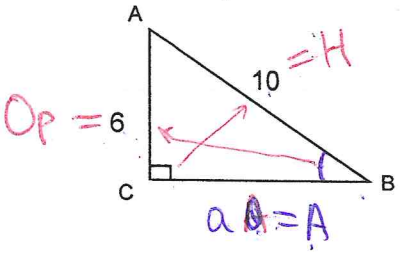
June 12

Park

MPM2D

Trig Review

1. State the primary trig ratios for $\angle B$



Op = 6 = H

a A = A

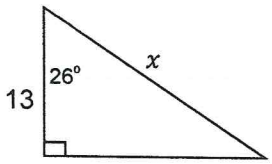
SOH : $\sin B = \frac{O}{H} = \frac{6}{10}$ $\therefore \sin B = \frac{6}{10} = \frac{\div 2}{\div 2}$

CAH : $\cos B = \frac{A}{H} = \frac{a}{10}$ $\therefore \cos B = \frac{a \leftarrow 8}{10} =$

TOA : $\tan B = \frac{O}{A} = \frac{6}{a}$ $\therefore \tan B = \frac{6}{a \leftarrow 8} =$

2. Find the length of each unknown side.

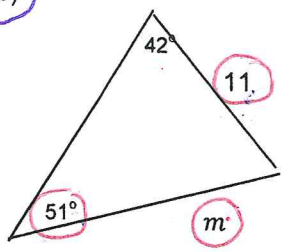
a)



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

$6^2 + a^2 = 10^2 \longrightarrow a^2 = 100 - 36 = 64 \therefore a = 8$

b)



$\frac{\sin A}{a} = \frac{\sin B = 42°}{b \rightarrow m}$

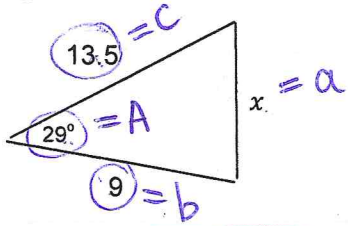
$\frac{\sin 51°}{11} = \frac{\sin 42°}{m}$

$m \cdot \sin 51° = 11 \times \sin$

$m = \frac{11 \times \sin 42°}{\sin 51}$

$\therefore m = 9.47 = 9.5$

c)



* Cosine Law : $a^2 = b^2 + c^2 - 2bc\cos A$

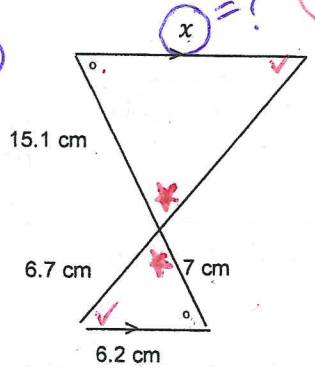
$x^2 = 9^2 + (13.5)^2 - 2(9)(13.5) \cdot \cos 29°$

$x^2 = 81 + 182.25 - 212.5326$

$\sqrt{x^2} = \sqrt{50.7174}$

$x = 7.1$

d)



7 : 15.1 = 6.2 : x

S B S : B

$\frac{7}{15.1} = \frac{6.2}{x}$

$7x = 6.2 \times 15.1$

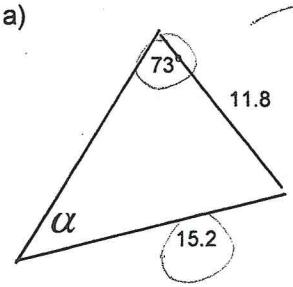
$7x = 93.62$

$x = \frac{93.62}{7}$

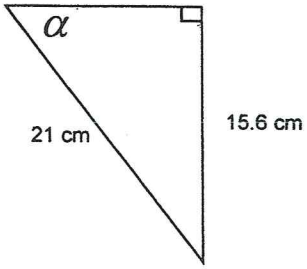
$x = 13.4$ cm

3. Find each unknown angle.

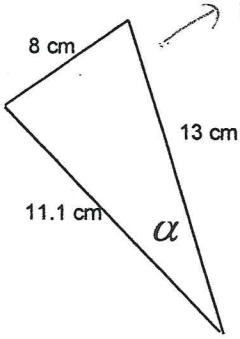
a) → Sine Law



b) → SOHCAHTOA



c) → Cosine Law



4. When should you use each?

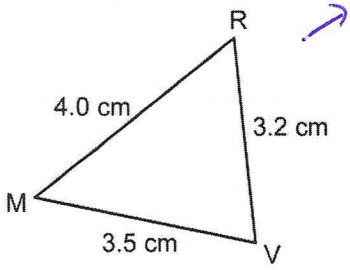
Trig Ratios	Right angle triangle.
Sine Law	① You are given a "matching" pair of angle and side (opposite to each other)
Cosine Law	① You are given 2 sides and one angle (between two sides) ② " " 3 sides

Answers: 1. $\sin B = \frac{3}{4}, \cos B = \frac{4}{5}, \tan B = \frac{3}{4}$ 2. a) 14.46 b) 9.47 c) 7.12 d)13.37 cm
3. a) 48° b) 48° c) 38°

June 12 MPM2D Mr. Park

Section 7: Solve Each Acute Triangle (round to the nearest tenth)

30)



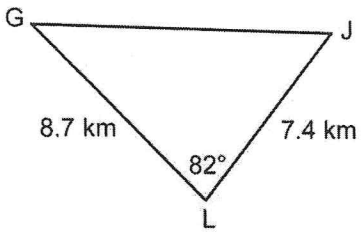
→ cosine Law

Angle R = _____

Angle M = _____

Angle V = _____

31)



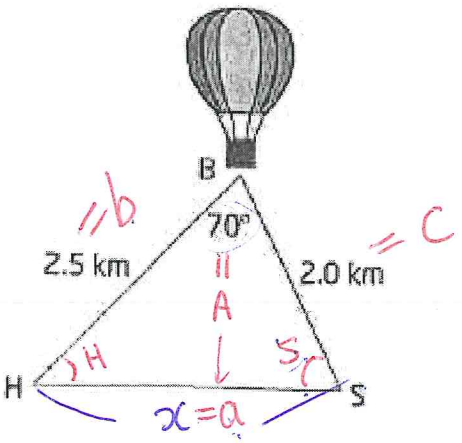
Angle G = _____

Angle J = _____

Side l = _____

Section 8: Applications

32) Chandra is riding in a hot-air balloon and spots her house and her school. She estimates how far away they are from her, and the angle separating their lines of sight, as shown.



a) How far apart are Chandra's home and school, to the nearest tenth of a kilometer?

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

$x^2 = 2.5^2 + 2^2 - 2 \cdot 2.5 \cdot 2 \cdot \cos 70°$

$x^2 = 6.25 + 4 - 3.4202$

$\sqrt{x^2} = \sqrt{6.8298}$

$x = 2.6$ km

b) Chandra's mom is watching her from home, and her friends are watching from school. At what angle of elevation does Chandra appear to each of them, to the nearest degree.

$\frac{\sin A}{a} = \frac{\sin B}{b}$

$\frac{\sin 70}{2.6} = \frac{2.5 \sin S}{2.5}$

$2.6 \cdot \sin S = 2.5 \times \sin 70°$

$\frac{\sin S}{\sin} = \frac{2.5 \times \sin 70}{2.6}$

$S = \sin^{-1}\left(\frac{2.5 \times \sin 70°}{2.6}\right)$

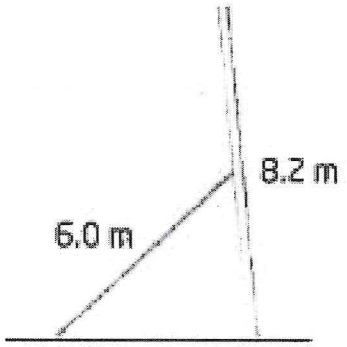
$\therefore S = 64.6°$

$\frac{\sin 70}{2.6} = \frac{\sin H}{2}$

$\angle H = 180 - 64.6 - 70$

$= 45.4°$

33) A leaning pole is braced at its midpoint as shown. The pole is 8.2 meters long and the bracing beam is 6.0 meters long. The foot of the beam is placed 5.0 meters from the base of the pole. Determine to the nearest degree:

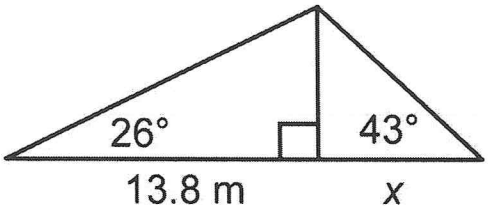


a) The angle the pole makes with the ground

b) The angle the beam makes with the ground

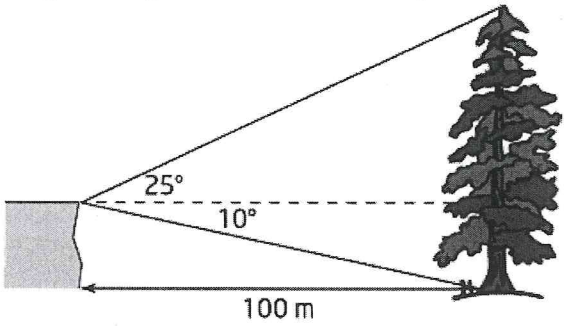
c) The angle the beam makes with the pole

34) Find the length of x, to the nearest tenth of a centimeter



35)

From a rock ledge the angle of elevation to the top of a tree is 25°. The angle of depression to the bottom of the tree is 10°.



a) Find the height of the rock ledge to the nearest tenth of a metre.

b) Find the height of the tree to the nearest tenth of a metre.