Name_____ Date_____

8.6 – The Distance Formula

Find the distance between each pair of points. Keep your answer in simplest radical form.

1) (10, 20), (13, 16)

2) (15, 37), (42, 73)

3) (-19, -16), (-3, 14)

4) (13, 2), (7, 10)

5) Find the perimeter of ΔABC with vertices A(2, 4), B(8, 12), and C(24, 0).

6) Determine whether ΔDEF with vertices D(6, -6), E(39, -12), and F(24, 18) is scalene, isosceles, or equilateral.

7) Determine whether ΔGHI with vertices G(2, 6), H(18, 2), and I(12, 12) is isosceles, right, isosceles right, or equilateral.

8) Describe and correct the error in finding the distance between A(6, 2) and B(1, −4).

$$AB = \sqrt{(6 - 2)^2 + [1 - (-4)]^2}$$
$$= \sqrt{4^2 + 5^2}$$
$$= \sqrt{16 + 25}$$
$$= \sqrt{41}$$
$$\approx 6.4$$

For Exercises 9-11 use ΔABC with vertices A(-2, -2), B(4, 0), and C(0, 6).

9) Find midpoints M, N, and P of $\overline{AC}$, $\overline{CB}$, and $\overline{AB}$, respectively.

10) Find the slopes of $\overline{MN}$ and $\overline{AB}$, the slopes of $\overline{MP}$ and $\overline{BC}$, and the slopes of $\overline{NP}$ and $\overline{AC}$. How do they compare?

11) Find the lengths of $\overline{MN}$ and $\overline{AB}$, the lengths of $\overline{MP}$ and $\overline{BC}$, and the lengths of $\overline{NP}$ and $\overline{AC}$. How do they compare?

12) Your school is 20 blocks east and 12 blocks south of your house. The mall is 10 blocks north and 7 blocks west of your house. You plan on going to the mall right after school. Find the distance between your school and the mall assuming there is a road directly connecting the school and the mall. One block is 0.1 mile.

A path goes around a triangular park, as shown.
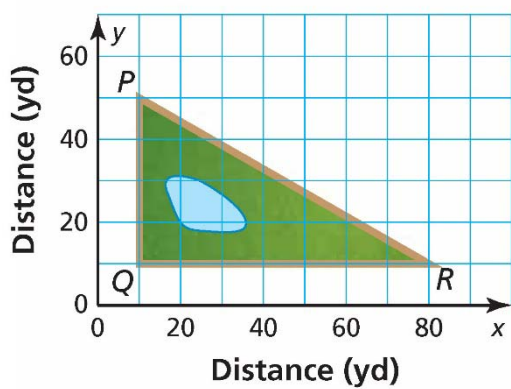
a. Find the distance around the park to the nearest yard.

b. A new path and a bridge are constructed from point Q to the midpoint M of $\overline{PR}$. Find QM to the nearest yard.

c. A man jogs from P to Q to M to R to Q and back to P at an average speed of 150 yards per minute. About how many minutes does it take? Explain your reasoning.