Lesson Plan

Grade 10 Academic Math **Lesson: 7 - 3**

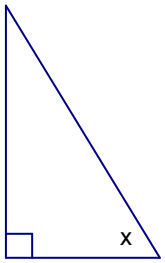
Unit: Trigonometry **Topic: Primary Trig Ratios**

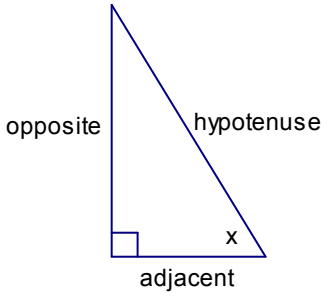
- ***homework check:*** **Principles of Mathematics 10 p. 386 # 2, 4, 5, 7, 9, 11 – 13**

- ***note:*** **Primary Trig Ratios**

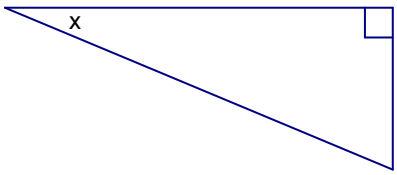
The angle in a right triangle designates the name of the sides. The hypotenuse is the only side that does not change even if the angle changes! The word *adjacent means beside and is located beside the angle*. The name of the *opposite side shows its location opposite the angle*. For example, for each triangle, label the hypotenuse, opposite and adjacent sides.

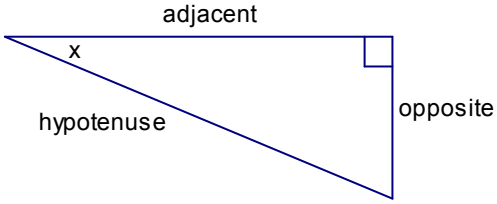
a)





b)



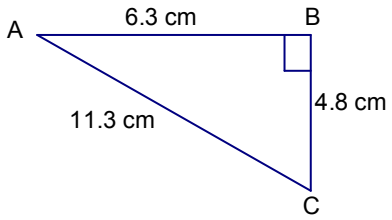


Writing the ratios of sides in a right angled triangle requires knowing not only the names of the sides, but also how to name the sides and angles given a specific triangle. The acronym **SOH CAH TOA** helps us remember the primary trig ratios for right angles triangles.

$SOH \quad \sin\vartheta = \dfrac{opposite}{hypotenuse}$ $\qquad$ $CAH \quad \cos\vartheta = \dfrac{adjacent}{hypotenuse}$

$TOA \quad \tan\vartheta = \dfrac{opposite}{adjacent}$

We use primary trig ratios to solve for any unknown values in a right angles triangle. For example, given triangle ABC , find angle C.



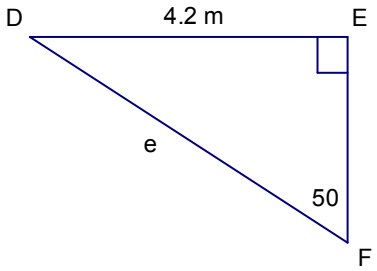
$$\sin C = \frac{opposite\ side}{\text{hypotenuse } side}$$

$$\sin C = \frac{6.3}{11.3}$$

$$c = \sin^{-1}\left(\frac{6.3}{11.3}\right)$$

$$C = 33.9°$$

Given triangle DEF, find the size of side e.



$$\sin F = \frac{opp}{hyp}$$

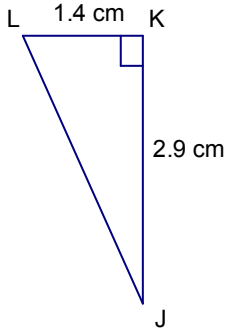
$$\sin 50 = \frac{4.2}{e}$$

$$e\sin 50 = 4.2$$

$$e = \frac{4.2}{\sin 50}$$

$$e = 5.5m$$

Find angle J in the triangle JKL.



$$\tan J = \frac{opp}{adj}$$

$$\tan J = \frac{1.4}{2.9}$$

$$J = \tan^{-1}\left(\frac{1.4}{2.9}\right)$$

$$J = 25.8°$$

Note: *To solve a triangle means to find all unknown values. Use one decimal place unless told otherwise!*

- ***homework assignment:*** **<u>Principles of Mathematics 10</u> p. 404 #2, 3, 6, 8, 10, 14**