Unit 1 Review

Multiple Choice

For #1 to #16, choose the best answer.

1. Mike wants to measure the length of his bicycle to determine if it will fit in his parents' garden shed for storage during the winter. Which unit of measurement is the most appropriate for Mike to use?

A millimetres

B inches

C feet

D kilometres

2. Sarah needs to mark the position for a showerhead that is recommended to be installed at a height of 6′ 6″. Which referent and estimate are best for Sarah to approximate that height?

A body height 5′ 3″, just above her head

B hand span $8\frac{1}{2}$ in., just over 9 hand spans

C length of foot $9\frac{1}{2}$ in., 6 and one half foot lengths

D length of forearm 17″, six forearm lengths

3. The length of a Canadian flag is always twice its width. If the length of a particular flag is 52 in., what is its width in centimetres?

A 26 cm

B 66.04 cm

C 104 cm

D 132.08 cm

4. If 1 ft = 0.3048 m, what is the correct conversion to express the number of inches in metres?

A 1 in. = 0.0254 m

B 1 m = 39.37 in.

C 1 m = 100 in.

D 3.6576 in. = 1 m

5. Which unit would be the most appropriate to measure the volume of concrete used for a driveway?

A cubic millimetres

B cubic yards

C square inches

D square metres

6. Which of the following could be used to accurately determine the circumference of a basketball?

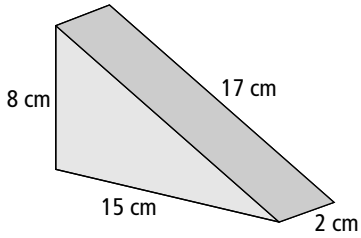
A hand span

B trundle wheel

C string and ruler

D arm length

7. What is the surface area of the right pyramid?



A 140 cm^2

B 200 cm^2

C 240 cm^2

D 260 cm^2

8. A stress ball is squeezed in the hand and manipulated by the fingers to help relieve stress and muscle tension or to exercise the muscles of the hand. If a stress ball has a diameter of 7 cm, what is the surface area of its covering?

A 4310.3 cm^2

B 1372 cm^2

C 538.8 cm^2

D 153.9 cm^2

9. If the volume of a sphere is 905 cm^3, the diameter of the sphere is

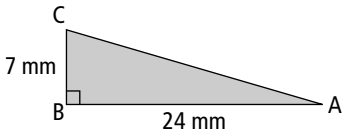
A 6 cm

B 12 cm

C 216 cm

D 432 cm

10. Which equation regarding triangle ABC is true?



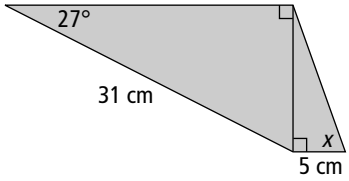
A $\tan C = \frac{25}{7}$

B $\tan C = \frac{7}{24}$

C $\sin A = \frac{7}{25}$

D $A = \cos^{-1}\left(\frac{24}{25}\right)$

11. Determine the measure of angle x, to the nearest tenth of a degree.



A 79.7°

B 70.4°

C 63°

D 19.6°

12. The surface area of a cone with a diameter of 10 cm is determined to be 65π cm^2. The slant height of the cone is

A 3.5 cm

B 8 cm

C 25 cm

D 35 cm

13. The standard height of a basketball hoop above the floor is 3.048 m. Colin is 5′ 9″ tall and can reach an additional 21″ when extending his arm above his head. How high must Colin jump to be able to touch the hoop?

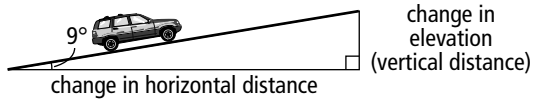
A 1.573 m

B 2′ 6″

C 36 cm

D 40 in.

14. If a vehicle travels a distance of 2 km along an incline of 9°, how far does it actually travel along a horizontal distance?



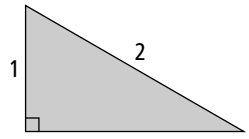
A 0.323 km

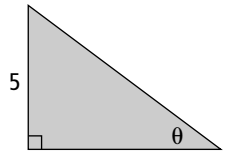
B 1.869 km

C 1970 m

D 3168 m

15. Using the measurements given in the diagrams of the similar triangles, which of the primary trigonometric ratios could be used to determine the measure of the indicated angle in the larger triangle?





A tangent

B sine

C cosine

D Pythagorean theorem

16. If the tangent ratio of a reference angle in a right triangle is calculated to be 0.6249, then the cosine ratio of the same angle is

A 32.0013

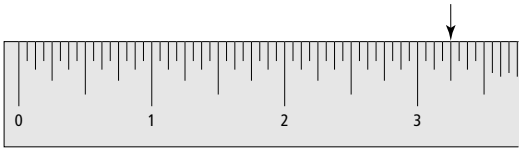
B 1

C 0.8480

D 0.0109

Numerical Response

17. What is the value of the reading, as a mixed fraction, represented by the arrow on the imperial ruler?

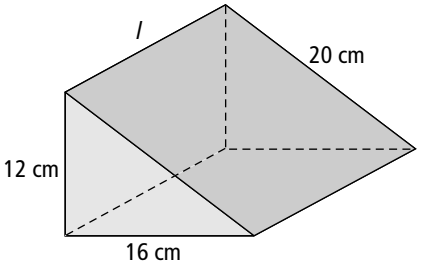


18. In the SI system, 0.0305 metres is the same as how many millimetres?

19. In the imperial system, how many inches are there in $2\frac{1}{2}$ yards?

20. Calculate the surface area of a square-based pyramid with a side length of 8 cm and a height of 5 cm, to the nearest hundredth of a centimetre.

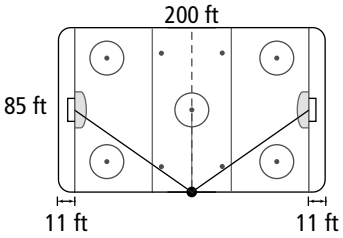
21. The surface area of the triangular-based right prism shown is 1440 m^2. Determine the missing dimension.



22. Kayla is playing golf and needs to make a putt of 3.7 yd to get the ball into the cup. What is the length of the putt in feet, rounded to the nearest foot?

23. A gravel pile in the shape of a cone has a height of 2 yd and a radius of 3.5 yd. What is the volume of gravel in the pile, to the nearest tenth of a cubic yard?

24. The ice surface in a hockey arena measures 200 ft by 85 ft. A spectator stands along the boards at the centre line. At each end of the rink, the goal line is 11 ft from the boards. From the perspective of the spectator, what is the angle between the two goalies, to the nearest tenth of a degree?



Extended Response

25. A cone-shaped oil filter, open at the base, has a diameter of 10″ and a depth of 12″.

a) What are the measurements of the filter's radius and depth, to the nearest tenth of a centimetre?

b) A paper cone is used to line the filter. What is the surface area of paper, to the nearest tenth of a cubic centimetre?

c) What is the capacity of the filter, to the nearest tenth of a cubic centimetre?

26. Two trees are 70 m apart. From the point on the ground halfway between the trees, the angle of elevation to the top of one tree is 15° and to the top of the other tree is 22°.

a) Sketch and label a diagram to represent the given information.

b) Which trigonometric ratio would you use to determine the heights of the trees? Explain your reasoning.

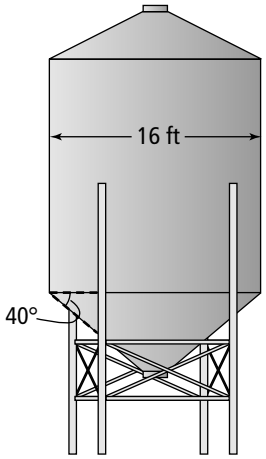
c) Determine the difference between the heights of the trees, to the nearest tenth of a metre.

27. A boy spots a bird sitting on a power line 3.7 m above the ground. The boy is 1.2 m tall and is standing 5 m from the point on the ground that is directly below the bird.

a) Sketch and label a diagram to represent the given information.

b) Determine the angle at which the boy is looking up at the bird, to the nearest tenth of a degree.

28. A bin to store grain has a diameter of 16 ft. The slope of the bottom cone is 40° from the horizontal.

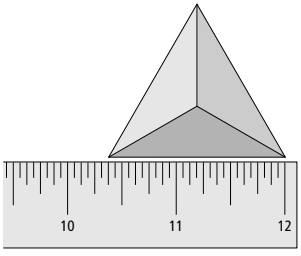


a) What is the depth of the cone-shaped bottom, to the nearest tenth of a foot?

b) What volume of grain could be held in the bottom cone, to the nearest cubic foot?

c) Suppose that the volume of grain that can be stored in the bin, not including the top conical section, is 4042 ft^3. What is the length of the cylindrical section, to the nearest tenth of a foot?

29. A regular tetrahedron is an object with four congruent equilateral triangular faces.

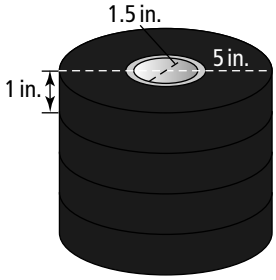


a) Use the diagram to determine the length of the tetrahedron, to the nearest $\frac{1}{8}$ in.

b) Determine the surface area of the tetrahedron, to the nearest tenth of a square inch.

c) Determine the volume of the shape, to the nearest tenth of a cubic inch.

30. A single roll of hockey tape has an outside diameter of 5 in., has an inside diameter of $1\frac{1}{2}$ in., and is 1 in. thick.

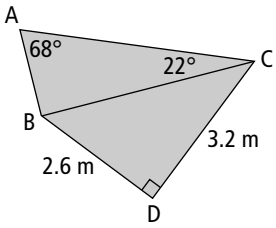


a) Name a personal referent that could be used to estimate the size of the roll of hockey tape. Use your referent to sketch the actual size of the roll of tape.

b) Using the conversion rate 1 in. = 2.54 cm, determine the measures of the inner radius and the outer radius, each to the nearest hundredth of a centimetre.

c) Determine the volume of tape in 4 rolls of tape, to the nearest cubic centimetre.

31. Use the diagram to answer the questions below.



a) Describe in words a possible strategy you could use to solve for the length of side AB.

b) Determine the length of side AB, to the nearest tenth of a metre.