

Chapter 2 - TRIGONOMETRY EXAM REVIEW

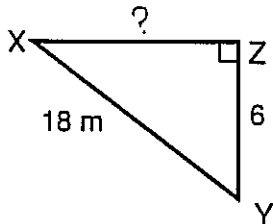
Name: _____

Selective Response (11 points):

Identify the choice that best completes the statement or answers the question.

1. Determine the measure of side y to the nearest hundredth of a metre.

- A. 18.97 m
- B. 16.97 m
- C. 12.00 m
- D. 6.69 m



$$18^2 - 6^2 = y^2$$

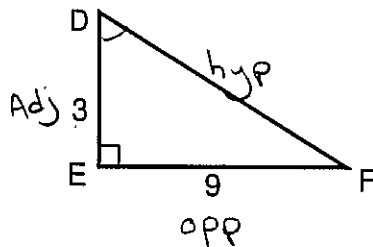
$$288 = y^2$$

$$\sqrt{288} = y$$

$$16.97 \text{ m} = y$$

2. Determine the measure of $\angle D$ to the nearest degree.

- A. 18°
- B. 19°
- C. 71°
- D. 72°



SOHCAHTOA

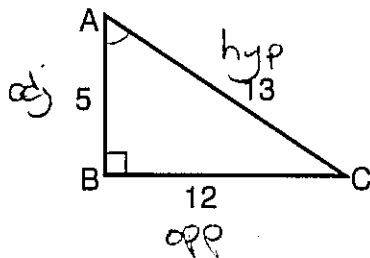
$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{9}{3}$$

$$\theta = \tan^{-1}(3)$$

$$\theta = 71.57^\circ$$

3. What is $\tan A$?

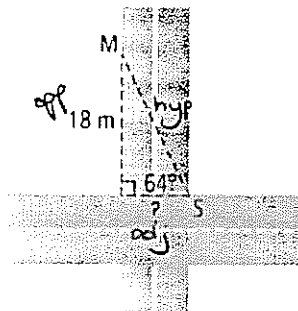
- A. $\frac{12}{5}$
- B. $\frac{13}{12}$
- C. $\frac{5}{12}$
- D. $\frac{12}{13}$



$$\tan = \frac{\text{opp}}{\text{adj}}$$

4. A surveyor, S, is measuring the width of a street, using a marker, M. The surveyor cannot measure the width directly, because there is too much traffic. She stands on the east side of the intersection. Using the diagram below, find the width of the street, to the nearest tenth of a metre.

- A. 6.9 m
- B. 24.1 m
- C. 13.1 m
- D. 8.8 m



SOHCAHTOA

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 64^\circ = \frac{18}{\text{adj}}$$

$$\text{adj} = \frac{18}{\tan 64^\circ}$$

$$\text{adj} = 8.78 \text{ m}$$

5. The angle of inclination of a solar panel on the roof of a cottage is 57° . Determine the height of the roof, to the nearest tenth of a metre.

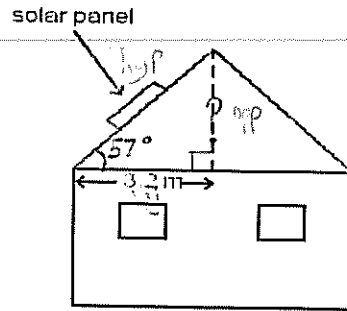
- A. 3.8 m
 B. 4.9 m
 C. 2.1 m
 D. 5.9 m

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 57^\circ = \frac{\text{opp}}{3.2}$$

$$3.2 \tan 57^\circ = \text{opp}$$

$$4.93 \text{ m} = \text{opp}$$



6. Determine the measure of $\angle D$ to the nearest tenth of a degree.

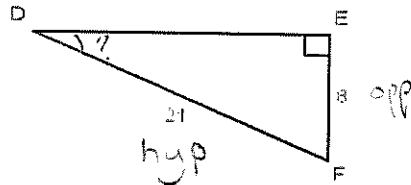
- A. 67.6°
 B. 69.1°
 C. 22.4°
 D. 20.9°

$$\sin D = \frac{\text{opp}}{\text{hyp}} = \frac{8}{21}$$

$$D = \sin^{-1}\left(\frac{8}{21}\right)$$

$$D = 22.4^\circ$$

SOHCAHTOA



7. Determine the length of RS to the nearest tenth of a metre.

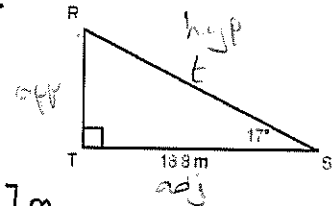
- A. 19.7 m
 B. 5.7 m
 C. 19.0 m
 D. 21.3 m

$$\cos S = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 17^\circ = \frac{18.8}{t}$$

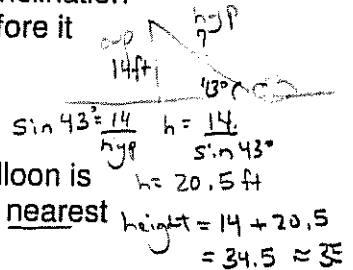
$$t = \frac{18.8}{\cos 17^\circ}$$

$$t = 19.7 \text{ m}$$



8. A tree broke 14 ft. above the ground. The top of the tree now touches the level ground and the trunk is still partially attached to the stump. The angle of inclination of the tree is 43° . To the nearest foot, determine the height of the tree before it broke.

- A. 35 ft. B. 33 ft. C. 29 ft. D. 21 ft.



9. A rope that anchors a hot air balloon to the ground is 136 m long. The balloon is 72 m above the ground. What is the angle of inclination of the rope to the nearest degree?

- A. 62° B. 58° C. 32° D. 28°

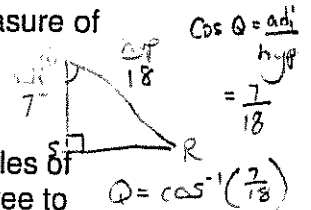
$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{72}{136}$$

$$\theta = \sin^{-1} \frac{72}{136}$$

$$\theta = 32^\circ$$

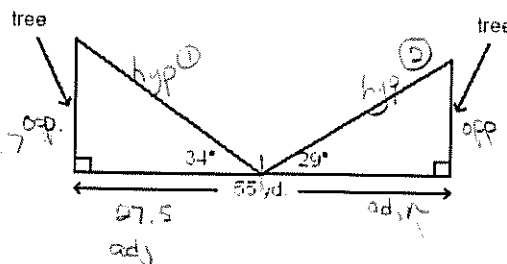
10. In the right $\triangle QRS$, $\angle S = 90^\circ$, $QS = 7$ cm and $QR = 18$ cm. What is the measure of $\angle Q$ to the nearest degree?

- A. 67° B. 56° C. 21° D. 18°



11. Two trees are 55 yd. apart. From a point halfway between the trees, the angles of elevation of the tops of the trees are measured. What is the height of each tree to the nearest yard?

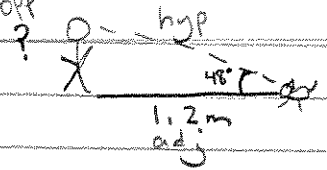
- A. 37 yd.; 30 yd.
 B. 24 yd.; 23 yd.
 C. 19 yd.; 11 yd.
 D. 19 yd.; 15 yd.



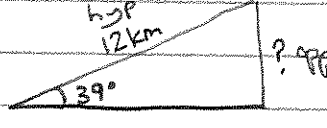
$$\tan 34^\circ = \frac{\text{opp}}{27.5}$$

$$\tan 29^\circ = \frac{\text{opp}}{27.5}$$

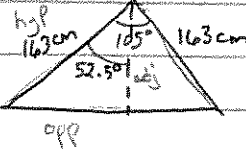
Chap 2 - Constructed Response

①  $\tan \theta = \frac{\text{opp}}{\text{adj}}$ $\tan 48^\circ = \frac{\text{opp}}{1.2}$ $1.2 \tan 48^\circ = \text{opp}$

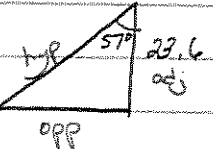
Max is 1.33m tall.

②  $\sin \theta = \frac{\text{opp}}{\text{hyp}}$ $\sin 39^\circ = \frac{\text{opp}}{12}$
 $12 \sin 39^\circ = \text{opp}$

The plane reaches an altitude of 7.6 km


③  $\cos \theta = \frac{\text{adj}}{\text{hyp}}$ $\cos 52.5^\circ = \frac{\text{adj}}{163}$

$163 \cos 52.5^\circ = \text{adj}$
 Head room = 99 cm


④  $\tan \theta = \frac{\text{opp}}{\text{adj}}$ $\tan 57^\circ = \frac{\text{opp}}{23.6}$ $23.6 \tan 57^\circ = \text{opp}$
 $36.3408 = \text{opp}$

$\cos \theta = \frac{\text{adj}}{\text{hyp}}$ $\cos 57^\circ = \frac{23.6}{\text{hyp}}$ $\text{hyp} = \frac{23.6}{\cos 57^\circ}$
 $\text{hyp} = 43.3315$

$P = 23.6 + 36.3408 + 43.3315$
 $= 103 \text{ units}$

5.  $\sin \theta = \frac{\text{opp}}{\text{hyp}}$
 $\sin \theta = \frac{35}{47}$

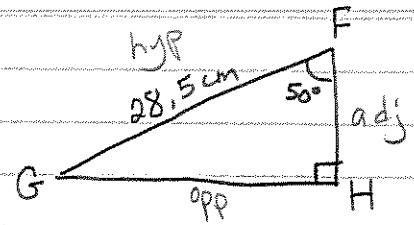
$\theta = \sin^{-1} \left(\frac{35}{47} \right)$
 $= 48.13^\circ$

 $\cos \theta = \frac{\text{adj}}{\text{hyp}}$
 $\cos \theta = \frac{37}{52}$

$\theta = \cos^{-1} \left(\frac{37}{52} \right)$
 $= 44.64^\circ$

6.

Side	cm	Angles	°
f	21.8cm	F	50°
g	18.3cm	G	40°
h	28.5cm	H	90°



$$G = 180^\circ - 90^\circ - 50^\circ = 40^\circ$$

$$\cos F = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 50^\circ = \frac{\text{adj}}{28.5}$$

$$28.5 \cos 50^\circ = \text{adj}$$

$$18.3 \text{ cm} = \text{adj} \quad (g)$$

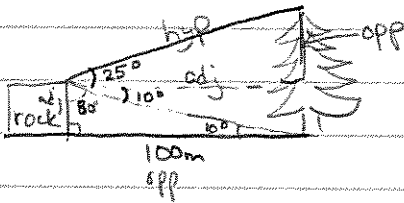
$$\tan F = \frac{\text{opp}}{\text{adj}}$$

$$\tan 50^\circ = \frac{\text{opp}}{18.3}$$

$$18.3 \tan 50^\circ = \text{opp}$$

$$21.8 \text{ cm} = \text{opp} \quad (f)$$

7.



rock face $\tan \theta = \frac{\text{opp}}{\text{adj}}$ $\tan 80^\circ = \frac{100}{\text{adj}}$

$$\text{adj (rock face)} = \frac{100}{\tan 80^\circ} = 17.6 \text{ m}$$

b) $\tan \theta = \frac{\text{opp}}{\text{adj}}$

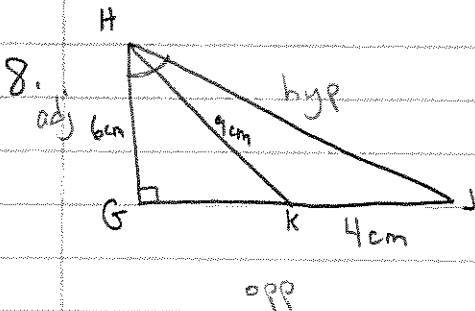
$$\tan 25^\circ = \frac{\text{opp}}{100}$$

$$\text{opp} = 100 \tan 25^\circ$$

$$= 46.6 \text{ m}$$

$$\text{Tree } 17.6 \text{ m} + 46.6 \text{ m}$$

$$= 64.2 \text{ m}$$

 $\angle GHJ$

$$\overline{GK}^2 = h^2 - b^2$$

$$= 9^2 - 6^2$$

$$= 81 - 36$$

$$= 45$$

$$\overline{GK} = 6.71$$

$$\text{so } GJ = 6.71 + 4$$

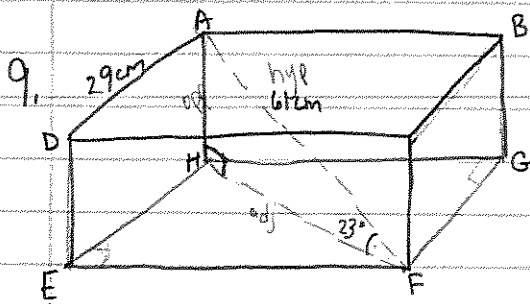
$$= 10.71 \text{ cm}$$

$$\tan H = \frac{\text{opp}}{\text{adj}}$$

$$\tan H = \frac{10.71}{6}$$

$$H = \tan^{-1} \left(\frac{10.71}{6} \right)$$

$$H = 60.74^\circ$$



$$\sin \theta = \frac{\text{opp}}{\text{hyp}} \quad \sin 23^\circ = \frac{\text{opp}}{61}$$

$$\text{Height} \rightarrow \begin{aligned} 61 \sin 23^\circ &= \text{opp} \\ 23.8346 &= \text{opp} \end{aligned}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} \quad \cos 23^\circ = \frac{\text{adj}}{61} \quad \begin{aligned} 61 \cos 23^\circ &= \text{adj} \\ 56.1508 &= \text{adj} \end{aligned}$$

$$\begin{aligned} \text{length} &= a^2 + b^2 = h^2 \\ 56.1508^2 - 29^2 &= \text{length}^2 \\ \sqrt{56.1508^2 - 29^2} &= \text{length} \\ 48.0823 &= \text{length} \end{aligned}$$

$$\begin{aligned} \text{Height} &= 24 \text{ cm} \\ \text{Length} &= 48 \text{ cm} \end{aligned}$$