Geometry II Test #1 Name:_____
Brewer 09 March 2016

Part I. Find the specified angle measure or side length for the triangle with the given measurements. It is strongly recommended, but not required, that you draw the triangles. Show the equation or formula that you used to find it.

1. Find **angle A** to the **nearest tenth**. $a = 16, b = 31, c = 20$

2. Find **side a** to the **nearest tenth**. $A = 32°, b = 51, c = 44,$

3. Find **side a** to the **nearest tenth**. $A = 14°, B = 42°, c = 73$

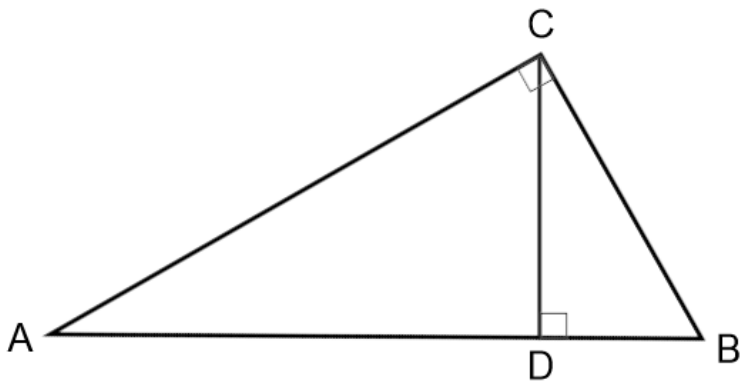
4. Find **side c**. Give an **exact value** in terms of fractions or square roots as necessary. $a = 4, B = 45°, C = 90°$

5. Find **side c**. Give an **exact value** in terms of fractions or square roots as necessary. $a = 4, B = 30°, C = 90°$

Part II – Answer the questions about the given triangles.

6. **How many solutions** does this triangle have? Explain your reasoning. $a = 13, b = 5,\ B = 18°$

Use this triangle to answer questions #7-14. Label and/or draw on the figure as needed.



In the above right triangle ABC, assume AB = 13 and CB = 5.

7. Find the length of side AC. Show the equation or formula you used to find it or explain your reasoning. Give an **exact answer** as a fraction or square root as necessary (do not round).

Evaluate the following functions of angle A. Give **exact answers** as fractions or square roots as necessary (do not round).

8. $\sin A =$

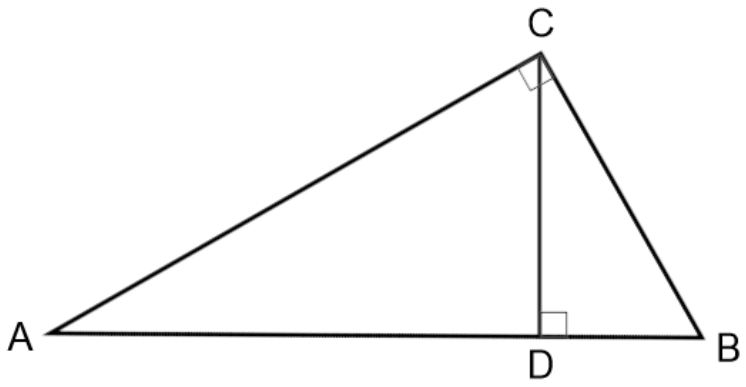
9. $\cos A =$

10. $\tan A =$

11. Find **angle A**. Round to the **nearest tenth**. Show the equation or formula that you used to find it.

12. Find **angle B**. Round to the **nearest tenth**. Show the equation or formula that you used to find it.

(same triangle from #7-12)



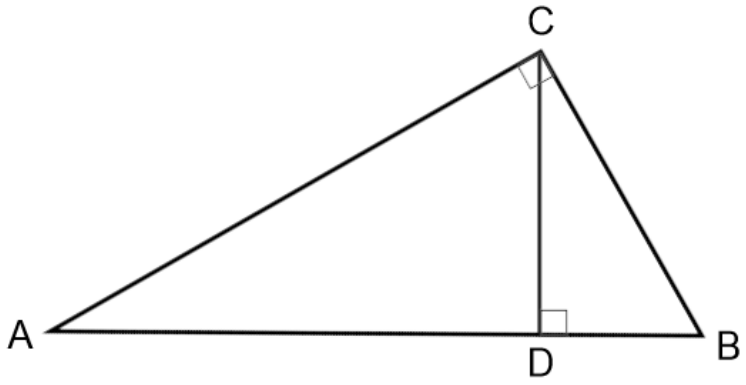
13. Find the length of **AD**. Show the equation or formula you used to find it or explain your reasoning. Give an **exact answer** as a fraction or square root as necessary (do not round).

14. Find the length of **CD**. Show the equation or formula you used to find it or explain your reasoning. Give an **exact answer** as a fraction or square root as necessary (do not round).

15. Find **angle BCD**. Round to the **nearest tenth**. Show the equation or formula you used to find it or explain your reasoning.

Part III. Find the requested side lengths, altitudes, or other measurements in the given figures.

Use this triangle to answer questions #13-15. Label and/or draw on the figure as needed.



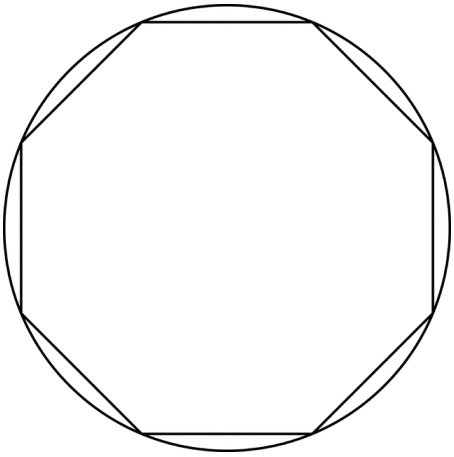
In right triangle ABC, assume AD = 7, DB = 4. Find the following, giving **exact answers** in terms of square roots or fractions as necessary (do not round). Show the equation or formula you used to find your answer.

16. $AC =$

17. $CB =$

18. $CD =$

19. A regular octagon is inscribed in a circle with a radius of 5 inches. Find the **perimeter** of the octagon.



20. The sides of a rectangle are said to be in the "Golden Ratio" if when the rectangle is divided into a square and a smaller rectangle, the smaller rectangle is similar to the original rectangle. That is, the below rectangle is a "Golden Rectangle" if $\frac{a+b}{a} = \frac{a}{b}$. What would be the length of the shorter side of a Golden Rectangle whose longer side length is 24 inches? For full credit, give the answer rounded to the nearest hundredth. For extra credit, give the exact value.