

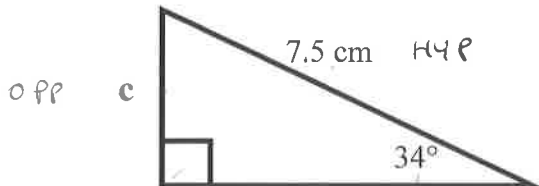
Foundations of Math 11 - Trigonometry PRE TEST

Calculator in Degree mode.

Name: _____

SOH CAH TOA

____ 1. Find the length of side **c**. *This is a right triangle



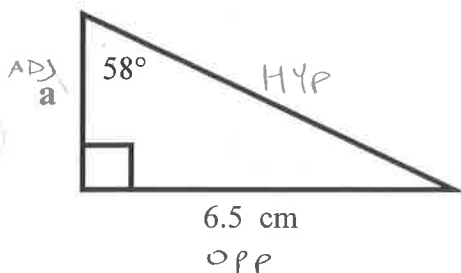
- a) 5.0 cm
- b) 3.5 cm
- c) 4.0 cm
- d) 4.2 cm

$$\sin 34^\circ = \frac{c}{7.5} \quad (25)$$

$$\sin 34 \times 7.5 = c$$

$$\boxed{c = 4.2 \text{ cm}}$$

____ 2. Find the length of side **a**.



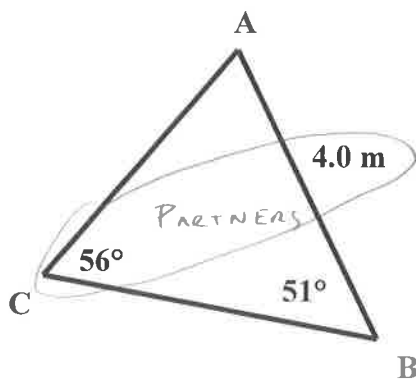
- a) 5.5 cm
- b) 4.1 cm
- c) 3.8 cm
- d) 3.5 cm

$$\tan 58^\circ = \frac{6.5}{a}$$

$$a = 6.5 \div \tan 58$$

$$\boxed{a = 4.06}$$

____ 3. Solve for side **b**.



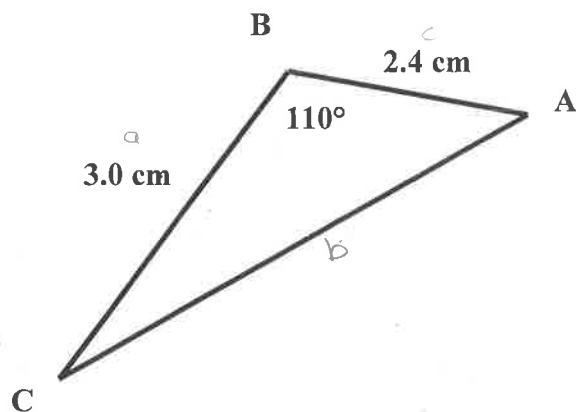
- a) 5.5 ~~cm~~ m
- b) 4.3 ~~cm~~ m
- c) 3.7 ~~cm~~ m
- d) 3.5 ~~cm~~ m

$$\frac{\sin 56^\circ}{4.0 \text{ m}} = \frac{\sin 51^\circ}{b}$$

$$4.0 \times \sin 51 \div \sin 56 = b$$

$$\boxed{b = 3.749}$$

4. Solve for side b.



- a) 4.4 cm
b) 3.5 cm
c) 4.0 cm
d) 5.0 cm

NO PARTNERS

SO
LAW OF COSINES

$$b^2 = a^2 + c^2 - 2ac \cos 110^\circ$$

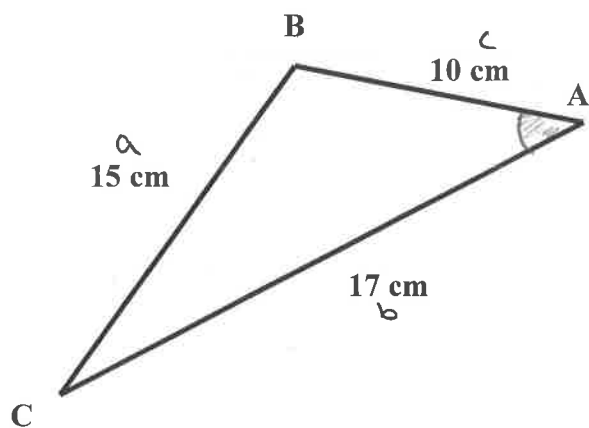
$$b^2 = (3)^2 + (2.4)^2 - 2(3)(2.4) \cos 110^\circ$$

$$= 14.76 - -4.925$$

$$= 19.68$$

$$b = 4.436 \text{ m}$$

5. Solve for angle A.



- a) 60°
b) 65°
c) 56°
→ d) 61°

NO PARTNERS

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

$$15^2 = 17^2 + 10^2 - 2(17)(10) \cos A$$

$$225 = 389 - 340 \cos A$$

$$-389 = -340 \cos A$$

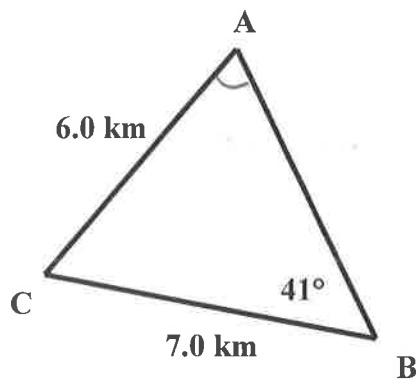
$$\frac{-164}{-340} = \frac{-340 \cos A}{-340}$$

$$0.48235 = \cos A$$

2nd Cos⁻¹

$$A = 61.16$$

6. Solve for angle A.



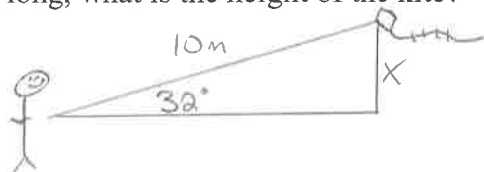
- a) 45°
b) 41°
→ c) 50°
d) 56°

$$\frac{\sin 41}{6} = \frac{\sin A}{7}$$

$$A = 49.9$$

7. Alexa is flying a kite. The kite string is at an angle, creating an angle of elevation of 32° with the ground. If the string is 10m long, what is the height of the kite?

- a) 5.0 m
- b) 5.3 m
- c) 6.2 m
- d) 4.6 m



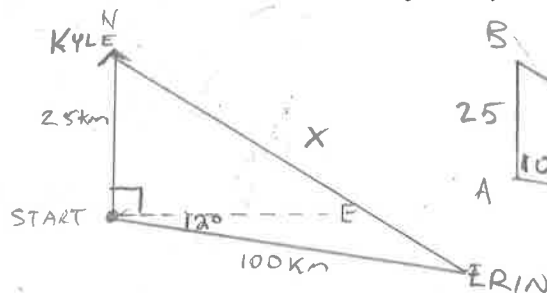
$$\sin 32^\circ = \frac{x}{10m}$$

$$x = \sin 32^\circ \times 10$$

$$x = 5.29m$$

8. Kyle and Erin leave Victoria at the same time. Kyle drives due North for 25 km, while Erin drives at a direction of 12° South of East for 100 km. At the end of their journey, what is the distance between Kyle and Erin?

- a) 108 km
- b) 100 km
- c) 135 km
- d) 25 km



$$a^2 = b^2 + c^2 - 2bc \cos 102^\circ$$

$$a^2 = (100)^2 + (25)^2 - 2(100)(25) \cos 102^\circ$$

$$a^2 = 10625 - 5000 \cos 102^\circ$$

$$a^2 = 10625 - (-1039.55)$$

$$a^2 = 11,664.558$$

$$a = 108.0$$

9. Which set of measurements will not produce a triangle?

- a. $\angle A = 25^\circ$, $a = 10$ m, $b = 8.0$ m
- b. $\angle A = 25^\circ$, $a = 4.5$ m, $b = 8.0$ m
- c. $\angle A = 25^\circ$, $a = 6.2$ m, $b = 8.0$ m
- d. $\angle A = 25^\circ$, $a = 3.0$ m, $b = 8.0$ m

10. Calculate $\sin 35^\circ$ to four decimal places. Predict another term that equals $\sin 35^\circ$.

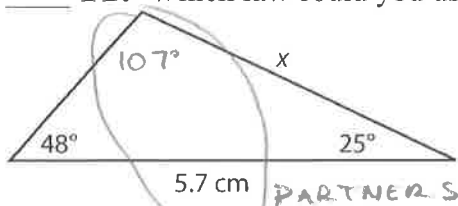
- a. 0.5735; $\sin(-35^\circ)$
- b. 0.5735; $-\sin(145^\circ)$
- c. 0.5735; $\sin 145^\circ$
- d. -0.5735; $\sin 145^\circ$

$$\sin 35^\circ = 0.5735$$

$$\sin 35^\circ = \sin(180 - 35)$$

$$\sin 35^\circ = \sin 145^\circ$$

11. Which law could you use to determine the unknown side length in this triangle?



WE CANNOT USE LAW OF COSINE AS IT REQUIRES TWO SIDE LENGTHS AND WE DO NOT HAVE TWO SIDE LENGTHS.

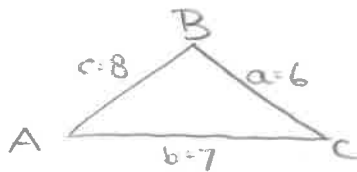
- a. neither the sine law nor the cosine law
- b. the sine law only
- c. the cosine law only
- d. the sine law and the cosine law

Short Answer

SIDE - SIDE - SIDE

* FIND BIGGEST ANGLE FIRST

1. Solve $\triangle ABC$, $a=6$ $b=7$ $c=8$



LARGEST SIDE
SO $\angle C$ LARGEST
ANGLE.

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$8^2 = 6^2 + 7^2 - 2(6)(7) \cos C$$

$$64 = 49 - 84 \cos C$$

$$\frac{-20}{-84} = \frac{-84 \cos C}{-84}$$

$$0.23809 = \cos C$$

$$C = 76.2^\circ$$

$$\frac{\sin 76}{8} = \frac{\sin A}{6}$$

$$\sin 76 \times 6 \div 8 = \sin A$$

$$0.7277 = \sin A$$

$$2^{nd} \sin$$

$$\angle A = 46.6^\circ$$

$$180 - 76.2 - 46.6$$

$$\angle B = 57.2^\circ$$

2. Solve $\triangle ABC$ $\angle C = 27^\circ$ $\angle B = 46^\circ$, $a = 120$

$$\angle A = 180 - 27 - 46 = 107^\circ$$

$$\frac{\sin 107}{120} = \frac{\sin 27}{c}$$

$$c = \sin 27 \times 120 \div \sin 107 = 56.9$$

$$\frac{\sin 107}{120} = \frac{\sin 46}{b}$$

$$b = 90.3$$

3. Solve for $\angle A$ $7^2 = 3^2 + 6^2 - 2(3)(6) \cos A$

$$49 = 45 - 36 \cos A$$

$$-45 - 45$$

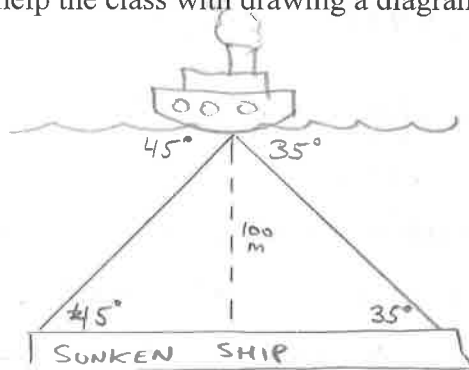
$$\frac{4}{-36} = \frac{-36 \cos A}{-36}$$

$$-0.1 = \cos A$$

$$2^{nd} \cos$$

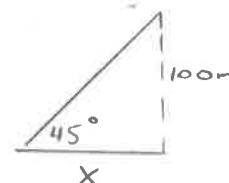
$$A = 96.379^\circ$$

4. A radar operator on a ship discovers a large sunken vessel on the ocean floor 100m below the surface. The radar operator measures the angles of depression to the front and back of the sunken vessel to be 45° and 35° . The identity of the sunken vessel is a mystery but if the radar operator can determine the length of the ship they may be able to identify the ship. How long is the sunken vessel? (I can help the class with drawing a diagram for this.)



$$100 + 142.8$$

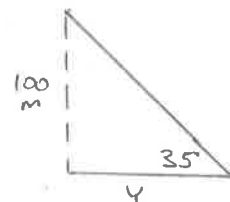
$$= 242.8 \text{ m}$$



$$\tan 45^\circ = \frac{100}{x}$$

$$x = 1 \times 100 \div \tan 45$$

$$x = 100$$



$$\tan 35^\circ = \frac{100}{y}$$

$$y = 1 \times 100 \div \tan 35$$

$$y = 142.8$$

Answers (1) D (2) B (3) C (4) A (5) D (6) C (7) B (8) A (9) D (10) C (11) B

Short Answer

$$1. \angle A = 20.8^\circ, \angle B = 24.5^\circ, \angle C = 134.7^\circ$$

$$2. \angle A = 107^\circ, b = 90.3, c = 57$$

$$3. 96.4^\circ$$

$$4. 243 \text{ m}$$

$$\angle A = 46.6 \quad \angle B = 57.2 \quad \angle C = 76.2$$

ERROR