

Date: _____

Today's Learning Goal(s):

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

- a) prepared for the Unit 5 Summative Wednesday.

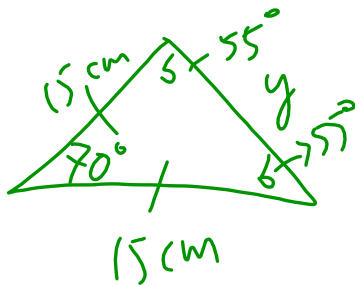
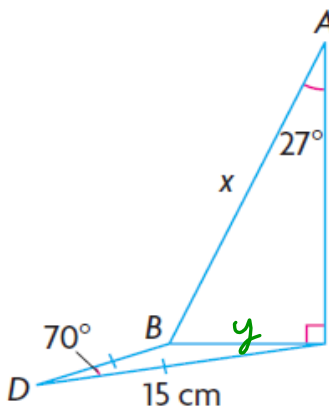
Last day's work: pp. 332-335 #3 – 6 [7, 14]

~~5, 6~~
3b
7
4a

p. 332 #3

3. Determine the value of x to the nearest centimetre and θ to the nearest **K** degree. Explain your reasoning for each step of your solution.

b)



$$\sin 27^\circ = \frac{y}{x}$$

$$\sin 27^\circ = \frac{17.20}{x}$$

$$x = \frac{17.20}{\sin 27^\circ}$$

$$x \approx 37.9$$

$$\approx 38 \text{ cm}$$

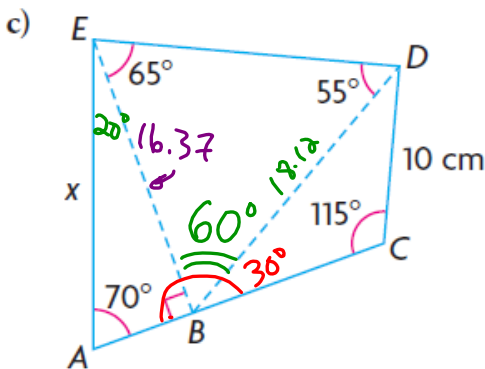
$$\frac{y}{\sin 70^\circ} = \frac{15}{\sin 55^\circ}$$

$$y = \sin 70^\circ \times \frac{15}{\sin 55^\circ}$$

$$\approx 17.20 \text{ cm}$$

p. 332 #3

3. Determine the value of x to the nearest centimetre and θ to the nearest degree. Explain your reasoning for each step of your solution.



Side DB aka "c"

$$\frac{DB}{\sin 115^\circ} = \frac{10}{\sin 30^\circ}$$

$$DB = \sin 115^\circ \times \frac{10}{\sin 30^\circ}$$

Next Find EB $\leftarrow \doteq 18.12$

$$\frac{EB}{\sin 55^\circ} = \frac{18.12}{\sin 65^\circ}$$

$$EB = \sin 55^\circ \times \frac{18.12}{\sin 65^\circ}$$

$$\doteq 16.37$$

use SOH in the right $\triangle ABE$

$$\sin 70^\circ = \frac{16.37}{x}$$

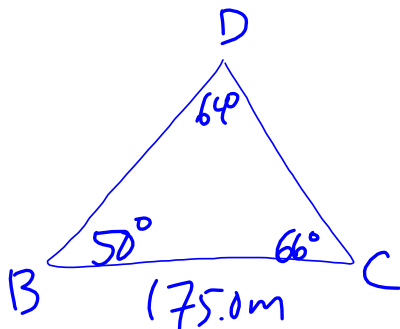
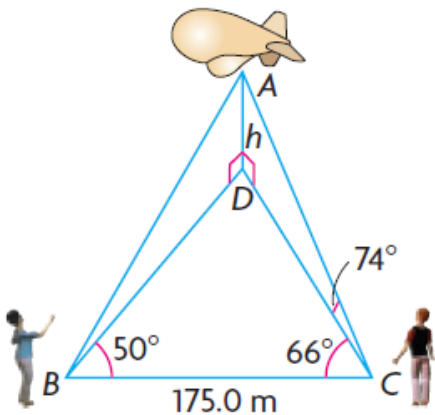
$$x = \frac{16.37}{\sin 70^\circ}$$

$$\doteq 17.42$$

$$\doteq 17 \text{ cm}$$

4. As a project, a group of students was asked to determine the altitude, h , of a promotional blimp. The students' measurements are shown in the sketch at the left.

- a) Determine h to the nearest tenth of a metre. Explain each of your steps.
 b) Is there another way to solve this problem? Explain.



$$\frac{DC}{\sin 50^\circ} = \frac{175.0}{\sin 64^\circ}$$

$$DC = \sin 50^\circ \times \frac{175.0}{\sin 64^\circ}$$

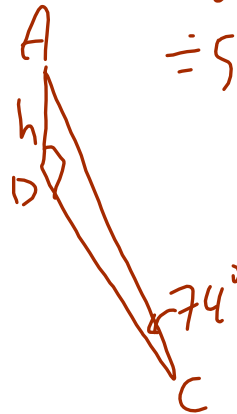
$$\approx 149.15$$

$$\tan 74^\circ = \frac{h}{DC}$$

$$h = 149.15 \tan 74^\circ$$

$$\approx 520.15$$

$$\approx 520.2 \text{ m}$$



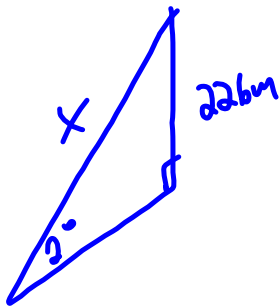
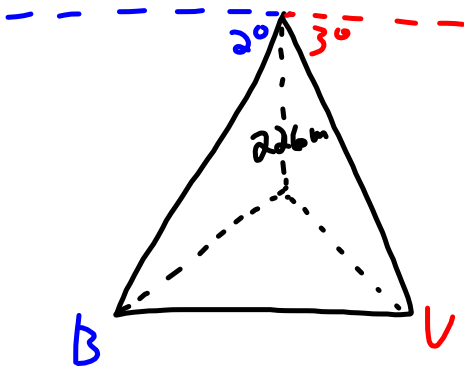
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5. While Travis and Bob were flying a hot-air balloon from Beamsville to Vineland in southwestern Ontario, they decided to calculate the straight-line distance, to the nearest metre, between the two towns.

- From an altitude of 226 m, they simultaneously measured the angle of depression to Beamsville as 2° and to Vineland as 3° .
- They measured the angle between the lines of sight to the two towns as 80° .

Is there enough information to calculate the distance between the two towns? Justify your reasoning with calculations.

Please remind me to explain why my answer differs from the textbook and solution manual, which are incorrect.



$$\sin 2^\circ = \frac{226}{x}$$

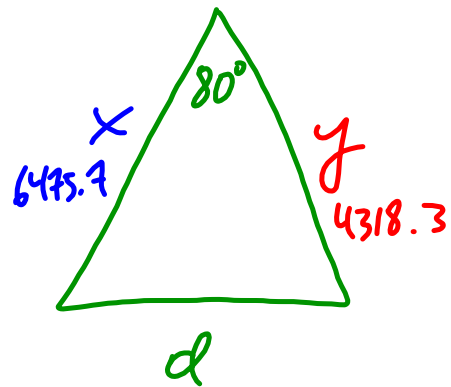
$$x = \frac{226}{\sin 2^\circ}$$

$$= 6475.7$$



$$y = \frac{226}{\sin 3^\circ}$$

$$= 4318.3$$



$$d^2 = 6475.7^2 + 4318.3^2 - 2(6475.7)(4318.3)\cos 80^\circ$$

$$d = 7132.36$$

$$\approx 7133 \text{ m}$$

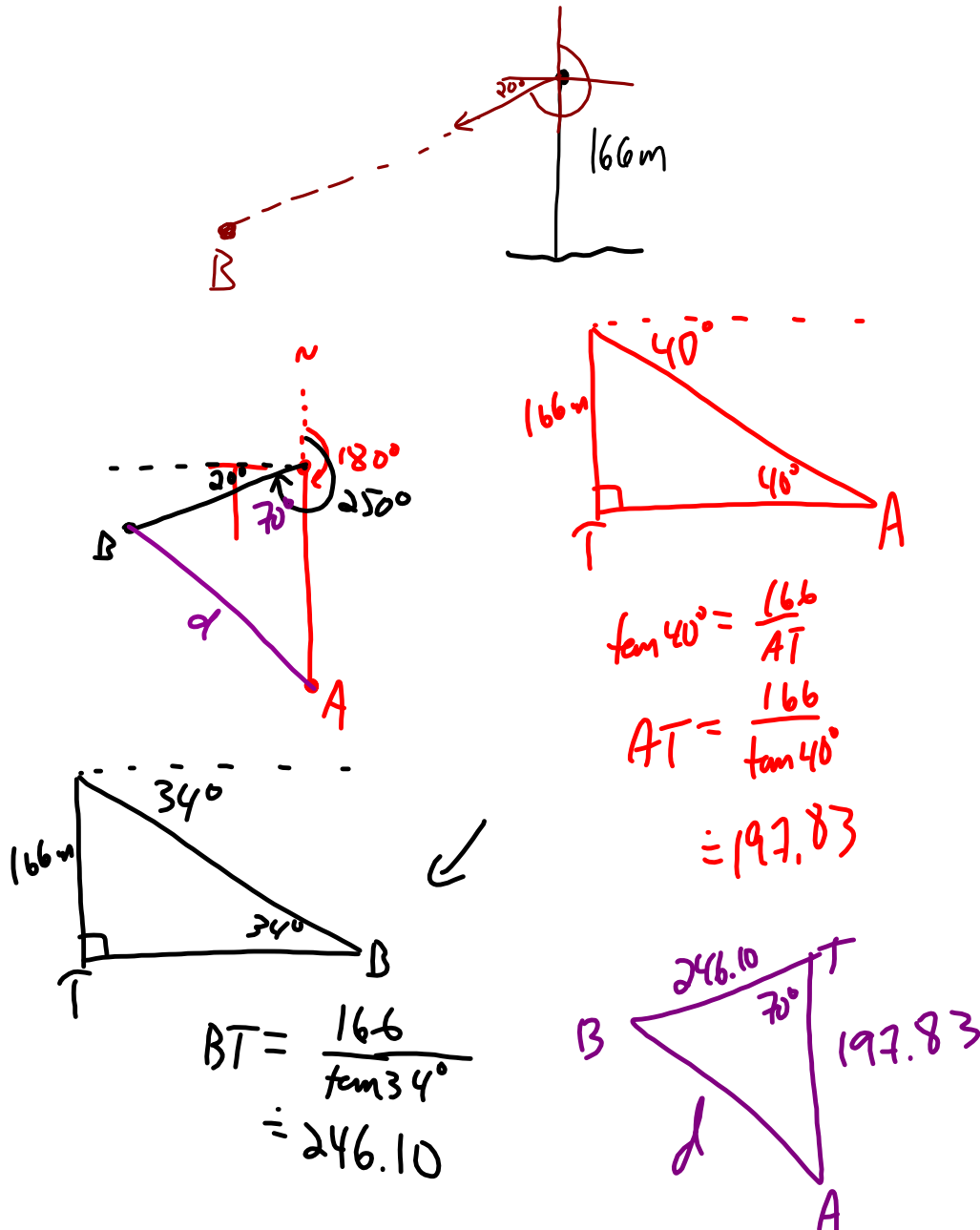
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6. The observation deck of the Skylon Tower in Niagara Falls, Ontario, is

A 166 m above the Niagara River. A tourist in the observation deck notices two boats on the water. From the tourist's position,

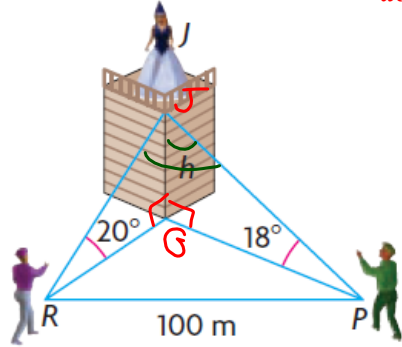
- the bearing of boat A is 180° at an angle of depression of 40°
- the bearing of boat B is 250° at an angle of depression of 34°

Calculate the distance between the two boats to the nearest metre.



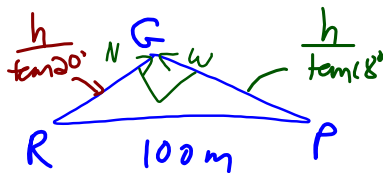
- p. 333 7. Suppose Romeo is serenading Juliet while she is on her balcony. Romeo is facing north and sees the balcony at an angle of elevation of 20° . Paris, Juliet's other suitor, is observing the situation and is facing west. Paris sees the balcony at an angle of elevation of 18° . Romeo and Paris are 100 m apart as shown. Determine the height of Juliet's balcony above the ground, to the nearest metre.

Please remind me to explain why my answer differs; don't worry too much about this one.



$$\tan 18^\circ = \frac{h}{GP} \quad \text{or} \quad \sin 18^\circ = \frac{h}{JP}$$

$$GP = \frac{h}{\tan 18^\circ}$$



$$\tan 20^\circ = \frac{h}{GR}$$

$$GR = \frac{h}{\tan 20^\circ}$$

$$\text{from PT: } GR^2 + GP^2 = 100^2$$

$$\therefore \left(\frac{h}{\tan 20^\circ}\right)^2 + \left(\frac{h}{\tan 18^\circ}\right)^2 = 100^2$$

$$\frac{h^2}{(\tan 20^\circ)^2} + \frac{h^2}{(\tan 18^\circ)^2} = 100^2$$

$$\text{Factor: } h^2 \left(\frac{1}{(\tan 20^\circ)^2} + \frac{1}{(\tan 18^\circ)^2} \right) = 100^2$$

$$h^2 = \frac{100^2}{\left(\frac{1}{(\tan 20^\circ)^2} + \frac{1}{(\tan 18^\circ)^2} \right)}$$

$$h = \sqrt{\frac{10\,000}{\left(\frac{1}{(\tan 20^\circ)^2} + \frac{1}{(\tan 18^\circ)^2} \right)}}$$

$$\approx 24.23$$

$$\approx 24 \text{ m above the ground}$$

5.R Unit 5 Review Redo SWYK 5.1Date: May 7/18

- 5.1 Trig Raos of Acute Angles (**6** Trig Raos)
- 5.2 Trig Raos of Special Angles (**Exact** Values)
- 5.3 Trig Raos of Obtuse Angles (Angles in Standard Posion)
- 5.4 **CAST** Rule & Related Acute Angles (RAA; **β** vs **θ**)
- 5.4 Evaluang Trigonometric Raos for $0^\circ \leq \theta \leq 360^\circ$ (**Both** answers)
- 5.6 The Sine Law (& **Ambiguous** Case)
- 5.7 The Cosine Law
- 5.8 Solving 3-Dimensional Problems Using Trigonometry

Today's Homework Practice includes:

pp. 338-339 #1 – 5, 8 – 13

p. 340 #2