Math 11

Trigonometry Exam Review

1. The area of a triangular flower bed is 200m^2. Two of the sides are 20m and 35m. What is the measure of the included angle?

$A = \frac{1}{2} bc \sin A$

$200m^2 = \frac{1}{2}(20m)(35m)\sin A$

$200m^2 = \frac{1}{2}(700m^2)\sin A$

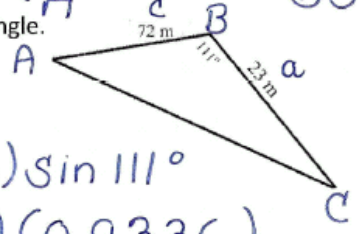
$\frac{200m^2}{350m^2} = \frac{350m^2 \sin A}{350m^2}$

$0.5714 = \sin A$

$\sin^{-1}(0.5714) = \angle A$

$35° = \angle A$

2. Find the area of the following triangle.



$A = \frac{1}{2} ac \sin B$

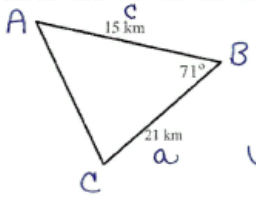
$A = \frac{1}{2}(23m)(72m)\sin 111°$

$A = \frac{1}{2}(1656m^2)(0.9336)$

$A = \frac{1}{2}(1546.0092m^2)$

$A = 773.0\ m^2$

3. A bus travels the following route as shown. Determine the area it covers to the nearest 10km^2.



$A = \frac{1}{2} ac \sin B$

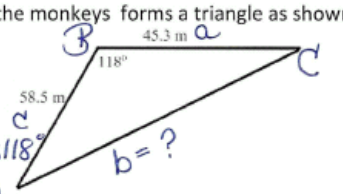
$A = \frac{1}{2}(21\text{Km})(15\text{Km})\sin 71°$

$A = \frac{1}{2}(315\ \text{Km}^2)(0.9455)$

$A = \frac{1}{2}(297.8325\ \text{Km}^2)$

$A = 148.92\ \text{Km}^2$

4. The boundaries for a zoo exhibit which houses the monkeys forms a triangle as shown. Determine the length of the third side to the nearest tenth of a meter.



$b^2 = a^2 + c^2 - 2ac\cos B$

$b^2 = (45.3)^2 + (58.5)^2 - 2(45.3)(585)\cos 118°$

$b^2 = 2052.09 + 3422.25 - 5300.1(-0.4695)$

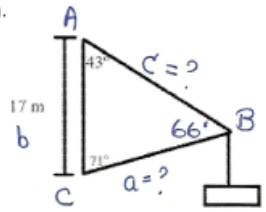
$b^2 = 5474.34 + 2488.35$

$b^2 = 7962.69$

$b = \sqrt{7962.69}$

$b = 89.2\text{ m}$

5. A sign is supported from the side of a building by two steel struts, as shown below. Find the length of the struts from the information given in the diagram.



$\angle B = 180° - 43° - 71°$

$\angle B = 66°$

$$\frac{a}{\sin A} = \frac{b}{\sin B}$$

$$\frac{a}{\sin 43°} = \frac{17}{\sin 66°}$$

$$\frac{a \sin 66°}{\sin 66°} = \frac{17 \sin 43°}{\sin 66°}$$

$$a = 12.7 \text{ m}$$

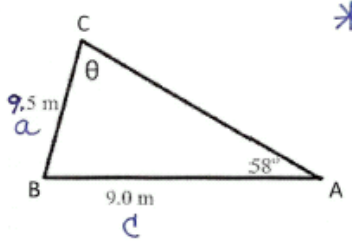
$$\frac{c}{\sin C} = \frac{b}{\sin B}$$

$$\frac{c}{\sin 71°} = \frac{17}{\sin 66°}$$

$$\frac{c \sin 66°}{\sin 66°} = \frac{17 \sin 71°}{\sin 66°}$$

$$c = 17.6 \text{ m}$$

6. During basketball practice the players performed the following drill. Player B threw the ball to player A, who directed it through an angle of 58° to player C as show in the diagram below. To the nearest degree determine the measure of the acute angle θ in the diagram.



* Change 7.5 to 9.5!

$$\frac{\sin C}{c} = \frac{\sin A}{a}$$

$$\frac{\sin C}{9.0\text{m}} = \frac{\sin 58°}{9.5\text{m}}$$

$$\frac{9.5 \sin C}{9.5} = \frac{9.0 \sin 58°}{9.5}$$

$$\sin C = 0.8034$$

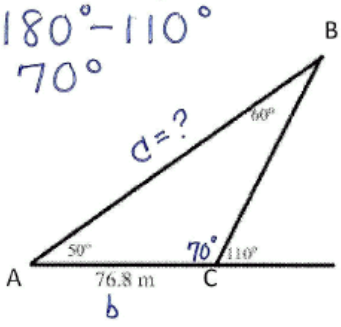
$$C = \sin^{-1}(0.8034)$$

$$C = 53°$$

7. A lightening rod is anchored to the ground at point A, 76.8 m from the building at point C, as shown in the following diagram. Find the length of the cable AB to the nearest meter.

$\angle C = 180° - 60° - 50°$ OR $\angle C = 180° - 110°$

$= 70°$ $= 70°$



$$\frac{c}{\sin C} = \frac{b}{\sin B}$$

$$\frac{c}{\sin 70°} = \frac{76.8\text{ m}}{\sin 60°}$$

$$\frac{c \sin 60°}{\sin 60°} = \frac{76.8 \sin 70°}{\sin 60°}$$

$$c = \frac{76.8(0.9397)}{0.8660}$$

$$c = 83.3\text{ m}$$