

Area using Right Triangles

Some problems may not give you everything you need to find the area of the figure. You may have to rely on background knowledge to help you find that missing piece of information.

\*Background Knowledge: ☺☺☺

45° - 45° - 90°	30° - 60° - 90°	Sine	Cosine	Tangent
		$\sin x = \frac{\text{opp}}{\text{hyp}}$	$\cos x = \frac{\text{adj}}{\text{hyp}}$	$\tan x = \frac{\text{opp}}{\text{adj}}$

Ex1: Find the area of each figure. Round to the nearest tenth if necessary.

A) Parallelogram  
 $A = bh$   
 $\sin 60 = \frac{h}{11}$

B) Rectangle  
 $A = l \cdot w$   
 $7 = h$   
 $b = 7\sqrt{3}$

C) Triangle  
 $h = \frac{10}{\sqrt{2}} = 7.071$

$h = 5.196$   
 $A = 11(5.196)$   
 $A = 57.2 \text{ units}^2$

$\tan 30 = \frac{7}{b} \Rightarrow b = 12.124$   
 $A = 7(12.124)$   
 $A = 84.9 \text{ units}^2$

$A = \frac{1}{2}bh$   
 $A = \frac{1}{2}(7.071)(7.071)$   
 $A = 25.0 \text{ units}^2$

D) Rectangle  
 $A = l \cdot w$  or  $b \cdot h$   
 $b = \frac{24}{\sqrt{3}}$

E) Triangle  
 $A = \frac{1}{2}bh$

F) Parallelogram  
 $A = b \cdot h$   
 $9 = b$

$\tan 60 = \frac{24}{b}$   
 $b = 13.856$   
 $A = (13.856)(24)$   
 $A = 332.5 \text{ units}^2$

$\cos 40 = \frac{b}{15}$   
 $b = 11.491$   
 $\sin 40 = \frac{h}{15}$   
 $h = 9.642$

$\frac{8}{\sqrt{2}} = 5.657$   
 $\sin 45 = \frac{h}{8}$   
 $A = 9(5.657)$   
 $A = 50.9 \text{ units}^2$

$A = \frac{1}{2}(11.491)(9.642) = 55.4 \text{ units}^2$