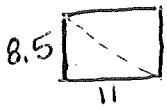
Name _____ Hour ___

11-2 Area of Triangles

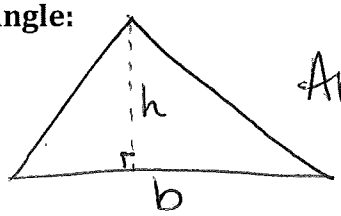
***Geometry Lab:* Area of a Triangle**



$A = 11(8.5)$

1. What is the area of an 8.5" x 11" piece of computer paper?
   $93.5\ in^2$
   a. If you were to cut it diagonally, what would be the area of that half sheet of paper? $\frac{1}{2}(93.5) = 46.75\ in^2$
2. What is the area of a 3" x 5" index card?
   $A = 3(5) = 15\ in^2$
   a. If you were to cut this card diagonally and get a triangle, what would be the area of the resulting triangle? $\frac{1}{2}(15) = 7.5\ in^2$
3. What do you observe happened to the areas when you cut you triangle in each situation? the area becomes half the original
4. What would be a formula we could use to find the area of any ΔABC?
   $A = \frac{1}{2}l \cdot w \Rightarrow A = \frac{1}{2}bh$

Area of a Triangle:

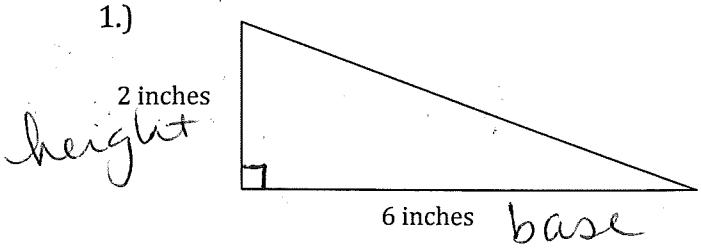


$Area = \frac{1}{2}(base)(height)$

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

Examples: Determine the area of the triangles below.

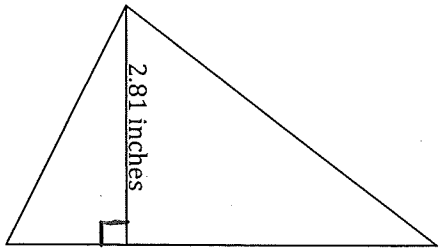
1.)



$A = \frac{1}{2}(6)(2)$

$A = 6\ in^2$

2.)



$A = \frac{1}{2}(3.75)(2.81)$

$= 5.27\ in^2$

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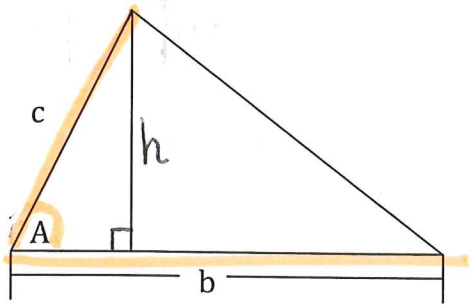
11-2 Area of Triangles

What happens when we don't' know the height?



We know that... $A = \frac{1}{2}bh$

We don't know... the height

We can say that... $\sin A = \frac{h}{c}$

So... $c \cdot \sin A = \frac{h}{c} \cdot c$

Therefore... $h = c \cdot \sin A$

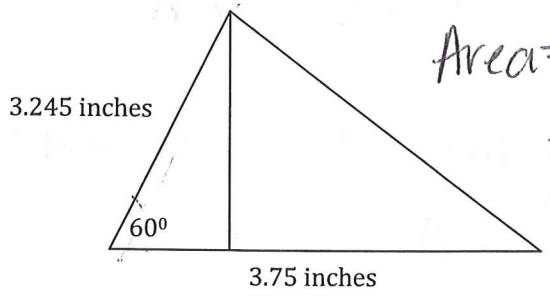
Area of a Triangle:

For any SAS $\triangle$, we can say

$$\text{Area} = \frac{1}{2}(b)(c)\sin A$$

Examples: Determine the area of the triangles below.

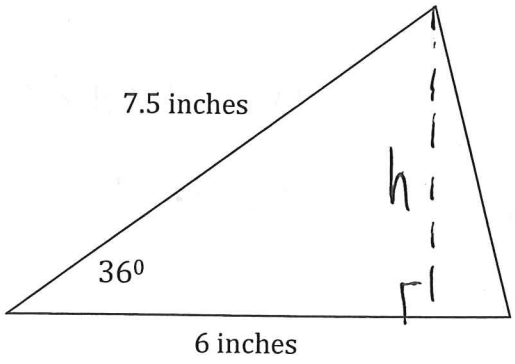
3.)



$\text{Area} = \frac{1}{2}(3.75)(3.245)\sin 60$

$= 5.27 \text{ in}^2$

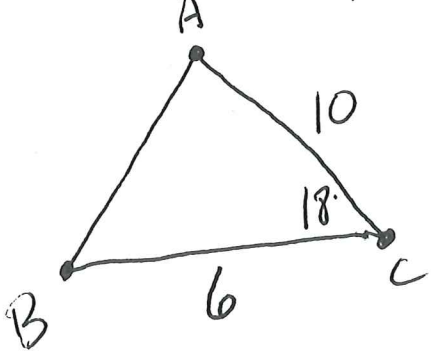
4.)



$\text{Area} = \frac{1}{2}(6)(7.5)\sin 36$

13.2 in^2

5.) Find the area of ΔABC, where $a = 6$, $b = 10$ and $m\angle C = 18$.



$\text{Area} = \frac{1}{2}(6)(10)(\sin 18)$

9.27 units^2

Name _____ Hour ___

11-2 Area of Triangles

Homework: ~~p. 643 Q#10-12, 14, 15, 26, 28, 29, 44-48 & the additional problems below.~~

Find the area of each triangle below.

1.) ΔABC, where $b = 5.2$, $c = 3.9$ and $m\angle A = 42$.

2.) ΔABC, where $a = 11$, $c = 21$ and $m\angle B = 132$.

3.) ΔABC, where $a = 31.1$, $b = 29.5$ and $m\angle C = 141$.

4.) ΔABC, where $a = 5$, $b = 8$ and $m\angle C = 67$.

5.) ΔABC, where $b = 123$, $c = 97$ and $m\angle A = 22$.

6.) ΔABC, where $a = 6$, $c = 8$ and $m\angle B = 172$.