Geometry 21 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_ Per: \_\_\_\_\_

**5-3 Bisectors in Triangles**

*****Objective: To identify properties of perpendicular bisectors and angle bisectors.*

**Warm up:**

When three or more lines intersect at one point, they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The point at which they intersect is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The following sets of lines are always concurrent:

* the perpendicular bisectors of a triangle’s 3 sides
* the bisectors of a triangle’s 3 angles

**\*PERPENDICULAR BISECTORS of a triangle**

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**Problem 2**

Where should a bench be placed if it needs to be equidistant from the 3 trees shown?

**circumcenter of the triangle** – the point of concurrency of the perpendicular bisectors of a triangle



The circle is **circumscribed about the triangle** when the circle contains each

 vertex of the triangle. The circumcenter is the center of the circumscribed circle.

**\*ANGLE BISECTORS of a triangle**

The **incenter of the triangle** is the point of concurrency of the angle bisectors of a triangle.

Circle P is **inscribed in** the triangle at right. The incenter is the center of the inscribed circle.

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**Problem 3**



6. In the figure below, which point is the circumcenter? \_\_\_\_\_\_\_\_\_\_\_\_

 Which point is the incenter? \_\_\_\_\_\_\_\_\_\_

Find x.

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