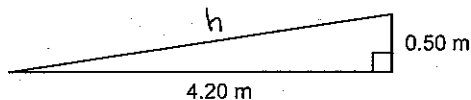


Chapter 8 TEST - Trigonometry - PRACTICE TEST

Multiple Choice

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

1. Determine the length of this wheelchair ramp to the nearest hundredth of a metre.

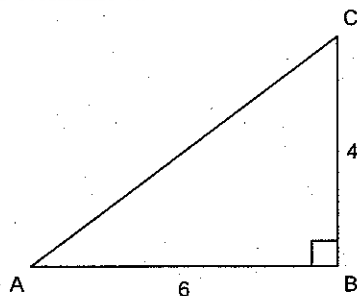


USE PYTHAGORUS

$$4.2^2 + .5^2 = h^2$$

$$\sqrt{4.2^2 + .5^2} = h \quad h = 4.23\text{m}$$

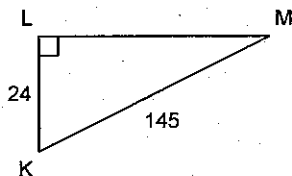
- a. 4.27 m b. 6.53 m c. 4.17 m **(d.) 4.23 m**
2. Determine $\tan A$ and $\tan C$.



$$\tan A = \frac{4}{6} = 0.66\bar{6}$$

$$\tan C = \frac{6}{4} = 1.5$$

- a. $\tan A = 1.5$; $\tan C = 0.\bar{6}$ **(c.) $\tan A = 0.\bar{6}$; $\tan C = 1.5$**
 b. $\tan A = 0.\bar{6}$; $\tan C = 0.8321\dots$ d. $\tan A = 0.5547\dots$; $\tan C = 1.5$
3. Determine the tangent ratio for $\angle K$.



- a. $\frac{24}{143}$ b. $\frac{24}{145}$ c. $\frac{145}{24}$ **(d.) $\frac{143}{24}$**

USE PYTHAGOREAN THM. TO FIND THE LENGTH OF LM.

$$24^2 + (\overline{LM})^2 = 145^2$$

$$\therefore \tan K = \frac{143}{24}$$

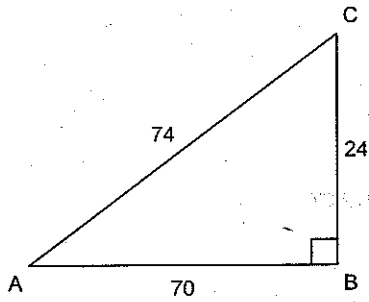
$$(\overline{LM})^2 = 145^2 - 24^2$$

$$\overline{LM} = \sqrt{145^2 - 24^2}$$

$$\overline{LM} = 143$$

THIS BAR MEANS "THE LENGTH OF"

4. Determine
- $\sin A$
- and
- $\cos A$
- to the nearest tenth.

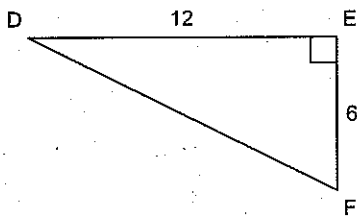


$$\sin A = \frac{24}{74} = 0.3$$

$$\cos A = \frac{70}{74} = 0.9$$

- a. $\sin A = 3.1$; $\cos A = 0.9$
 b. $\sin A = 0.9$; $\cos A = 0.3$
 c. $\sin A = 0.3$; $\cos A = 1.1$
 d. $\sin A = 0.3$; $\cos A = 0.9$

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



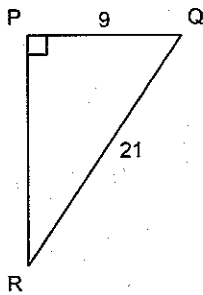
$$\tan D = \frac{6}{12}$$

$$D = \tan^{-1}\left(\frac{6}{12}\right)$$

$$D = 26.6^\circ$$

- a. 26.6°
 b. 30.0°
 c. 60.0°
 d. 63.4°

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



$$\cos Q = \frac{9}{21}$$

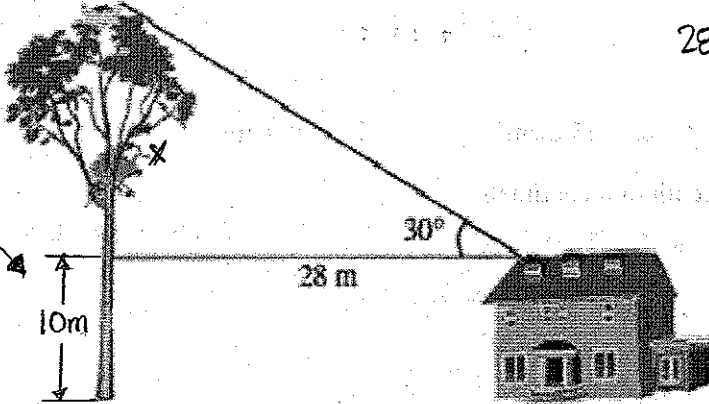
$$Q = \cos^{-1}\left(\frac{9}{21}\right)$$

$$Q = 64.6^\circ$$

- a. 64.6°
 b. 66.8°
 c. 25.4°
 d. 23.2°

7. A 10 metre tall farmhouse is located 28.0 m away from a tree with an eagle's nest. The angle of elevation from the roof of the farmhouse to the eagle's nest is 30° .

What is the height of the eagle's nest?



$$\tan 30^\circ = \frac{x}{28m}$$

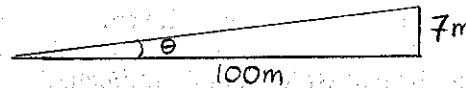
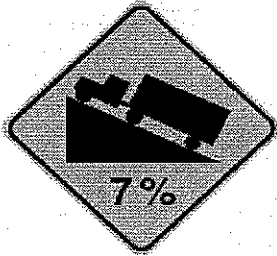
$$28 \tan 30^\circ = x$$

$$x = 16.2m$$

HEIGHT OF EAGLE'S NEST IS

$$16.2m + 10m = 26.2m$$

- a. 16 m
 b. 24 m
 c. 26 m
 d. 48 m
8. Calculate the angle of inclination, to the nearest tenth of a degree, of a road with a grade of 7% (a rise of 7m with a horizontal change of 100m).

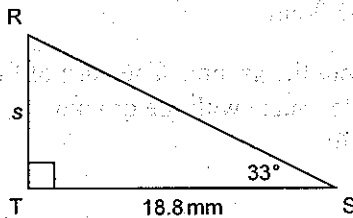


$$\tan \theta = \frac{7}{100}$$

$$\theta = \tan^{-1}\left(\frac{7}{100}\right)$$

$$\theta = 4^\circ$$

- a. 86°
 b. 8°
 c. 4°
 d. 100°
9. Determine the length of side s to the nearest tenth of a millimetre.



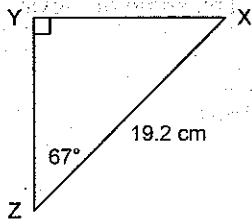
$$\tan 33^\circ = \frac{s}{18.8}$$

$$18.8 \tan 33^\circ = s$$

$$s = 12.21 \text{ mm}$$

- a. 15.8 mm
 b. 28.9 mm
 c. 10.2 mm
 d. 12.2 mm

10. Determine the length of XY to the nearest tenth of a centimetre.



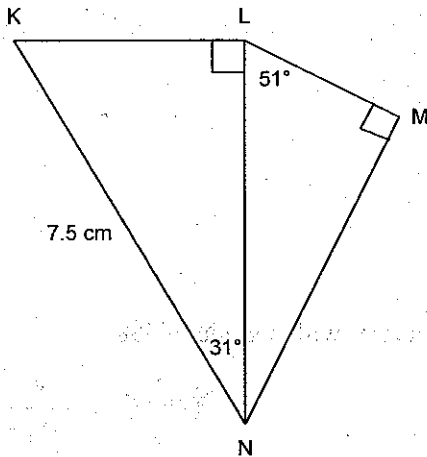
$$\sin 67^\circ = \frac{XY}{19.2}$$

$$19.2 \sin 67^\circ = XY$$

$$XY = 17.67 \text{ cm}$$

- a. 7.5 cm **b. 17.7 cm** c. 45.2 cm d. 20.9 cm

11. Determine the length of MN to the nearest tenth of a centimetre.



① DETERMINE THE LENGTH OF THE COMMON SIDE

$$\cos 31^\circ = \frac{LN}{7.5}$$

$$7.5 \cos 31^\circ = LN$$

$$LN = 6.43 \text{ cm}$$

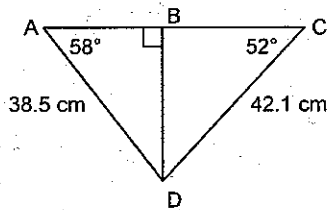
② USING LN, FIND MN

$$\sin 51^\circ = \frac{MN}{6.43} \implies 6.43 \sin 51^\circ = MN$$

$$MN = 4.99 \text{ cm}$$

- a. 5.0 cm** b. 3.0 cm c. 2.4 cm d. 4.0 cm

12. Determine the length of AC to the nearest tenth of a centimetre.



$$\cos 58^\circ = \frac{AB}{38.5}$$

$$38.5 \cos 58^\circ = AB$$

$$AB = 20.4 \text{ cm}$$

$$\cos 52^\circ = \frac{BC}{42.1}$$

$$42.1 \cos 52^\circ = BC$$

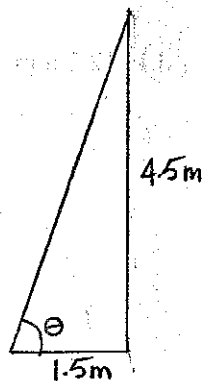
$$BC = 25.9 \text{ cm}$$

$$20.4 + 25.9 = 46.3 \text{ cm}$$

- a. 65.8 cm b. 115.5 cm c. 30.8 cm **d. 46.3 cm**

13. A ladder leans against the side of a building. The top of the ladder is 4.5 m from the ground. The base of the ladder is 1.5 m from the wall. What angle, to the nearest degree, does the ladder make with the ground?

- a. 72° b. 18° c. 16° d. 76°

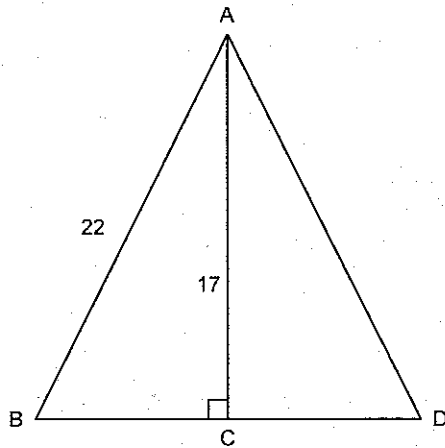


$$\tan \theta = \frac{4.5 \text{ m}}{1.5 \text{ m}}$$

$$\theta = \tan^{-1} \left(\frac{4.5}{1.5} \right)$$

$$\theta = 71.5^\circ \longrightarrow \text{TO THE NEAREST DEGREE } \underline{72^\circ}$$

14. Determine the measure of $\angle B$ to the nearest tenth of a degree.



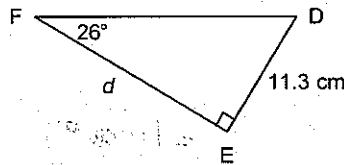
$$\sin B = \frac{17}{22}$$

$$\angle B = \sin^{-1}\left(\frac{17}{22}\right)$$

$$\angle B = 50.6^\circ$$

- a. 78.8° b. 37.7° c. 50.6° d. 39.4°

15. Determine the length of side d to the nearest tenth of a centimetre.



$$\tan 26^\circ = \frac{11.3 \text{ cm}}{d}$$

$$d \tan 26^\circ = 11.3 \text{ cm} \longrightarrow d = \frac{11.3 \text{ cm}}{\tan 26^\circ} = 23.2 \text{ cm}$$

- a. 25.8 cm b. 23.2 cm c. 12.6 cm d. 5.5 cm

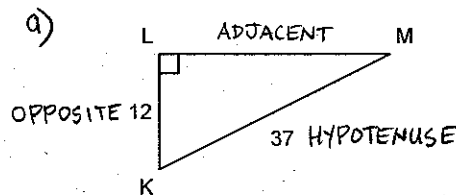
Short Answer

16. $\tan B = 1.2$; determine the measure of $\angle B$ to the nearest tenth of a degree.

$$\angle B = \tan^{-1} 1.2 = 50.2^\circ$$

17. a) For $\angle M$ in the triangle below, label the hypotenuse and the opposite and adjacent sides.

b) Find $\angle M$

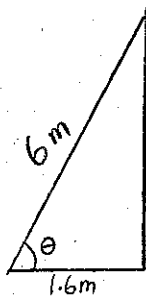


$$\sin M = \frac{12}{37}$$

$$M = \sin^{-1}\left(\frac{12}{37}\right)$$

$$\angle M = 18.9^\circ \text{ or } 19^\circ$$

18. A ladder is 6 m long. It leans against a house. The base of the ladder is 1.6 m from the house. What is the angle of inclination of the ladder to the nearest tenth of a degree?

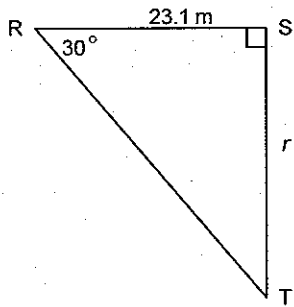


$$\cos \theta = \frac{1.6 \text{ m}}{6 \text{ m}}$$

$$\theta = \cos^{-1}\left(\frac{1.6}{6}\right)$$

$$\theta = 74.5^\circ$$

19. Determine the length of side r to the nearest tenth of a metre.

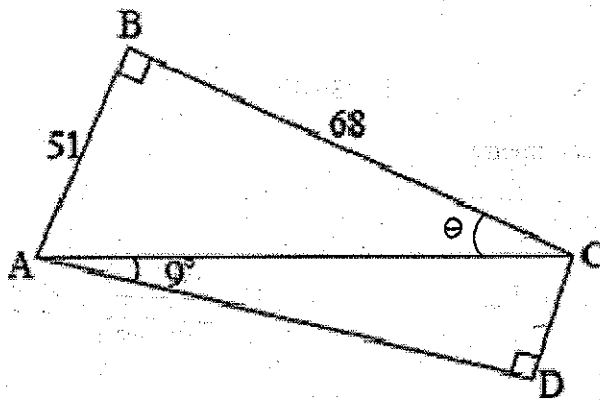


$$\tan 30^\circ = \frac{r}{23.1\text{m}}$$

$$(23.1\text{m}) \tan 30^\circ = r$$

$$r = 13.3\text{m}$$

20. Determine the measure of $\angle BCD$. Answer to the nearest degree



$$\angle ACD = 90^\circ - 9^\circ = 81^\circ$$

$$\tan \theta = \frac{51}{68}$$

$$\theta = \tan^{-1}\left(\frac{51}{68}\right)$$

$$\theta = 37^\circ$$

$$\angle BCD = 81^\circ + 37^\circ = 118^\circ$$

21. How many degrees do all three angles of a triangle add up to? 180°