H (-5, 5) and (7,3) Ans: _____

3. R (-3, -2), M (-1, -8) Ans: _____

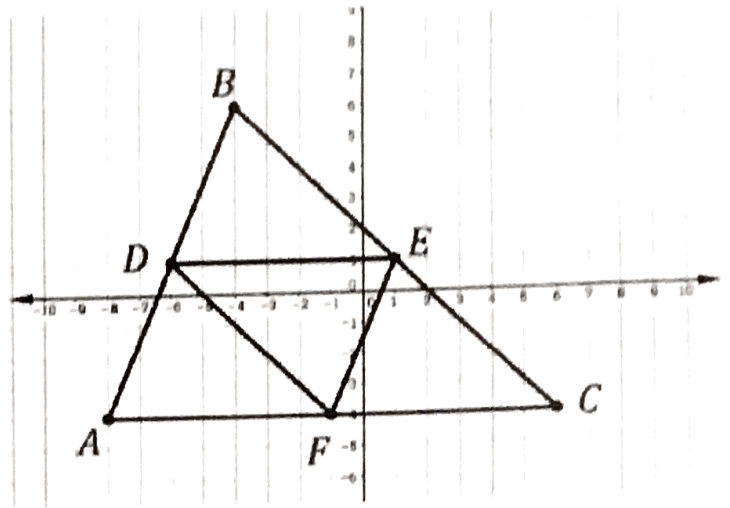
4. G (-2, -8) and H (-3, -12) Ans: _____

4. R (11, -5), M (-4, -4) Ans: _____

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

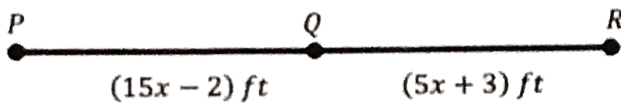
Answers: 1. (-6, 4) 2. (3, -8) 3. (1, -14) 4. (-19, -3)

Application Problems

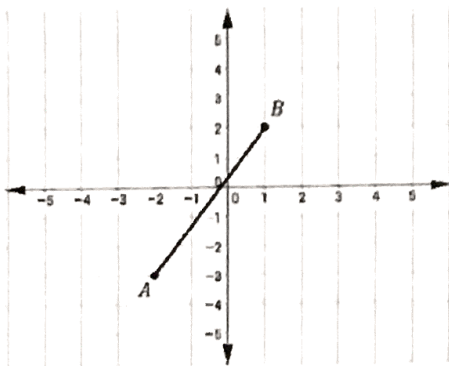


1. Select all that apply:
- E is the midpoint of BC
 - EF is longer than DE
 - BD is exactly 5 units long
 - The perimeter of $\triangle DEF$ is about 19.5
 - The perimeter of AFED is about 27

2. Consider the line segment below that is 10 feet long. Determine if Q is the midpoint of PR. Justify your answer. **NO**



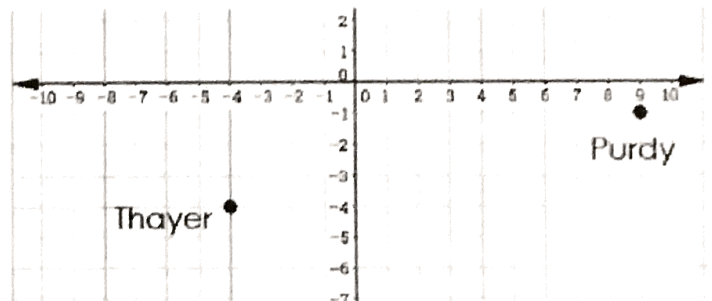
3. If AB is extended through B creating AC and B becomes the midpoint of AC, then what are the coordinates of C?



C (4, 7)

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

R (2.5, -2.5)



5. Find the exact distance between:

a) the Twin Theater and the Library

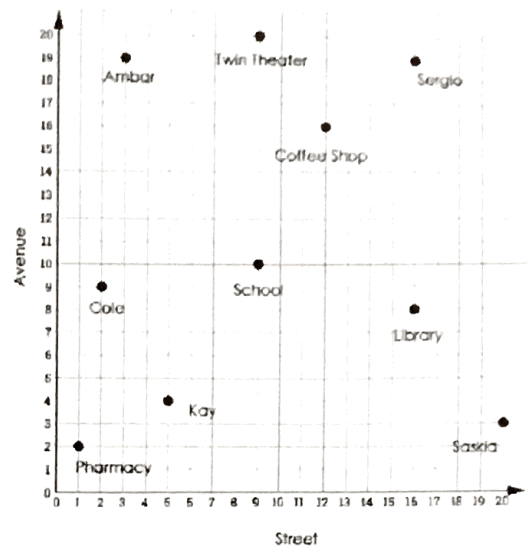
$$\sqrt{193}$$

b) Cole's house and the School

$$\sqrt{50}$$

c) Sergio's house and the Coffee Shop

$$5$$



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

6. Point P partitions line segment DF into the ratio 4:5, what is k? $\frac{4}{9}$

7. Points A,R,K are collinear on segment AK. The ratio of AR:AK is 2:7, what is k? $\frac{2}{7}$

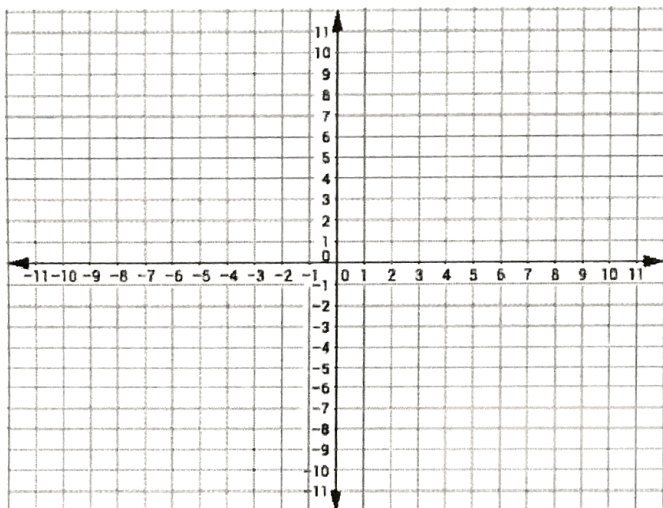
8. Point T is on line segment AE. Point T will be placed on segment AE so that it partitions it into a ratio of 2:3. Draw a sketch of each location that point T can assume and write down the corresponding k value for that example. $\frac{2}{5}$ and $\frac{3}{5}$

9. Point K is located on AF. The ratio of AK:KF is 7:8. What is k? $\frac{7}{15}$

10. Describe the difference between the ratio AP:PB and the ratio AP:AB?

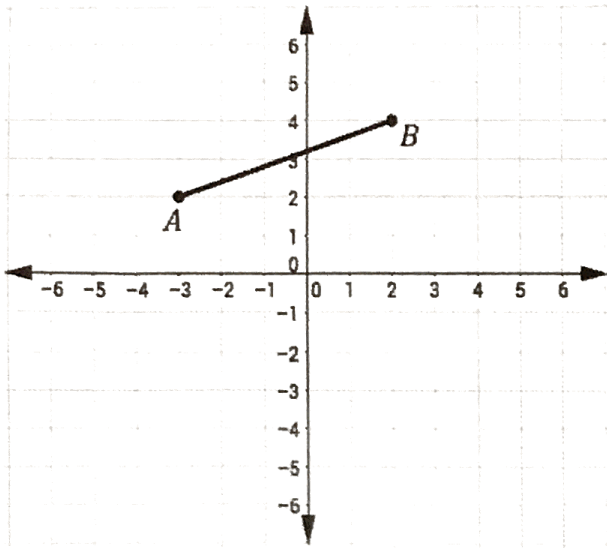
Part:Part vuse Part:whole

11. 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.



$$M(-1, 7.75)$$

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?



$$(-1.\bar{3}, 2.\bar{6})$$

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.

$$(.2, -2.4)$$

