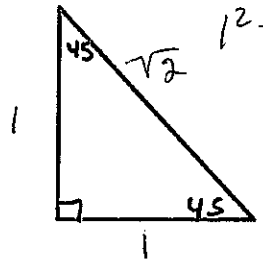
45° 45° 45° Triangles

Notes

$a^2+b^2=c^2$



$1^2+1^2=c^2$

$1+1=x^2$

$2=x^2$

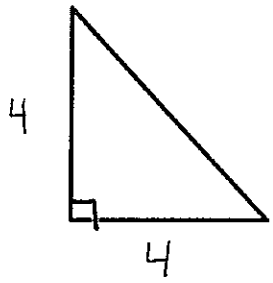
$\sqrt{2}=x$

Isosceles Right Triangle

Theorem: w/ 45, 45 90 Triangle

legs are $\cong$

hypotenuse = leg times $\sqrt{2}$



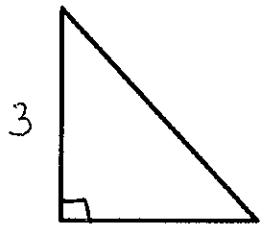
$4^2+4^2=x^2$

$16+16=x^2$

$32=x^2$

$4 \cdot 8$

$4\sqrt{2}$

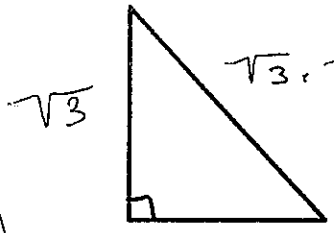


What will it be if legs are 10?

Converse of Theorem: If Hyp = leg $\sqrt{2}$ Find for a Leg

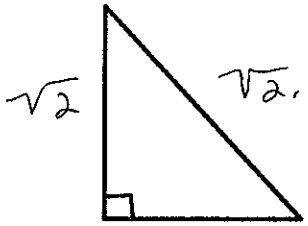
$\frac{H}{\sqrt{2}} = \frac{L\sqrt{2}}{\sqrt{2}}$

$\frac{H}{\sqrt{2}} = \text{leg}$



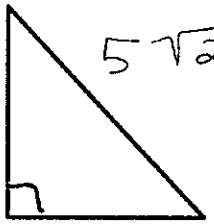
$\sqrt{3} \cdot \sqrt{2} = \sqrt{3 \cdot 2}$

$= \sqrt{6}$



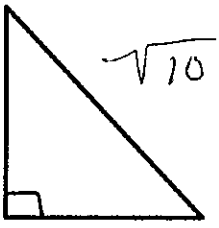
$\sqrt{2} \cdot \sqrt{2} = \sqrt{2 \cdot 2}$

$= 2$



$\frac{5\sqrt{2}}{\sqrt{2}}$

$= 5$

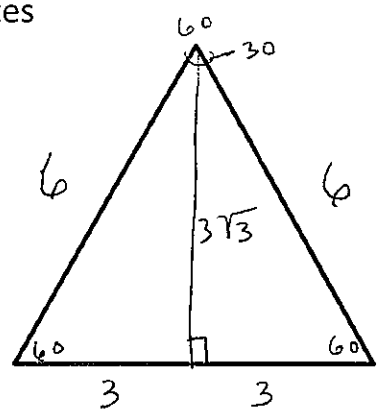


$= \frac{\sqrt{10}}{\sqrt{2}} = \sqrt{5}$

Name_____

30° 60° 90° Special Right Triangles

Notes



Bisect an equilateral triangle

- now you have 2, 30, 60, 90 triangles

$a^2 + b^2 = c^2$

$3^2 + x^2 = 6^2$

$9 + x^2 = 36$

$-9 \quad -9$

$x^2 = 27$

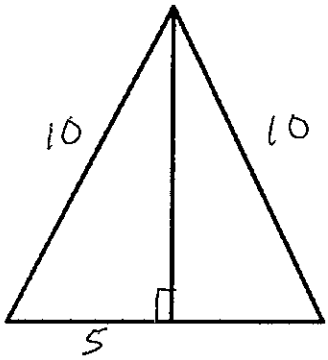
$x = \sqrt{27}$

$\sqrt{27}$

$3 \cdot 9$

$3 \cdot 3$

$3\sqrt{3}$



$5^2 + x^2 = 10^2$

$25 + x^2 = 100$

$x^2 = 75$

$x = \sqrt{75}$

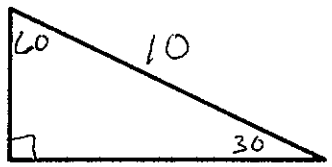
$3 \cdot 25$

$5 \cdot 5$

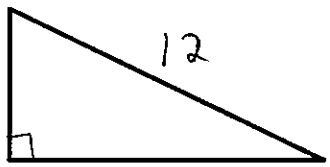
$= 5\sqrt{3}$

Theorems of 30° 60° 90° Triangles:

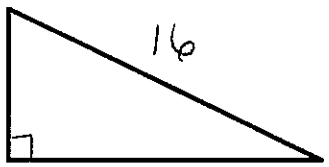
- Hypotenuse = 2 times the short leg
- long leg = $\sqrt{3}$ times the short leg
- smallest side is opposite the smallest angle

5 

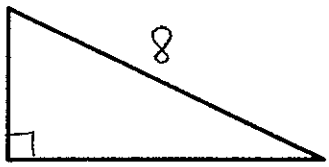
$5\sqrt{3}$

6 

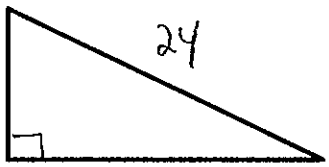
$6\sqrt{3}$

8 

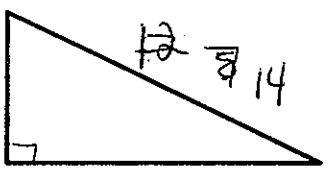
$8\sqrt{3}$

4 

$4\sqrt{3}$

12 

$12\sqrt{3}$

7 

~~$20\sqrt{3}$~~ $7\sqrt{3}$