

ANSWERS:

Triangle Centers (More Practice)
 Geometry

Name _____
 Date _____ Block _____

Find the coordinates for the centroid, the orthocenter, and the circumcenter for each triangle with the given vertices. Show all algebra neatly organized and labeled! Graphing is optional.

1. C (3, 3), M (0, 0), T (9, -10)

Centroid: (4, -7/3)

Orthocenter: (-13/19, -6/19)

Circumcenter:
 (241/38, -127/38)

Eqs:

$$y = -\frac{23}{15}x + \frac{19}{5}$$

$$23x + 15y = 57$$

$$y = -\frac{16}{3}x + 19$$

$$16x + 3y = 57$$

$$y = -\frac{7}{12}x$$

$$7x + 12y = 0$$

$$y = -x - 1$$

$$x + y = -1$$

$$y = \frac{9}{10}x + \frac{3}{10}$$

$$9x - 10y = -3$$

$$y = \frac{6}{13}x$$

$$6x - 13y = 0$$

$$y = -x + 3$$

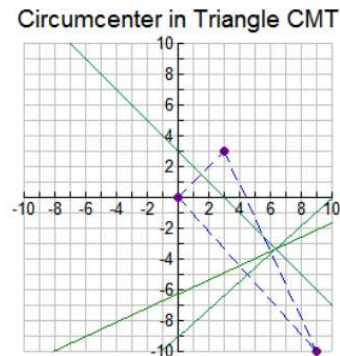
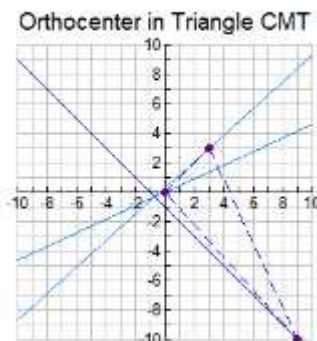
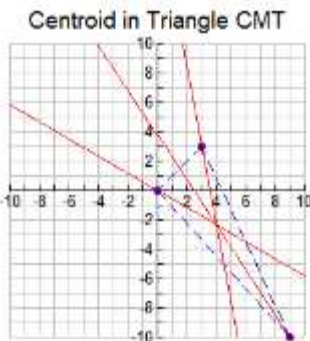
$$x + y = 3$$

$$y = \frac{9}{10}x - \frac{181}{20}$$

$$18x - 20y = 181$$

$$y = \frac{6}{13}x - \frac{163}{26}$$

$$12x - 26y = 163$$



2. A (-6, 0), B (0, 5), C (6, 0)

Centroid: (0, 5/3)

Orthocenter: (0, 36/5)

Circumcenter: (0, -11/10)

Eqs:

$$y = -\frac{5}{18}x + \frac{5}{3}$$

$$5x + 18y = 30$$

$$y = \frac{5}{18}x + \frac{5}{3}$$

$$5x - 18y = -30$$

$$x = 0$$

$$y = -\frac{6}{5}x + \frac{36}{5}$$

$$6x + 5y = 36$$

$$y = \frac{6}{5}x + \frac{36}{5}$$

$$6x - 5y = -36$$

$$x = 0$$

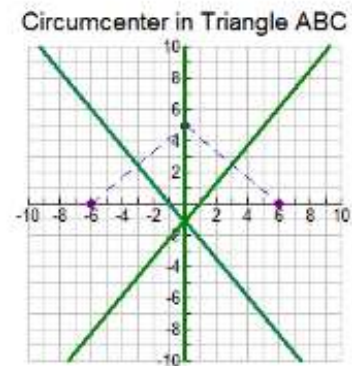
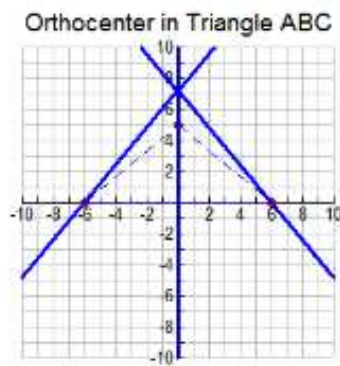
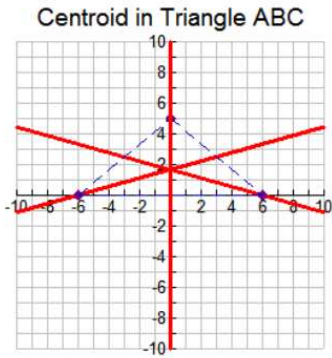
$$y = -\frac{6}{5}x - \frac{11}{10}$$

$$12x + 10y = -11$$

$$y = \frac{6}{5}x - \frac{11}{10}$$

$$12x - 10y = 11$$

$$x = 0$$



3. E (-3, 7), M (2, 3), J (0, -2)

Centroid: $(-1/3, 8/3)$

Orthocenter:
 $(52/11, 43/11)$

Circumcenter: $(-63/22, 45/22)$

Eqs:

$$y = -14x - 2$$

$$14x + y = -2$$

$$y = -\frac{13}{8}x + \frac{17}{8}$$

$$13x + 8y = 17$$

$$y = \frac{1}{7}x + \frac{19}{7}$$

$$x - 7y = -19$$

$$y = \frac{5}{4}x - 2$$

$$5x - 4y = 8$$

$$y = -\frac{2}{5}x + \frac{29}{5}$$

$$2x + 5y = 29$$

$$y = \frac{1}{3}x + \frac{7}{3}$$

$$x - 3y = -7$$

$$y = \frac{5}{4}x + \frac{45}{8}$$

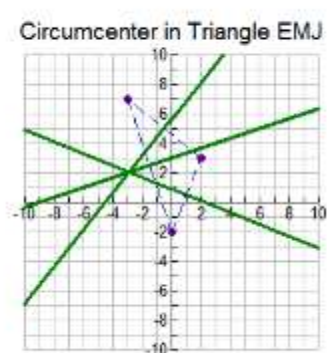
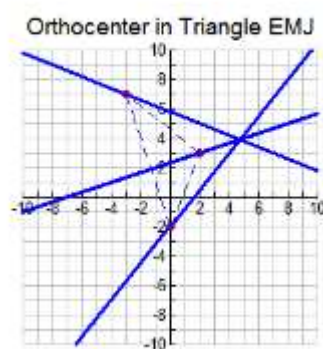
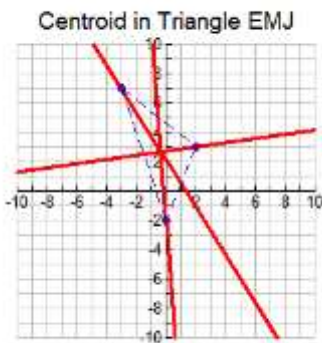
$$10x - 8y = -45$$

$$y = -\frac{2}{5}x + \frac{9}{10}$$

$$4x + 10y = 9$$

$$y = \frac{1}{3}x + 3$$

$$x - 3y = -9$$



4. E (2, 4), F (4, -8), G (-3, -5)

Centroid: (1, -3)

Orthocenter: (-23/13, -187/39)

Circumcenter: (31/13, -82/39)

$$y = \frac{1}{2}x - \frac{7}{2}$$

$$x - 2y = 7$$

$$y = 7x - 10$$

$$7x - y = 10$$

$$y = -\frac{5}{3}x - \frac{4}{3}$$

$$5x + 3y = -4$$

$$y = \frac{1}{6}x - \frac{9}{2}$$

$$x - 6y = 27$$

$$y = \frac{7}{3}x - \frac{2}{3}$$

$$7x - 3y = 2$$

$$y = -\frac{5}{9}x - \frac{52}{9}$$

$$5x + 9y = -52$$

$$y = \frac{1}{6}x - \frac{5}{2}$$

$$x - 6y = 15$$

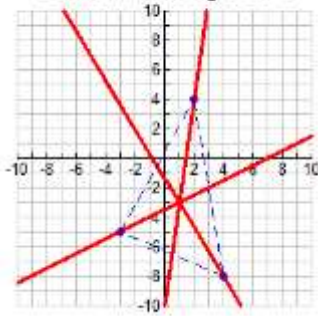
$$y = \frac{7}{3}x - \frac{23}{3}$$

$$7x - 3y = 23$$

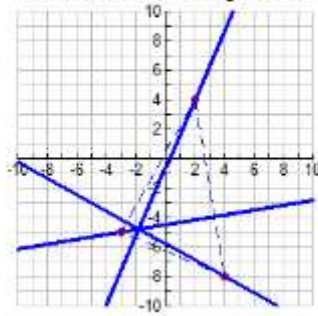
$$y = -\frac{5}{9}x - \frac{7}{9}$$

$$5x + 9y = -7$$

Centroid in Triangle EFG



Orthocenter in Triangle EFG



Circumcenter in Triangle EFG

