

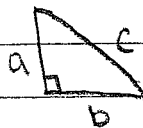
# "Solving" Right Triangles

Dec. 17/19

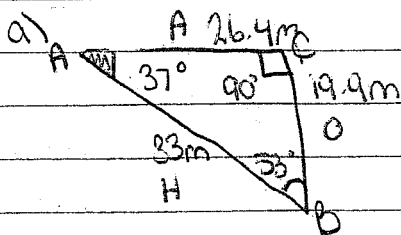
° Solving a right triangle means finding ALL the side lengths and ALL the angles.

\* Recall: 3 angles in a  $\Delta$  sum to  $180^\circ$

\* Use  $a^2 + b^2 = c^2$  for  $c$  if needed.



Ex. Solve the triangle.



$$\angle B = 180^\circ - 90^\circ - 37^\circ = 53^\circ$$

$$\underline{AC} = \cos \theta = \frac{A}{H}$$

$$\cos 37 = \frac{AC}{33}$$

$$0.7986 = \frac{AC}{33}$$

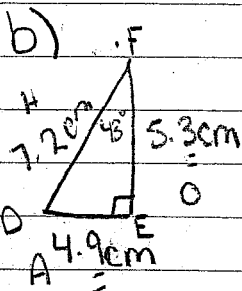
$$\underline{AC = 26.4m}$$

$$\underline{BC} = \sin \theta = \frac{O}{H}$$

$$\sin 37 = \frac{BC}{33}$$

$$0.6018 = \frac{BC}{33} \times 33$$

$$\underline{BC = 19.9m}$$



$$\underline{DF} = a^2 + b^2 = c^2$$

$$4.9^2 + 5.3^2 = c^2$$

$$24.01 + 28.09 = c^2$$

$$52.1 = c^2$$

$$\underline{c = \sqrt{52.1} = 7.2cm}$$

$$\underline{\angle D} = \tan \theta = \frac{O}{A}$$

$$\tan D = \frac{5.3}{4.9}$$

$$\tan D = 1.0816$$

$$D = \tan^{-1}(1.0816) = 47^\circ$$

$$\underline{\angle F} = 180^\circ - 90^\circ - 47^\circ = 43^\circ$$