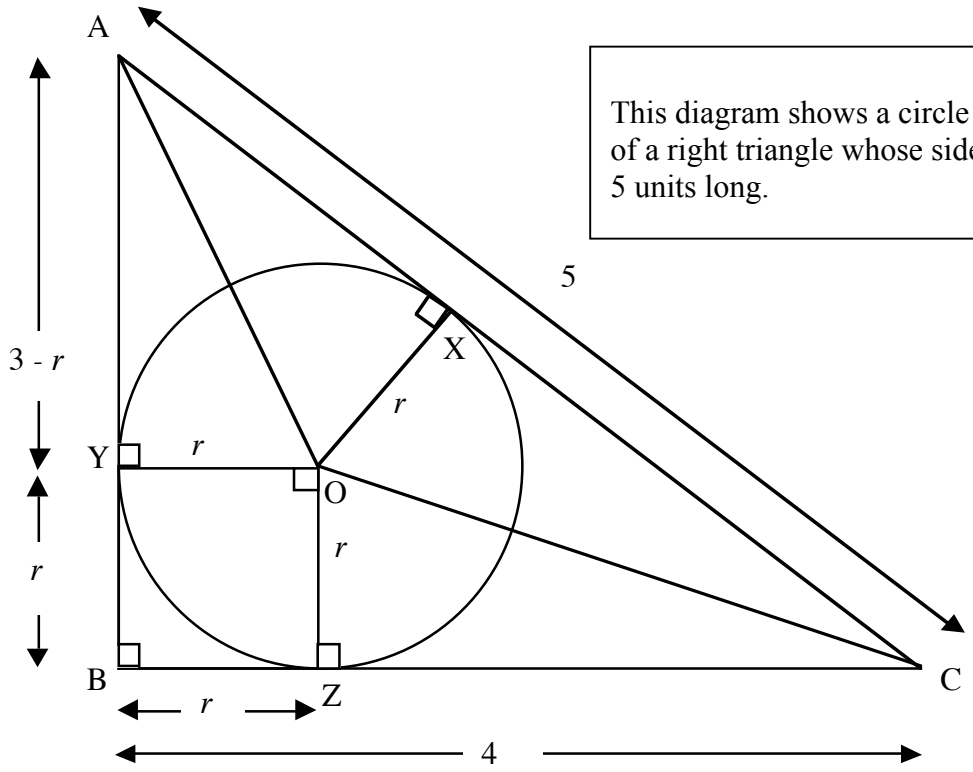
Circles in Triangles



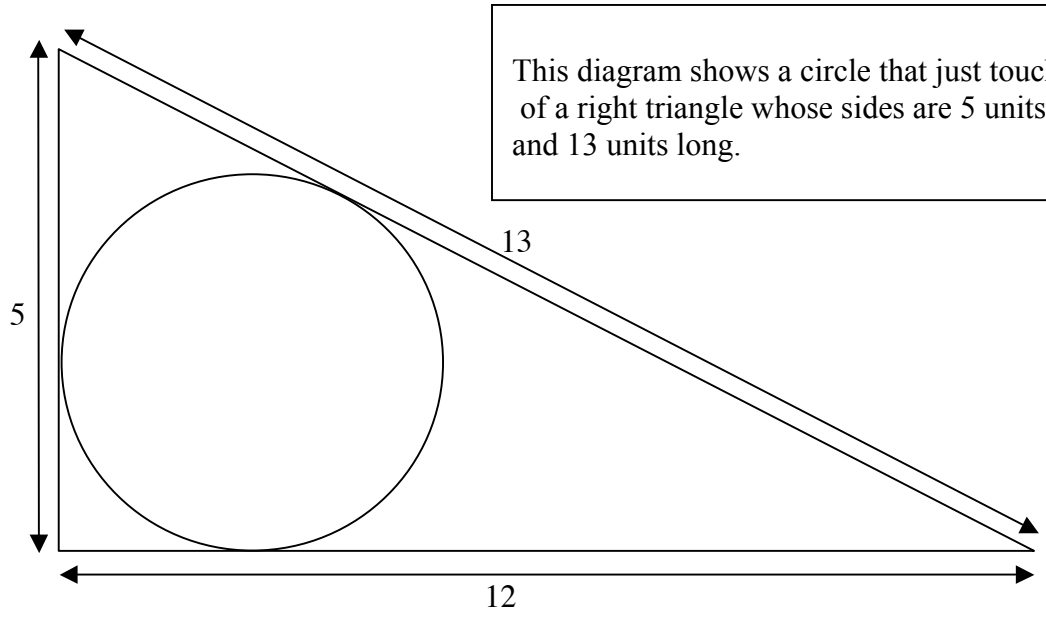
This diagram shows a circle that just touches the sides of a right triangle whose sides are 3 units, 4 units, and 5 units long.

1. Prove that triangles AOX and AOY are congruent.

2. What can you say about the measures of the line segments CX and CZ?

3. Find *r,* the radius of the circle. Explain your work clearly and show all your calculations.

4.



Draw construction lines as in the previous task, and find the radius of the circle in this 5, 12, 13 right triangle. Explain your work and show your calculations.

Circles in Triangles Rubric		
	Points	Section points
1. Triangle AOY is congruent to triangle AOX (Hypotenuse – Leg Postulate)	1	1
2. Triangle COZ is congruent to triangle COX (Hypotenuse – Leg Postulate) CZ = CX CZ = CX = 4 – *r* Accept alternative methods	 1 1	 2
3. Since triangle AOY is congruent to triangle AOX AY = AX = 3 – *r* Since AC = AX + XC 5 = 3 – *r* + 4 – *r* *r* = 1 Accept alternative methods such as using the Pythagorean Rule.	 1 1 1	 3
4. Draws in construction lines and uses a similar method to Question #3, 13 = 5 – *r* + 12 – *r* *r* = 2	1 2 1	 4
Total Points		**10**