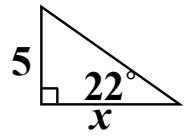
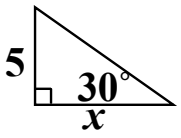
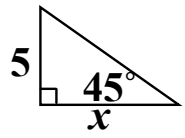
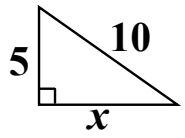
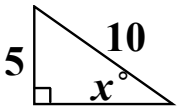
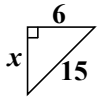
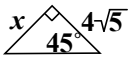
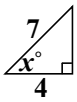
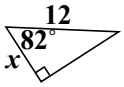
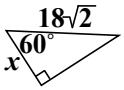
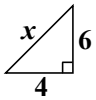
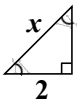
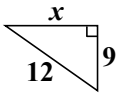
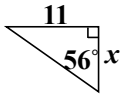
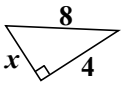
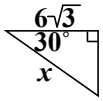
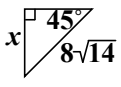
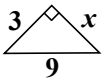
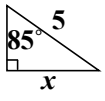
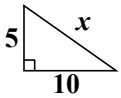
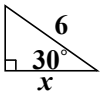
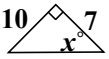
Name: _____

Special Triangles vs. Trigonometry vs. Pythagorean Theorem

The first step to solving a right triangle problem is recognizing what type of problem you should be solving. There are various options that help you to evaluate **right triangles:**

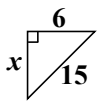
Use when you…	**Trigonometry**	**Special Triangles**		**Pythagorean Theorem**	**Inverse Trigonometry**
		30-60-90	*45-45-90*		
HAVE:	1 side and 1 angle	1 side on 30-60-90	1 side on 45-45-90	2 sides	2 sides
WANT:	a side	a side	a side	a side	an angle
Example:					

Section 1: Determine which process you should use to solve each triangle below.

EXAMPLE: Which process should you use to solve for *x*?  I **have** 2 sides, & I **want** a side, so I'll USE: *PYTHAGOREAN THEOREM*	**EXAMPLE:** Which process should you use to solve for *x*?  I **have** 1 side on 45-45-90 & I **want** a side, so I'll USE: *SPECIAL TRIANGLES*	**EXAMPLE:** Which process should you use to solve for *x*?  I **have** 2 sides & **want** an angle, so I'll USE: *INVERSE TRIG*
EXAMPLE: Which process should you use to solve for *x*?  I **have** 1 sides and 1 angle, & I **want** a side, so I'll USE: *TRIGONOMETRY*	1*a.* Which process should you use to solve for *x*? 	2*a.* Which process should you use to solve for *x*? 
3*a.* Which process should you use to solve for *x*? 	4*a.* Which process should you use to solve for *x*? 	5*a.* Which process should you use to solve for *x*? 
6*a.* Which process should you use to solve for *x*? 	7*a.* Which process should you use to solve for *x*? 	8*a.* Which process should you use to solve for *x*? 
9*a.* Which process should you use to solve for *x*? 	10*a.* Which process should you use to solve for *x*? 	11*a.* Which process should you use to solve for *x*? 
12*a.* Which process should you use to solve for *x*? 	13*a.* Which process should you use to solve for *x*? 	14*a.* Which process should you use to solve for *x*? 

Section 2: Determine the value of x.

EXAMPLE:



Pyth. Thm: $a^2 + b^2 = c^2$

c is the hyp!

$x^2 + 6^2 = 15^2$

$x^2 + 36 = 225$

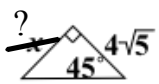
$x^2 = 189$

$x = \sqrt{189}$

$x = \sqrt{9}\sqrt{21}$

$x = \boxed{3\sqrt{21}}$

EXAMPLE:



Special Triangles: 45-45-90

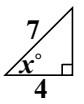
$opp45: x = \_?\_ \leftarrow (4\sqrt{5}) = \_?\_$

$opp45: x = 4\sqrt{5}$

$hyp: x\sqrt{2} = \_\_\_$

$opp45 = \boxed{4\sqrt{5}}$

EXAMPLE:



Inverse Trigonometry:

$S\ o\ h\ \boxed{C\ a\ h}\ T\ o\ a$

$7 \quad 4\ 7 \quad 4$

$\cos(x^\circ) = \frac{4}{7}$

$\cos(x^\circ) = 0.5714$

$x^\circ = \boxed{55^\circ}$

$$7\overline{)4.000000}\ 0.57142$$

-35

50

-49

10

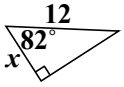
-7

30

-28

20

EXAMPLE:



Trigonometry:

$S\ o\ h\ \boxed{C\ a\ h}\ T\ o\ a$

$12 \quad x\ 12 \quad x$

$\cos(82^\circ) = \frac{x}{12}$

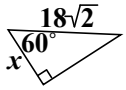
$12\cos(82^\circ) = x$

$12(0.1392) = x$

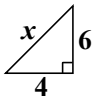
$1.6704 = x$

$x = \boxed{1.7}$

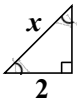
1*b.*



2*b.*

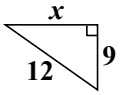


3*b.*

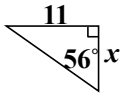


4*b.*

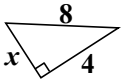
5*b.*



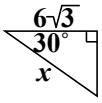
6*b.*



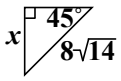
7*b.*



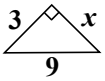
8*b.*



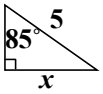
9*b.*



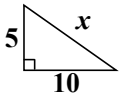
10*b.*



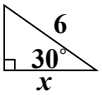
11*b.*



12*b.*



13*b.*



14*b.*