

# Lesson 6.2 Perpendicular and Angle Bisectors – Points of Concurrency

Tuesday, February 1, 2022 6:18 PM

Pear Deck Lesson

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Lesson 6.2  
Geometry

## Lesson 6.2 Perpendicular and Angle Bisectors

**\*Points of Concurrency**

Date: 2/2/22

### Lesson 6.2 - Bisectors of Triangles

**Learning Intent (Target):** *Today I will be able to use the properties of the points of concurrency to solve problems involving bisectors of triangles.*

**Success Criteria:** *I'll know I'll have it when I can accurately use perpendicular and angle bisectors to determine the distance and location of the points of concurrency.*

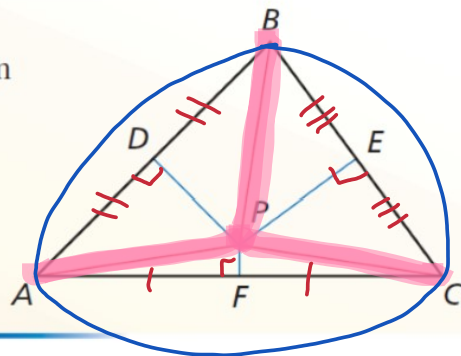
**Accountable Team Task:** *Therefore, I can practice using interactive Pear Deck Powerpoint for notes and geogebra investigations.*

## Theorem 6.5 Circumcenter Theorem

The circumcenter of a triangle is equidistant from the vertices of the triangle.

If  $\overline{PD}$ ,  $\overline{PE}$ , and  $\overline{PF}$  are perpendicular bisectors, then  $PA = PB = PC$ .

Proof p. 310

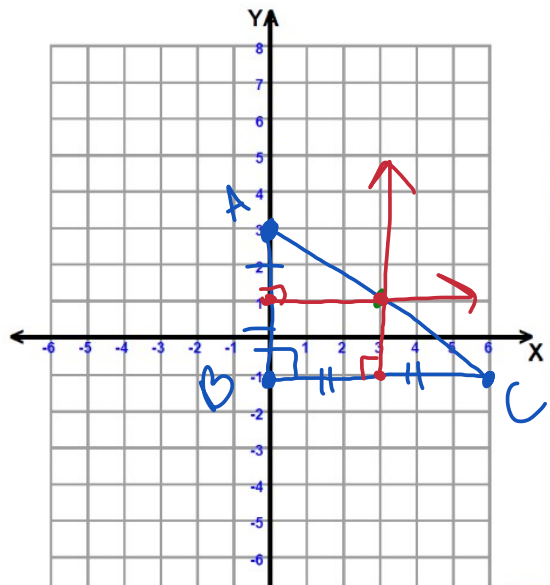


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Find the coordinates of the circumcenter of  $\triangle ABC$  with vertices  $A(0, 3)$ ,  $B(0, -1)$ , and  $C(6, -1)$ .

*Right Triangle Hypotenuse Midpoint*  
 $\frac{0+6}{2}, \frac{3+(-1)}{2}$   
 $\frac{6}{2}, \frac{2}{2}$   
 $(3, 1)$



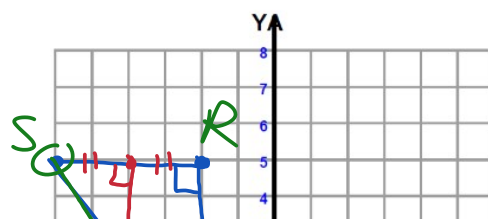
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Find the coordinates of the circumcenter of the triangle with the given vertices.

2.  $R(-2, 5)$ ,  $S(-6, 5)$ ,  $T(-2, -1)$

*Midpoint Hypotenuse*  
 $\frac{-6+(-2)}{2}, \frac{5+(-1)}{2}$   
 $\frac{-8}{2}, \frac{4}{2}$   
 $(-4, 2)$



$$\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$$

$$-\frac{8}{2}, \frac{4}{2}$$

$$(-4, 2)$$

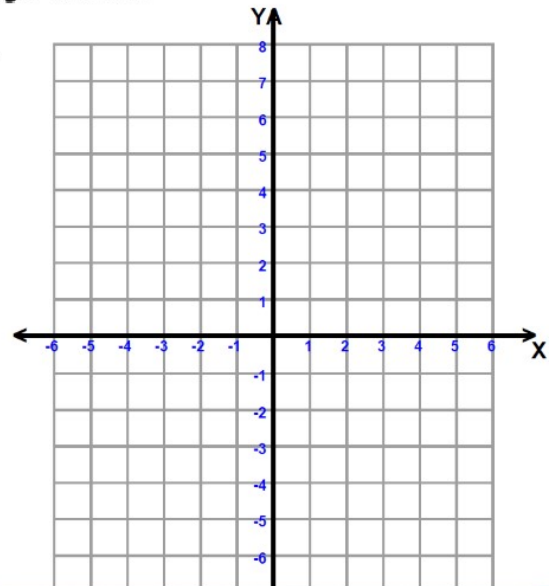


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Find the coordinates of the circumcenter of the triangle with the given vertices.

3.  $W(-1, 4)$ ,  $X(1, 4)$ ,  $Y(1, -6)$



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### Theorem 6.6 Incenter Theorem

The incenter of a triangle is equidistant from the sides of the triangle.

If  $\overline{AP}$ ,  $\overline{BP}$ , and  $\overline{CP}$  are angle bisectors of  $\triangle ABC$ , then  $PD = PE = PF$ .

*Proof* Ex. 38, p. 317

