

What's Going On?

Checking In F.F.M.

Minds on Circles 2.0

Action! Some MORE New Terms

Consolidation Find the Centroid!

Learning Goal - I will investigate circumcentres, centroids, and orthocentres.

F.F.M.

Find the equation of the perpendicular bisector of the line segment with end points A (-3, 5) and B(7, 5).

HINT: Draw a quick sketch!

$$\cancel{y=5} \quad \cancel{y-5=0}$$

$$x=2$$

$$m = \frac{0}{+10} \Rightarrow \frac{-10}{0}$$

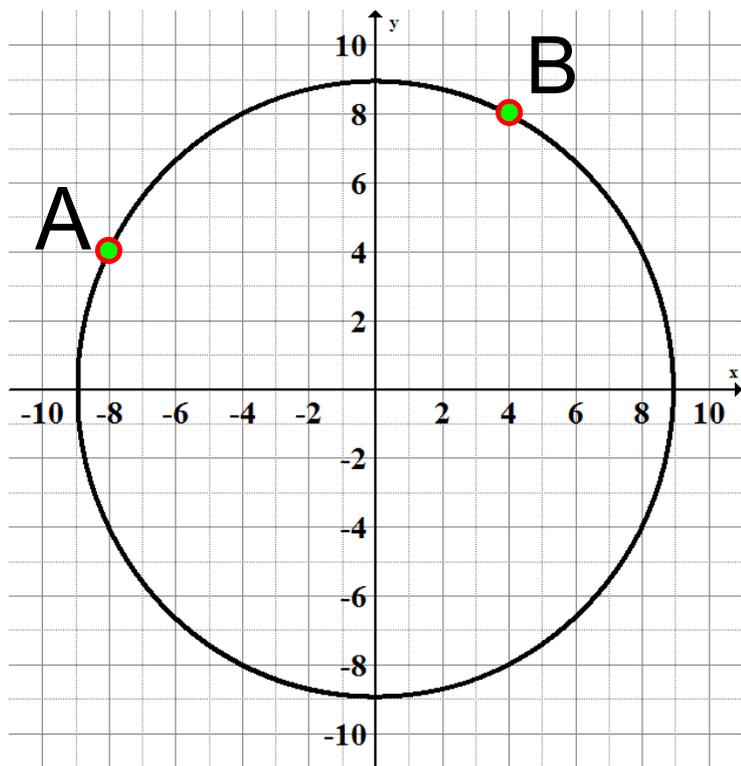
$$M = (2, 5)$$

$$y - 5 \neq \left(\frac{-10}{0}\right) (x - x_1)$$

$$x = 2$$

Minds on

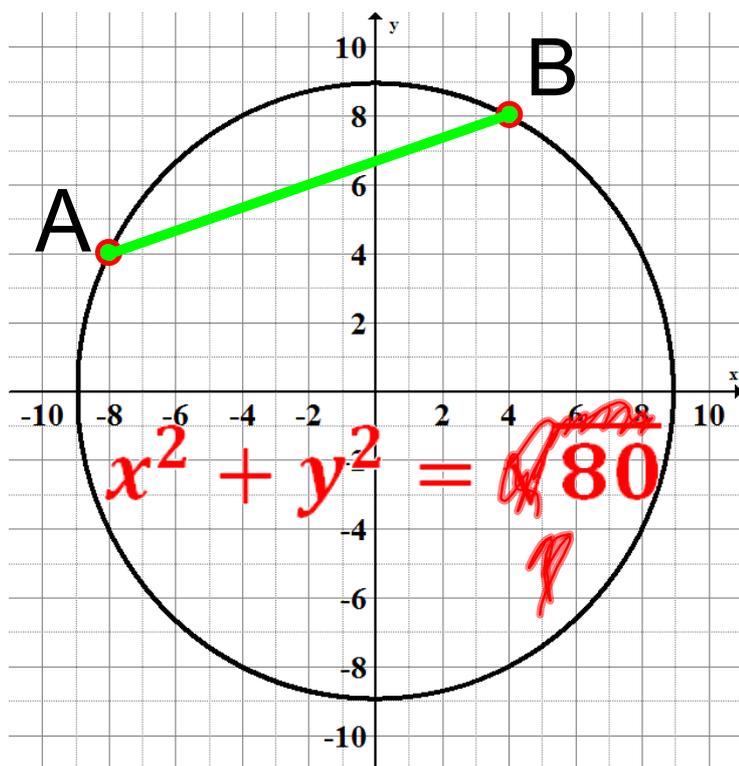
Circles 2.0



A **chord** is a line segment joining two points on a circle.

Minds on

Circles 2.0

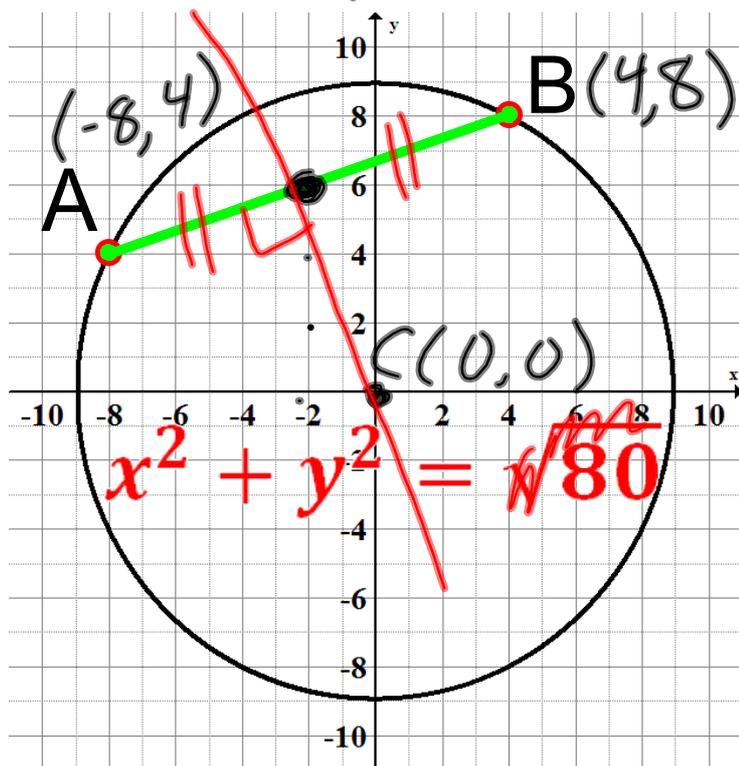


A **chord** is a line segment joining two points on a circle.

Minds on

Circles 2.0

$$m(\overline{AB}) = \frac{1}{3}$$



Verify that the centre of the circle lies on the *right bisector* of chord \overline{AB} .

Steps

1. Find the equation of the right bisector of AB .
2. Substitute the centre of the circle $(x, y) = (0, 0)$ into the equation found in Step 1.
3. Verify that the point satisfies the equation.

$$A(-8, 4) \quad B(4, 8)$$

$$\begin{aligned} m(AB) &= \frac{8-4}{4-(-8)} \\ &= \frac{4}{12} \\ &= \frac{1}{3} \end{aligned}$$

$$\perp m(AB) = -3$$

$$\begin{aligned} M(AB) &= \left(\frac{-8+4}{2}, \frac{4+8}{2} \right) \\ &= (-2, 6) \end{aligned}$$

$$y - y_1 = m(x - x_1)$$

$$y - 6 = -3(x + 2)$$

$$y - 6 = -3x - 6$$

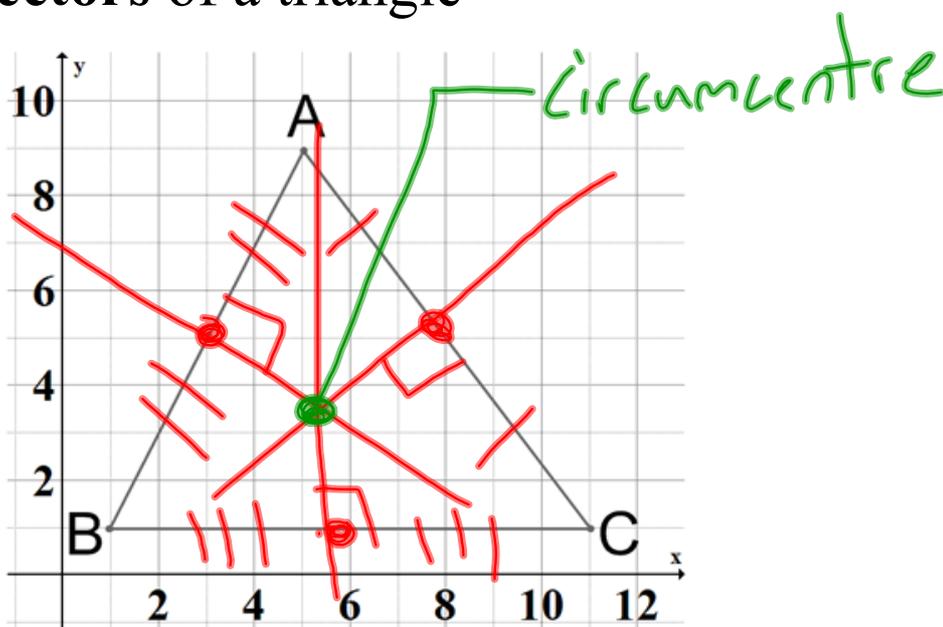
$$3x + y = 0$$

Action!

Some MORE New Terms

Circumcentre

The point of intersection of **the right bisectors** of a triangle

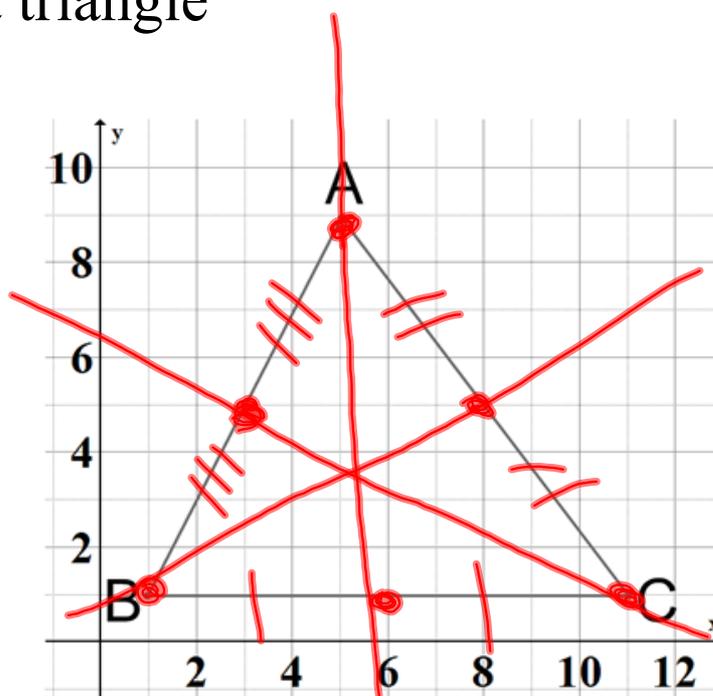


Action!

Some MORE New Terms

Centroid

The point of intersection of **the medians** of a triangle

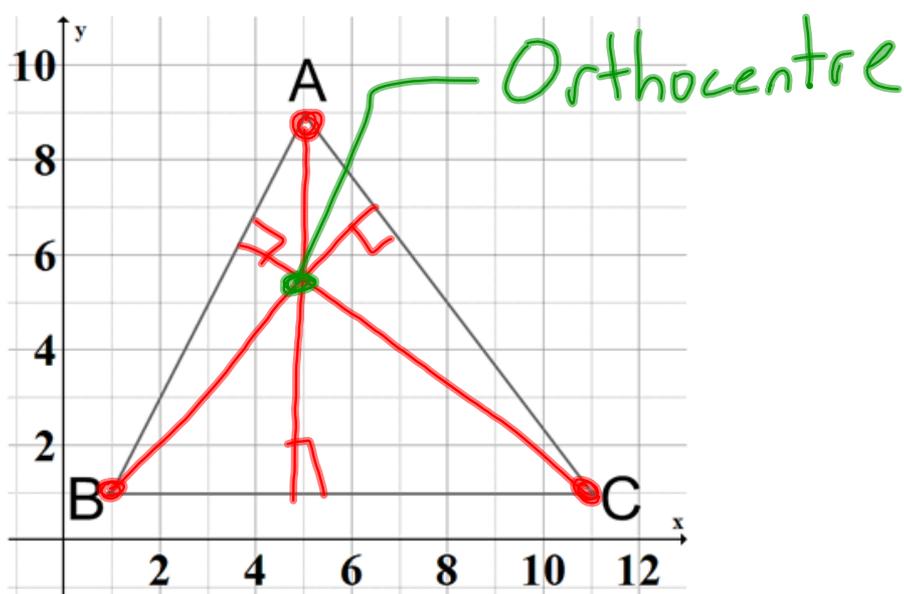


Action!

Some MORE New Terms

Orthocentre

The point of intersection of **the altitudes** of a triangle



Action!

Investigate!

1. Get in groups of 2.
2. Find the **circumcentre (1s)** OR **centroid (2s)** OR **orthocentre (3s)** of your triangle.
Note: I have marked the upper left corner.
USE A RULER and PROTRACTOR and PENCIL!
Show me, and I'll give you a marker.
3. Label it!
4. Post it! At the back in the proper spot.

Finding Circumcentres, Centroids and Orthocentres Mathematically

1. Find the equations of TWO

perpendicular bisectors (circumcentre)

OR

medians (centroid)

OR

altitudes (orthocentre)

2. Solve the system of your TWO linear equations using Elimination.

The point you find is your

circumcentre OR centroid OR orthocentre

Consolidation

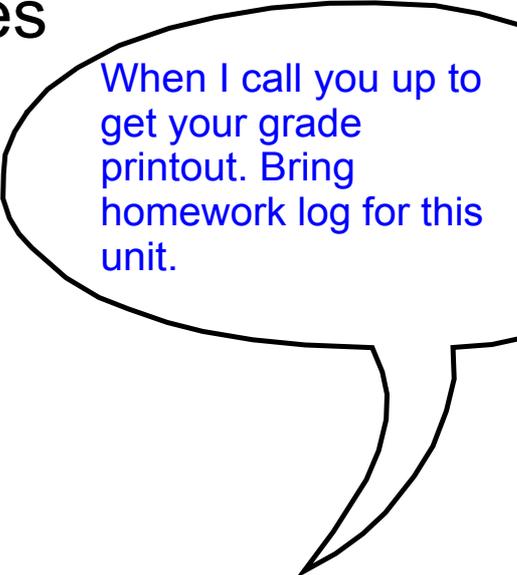
Find the Centroid

Triangle ABC has vertices at the following points:

A(4,14) **B**(10, 2) & **C**(4,2)

Find the CENTROID.

(mathematically!)



When I call you up to get your grade printout. Bring homework log for this unit.

Consolidation

Homework

Challenge Problems:

Pg. 95

15, 18, 20

1. Explain why the circumcentre, centroid and orthocentre, when connected, form a straight line in an isosceles triangle.

2. Prove, algebraically, that the circumcentre, centroid and orthocentre of an equilateral triangle coincide.

Triangle ABC has vertices at the following points:

A(4, 14) **B**(10, 2) & **C**(4, 2)

Find the CENTROID.

(mathematically!)