Name: _____ per ___ Date: _____

Special Segments Practice

I. Matching: Match the picture to the special segment. You will use the special segment more than once.

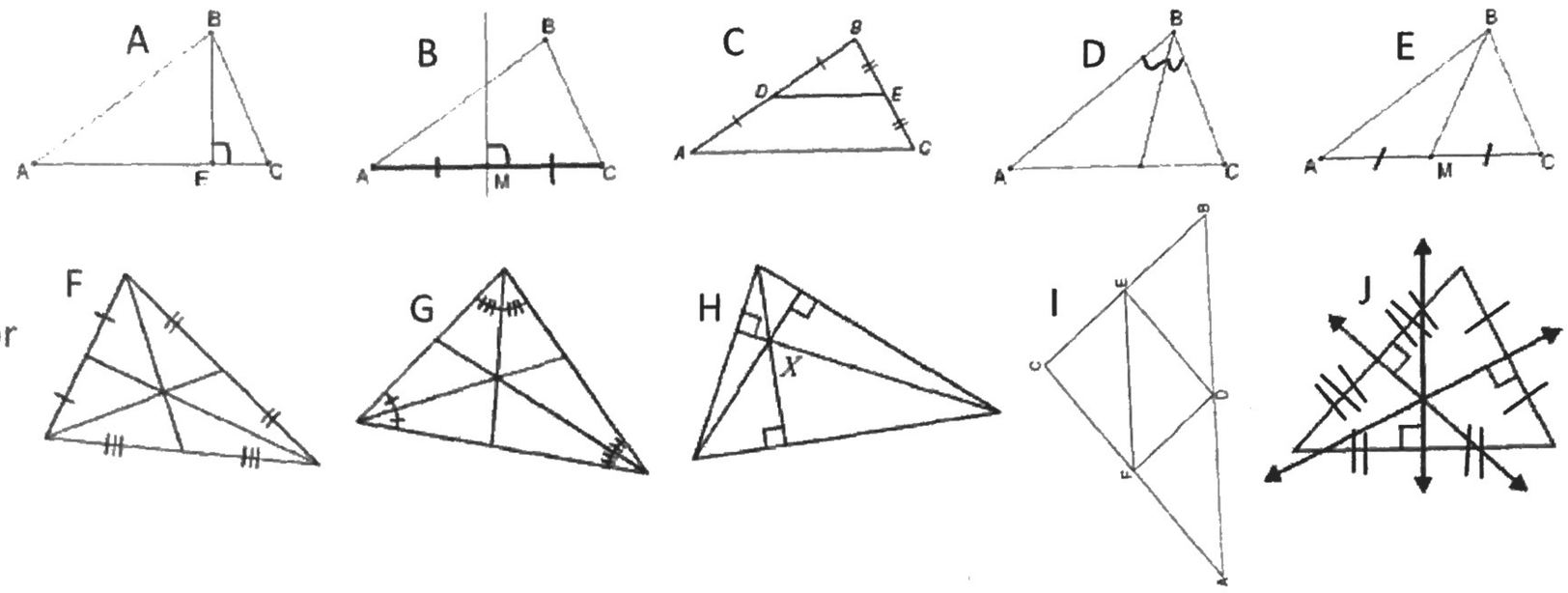
1) Midsegment

2) Altitude

3) Angle Bisector

4) Perpendicular Bisector

5) Median

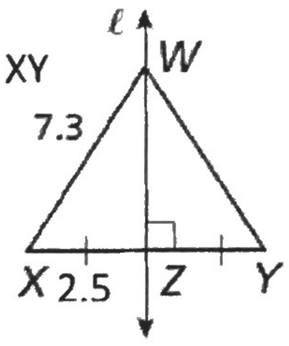


II. Matching: Match the point of concurrency to the special segment and to the correct fact about location.

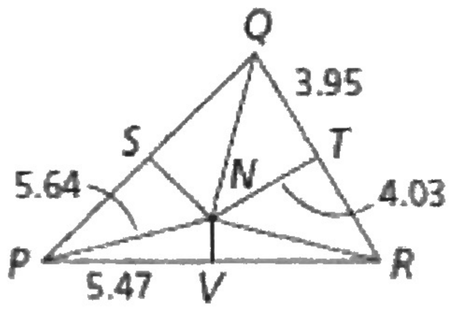
6) Orthocenter	A) Medians	i) Equidistant from verticies
7) Incenter	B) Altitudes	ii) Equidistant from sides
8) Circumcenter	C) Angle Bisectors	iii) 2(small section) = (larger section)
9) Centroid	D) Perpendicular Bisectors	iv) No location fact

III. Solve: Use the properties of special segments to solve the following problems.

10) Find WY, ZY, and XY



11) N is the circumcenter.
Find QN, RN, QR

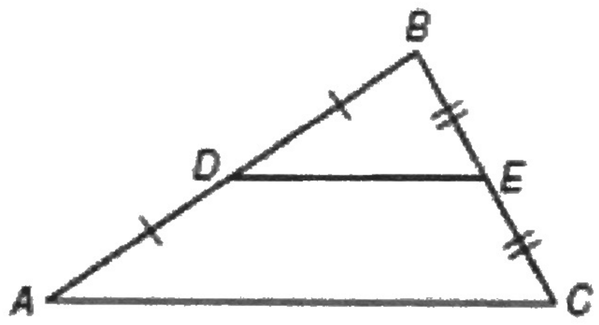


12) Use the picture at the right to answer the following questions.

a) A segment parallel to $\overline{AC}$

b) A segment that has half the length of $\overline{AC}$

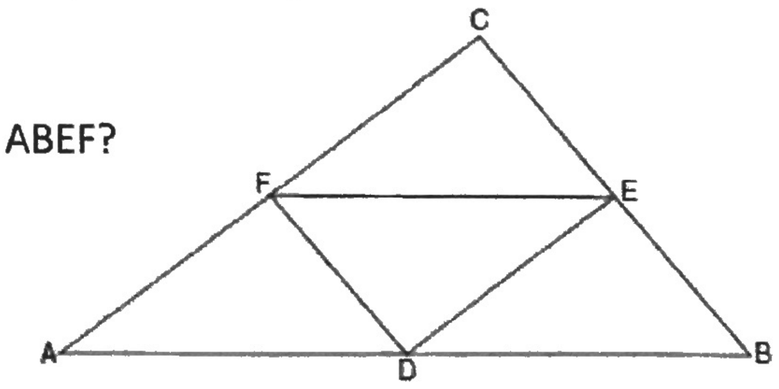
c) A segment that has twice the length of $\overline{EC}$



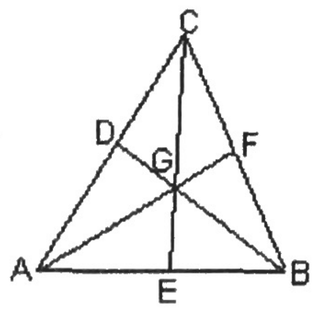
13) In the diagram of ΔABC shown below, D is the midpoint of $\overline{AB}$, E is the midpoint of $\overline{BC}$, and F is the midpoint of $\overline{AC}$.

If AB = 20, BC = 12, and AC = 16, what is the perimeter of trapezoid ABEF?

A 24 **B** 36 **C** 40 **D** 44

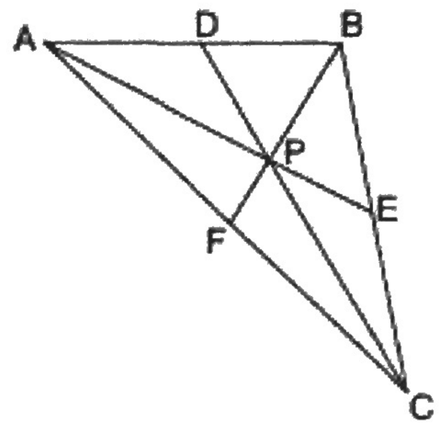


14) G is the centroid. If CG = 20, find GE and CE?



15) In ΔABC shown below, P is the centroid and BF = 18. What is the length of BP?

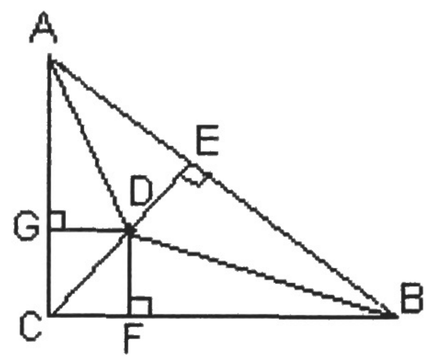
A 6 **B** 9 **C** 3 **D** 12



Use the picture to the right for 16 and 17.

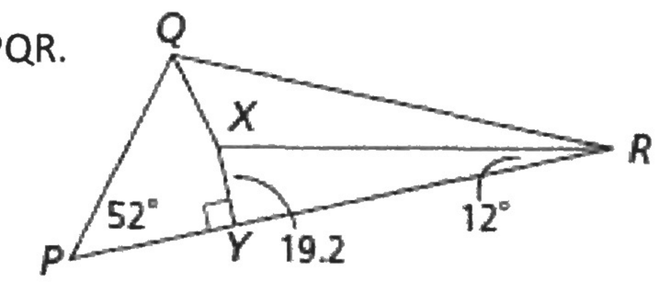
16) If DF = 13, what is DE?

17) $m\measuredangle EAD = 15°$ Find m<DAG and m<GAE

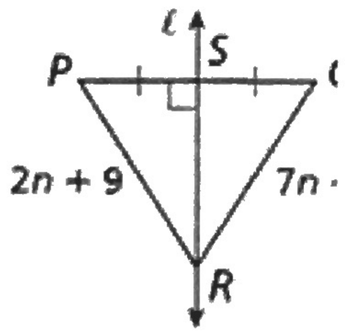


D is the incenter.

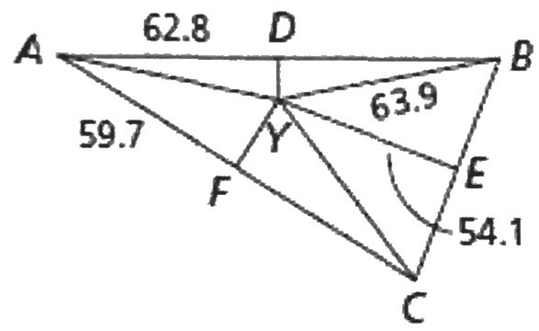
18) Find m<XRQ, m<PRQ, and m<PQR.



19) Find n



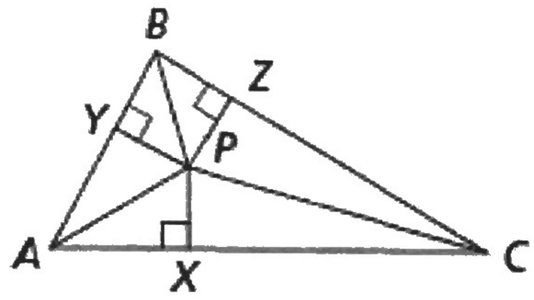
20) Y is the circumcenter. Find YC and AB.



21) *P* is the incenter of $\triangle ABC$. Which must be true?

Ⓐ $PA = PB$ Ⓒ $YA = YB$

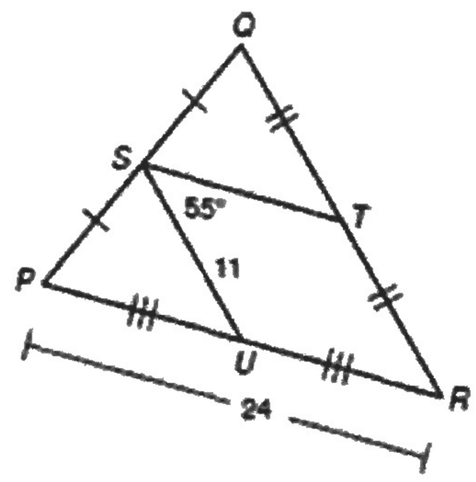
Ⓑ $PX = PY$ Ⓓ $AX = BZ$



22) The circumcenter of the triangle is equidistant from the _____ of the triangle.

23) The incenter is important because it is _____ from the sides of the triangle.

24) Use the picture at the right to answer the following questions.



a) ST _____ d) QR _____

b) PU _____ e) m<SUP _____

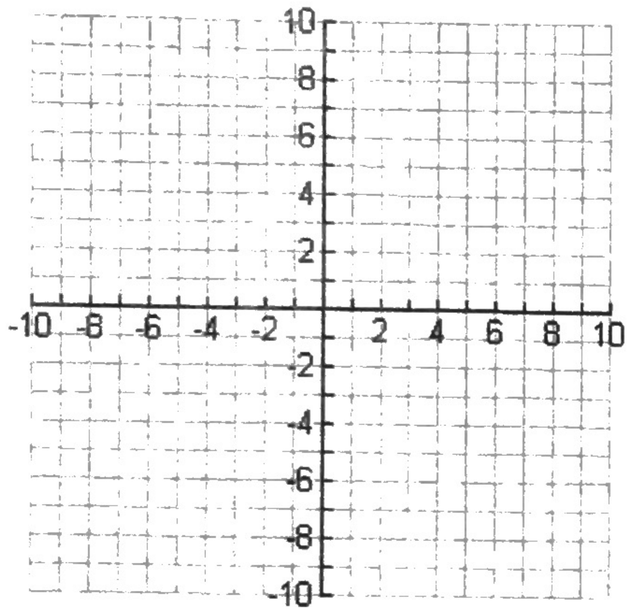
c) M<SUR _____ f) m<PRQ

You shouldn't NEED to graph anything!

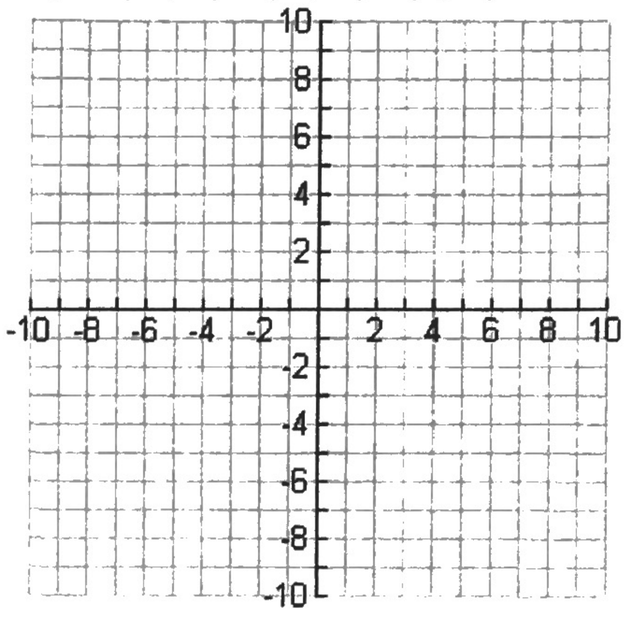
Triangles on the Coordinate Plane Examples

Ex. 1 – Classify by angles and sides.

Together: D(1, 0) E(-3, -2) W(-1, 4)

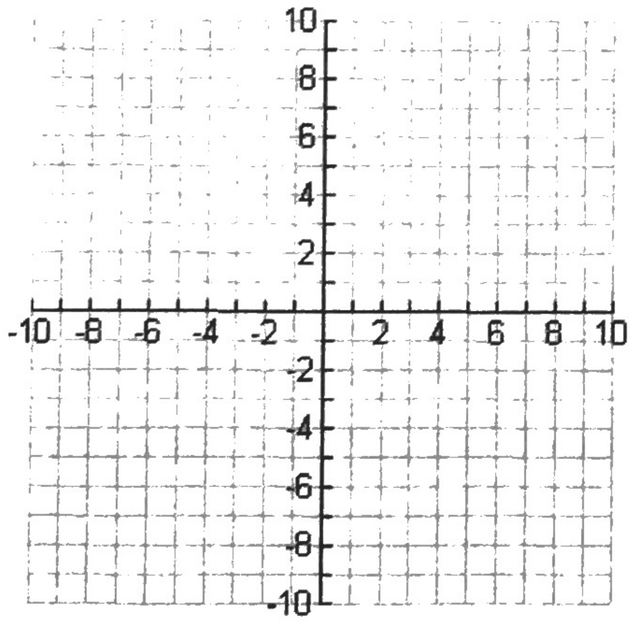


You try : F(-2, 1) O(-1, 5) G(2, 5)



Ex 2 – Midsegment –

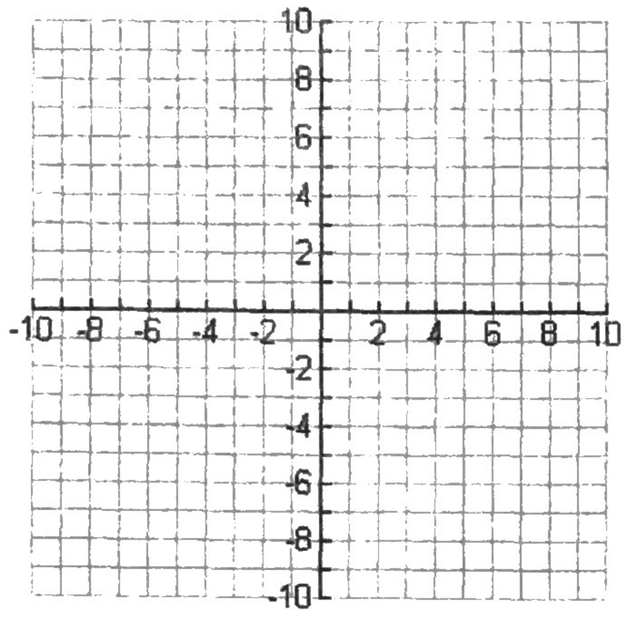
Together: A(-3, 2) B(3, 2) C(5, -2)



You try: Find the other 2 midsegments.

Ex. 3 – Medians

Together: (-3, 2) (1, -6) (5, -2)

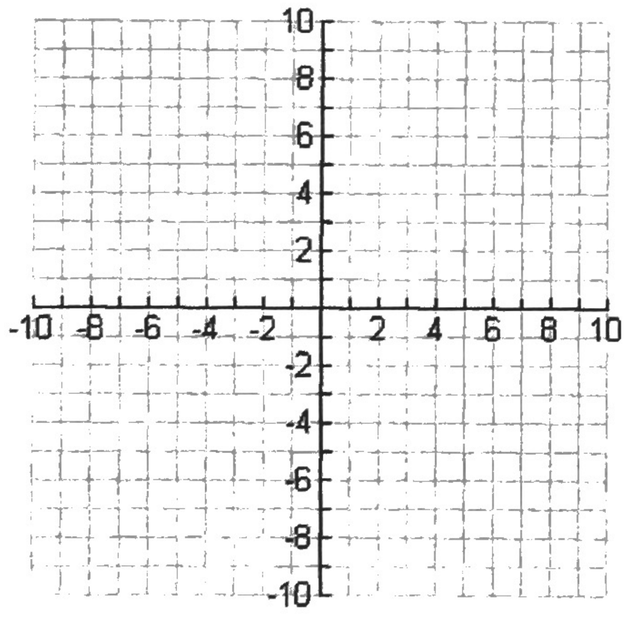


You try: Find the other 2 medians.

Where is the centroid?

Ex 4 – Altitude

Together: (-2, 5) (6, 5) (4, -1)

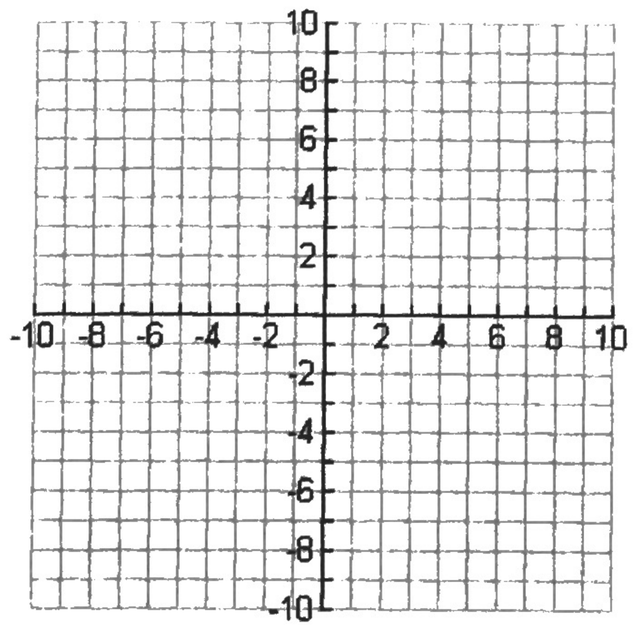


You try: Find the other 2 altitudes.

Where is the orthocenter?

Ex. 5 – Perpendicular Bisectors

Together: (3, 3) (3, -1) (-3, -3)



You try : Find the other 2 perpendicular bisectors.

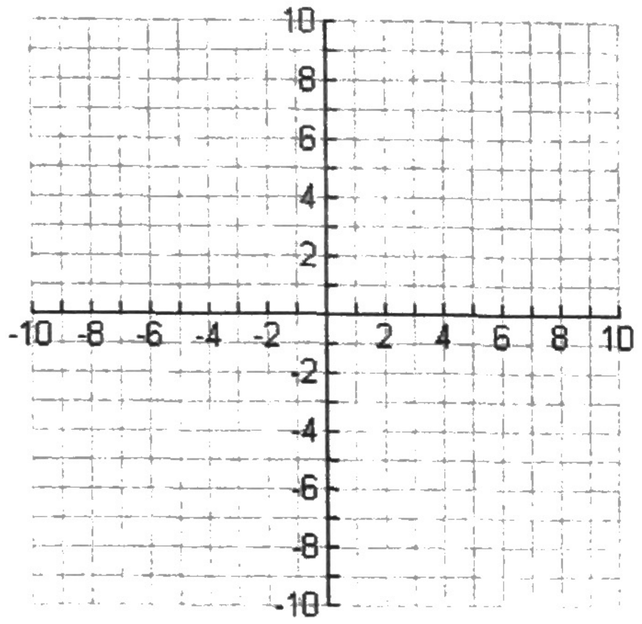
Where is the circumcenter?

Name _____ Period _____

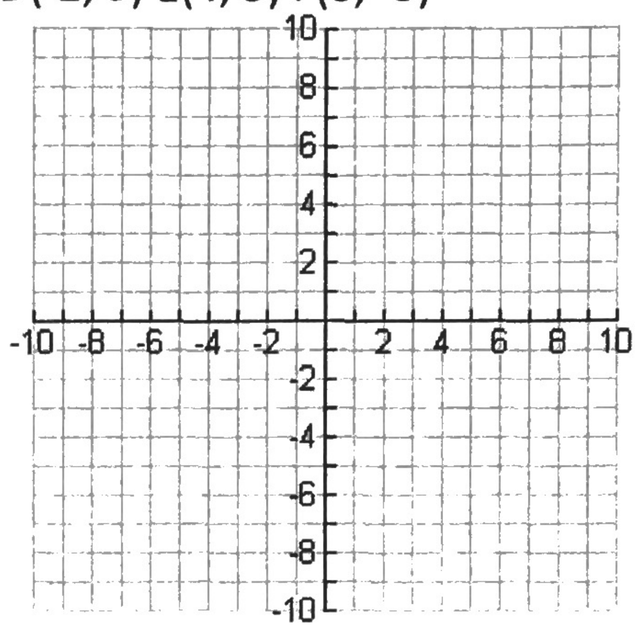
Special Segments on a Coordinate Plane

Classify the following triangles. Be sure to justify each classification.

1. A(1, 3) B(3, -1) C(5, 3)

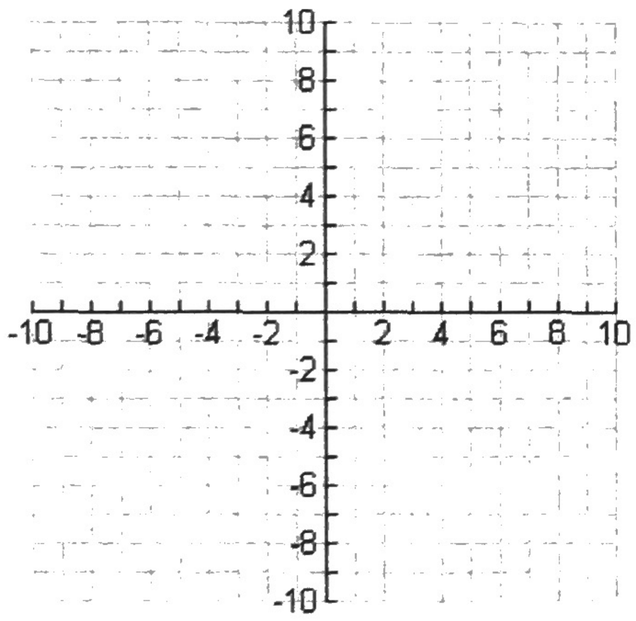


2. D(-2, 3) E(4, 5) F(0, -3)

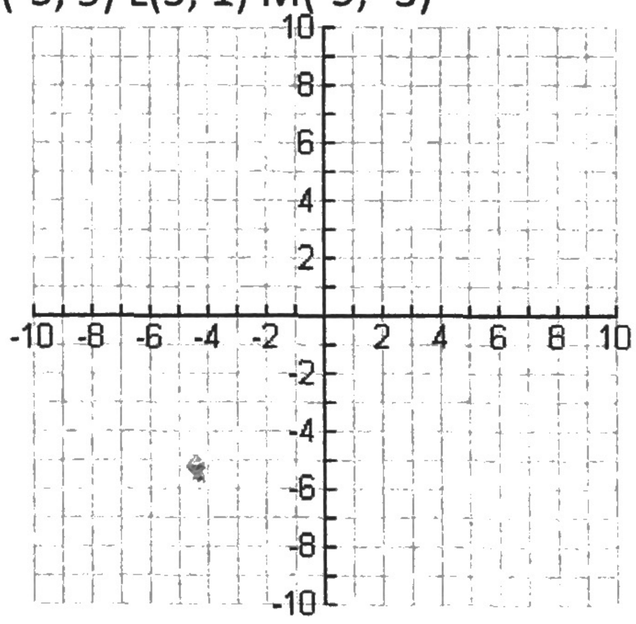


Using the points given, draw in each median. State the location of the centroid of each triangle.

3. G(-1, -3) H(7, 1) J(3, 5)

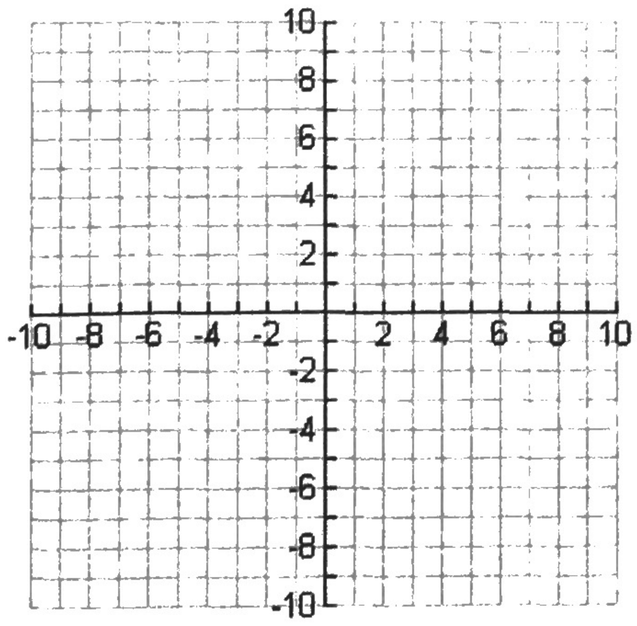


4. K(-3, 5) L(3, 1) M(-5, -3)

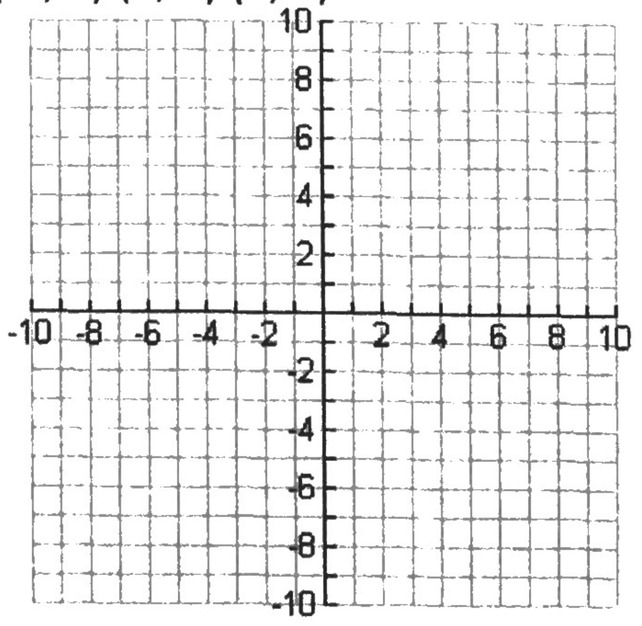


Using the points given, draw in each altitude. State the location of the orthocenter of each triangle.

5. (-2, 0) (4, 0) (2, 4)

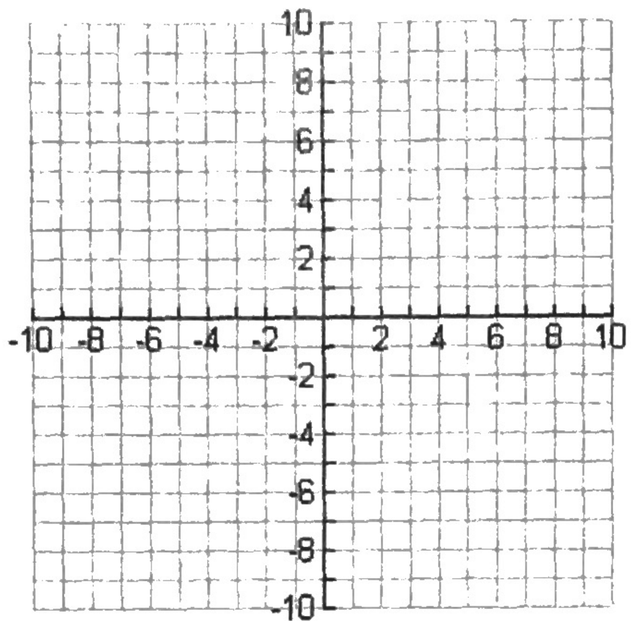


6. (-3, 1) (3, 1) (1, 5)

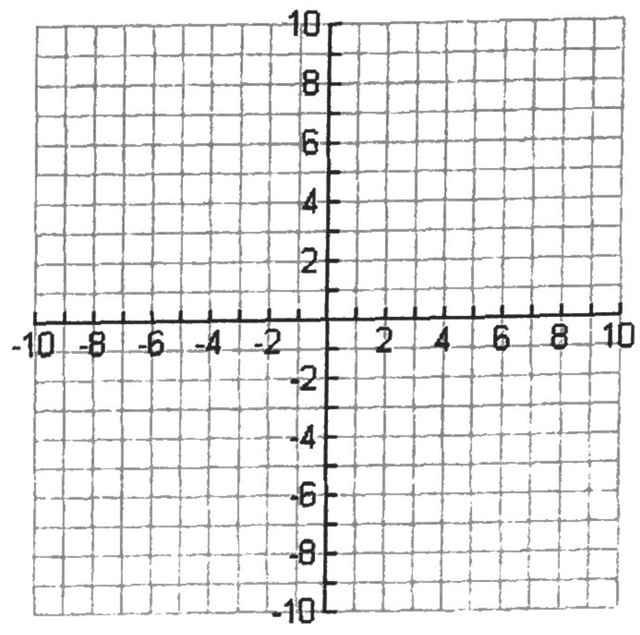


Using the points given, draw in each perpendicular bisector. State the location of the circumcenter for each triangle.

7. (-2, -1) (2, -3) (0, 3)

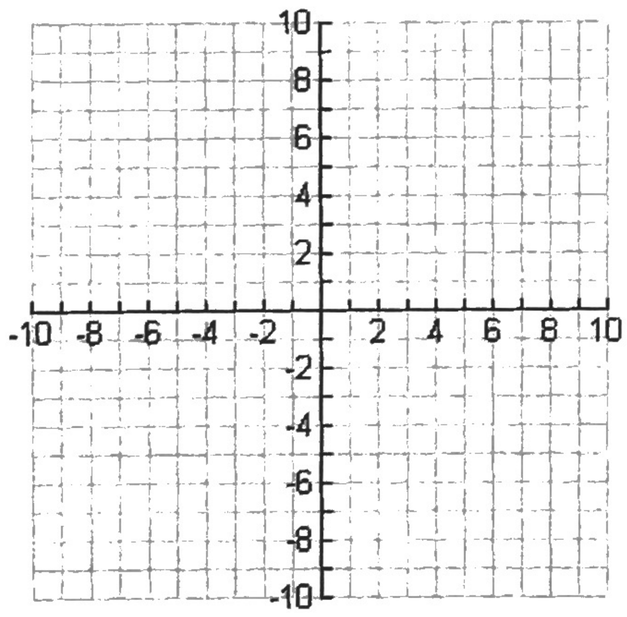


8. (-3, -2) (1, 6) (5, -2)



Using the points given, draw each midsegment. Then show that the midsegments are parallel and ½ the length of the sides.

9. A(1, 3) B(3, -1) C(5, 3)



10. D(-2, 3) E(4, 5) F(0, -3)