# Chapter 1 Practice Test

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

_____ 1. Determine the value of $\sqrt{0.09}$.

     a. 0.3   b. 0.045   c. 0.0225   d. 0.03

_____ 2. Determine the value of $\sqrt{0.0225}$.

     a. 0.225   b. 0.15   c. 0.015   d. 2.25

_____ 3. Calculate the number whose square root is 0.9.

     a. 0.81   b. 0.0081   c. 0.081   d. 0.09

_____ 4. Which fraction is a perfect square?

     i) $\dfrac{49}{60}$

     ii) $\dfrac{49}{225}$

     iii) $\dfrac{28}{225}$

     iv) $\dfrac{7}{15}$

     a. ii   b. iii   c. iv   d. i

_____ 5. Name the two whole numbers whose squares are closest to 22.5.

     a. 9, 25   b. 4, 5   c. 4, 9   d. 16, 25

_____ 6. Which decimal has a square root between 14 and 15?

     i) 240.3
     ii) 169
     iii) 14.5
     iv) 204.5

     a. ii   b. iii   c. i   d. iv

_____ 7. Which fraction has a square root between 3 and 4?

     i) $\dfrac{52}{3}$

     ii) $\dfrac{61}{3}$

     iii) $\dfrac{37}{4}$

     iv) $\dfrac{79}{4}$

     a. iv   b. ii   c. iii   d. i

_____ 8. Estimate the value of $\sqrt{\dfrac{5}{11}}$, to the nearest tenth.

     a. 0.7   b. 0.6   c. 0.67   d. 0.5

____ 9. A square has an area of 27.8 cm^2.
Determine the side length of the square, to the nearest millimetre.
a. 5 cm   b. 5.2 cm   c. 5.27 cm   d. 5.3 cm

____ 10. This object is made from 7 centimetre cubes. Determine its surface area.
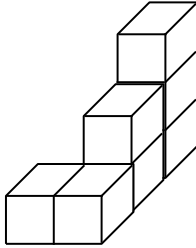
a. 29 cm^2 b. 28 cm^2 c. 24 cm^2 d. 26 cm^2

____ 11. This object is made from 3 identical right rectangular prisms.
Each prism is 55 cm long and has square ends of side length 25 cm.
What is the surface area of the object?
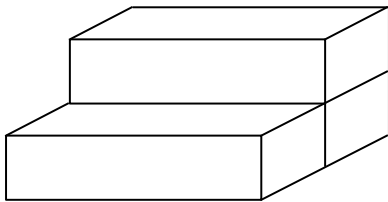
a. 20 250 cm^2 b. 12 875 cm^2 c. 12 000 cm^2 d. 14 750 cm^2

____ 12. This object is made of a right rectangular prism of length 12 cm, width 6 cm, and height 4 cm.
A cube of side length 2 cm has been removed from one corner.
Determine the surface area of the object.
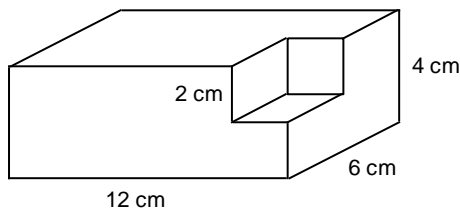

a. 312 cm^2 b. 264 cm^2 c. 288 cm^2 d. 280 cm^2

____ 13. This object is composed of two identical cubes joined by a right rectangular prism.
The edge length of each cube is 8 cm.
The rectangular prism is 9 cm long and has square ends of side length 3 cm.
Determine the surface area of the object.

8 cm

9 cm
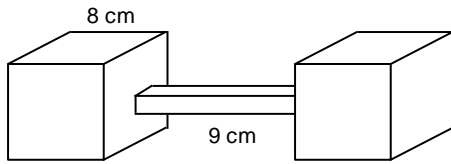
a. 660 cm^2 b. 894 cm^2 c. 876 cm^2 d. 858 cm^2

____ 14. This birdhouse is to be hung from the branch of a tree. The circular hole has diameter 8 cm.
Determine the surface area of the birdhouse, to the nearest square centimetre.

18 cm

18 cm

26 cm   25 cm
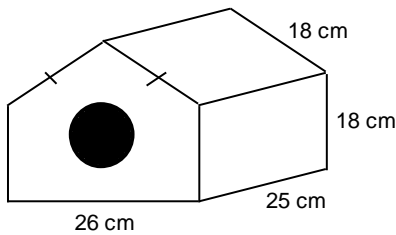
a. 3009 cm^2 b. 3760 cm^2 c. 3609 cm^2 d. 3659 cm^2

____ 15. This object is composed of a rectangular prism on top of a cylinder.
The rectangular prism has height 8 cm and square ends of side length 4 cm.
The cylinder has diameter 16 cm and height 6 cm.
Determine the surface area of the object, to the nearest square centimetre.

4 cm

8 cm

6 cm
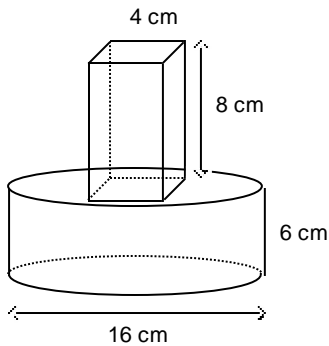
16 cm

a. 631 cm^2 b. 816 cm^2 c. 832 cm^2 d. 848 cm^2

Short Answer

16. Between which two whole numbers does $\sqrt{21.16}$ lie?

17. Each layer of a three-layer cake is a cylinder of height 8 cm.
The bottom layer has diameter 28 cm.
The middle layer has diameter 24 cm.
The top layer has diameter 20 cm.
The surface of the cake is frosted. What area of the cake is frosted?

18. A circular hole of diameter 4 cm is cut through this block.

Determine the surface area of the object, to the nearest square centimetre.

15 cm

8 cm
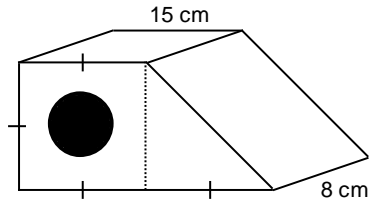
Problem

19. Determine the value of $\sqrt{\dfrac{\sqrt{81} + \sqrt{49}}{\sqrt{196} - \sqrt{100}}}$.

20. Blocks A, B, and C are joined together to form the composite object shown.
    Block A is a cube with side length 12 cm, Block B is a cube with side length 6 cm, and Block C is a right rectangular prism with length 24 cm, width 12 cm, and height 12 cm.
    Determine the total surface area of the composite object. Justify your answer.

B

C

A

Chapter 1 Practice Test
Answer Section

MULTIPLE CHOICE

1. ANS: A   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge
2. ANS: B   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge
3. ANS: A   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge
4. ANS: A   PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
    LOC: 9.N5   TOP: Number   KEY: Conceptual Understanding
5. ANS: B   PTS: 1   DIF: Easy
    REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
    TOP: Number   KEY: Conceptual Understanding
6. ANS: D   PTS: 1   DIF: Moderate
    REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
    TOP: Number   KEY: Conceptual Understanding
7. ANS: C   PTS: 1   DIF: Moderate
    REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
    TOP: Number   KEY: Conceptual Understanding
8. ANS: A   PTS: 1   DIF: Moderate
    REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
    TOP: Number   KEY: Procedural Knowledge
9. ANS: D   PTS: 1   DIF: Moderate
    REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
    TOP: Number   KEY: Procedural Knowledge
10. ANS: B   PTS: 1   DIF: Moderate
    REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
    LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
11. ANS: D   PTS: 1   DIF: Moderate
    REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
    LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
12. ANS: C   PTS: 1   DIF: Moderate
    REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
    LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge
13. ANS: D   PTS: 1   DIF: Easy
    REF: 1.4 Surface Areas of Other Composite Objects   LOC: 9.SS2
    TOP: Shape and Space (3-D Objects and 2-D Shapes)   KEY: Procedural Knowledge
14. ANS: D   PTS: 1   DIF: Easy
    REF: 1.4 Surface Areas of Other Composite Objects   LOC: 9.SS2
    TOP: Shape and Space (3-D Objects and 2-D Shapes)
    KEY: Procedural Knowledge | Problem-Solving Skills
15. ANS: C   PTS: 1   DIF: Easy

REF: 1.4 Surface Areas of Other Composite Objects   LOC: 9.SS2
TOP: Shape and Space (3-D Objects and 2-D Shapes)   KEY: Procedural Knowledge

SHORT ANSWER

16. ANS:
Between 4 and 5

PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Conceptual Understanding

17. ANS:
The frosted area of the cake is about 2425 cm^2.

PTS: 1   DIF: Moderate   REF: 1.4 Surface Areas of Other Composite Objects
LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge | Problem-Solving Skills

18. ANS:
The surface area of the object is about 1400 cm^2.

PTS: 1   DIF: Difficult   REF: 1.4 Surface Areas of Other Composite Objects
LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Procedural Knowledge | Problem-Solving Skills

PROBLEM

19. ANS:
$$\sqrt{\frac{\sqrt{81}+\sqrt{49}}{\sqrt{196}-\sqrt{100}}} = \sqrt{\frac{9+7}{14-10}}$$
$$= \sqrt{\frac{16}{4}}$$
$$= 2$$

PTS: 1   DIF: Difficult   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Problem-Solving Skills

20. ANS:
Area of top $= 24 \times 12 + 12 \times 12 = 432$
Area of bottom $= 432$
Area of front $= 24 \times 12 + 6 \times 6 = 324$
Area of back $= 324$
Area of left side $= 6 \times 6 + 12 \times 12 + 12 \times 12 = 324$
Area of right side $= 324$

So, the total surface area of the composite object is: $2 \times (432 \text{ cm}^2 + 324 \text{ cm}^2 + 324 \text{ cm}^2) = 2160 \text{ cm}^2$

PTS: 1   DIF: Difficult
REF: 1.3 Surface Areas of Objects Made from Right Rectangular Prisms
LOC: 9.SS2   TOP: Shape and Space (3-D Objects and 2-D Shapes)
KEY: Problem-Solving Skills | Communication