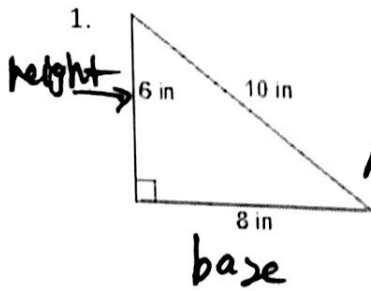


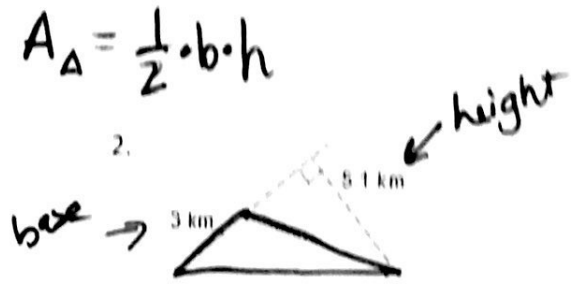
7.3N – Area of any Triangle

Review: Find the area of the following triangles:



$$A = \frac{1}{2} (8)(6)$$

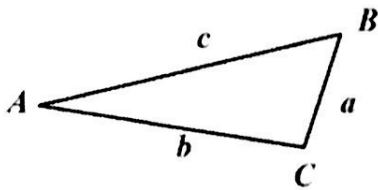
$$A = 24 \text{ in}^2$$



$$A = \left(\frac{1}{2}\right) 3 \cdot 5.1 = 7.65 \text{ km}^2$$

A. Finding the area of any triangle.

If we know two sides and the included angle (SAS), the area of that triangle is:



$$A = \frac{1}{2} ab \sin C$$

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

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

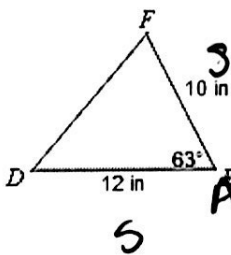
2 sides with the angle in between then!
SAS

Depending on which sides and angle we know.

Find the area of each triangle to the nearest tenth.

Examples:

1.

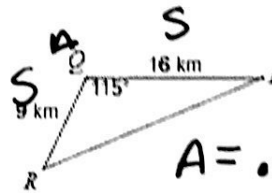


SAS

$$A = .5(10)(12) \sin 63^\circ$$

$$A = 60 \sin 63$$

$$A = 53.5 \text{ in}^2$$



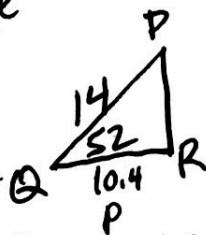
$$A = .5(16)(9) \sin 115$$

$$A = 65.3 \text{ km}^2$$

3.

In $\triangle QRP$, $p = 10.4$ yd, $r = 14$ yd, $m\angle Q = 52^\circ$

Draw picture
SAS

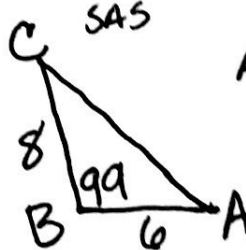


$$A = .5(10.4)(14) \sin 52$$

$$A = 57.4 \text{ yd}^2$$

4.

In $\triangle BCA$, $m\angle B = 99^\circ$, $c = 6$ yd, $a = 8$ yd

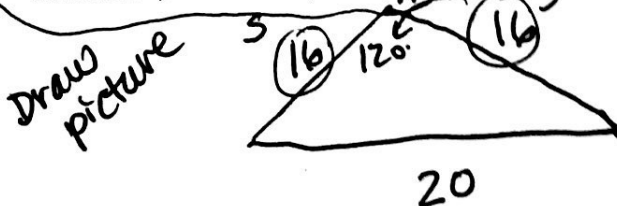


$$A = .5(6)(8) \sin 99$$

$$A = 23.7 \text{ yd}^2$$

5. You are repainting the shed in your backyard and only have the triangular piece above the door left. You are out of paint and are not sure if you should buy a gallon (350 square feet) or a quart (87.5 square feet) of paint. You measured the horizontal length to be 20ft and the legs to be 16ft. The larger angle measured to 120°.

How much paint should you buy?



$$A = .5(16)(16) \sin 120$$

$$A = 110.9 \text{ ft}^2$$

Buy Gallon