HOMEWORK QUESTIONS...
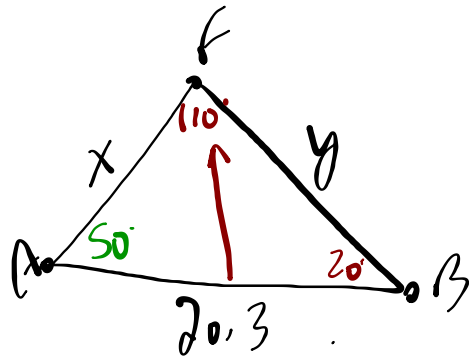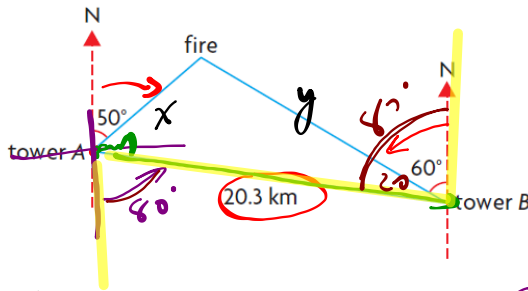
PRACTISING

2. Two forest-fire towers, A and B, are 20.3 km apart. From tower A, the compass heading for tower B is S80°E. The ranger in each tower sees the same forest fire. The heading of the fire from tower A is N50°E. The heading of the fire from tower B is N60°W. How far, to the nearest tenth of a kilometre, is the fire from each tower?

$$\frac{y \sin 50°}{\sin 50°} = \frac{20.3 \sin 50°}{\sin 110°} \qquad \frac{x \sin 20°}{\sin 20°} = \frac{20.3 \sin 20°}{\sin 110°}$$
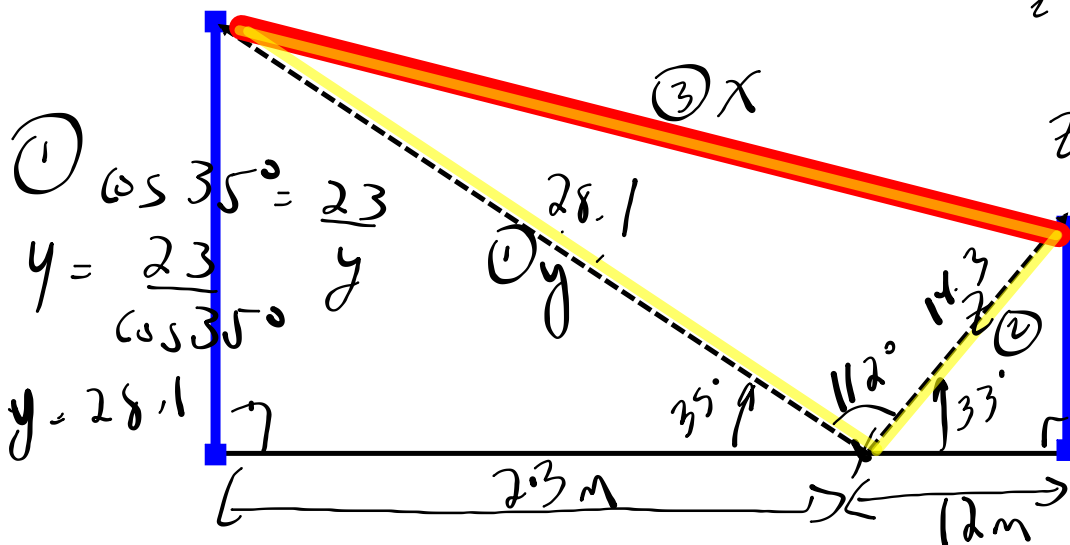
$$y = 16.5 \, km \qquad x = 7.4 \, km$$

13. A zip line is going to be suspended between two trees. From the forest floor, 12 m from the base of the smaller tree, the angles of elevation to the tree platforms measure 33° and 35°. The distance between the two trees is 35 m.

  a) Draw a diagram to represent this situation. What assumptions did you make?

  b) Calculate the length of the zip line needed.

② $\cos 33° = \dfrac{12}{z}$

$z = \dfrac{12}{\cos 33}$

$z = 14.3$

③ x

① $\cos 35° = \dfrac{23}{y}$

$y = \dfrac{23}{\cos 35°}$

$y = 28.1$

28.1

① y

35°   112°   14.3   ② 33°

23 m

12 m

③ $x^2 = 28.1^2 + 14.3^2 - 2(28.1)(14.3)\cos 112°$

x^2

$x =$

$28.1^2 + 14.3^2 - 2*28$
$.1*14.3*\cos(112$
$\qquad 1295.156335$
$\sqrt{(\text{Ans}}$
$\qquad 35.98828052$
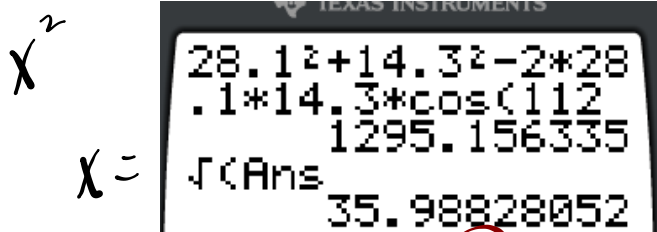
$x = 36 m$

REVIEW - Trigonometry

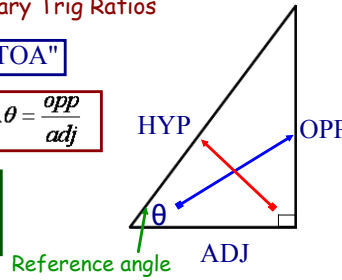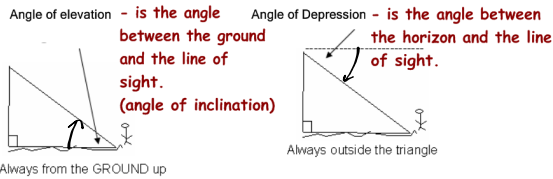- Pythagorean Theorem & Primary Trig Ratios

REMEMBER: "SOH CAH TOA"

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

$$c^2 = a^2 + b^2$$

HYP   OPP

θ

Reference angle   ADJ

- Applications of Primary Trig

Angle of elevation – is the angle between the ground and the line of sight. (angle of inclination)

Always from the GROUND up

Angle of Depression – is the angle between the horizon and the line of sight.

Always outside the triangle

Also, note that the angle of elevation = angle of depression

- Law of Sines & Its Applications

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \qquad \frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

SAA ↑   *SSA ↑

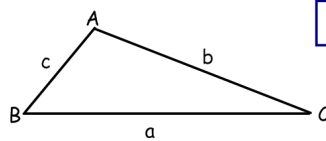"when looking for a <u>side</u>"   "when looking for an <u>angle</u>"

Ambiguous??? Need 3 C's...

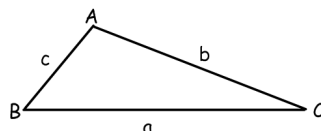## CRITERIA   CALCULATION   CASES

- SSA   h = bsinA   1) a < h
                                  (no solution)
- acute angle
                                  2) a = h
- a < b   (1 right triangle)

                                  3) a > h
                                  2 Solutions...Law of Sines
                                  Calc & 180 - Calc

- Law of Cosines & Its Applications

Finding an unknown side...
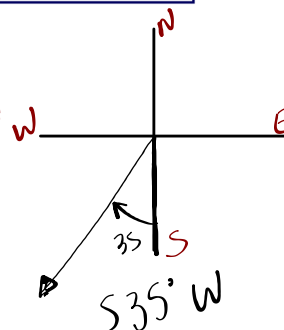• 2 sides and a contained angle (SAS)

A, c, b, B, a, C

$$a^2 = b^2 + c^2 - 2bc\cos A$$

Finding an unknown angle...
• 3 known sides (SSS)

A, c, b, B, a, C

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

- Bearings and Multi-step Word Problems
- "Solving" - find ALL angles & sides

  * Ambiguous

N

W _____ E

35   S

S 35° W

Review for Test - Lots of Practice from the Textbook!!!

Chapter Review...　　　　　　　　**Page 128**　}Chp. 3
(Frequently Asked Questions)　　**Page 153**
　　　　　　　　　　　　　　　　　　　　Page 174　}Chp. 4
　　　　　　　　　　　　　　　　　　　　Page 199

Friday Test

Practice Questions...　　　*Bearing #11, 12*　　**Page 129 #1 - 9**　}Chp 3
＊Ambiguous Case → 4.3　　　　　　　　　　　**Page 154 #1 - 12**
　　　　　　　　　　　　　　　　　　　　　　　　　　Page 175 #1 - 9　}Chp 4
　　　　　　　　　　　　　　　　　　　　　　　　　　Page 200 #1 - 8

Practice Tests...　　　*Bearing #8*　　**Page 152 #1 - 8**　Chp. 3
　　　　　　　　　　　　　　　　　　Page 198 #1 - 7　Chp. 4