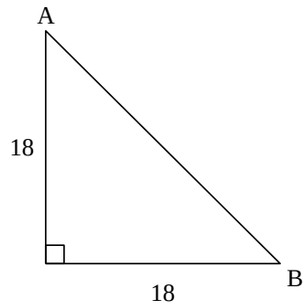
Math 2200
Test – Trigonometry

Name:_____

_____/25 = _____%

Part A Multiple Choice **Write the letter of the correct answer in the space provided to the right.** ***Diagrams are not drawn to scale.*** **(10 marks)**

1. What is the exact cosine of ∠A? 1._____



A) $\sqrt{2}$
B) 1
C) 18
D) $\frac{1}{\sqrt{2}}$

2. Which set of angles has the same terminal arm as 40°? 2._____

A) 120°, 240°, 300°
B) 140°, 220°, 320°
C) 150°, 210°, 330°
D) 140°, 200°, 300°

3. An angle is in standard position such that $\cos\theta = \frac{1}{9}$. What are the possible values of θ, to the nearest degree, if $0° \le \theta \le 360°$? 3._____

A) 6° and 174°
B) 6° and 276°
C) 84° and 264°
D) 84° and 276°

4. Solve to the nearest tenth of a unit for the unknown side in the ratio $\frac{a}{\sin 30°} = \frac{12}{\sin 115°}$. 4._____

A) 24
B) 21.8
C) 6.6
D) 24.6

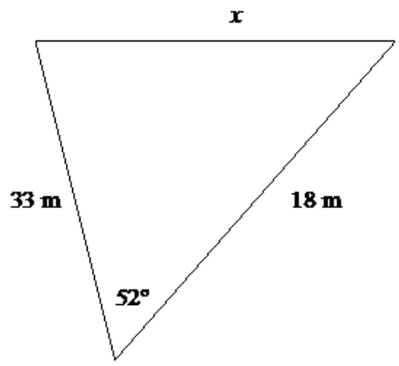
5. If ∠B = 58.8°, *c* = 10.3 cm, and *b* = 10.5 cm, and ΔABC is acute, what is the measure of ∠C, to the nearest tenth of a degree? 5._____

A) 57°
B) 123.0°
C) 30.5°
D) 149.5°

6. The point (40, –9) is on the terminal arm of ∠A. Which is the set of exact primary trigonometric ratios for the angle? 6._____

A) $\sin A = -\frac{41}{9}, \cos A = \frac{41}{40}, \tan A = -\frac{9}{40}$
B) $\sin A = \frac{40}{41}, \cos A = -\frac{9}{41}, \tan A = -\frac{40}{9}$
C) $\sin A = -\frac{40}{41}, \cos A = \frac{9}{41}, \tan A = -\frac{9}{40}$
D) $\sin A = -\frac{9}{41}, \cos A = \frac{40}{41}, \tan A = -\frac{9}{40}$

7. What is the length of *x*, to the nearest tenth of a metre? 7._____



A) 27.7 m
B) 21.8 m
C) 26.1 m
D) 37.6 m

8. Solve for θ to the nearest tenth: $\tan\theta = -\frac{4}{\sqrt{7}}, \quad 0° \le \theta \le 180°$ 8._____

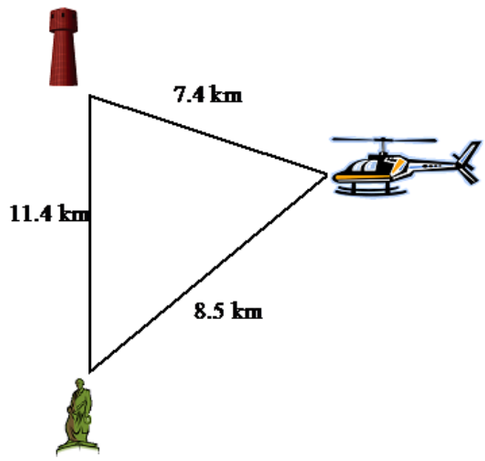
A) –56.5°

B) 56.5°

C) 123.5°

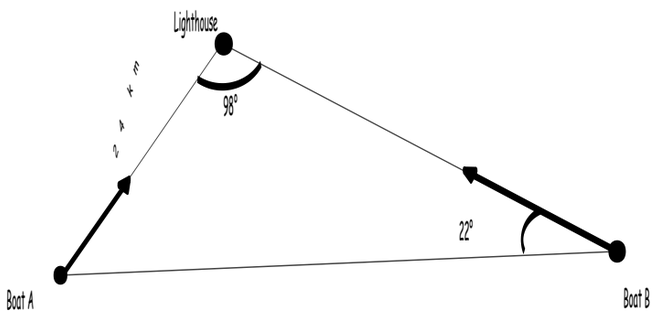
D) 123.5°, 303.5°

9. While flying, a helicopter pilot spots a water tower that is 7.4 km to the north. At the same time, he sees a monument that is 8.5 km to the south. The tower and the monument are separated by a distance of 11.4 km along the flat ground. What is the angle made by the water tower, helicopter, and monument? 9._____



A) 91°
B) 11°
C) 40°
D) 48°

10. Two boats are heading directly towards a lighthouse. Using the data given in the diagram, determine how far Boat B is from the lighthouse.



A) 42 km
B) 55 km
C) 59 km
D) 64 km

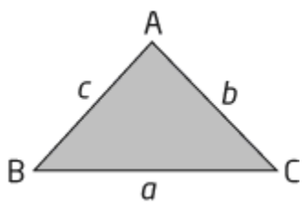
Part B Short Answer Questions **Complete each of the following in the space provided. Be sure to show all necessary workings. *Diagrams are not drawn to scale.* (15 marks)**

1. Given that $\sin A = \frac{5}{12}$ and that $\angle A$ is located in the second quadrant, determine exact values for the other two primary trigonometric ratios. (2 marks)

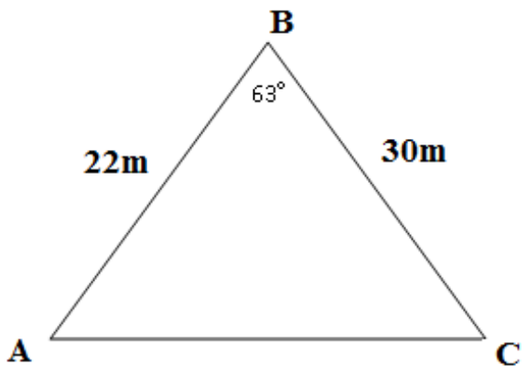
2. Determine the measure of θ, where $0 \leq \theta \leq 360^\circ$, to the nearest degree, if $sin\theta = -\frac{1}{\sqrt{3}}$. (3 marks)

3. Solve the following triangle, rounding side lengths to the nearest tenth of a unit and angle measures to the nearest degree. (6 marks)

$< A = 33^\circ$, b = 35.6, a = 20.4



4. Determine the lengths of the unknown side and the measures of the unknown angles to the nearest unit. (4 marks)



Bonus Question:

Calculate the value of *h*, to the nearest tenth of a meter, in the diagram below. (3 marks)