Wed., Dec 14th: 7.3_7.4 SOH CAH TOA
Worksheet #1-9(on next 2 pages) 8.9
Thurs., Dec 15th:
p. 363 #6ac
pp. 374-376 #13, 16, 20, 22, 26, 29

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) Solve problems involving right triangles.

P.374

16 a)

$\tan\theta = \frac{20}{1500}$

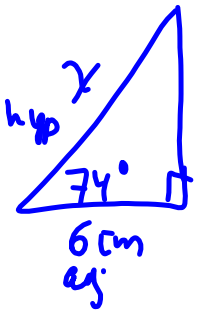
$\theta = \tan^{-1}\left(\frac{20}{1500}\right)$

b) if

$\psi = \tan^{-1}\left(\frac{40}{1500}\right)$

$=$

22

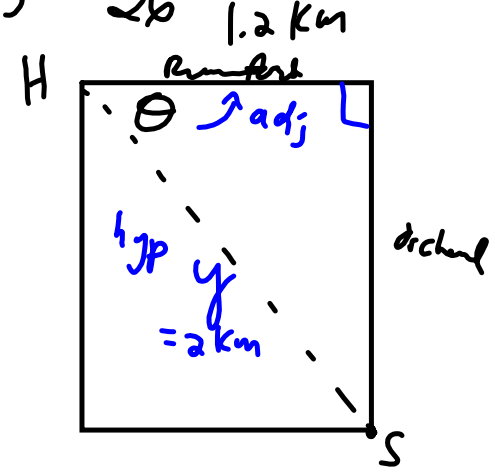


CAH

$\cos 74^\circ = \frac{6}{x}$

$x = \frac{6}{\cos 74^\circ}$

p.375 #26



Speed = 6 km/h

time: $y = 20$ min

$d = st$

$= 6\left(\frac{20}{60}\right)$

$= 2$ km

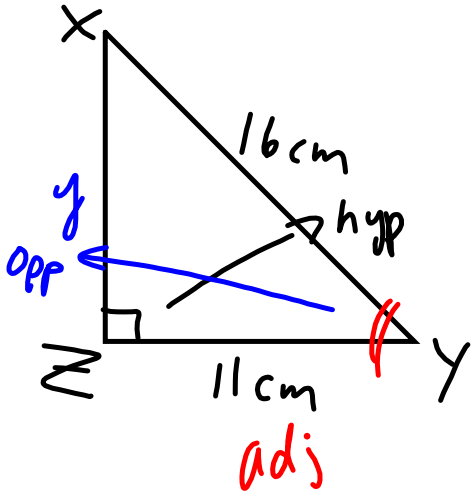
a) $\cos\theta = \frac{1.2}{2}$

$\theta = \cos^{-1}\left(\frac{1.2}{2}\right)$

$\doteq 53.1^\circ$

$\doteq 53^\circ$

9) In ΔXYZ, XY = 16 cm, YZ = 11 cm, $\angle Z = 90°$
   a) Draw this triangle and label the given information.
   b) Solve ΔXYZ.



CAH

$\cos Y = \frac{11}{16}$

$Y = \cos^{-1}\left(\frac{11}{16}\right)$

$\doteq 46.5°$

$X \doteq 180° - 90° - 46.5$

$= 43.5°$

---

y: SOH

$\sin 46.5° \doteq \frac{y}{16}$

$y \doteq 16 \sin 46.5°$

$\doteq 11.60$

$\doteq 11.6$ cm

TOA

$\tan 46.5 \doteq \frac{y}{11}$

$y \doteq 11 \tan 46.5°$

$= 11.59$

$= 11.6$ cm

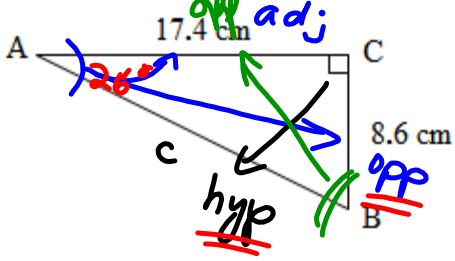
MPM 2DI

7.5 Solve Problems Involving Right Triangles (Day1)

Date: DEC. 16/16

SOH CAH TOA

Warm-up: Solve the triangle. Round angles to the nearest degree and lengths to the nearest tenth.



opp adj

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

$\tan A = \frac{8.6}{17.4}$

$\tan B = \frac{17.4}{8.6}$

$A = \tan^{-1}\left(\frac{8.6}{17.4}\right)$

$\doteq 26.3$

$\doteq 26°$

$B = \tan^{-1}\left(\frac{17.4}{8.6}\right)$

$\doteq 63.6$

$\doteq 64°$

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

$\sin 26° = \frac{8.6}{c}$

$c \sin 26° = 8.6$

$\frac{c \sin 26°}{\sin 26°} = \frac{8.6}{\sin 26°}$

$c = \frac{8.6}{\sin 26°}$

$\doteq 19.61$

$\doteq 19.6$ cm

Note: You will see three types of trig equations. (Solve each to **1 decimal place**).

a) the variable on the top

$$\tan 55° = \frac{x}{8}$$

$$x = 8 \times \tan 55°$$

$$x \doteq 11.42$$

$$x \doteq 11.4 \text{ cm}$$

b) the variable on the bottom

$$\sin 35° = \frac{4.3}{y}$$

$$y = \frac{4.3}{\sin 35°}$$

$$y \doteq 7.49$$

$$y \doteq 7.5 \text{ cm}$$

c) the variable is the angle

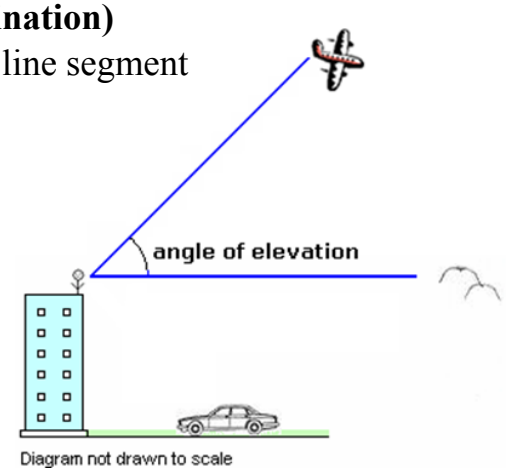
$$\cos Z = \frac{2.9}{5.6}$$

$$Z = \cos^{-1}\left(\frac{2.9}{5.6}\right)$$

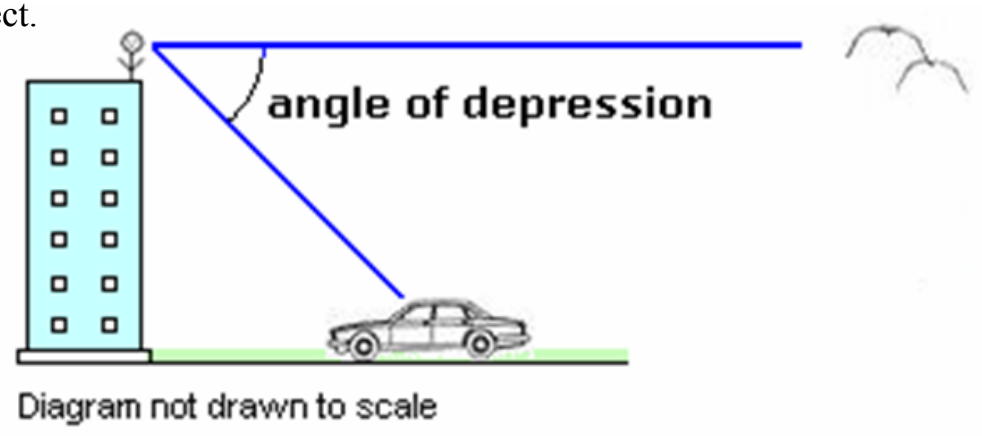
$$Z \doteq 58.81$$

$$Z \doteq 58.8°$$

The **angle of elevation (angle of inclination)** is the angle of view from a horizontal line segment up to the object being viewed.



The **angle of depression** is the angle between the horizontal line segment and the line of sight *down* to an object.

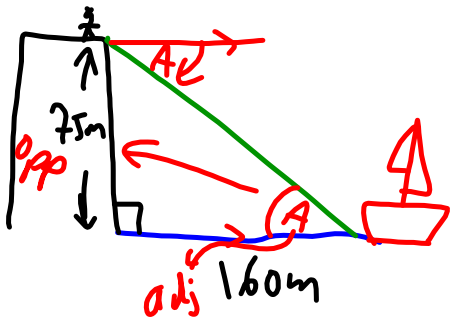


Ex. 1

25°

A surveyor on the edge of a cliff spots a boat on the lake below that is 160 metres away from the base of the cliff. If the cliff is 75 m above the shore of the lake, determine the angle of depression from the surveyor to the boat. (Round to the nearest degree)

Let A represent the angle of depression, in degrees.



TOA

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

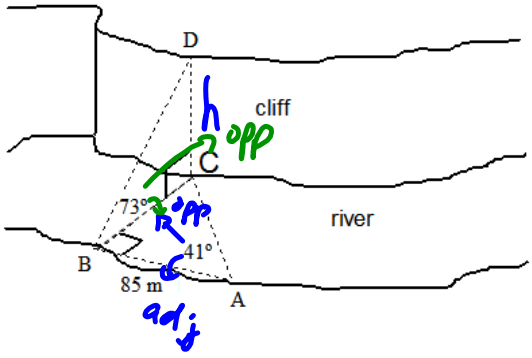
$\tan A = \frac{75}{160}$

$A = \tan^{-1}\left(\frac{75}{160}\right)$

$\doteq 25!$

the angle of depression is 25°

Ex. 2 Find the height of the cliff, to the nearest tenth of a metre. 241.7 m



Let h represent the height of the cliff, in m.

TOA

$\tan 73° = \frac{h}{BC}$

$\tan 73° \doteq \frac{h}{73.88}$

$h \doteq 73.88 \tan 73°$

$\doteq 241.65$

$\doteq 241.7$ m

the height of the cliff is 241.7 m.

TOA

$\tan 41° = \frac{BC}{85}$

$BC = 85 \tan 41°$

$\doteq 73.88$

Today's practice: **READ** Ex.1 pp. 378-379
pp. 381-384 #5, 7, 9, 10, 14, 20, 22
***Enrichment*:** p. 384 #23

SWYK on Tuesday