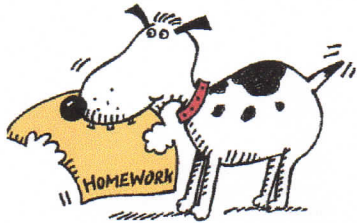


**HOMEWORK TAKE-UP**

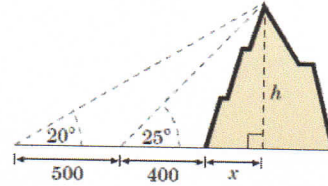
Pg 290 #1, #2a,b,d,e #3a,c,f



**UNIT #5: Trigonometry  
Trig Applications**

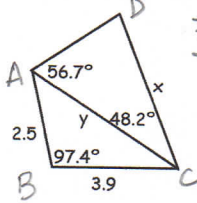
**Learning Goal:**

I will learn how to solve word problems with double triangles using trigonometry applications.



**Lesson: Double Triangle Trig Applications**

Example 1: Find the value of x.



Find  $y$  (SAS) Cosine

$$y^2 = (2.5)^2 + (3.9)^2 - 2(2.5)(3.9)\cos 97.4^\circ$$

$$y^2 = 21.46 - (-2.5115)$$

$$y^2 = 23.9715$$

$$y = 4.9$$

Find  $x$  (ASA) Sine.

$$\frac{x}{\sin 56.7^\circ} = \frac{4.9}{\sin 75.1^\circ}$$

$$x \sin 75.1^\circ = 4.9 \sin 56.7^\circ$$

$$x = 4.2$$

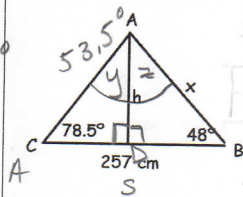
Find  $\angle A$

$$\angle y = 180^\circ - 78.5^\circ - 90^\circ = 11.5^\circ$$

$$\angle z = 180^\circ - 90^\circ - 48^\circ = 42^\circ$$

$$\angle A = 11.5^\circ + 42^\circ = 53.5^\circ$$

Example 2: Find the area of ABC.



ASA - Sine Law

Find  $x$

$$\frac{x}{\sin 78.5^\circ} = \frac{257}{\sin 53.5^\circ}$$

$$x \sin 53.5^\circ = 257 \sin 78.5^\circ$$

$$x = 313.29$$

Ans: 29991 units<sup>2</sup>

Find  $h$

$$\sin 48^\circ = \frac{h}{313.29}$$

$$232.8 = h$$

$$A = \frac{1}{2}bh$$

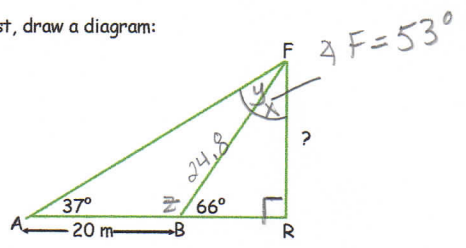
$$= \frac{1}{2}(257)(232.8) =$$

$$29,914.8 \text{ cm}^2$$

# Trig Applications (Lesson).notebook

**Example 3:** A model rocket is fired vertically upward. The angle of elevation to the top of the flight is measured from two points that are 20m apart, on the same side of the launch site, and collinear with it. The angles measured at the two points are 66° and 37°. How high will the rocket fly, to the nearest metre?

**Step 1:** First, draw a diagram:



**Step 2:** Solve using sine law followed by a primary trig ratio.

$$\angle x = 180^\circ - 66^\circ - 90^\circ = 24^\circ$$

$$\angle z = 180^\circ - 66^\circ = 114^\circ$$

$$\angle y = 180^\circ - 37^\circ - 114^\circ = 29^\circ$$

$$\angle F = \angle y + \angle x = 29^\circ + 24^\circ$$

$$\angle F = 53^\circ$$

Don't need this!!

AAS - sine  
Find FB

$$\frac{FB}{\sin 37^\circ} = \frac{20}{\sin 29^\circ}$$

$$FB \sin 29^\circ = 20 \sin 37^\circ$$

$$FB = 24.8 \text{ m}$$

Sine =  $\frac{o}{h}$  (right triangle)

Find FR

$$\sin 66^\circ = \frac{FR}{24.8}$$

$$24.8 \sin 66^\circ = FR$$

$$22.7 \text{ m} = FR$$

∴ The rocket will fly 23m high.

## UNIT 5: Trigonometry Trig Applications

### Learning Goal:

I will learn how to solve word problems with double triangles using trigonometry applications.

### Success Criteria:

To be successful, I must be able to...

- Identify what the question is asking and draw a diagram
- Create a plan to solve the unknown using a combination of Sine, Cosine, and/or primary trig ratios (SOH CAH TOA)

