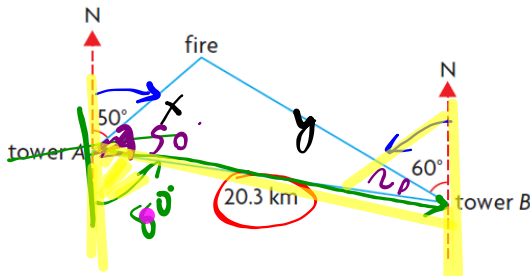


HOMEWORK QUESTIONS...

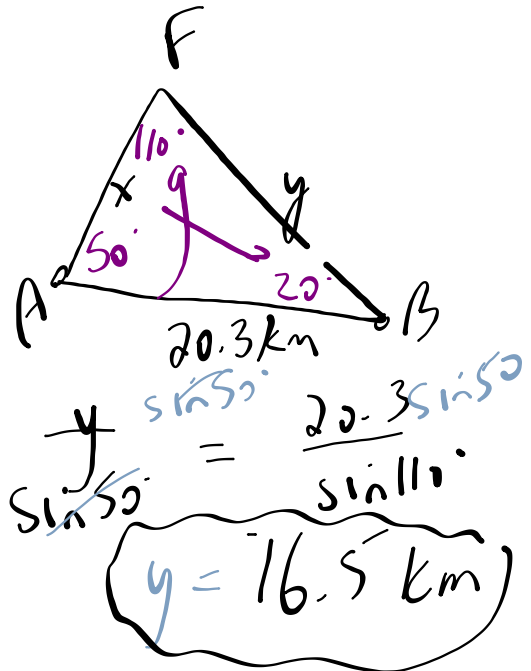
PRACTISING

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



$$\frac{x \sin 20^\circ}{\sin 20^\circ} = \frac{20.3 \sin 20^\circ}{\sin 110^\circ}$$

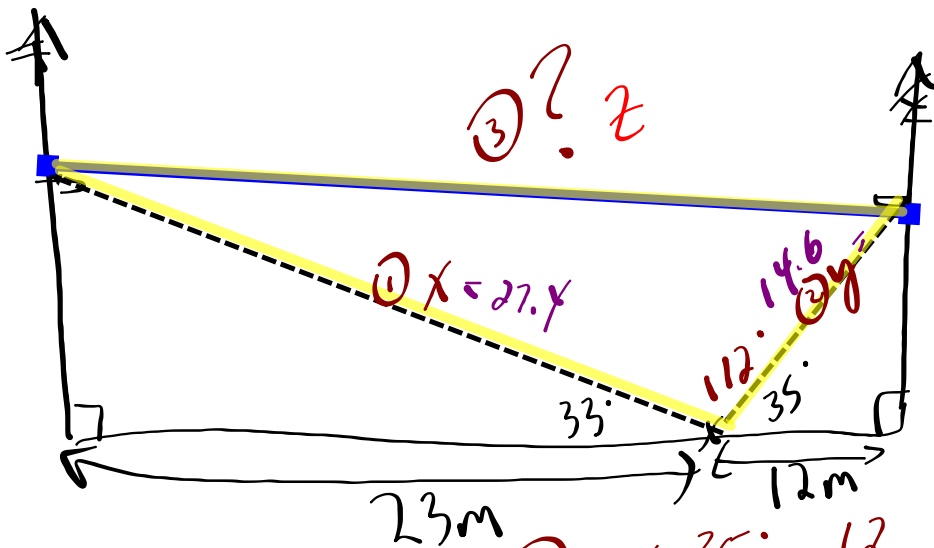
$$x = 7.4 \text{ km}$$



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.

Smaller



① $\cos 33^\circ = \frac{23}{x}$
 $x = \frac{23}{\cos 33^\circ}$

$x = 27.4$

② $\cos 35^\circ = \frac{12}{y}$

$y = \frac{12}{\cos 35^\circ}$

$y = 14.6$

③ $z^2 = 27.4^2 + 14.6^2 - 2(27.4)(14.6)\cos 112^\circ$

$27.4^2 + 14.6^2 - 2 * 27.4 * 14.6 * \cos(112)$ 1263.635243 $\sqrt{\text{Ans}}$ 35.54764751 $z =$

$z = 35.5 \text{ km}$

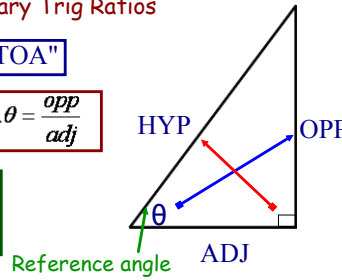
REVIEW - Trigonometry

- Pythagorean Theorem & Primary Trig Ratios

REMEMBER: "SOH CAH TOA"

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

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



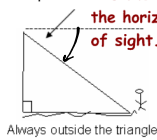
- Applications of Primary Trig

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

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

SAA ↑

*SSA ↑

"when looking for a side"

"when looking for an angle"

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

CRITERIA CALCULATION CASES

- SSA

$$h = b \sin A$$

1) $a < h$

(no solution)

- acute angle

2) $a = h$

(1 right triangle)

- $a < b$

3) $a > h$

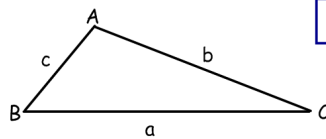
2 Solutions...Law of Sines

Calc & 180 - Calc

- Law of Cosines & Its Applications

Finding an unknown side...

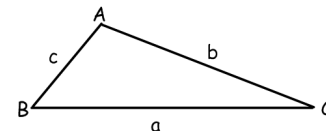
- 2 sides and a contained angle (SAS)



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

Finding an unknown angle...

- 3 known sides (SSS)

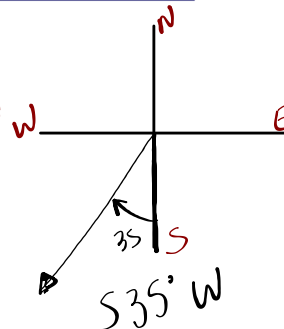


$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

- Bearings and Multi-step Word Problems

- "Solving" - find ALL angles & sides

* Ambiguous



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

**Chapter Review...
(Frequently Asked Questions)**

Page 128
Page 153
Page 174
Page 199

Friday Test

Practice Questions...

** Ambiguous case → 4.3*

Bearing #11, 12

Page 129 #1 - 9
Page 154 #1 - 12
Page 175 #1 - 9
Page 200 #1 - 8

Bearing #8

Practice Tests...

Page 152 #1 - 8
Page 198 #1 - 7