

Name: _____

Date: _____

MFM 2P

Formative Assessment: Primary Trigonometric Ratios

Remember: SOH - CAH - TOA

Expectations you're working on...

- Students will solve problems involving right triangles using the primary trigonometric ratios and the Pythagorean Theorem

Still Learning...	Almost There...	Got It!

Part A-Knowledge & Understanding

1. Find the measures of the indicated sides and angles. Round your final answers to the nearest degree or cm.

a)

- i) For x : Using the 50° as your reference angle, what ratio would you choose? tan (sin, cos, tan)

- ii) Set up the proportion you're going to use to solve for x .

$$\tan 50^\circ = \frac{x}{10} ; \quad \tan 50^\circ \approx \frac{1.1918}{1}$$

$$\frac{1.1918}{1} \approx \frac{x}{10}$$

iii) Solve for x .

To solve for x , multiply both sides of the equation by 10.

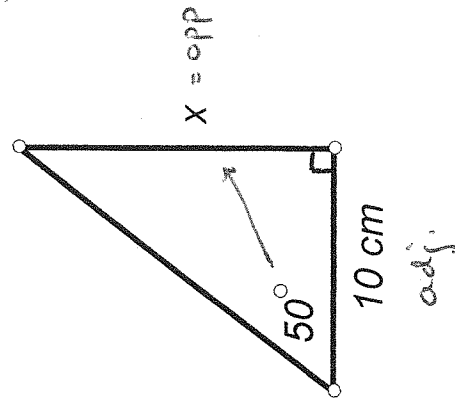
$$10 \cdot \frac{1.1918}{1} \approx \frac{x}{10} \cdot 10$$

$$11.918 \approx x$$

$$12 \approx x$$

$$\therefore x \approx 12 \text{ cm}$$

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 ↑
 Tan



a)

iv) For y : Using the 50° as your reference angle, what ratio will you use? cos (sin, cos, tan)

v) Set up the proportion you're going to use to solve for y .

$$\cos 50^\circ = \frac{10}{y} ; \cos 50^\circ \doteq 0.6428$$

$$\frac{0.6428}{1} = \frac{10}{y}$$

Cross-multiply:

$$10(1) = 0.6428y$$

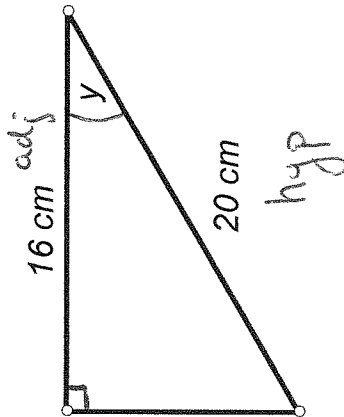
$$10 = \frac{0.6428y}{0.6428}$$

$$15.5572 \doteq y$$

$$16 \doteq y$$

$$y \doteq 16 \text{ cm}$$

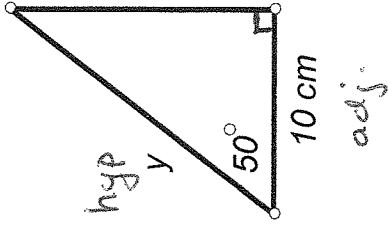
b) Solve for the missing angle y .



$$\cos y = \frac{16}{20}$$

$$y = \cos^{-1}\left(\frac{16}{20}\right)$$

$$y \doteq 37^\circ$$



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↑
cos

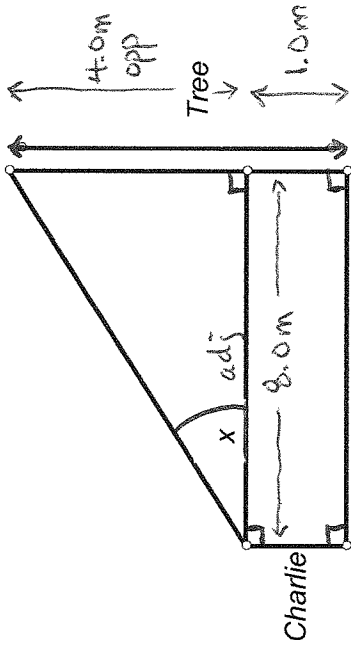
i) What inverse trig ratio will you use? cos⁻¹ (sin⁻¹, cos⁻¹, tan⁻¹)

ii) Solve for y .

SOH-CAH-TOA
↑
cos

Part B-Application

2. A tree is 5.0 m tall and Charlie, who is 1.0 m tall, stands 8.0 m from the tree. She looks up to the top of the tree and measures the *angle of elevation*, x , using a special device called a hypsometer.



a) Label the diagram with the information from the problem.

b) Calculate the angle of elevation, x , from Charlie's point of view. Express your answer to the nearest degree.

$$b) \quad \tan x = \frac{4}{8} \quad \left(\tan = \frac{\text{opp}}{\text{adj}} \right)$$

$$x = \tan^{-1} \left(\frac{4}{8} \right)$$

$$x \approx 27^\circ$$

3. A hydro pole, 10 m tall, is to be supported by two wires—one on both sides of the pole. The guy wires make angles of 60° with the ground. The hydro pole forms a right angle with the ground.

a) Prepare a neatly-labelled sketch of the information presented in the problem.

b) How long is each of the wires? Round your answer to the nearest metre.

Let x be the length of a wire.

$$\sin 60^\circ = \frac{10}{x} \quad ; \quad \sin 60^\circ \approx \frac{0.8660}{1}$$

$$\frac{0.8660}{1} = \frac{10}{x}$$

$$x \approx 12$$

$$0.8660x = 10 \quad (\text{Cross-multiply})$$

$$\frac{0.8660x}{0.8660} = \frac{10}{0.8660}$$

\therefore Each wire is about 12 m long.

a)

