**Triangle Midsegment Theorem Homework**

For #1 – 7, use the graph of ΔABC with midsegments DE, EF, and DF

1. Find the coordinates of points D, E, and F

D: \_\_\_\_\_\_\_\_\_\_\_

E: \_\_\_\_\_\_\_\_\_\_\_

F: \_\_\_\_\_\_\_\_\_\_\_

2. Show that DE is parallel to CB

3. Show that DE = ½CB

4. Show that EF is parallel to AC

5. Show that EF = ½AC

6. Show that DF is parallel to AB

7. Show that DF = ½AB

For #8 – 9 DE is a midsegment of ΔABC. Find the value of x.

8. x = \_\_\_\_\_\_\_\_ 9. x = \_\_\_\_\_\_\_\_



For #10 – 13, use ΔGHJ, where A, B, and C are midpoints of the sides. Label the drawings with the given information. Show all work.

10. If AB = 3x + 8 and GJ = 2x + 24, find the measure of AB

AB = \_\_\_\_\_\_\_\_

11. If AC = 3y − 5 and HJ = 4y + 2, find the measure of HB

HB = \_\_\_\_\_\_\_\_

12. If GH = 7z − 1 and CB = 4z − 3, find the measure of GA

GA = \_\_\_\_\_\_\_\_

13. A, B, and C are the midpoints of the sides of ΔGHJ. AB = 3.4, BC = 4.2, and AC = 3.8. Find the perimeter of ΔGHJ. Show all work.

Perimeter = \_\_\_\_\_\_\_\_\_

14. Describe and correct the error



15. The distance between consecutive bases on a baseball field is 90 feet. A second baseman stands halfway between first base and second base, a shortstop stands halfway between second base and third base, and a pitcher stands halfway between first base and third base. Find the distance between the shortstop and the pitcher.

Distance = \_\_\_\_\_\_\_

16. The points P(2, 1), Q(4, 5), and R(7, 4) are the **midpoints** of the sides of a triangle. Graph the three midsegments. Then show how to use your graph and the properties of midsegments to draw the original triangle ABC. Give the coordinates of each vertex.

Vertex A: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Vertex B: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Vertex C: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. Find a real-life object that uses midsegments as part of its structure. Print a photograph of the object, or use a ruler to draw the object, and identify the midsegments of one of the triangles in the structure.

18. The Deer County Parks Committee plans to build a park at point P, equidistant from the three largest cities labeled X, Y, and Z. The map shown was created by the committee.

a. Which point of concurrency did the committee use as the location of the park?

Point of Concurrency Used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How do you know?

b. Did the committee use the best point of concurrency for the location of the park? If not, which point would be better to use? Explain.

Best point of concurrency to use: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reasoning:

19. A woodworker is cutting the largest wheel possible from triangular scrap of wood. The wheel just touches each side of the triangle, as shown.



a. Which point of concurrency is the center of the circle?

Point of Concurrency Used: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How do you know?

b. What type of segments are BG, CG, and AG ?

Type of Segment: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How do you know?

c. Which theorem can you use to prove that ΔBGF ≅ ΔBGE? Draw and label the triangles. Mark all congruent parts.

Theorem: \_\_\_\_\_\_\_\_

d. Find the radius of the wheel to the nearest tenth of a centimeter. Justify your answer.

Radius: \_\_\_\_\_\_\_\_