# January Exam Review- Unit 1

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

_____ 1.   Determine the value of $\sqrt{0.16}$, ***without a calculator***
  a. 0.4   b.   0.07   c.   0.2   d.   0.04

_____ 2.   Calculate the number whose square root is 0.9, ***without a calculator.***
  a.   0.81   b.   0.0081   c.   0.081   d.   0.09

_____ 3.   Which numbers are perfect squares? ***(must do without a calculator)***
      i)   30.25   ii)   32   iii)   28.9   iv)   1.44
      a. i and iv   b.   ii and iii   c.   i and ii   d.   i and iii

_____ 4.   Determine the value of $\sqrt{\dfrac{72}{98}}$, without a calculator.

  a. $\dfrac{6}{14}$ b. $\dfrac{6}{7}$ c. $\dfrac{12}{7}$ d. $\dfrac{36}{49}$

_____ 5.   Name the two whole numbers whose squares are closest to 22.5. ***(must do without a calculator)***
  a.   9, 25   b.   4, 5   c.   4, 9   d.   16, 25

_____ 6.   Name the two whole numbers whose squares are closest to $\dfrac{595}{10}$.

  a.   49, 64   b.   4, 9   c.   16, 25   d.   7, 8

_____ 7.   Estimate the value of $\sqrt{0.35}$, to the nearest tenth. ***(must do without a calculator)***
  a.   0.5   b.   0.6   c.   0.59   d.   0.9

_____ 8.   A square has an area of 24.8 cm^2.
Determine the side length of the square, to the nearest centimeter.
  a.   4.98 cm   b.   4.9 cm   c.   5.0 cm   d.   5 cm

_____ 9.   The lengths of the two legs of a right triangle are 6.7 cm and 3.2 cm.
Determine the length of the hypotenuse to 1 decimal place.
  a.   55.1 cm   b.   5.9 cm   c.   7.4 cm   d.   3.1 cm

_____ 10.   This composite object is made using centimetre cubes. Determine its surface area.
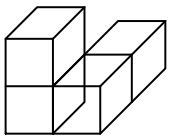
a.   24 cm^2 b. 20 cm^2

c. 15 cm^2 d. 18 cm^2

_ 11.   This composite object is made of a 15-cm cube on top of a 30-cm cube.
Determine its surface area.

15 cm

30 cm
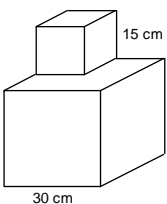
a.   6750 cm^2 b. 5625 cm^2

c. 6300 cm^2 d. 6525 cm^2

____ 12. This object is composed of two identical cubes joined by a right rectangular prism.
The edge length of each cube is 6 cm.
The rectangular prism is 9 cm long and has square ends of side length 3 cm.
Determine the surface area of the object.

6 cm

9 cm
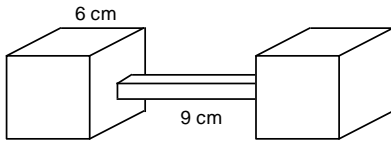
a. 540 cm^2 b. 558 cm^2

c. 522 cm^2 d. 324 cm^2

____ 13. This object is composed of a cylinder of diameter 4 cm and height 14 cm on top of another cylinder of diameter 12 cm and height 4 cm.
Determine the surface area of the object, to the nearest square centimeter.

4 cm

14 cm

4 cm

12 cm
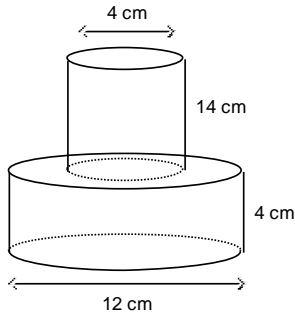
a. 440 cm^2 b. 527 cm^2

c. 561 cm^2 d. 553 cm^2

____ 14. 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.
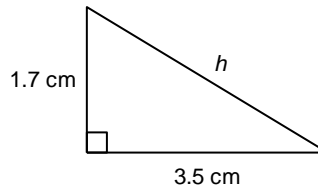Determine the surface area of the object, to the nearest square centimeter.

4 cm

8 cm

6 cm
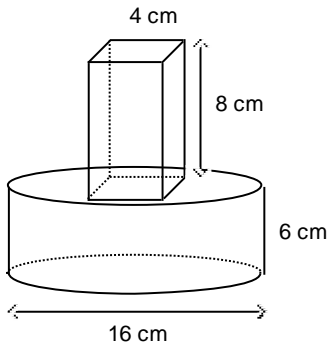
16 cm

a. 631 cm^2 b. 816 cm^2

c. 832 cm^2 d. 848 cm^2

Short Answer

15. Determine the value of $\sqrt{2.89}$.

(must do without a calculator)

16. Determine the value of $\sqrt{\dfrac{25}{36}}$. *(must do without a calculator)*

17. Determine the value of $\sqrt{6 \times 3 \times 18}$.
(must do without a calculator)

18. A square garden has an area of 240.25 m^2.
    a) Determine the length of one side of the garden.
    b) Determine the perimeter of the garden.

19. Determine the value of $\sqrt{0.27}$, to the nearest tenth.
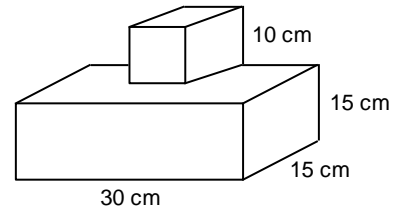*(must do without a calculator)*

20. Determine the length of the hypotenuse, h.

1.7 cm

h

3.5 cm

21. Determine the length of side s.

8.8 cm

s

5.2 cm
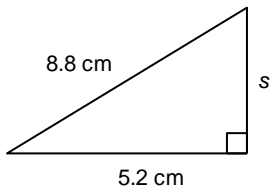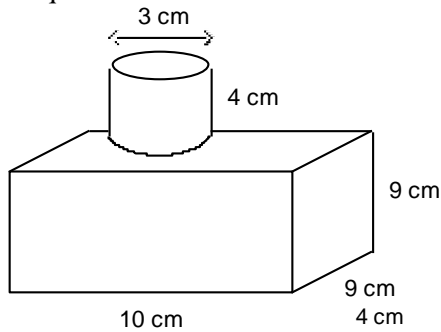
22. This object is composed of a cube on top of a right rectangular prism. Determine the surface area of the object.

10 cm

15 cm

15 cm

30 cm

23. Determine the surface area of this composite object, to the nearest square centimeter.
The cylinder has diameter 3 cm and height 4 cm.
The prism has length 10 cm, width 9 cm, and height 9 cm.

3 cm

4 cm

9 cm

9 cm

10 cm

4 cm

24. This object is composed of two identical cylinders connected by a right rectangular prism.
Each cylinder has diameter 18 cm and height 4 cm.
The rectangular prism has length 8 cm and square ends of side length 2 cm.
Determine the surface area of the object. Give your answer to the nearest whole number.
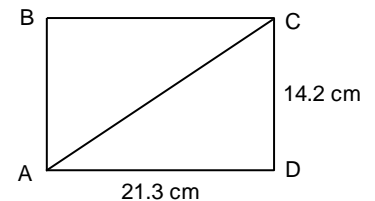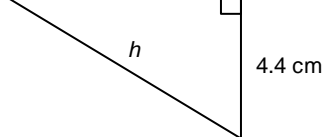
18 cm

2 cm

8 cm
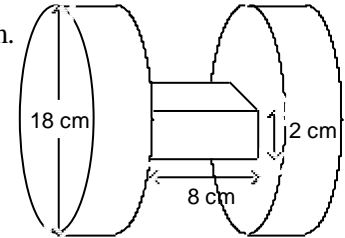
Problem

25. Determine the value of $\sqrt{6.47 + 7.36 + 17.53}$.

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

27. Determine the length of the diagonal AC of rectangle ABCD, to the nearest centimeter.

B ———— C

14.2 cm

A ———— D

21.3 cm

h 4.4 cm

Unit 1 Review for January Exam
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: A   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: Moderate   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Conceptual Understanding
4. ANS: B   PTS: 1   DIF: Moderate   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge
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: Easy
REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
TOP: Number   KEY: Conceptual Understanding
7. ANS: B   PTS: 1   DIF: Moderate
REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
TOP: Number   KEY: Procedural Knowledge
8. ANS: C   PTS: 1   DIF: Moderate
REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
TOP: Number   KEY: Procedural Knowledge
9. ANS: C   PTS: 1   DIF: Moderate
REF: 1.2 Square Roots of Non-Perfect Squares   LOC: 9.N6
TOP: Number   KEY: Procedural Knowledge
10. ANS: D   PTS: 1   DIF: Easy
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: 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
12. 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
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: 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

15. ANS:
1.7

PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

16. ANS:
$$\frac{5}{6}$$

PTS: 1   DIF: Easy   REF: 1.1 Square Roots of Perfect Squares
LOC: 9.N5   TOP: Number   KEY: Procedural Knowledge

17. ANS:
18

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

18. ANS:
a) The length of one side of the garden is $\sqrt{240.25}$ m, or 15.5 m.
b) The perimeter of the garden is 4×15.5 m, or 62 m.

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

19. ANS:
$\sqrt{0.27} \doteq 0.5$

PTS: 1   DIF: Easy   REF: 1.2 Square Roots of Non-Perfect Squares
LOC: 9.N6   TOP: Number   KEY: Procedural Knowledge

20. ANS:
The length of the hypotenuse is about 3.9 cm.

PTS: 1   DIF: Moderate   REF: 1.2 Square Roots of Non-Perfect Squares
LOC: 9.N6   TOP: Number   KEY: Procedural Knowledge

21. ANS:
The length of side *s* is about 7.1 cm.

PTS: 1   DIF: Moderate   REF: 1.2 Square Roots of Non-Perfect Squares
LOC: 9.N6   TOP: Number   KEY: Procedural Knowledge

22. ANS:
The surface area of the composite object is 2650 cm^2.

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

23. ANS:
The surface area of the object is about 560 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

24. ANS:
The surface area of the object is about 1526 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

25. ANS:
$$\sqrt{6.47 + 7.36 + 17.53} = \sqrt{31.36}$$
$$= 5.6$$

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

26. 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

27. ANS:
$$AC^2 = AD^2 + DC^2$$
$$= 21.3^2 + 14.2^2$$
$$= 655.33$$
$$AC = \sqrt{655.33}$$
$$\doteq 25.6$$
The length of AC is about 25.6 cm.

   PTS: 1   DIF: Moderate   REF: 1.2 Square Roots of Non-Perfect Squares
   LOC: 9.N6   TOP: Number   KEY: Problem-Solving Skills