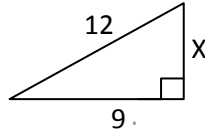


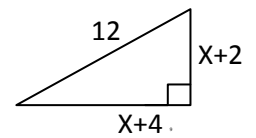
Unit 8 Graphic Organizer

Pythagorean Theorem

- Used when you know the length of 2 sides in a right triangle and want to know the 3rd side



- When you have expressions for all three sides.



Pythagorean Triples are sets of 3 whole numbers that work in the Pythagorean Theorem. Examples include: {3-4-5}, {5-12-13}, and {8-15-17}. Look for these and primitive triples with scale **factors** (multipliers like 3-4-5 to 9-12-15 using 3).

Special Right Triangles

30	60	90
n	$n\sqrt{3}$	2n

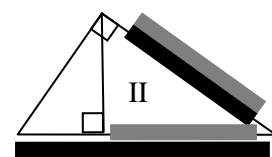
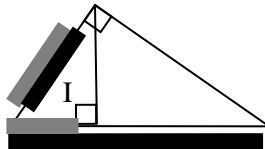
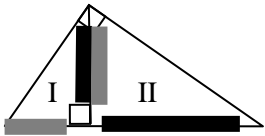
- Write appropriate box.
- Look at diagram. Place given information in the appropriate column under box.
- Write equation using the known value. (2nd row of column = 3rd row of column)

45	45	90
n	n	$n\sqrt{2}$

- Solve for n; rationalize as needed.
- Write additional equations and plug in n.

Geometric Mean

(the duplicate side in the ratio is called the mean)



$$\frac{\Delta I \text{ short leg}}{\Delta II \text{ short leg}} = \frac{\Delta I \text{ long leg}}{\Delta II \text{ long leg}}$$

Geometric Mean: ΔIII Altitude

$$\frac{\Delta I \text{ short leg}}{\Delta III \text{ short leg}} = \frac{\Delta I \text{ hypotenuse}}{\Delta III \text{ hypotenuse}}$$

Geometric Mean: ΔIII Short Leg

$$\frac{\Delta II \text{ long leg}}{\Delta III \text{ long leg}} = \frac{\Delta II \text{ hypotenuse}}{\Delta III \text{ hypotenuse}}$$

Geometric Mean: ΔIII Long Leg

Right Triangle Trigonometry

S	O	C	A	T
H	H	H	H	A

Given acute angle:

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}; \cos \theta = \frac{\text{adj}}{\text{hyp}}; \tan \theta = \frac{\text{opp}}{\text{adj}}$$

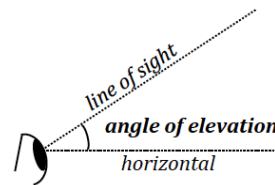
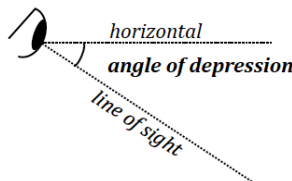
Given side ratio:

$$\sin^{-1}\left(\frac{\text{opp}}{\text{hyp}}\right) = \theta; \cos^{-1}\left(\frac{\text{adj}}{\text{hyp}}\right) = \theta; \tan^{-1}\left(\frac{\text{opp}}{\text{adj}}\right) = \theta$$

Complementary acute angle ratios: $\sin \alpha = \cos \beta$ iff $\alpha + \beta = 90^\circ$ (α & β are complementary)

Angles of Elevation / Depression

Angle of *depression*: formed by a horizontal line of sight to a point *below* the line.



Angle of *elevation*: formed by a horizontal line of sight to a point *above* the line.

Remember:

- Check to make sure the calculator's **MODE** is degrees.
- Never use your calculator until the last step to avoid rounding errors (round trig ratio to the ten thousandth place)