

Section A: Total Value : 50%

Answer all items and place the letter corresponding to the correct answer on the provided answer sheet.

1. What SI unit is most appropriate in measuring the length of Mealy Mountain Collegiate?
(A) mm
(B) cm
(C) m
(D) km
2. George has 20 yards of string that he wants to cut into pieces 15 inches long. How many pieces can George make?
(A) 1
(B) 16
(C) 48
(D) 720
3. Paul plans to replace 974 inches of baseboard in his home. Baseboard is sold in 8 foot lengths. How many pieces of baseboard does Paul need to purchase?
(A) 10
(B) 11
(C) 82
(D) 122

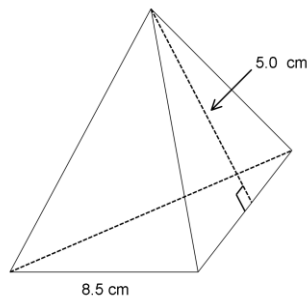
4. The distance Jim walked each day last week is shown in the table below.

Day of Week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Distance Walked in Miles	6	7	8	4	5	6	4

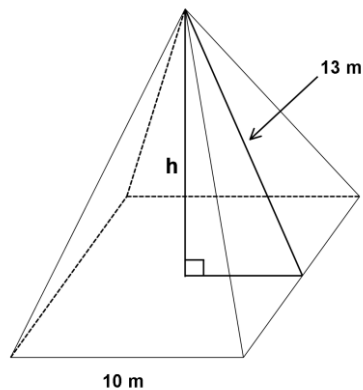
What was the distance Jim walked to the nearest kilometre?

- (A) 25
(B) 40
(C) 64
(D) 80
5. Which referent could be used for an inch?
(A) The distance from where you are to Tim Horton's.
(B) The length of your calculator.
(C) The width of your largest toe.
(D) The width of your desk top.
6. A janitor measures the height of a window in Mealy Mountain Collegiate to be 4 feet 10 inches high. What is the height of the window to the nearest centimetre?
(A) 23
(B) 35
(C) 120
(D) 145

7. A block is in the shape of a regular tetrahedron as shown below. Find its surface area.



- (A) 21.25 cm^2
 (B) 42.5 cm^2
 (C) 63.75 cm^2
 (D) 85.0 cm^2
8. The lateral area of a cone is 200.12 cm^2 . If the diameter of the cone is 12.2 cm find the height of the cone to the nearest tenth of a centimetre.
- (A) 5.2
 (B) 10.4
 (C) 16.4
 (D) 32.8
9. An Egyptian right square pyramid is shown below. Find its height, h , to the nearest tenth of a metre.

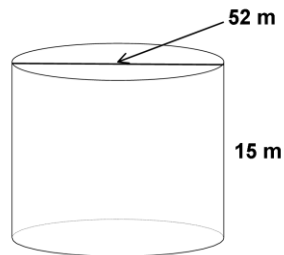


- (A) 5.0
 (B) 10.0
 (C) 13.9
 (D) 16.4
10. A volleyball ball just fits inside a cube that has an edge length equal to the diameter of the ball. If the diameter of the tennis ball is 24 cm , what is the volume of the air in the cube to the nearest cubic centimeter?
- (A) 1647
 (B) 6589
 (C) 7880
 (D) 44053

11. The surface area of a tennis ball is beach ball is 803.84 cm^2 . What is its diameter?

- (A) 4 cm
 (B) 8 cm
 (C) 16 cm
 (D) 64 cm

12. An oil tank is in the shape of cylinder. Find the amount oil needed to fill the tank.

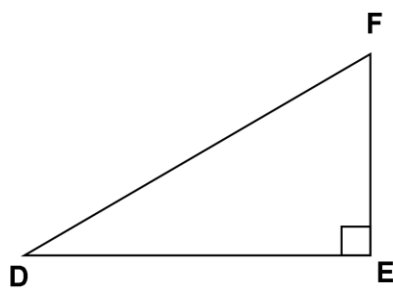


- (A) 4408.56 m^3
 (B) 17307.68 m^3
 (C) 31839.6 m^3
 (D) $127\,358.4 \text{ m}^3$

13. Which of the following is the ratio for **tangent** of an acute angle in a right triangle?

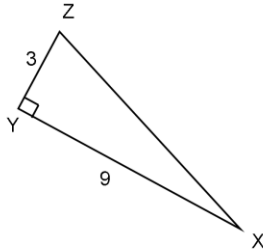
- A) $\frac{\textit{opposite side}}{\textit{hypotenuse}}$
 B) $\frac{\textit{adjacent side}}{\textit{hypotenuse}}$
 C) $\frac{\textit{opposite side}}{\textit{adjacent side}}$
 D) $\frac{\textit{adjacent side}}{\textit{opposite side}}$

14. Which of the following is the ratio for $\sin \angle D$ in $\triangle DEF$?

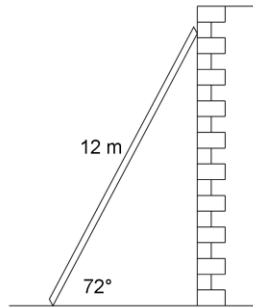


- (A) $\frac{FE}{DE}$
 (B) $\frac{DE}{DF}$
 (C) $\frac{DF}{FE}$
 (D) $\frac{FE}{DF}$

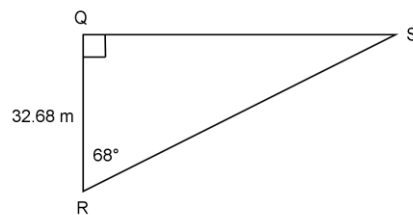
15. Determine the measure of $\angle X$ to the nearest tenth of a degree.



- (A) 18.4
 (B) 19.5
 (C) 70.5
 (D) 71.6
16. A ladder 12.0 m long is leaning against a wall. The angle of inclination is 72° . To the nearest tenth of a metre, how far up the wall does the ladder reach?

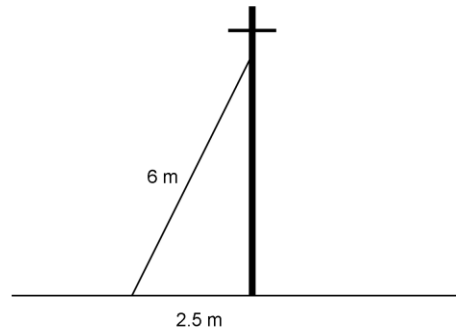


- (A) 0.8 m
 (B) 3.7 m
 (C) 11.4 m
 (D) 36.9 m
17. A surveyor made the measurements shown in the diagram. Determine the distance from R to S, to the nearest hundredth of a metre.

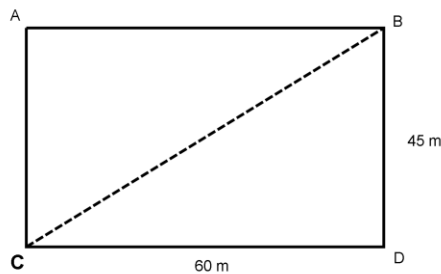


- (A) 12.34
 (B) 13.20
 (C) 35.25
 (D) 87.24

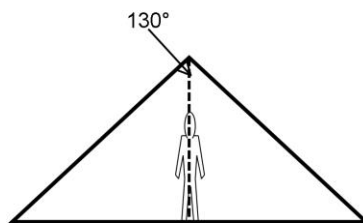
18. A 6 metre cable is attached to a pole. The cable is anchored to the ground 2.5 metres from the base of the pole. What is the angle of inclination of the cable to the nearest tenth of a degree.



- (A) 1.1
 (B) 22.6
 (C) 24.6
 (D) 65.4
19. Rhonda walked diagonally across a rectangular playground with dimensions 60 m by 45 m. If she started at point C determine the angle, to the nearest degree, between her path and the longest side of the playground.

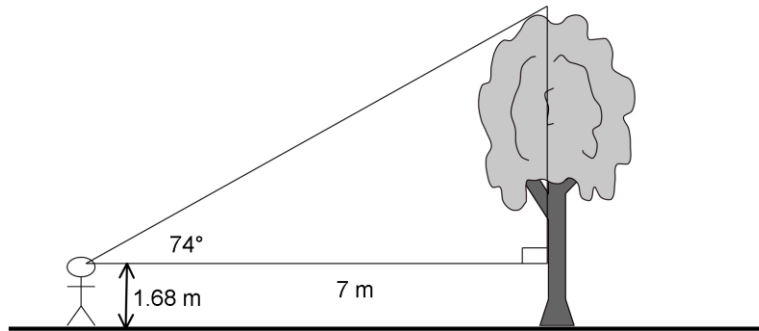


- (A) 37°
 (B) 41°
 (C) 49°
 (D) 53°
20. The front of a tent has the shape of an isosceles triangle with equal sides 8 feet long. The measure of the angle at the peak of the tent is 130° . Calculate the maximum headroom in the tent to the nearest metre.



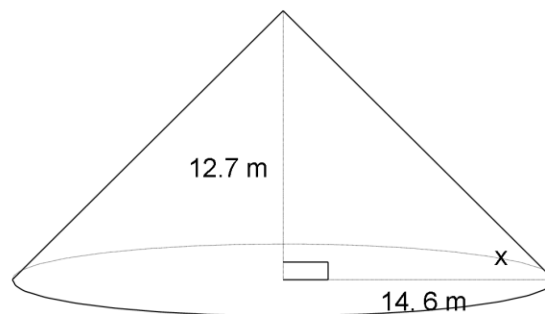
- (A) 3.4
 (B) 3.7
 (C) 6.9
 (D) 7.3

21. A forest technician 1.68 m tall is collecting data about the height of trees. He walks 7 m from the base of a tree and measures the angle of elevation to the top of the tree as illustrated in the diagram below.



Find the height of the tree.

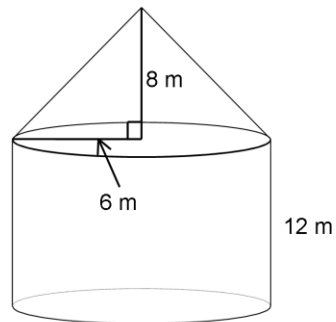
- (A) 3.7 m
 (B) 8.4 m
 (C) 24.4 m
 (D) 26.1 m
22. Grain is stored in a cone-shaped pile. The dimensions of the cone are shown. Which equation could be used to find x , the angle of inclination.



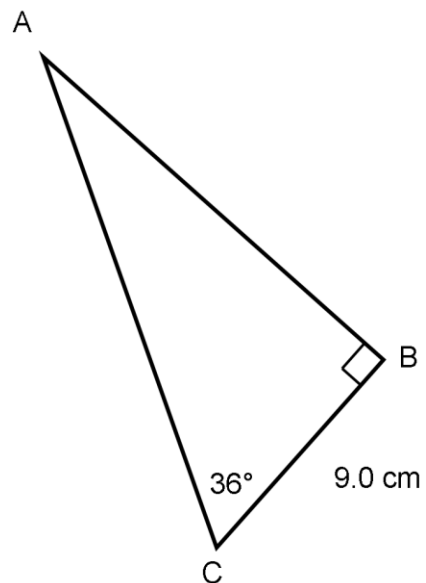
- (A) $x = \sin^{-1}\left(\frac{12.7}{14.6}\right)$
 (B) $x = \cos^{-1}\left(\frac{14.6}{12.7}\right)$
 (C) $x = \tan^{-1}\left(\frac{12.7}{14.6}\right)$
 (D) $x = \sin^{-1}\left(\frac{14.6}{12.7}\right)$

3. A tennis ball in the shape of a sphere fits inside a cube that has edge lengths equal to the diameter of the sphere. If the tennis ball has a diameter of 4.6 cm, what is the volume of the air in the cube? (3%)

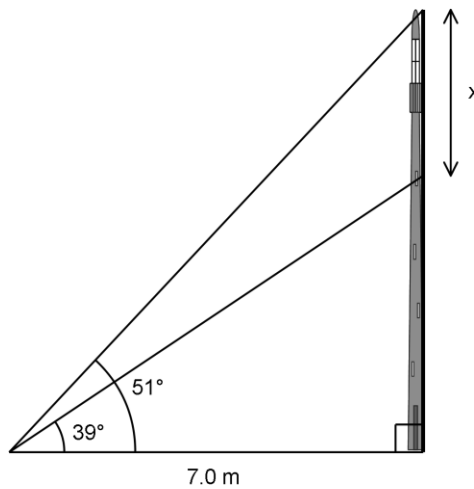
4. Determine how much paint is needed to paint the outside of the following composite 3-D object. (4%)



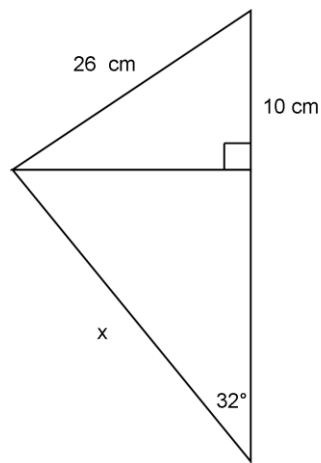
5. Solve $\triangle ABC$, given $BC = 9.0\text{ cm}$, and $\angle C = 36^\circ$. (3%)



6. A tower is supported by two guy wires as shown in the diagram below. The two wires are fixed in the ground 7.0 metres from the base of the tower. If the angle of elevation of the wires are 39° and 53° , how far apart are the wires attached on the tower? (4%)



7. Calculate the length of side x in the diagram below to the nearest centimeter. (3%)



8. Two office towers are 31.7 m apart. From the shorter tower, the angle of elevation to the top of the taller tower is 27.5° . The angle of depression to the base of the taller tower is 48.2° . Using the diagram below calculate the height of each building. (4%)

