

Chapter 1 Practice Test Questions

Chapter 1 Test

- Perfect Squares and Square root
- Non Perfect Squares [estimating using benchmarks]
- Surface Area of Composite Objects that are made up of
 - ◇ Rectangular prisms
 - ◇ Cubes
 - ◇ Triangular prisms
 - ◇ Cylinders

Short Answer

- List all the whole numbers between 63 and 101 that are perfect squares.
- Determine the value of $\sqrt{0.16}$.
- Determine the value of $\sqrt{0.0225}$.
- Calculate the number whose square root is 8.1.
- Which fraction is a perfect square?
 - $\frac{49}{60}$
 - $\frac{49}{225}$
 - $\frac{28}{225}$
 - $\frac{7}{15}$
- Name the two whole numbers whose squares are closest to 22.5.
- Which fraction has a square root between 3 and 4?
 - $\frac{57}{3}$
 - $\frac{61}{3}$
 - $\frac{37}{4}$
 - $\frac{79}{4}$
- Determine the value of $\sqrt{\frac{289}{361}}$.
- Between which two whole numbers does $\sqrt{21.16}$ lie?
- A square garden has an area of 240.25 m^2 .
 - Determine the length of one side of the garden.
 - Determine the perimeter of the garden.
- To estimate the value of $\sqrt{159.5}$, determine the two whole number perfect squares closest to 159.5 and their square roots.
- Determine the value of $\sqrt{0.27}$, to the nearest tenth.

Short Answer

1. This composite object is made using centimetre cubes. Determine its surface area.



Answer: 18 cm^2

2. This object is made from 7 centimetre cubes. Determine its surface area.



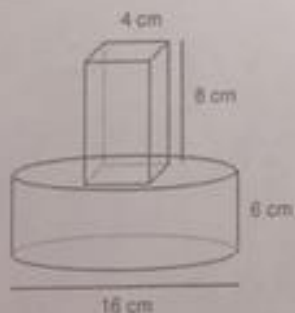
Answer: 22 cm^2

3. This composite object is made of a 10-cm cube on top of a 20-cm cube. Determine its surface area.



Answer: 2300 cm^2

4. 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.



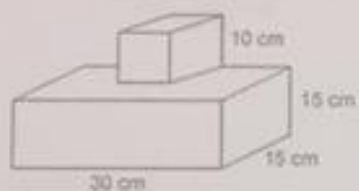
Answer: 85 cm^2

5. Calculate the surface area of this right triangular prism.



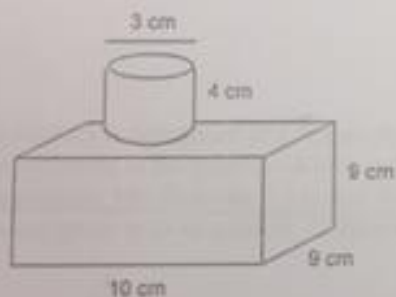
Answer: 1250 cm^2

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



Answer: 2650 cm^2

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

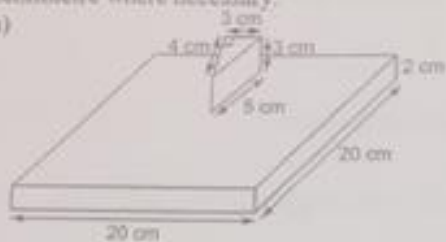


Answer: 300 cm^2

Extra Practice

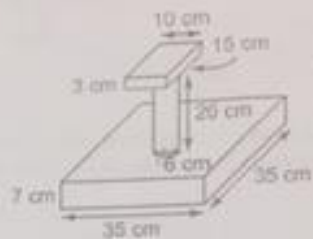
1. Determine the surface area of each composite object to the nearest tenth of a square centimetre where necessary.

a)



Answer 332 cm^2

b)



Answer 4300.4 cm^2

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



$$949 \text{ cm}^2$$

2. A sculpture is composed of a square pyramid on top of a cylindrical base. The sculpture is designed to sit on the floor as shown. The cylinder has diameter 3.5 m and height 3 m. The pyramid has all edges measuring 7 m. The sculpture is to be painted. Determine the area to be painted.



$$157 \text{ m}^2$$

Short Answer #1

1. 4 cubes x 6 faces = 24 faces
 2 overlaps = $\frac{6}{18 \text{ faces}}$
 18 cm^2

2. 7 cubes x 6 faces = 42 faces
 overlap 8 = $\frac{1}{260}$

#3

$\begin{array}{ c } \hline x6 \\ \hline 10 \\ \hline \end{array}$	$A = bh$ $= 10 \times 10$ $= 100$ $\times 6$ $\hline 600$	+	$\begin{array}{ c } \hline x6 \\ \hline 20 \\ \hline \end{array}$	$A = bh$ $= 20 \times 20$ $= 400$ $\times 6$ $\hline 2400$	$= 3000$ overlap $- 200$ <u>(2800)</u>
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#4 Rectangular Prism

F/B	T/B	Sides
$\begin{array}{ c } \hline x2 \\ \hline 4 \\ \hline \end{array}$	$\begin{array}{ c } \hline x2 \\ \hline 4 \\ \hline \end{array}$	$\begin{array}{ c } \hline x2 \\ \hline 8 \\ \hline \end{array}$
$A = bh$ $= 8 \times 4$ $= 32$ $\times 2$ $\hline 64$	$A = bh$ $= 4 \times 4$ $= 16$ $\times 2$ $\hline 32$ <u>(160)</u>	$A = bh$ $= 8 \times 4$ $= 32$ $\times 2$ $\hline 64$

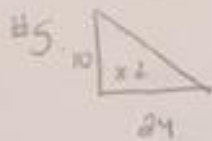
Cylinder

$2\pi r^2 + 2\pi r h$
 $2 \times 3.14 \times 8^2 + 2 \times 3.14 \times 8 \times 4$
 $401.92 + 301.74$
 (703.36)

$160 + 703.36 = 863.36$
 $\hline 30$
 831.36

Overlap $4 \times 4 = 16$
 $\times 2$
 $\hline 32$

(831.36)



$$A = \frac{bh}{2}$$

$$= \frac{24 \times 10}{2}$$

$$= 120$$

$$\times 2$$

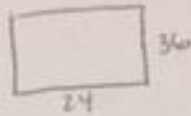
$$\hline 240$$



$$A = bh$$

$$= 36 \times 26$$

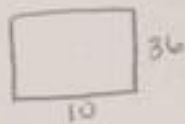
$$= 936$$



$$A = bh$$

$$= 24 \times 36$$

$$= 864$$



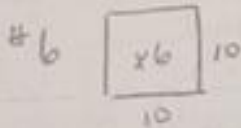
$$A = bh$$

$$= 10 \times 36$$

$$= 360$$

$$240 + 936 + 864 + 360$$

$$\underline{2400 \text{ cm}^2}$$



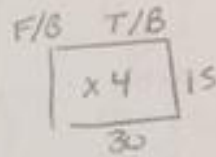
$$A = bh$$

$$= 10 \times 10$$

$$= 100$$

$$\times 6$$

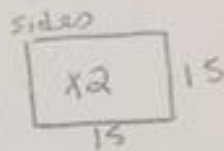
$$\hline 600$$



$$A = bh$$

$$= 30 \times 15$$

$$= 450 \times 4 = 1800$$



$$A = bh$$

$$= 15 \times 15$$

$$= 225$$

$$\times 2$$

$$\hline 450$$

$$450 + 600 + 1800 = 2850$$

$$\text{overlap} \quad - 200$$

$$\hline \underline{2650}$$

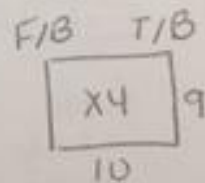
#7. Cylinder

$$2\pi r^2 + 2\pi r h$$

$$2 \times 3.14 \times 1.5^2 + 2 \times 3.14 \times 1.5 \times 4$$

$$14.13 + 37.68$$

$$51.81$$



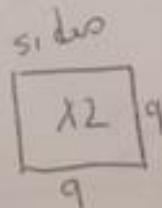
$$A = bh$$

$$= 10 \times 9$$

$$= 90$$

$$\times 4$$

$$\hline 360$$



$$A = bh$$

$$= 9 \times 9$$

$$= 81$$

$$\times 2$$

$$\hline 162$$

$$51.81 + 360 + 162 = 573.81$$

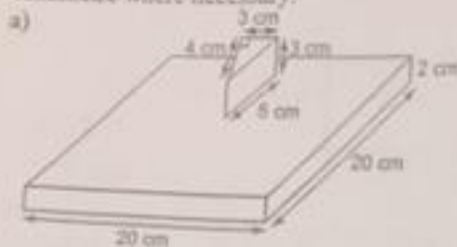
$$- 14.13$$

$$\hline \underline{559.68}$$

$$\underline{560}$$

Extra Practice

1. Determine the surface area of each composite object to the nearest tenth of a square centimetre where necessary.



$$996 \text{ cm}^2$$

Triangular Prism

$A = \frac{bh}{2}$	$A = bh$	$A = bh$	$A = bh$
$= \frac{4 \times 3}{2}$	$= 5 \times 3$	$= 3 \times 3$	$= 4 \times 3$
$= \frac{6}{2}$	$= 15$	$= 9$	$= 12$
$= 3$			
	48 cm^2		

Rectangular Prism

T/B	F/B	Sides
$A = bh$	$A = bh$	$A = bh$
$= 20 \times 20$	$= 20 \times 2$	$= 20 \times 2$
$= 400$	$= 40$	$= 40$
$\times 2$	$\times 2$	$\times 2$
800	80	80

$$(960)$$

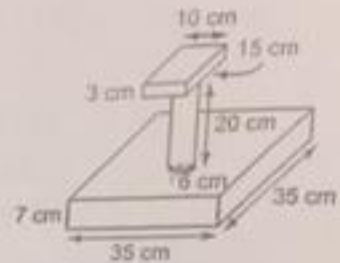
$$960 + 48 = 1008$$

overlap

$$= 12$$

$$(996 \text{ cm}^2)$$

b)



$$4200.4 \text{ cm}^2$$

Cylinder

$$2\pi r^2 + 2\pi r h$$

$$2 \times 3.14 \times 3^2 + 2 \times 3.14 \times 3 \times 20$$

$$56.52 + 376.8$$

$$(433.32)$$

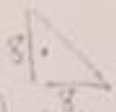
Small Rectangular Prism

T/B	F/B	Sides
$A = bh$	$A = bh$	$A = bh$
$= 10 \times 2$	$= 3 \times 2$	$= 3 \times 2$
$= 20$	$= 6$	$= 6$
$\times 2$	$\times 2$	$\times 2$
40	12	12

Large Rectangular Prism

F/B	T/B	Sides
$A = bh$	$A = bh$	$A = bh$
$= 35 \times 7$	$= 35 \times 2$	$= 35 \times 2$
$= 245$	$= 70$	$= 70$
$\times 2$	$\times 2$	$\times 2$
490	140	140

$$433.32 + 450 + 3430 = 4313.32$$




$$\begin{aligned}
 A &= \frac{bh}{2} \\
 &= \frac{8 \times 8}{2} \\
 &= \frac{64}{2} \\
 &= 32 \\
 &\times 2 \\
 \hline
 &64 \\
 &\times 2 \\
 \hline
 &128
 \end{aligned}$$

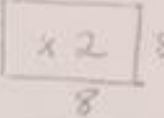
Bottom 8

$$\begin{aligned}
 A &= 8 \times 8 \\
 &= 64 \\
 &\times 2 \\
 \hline
 &128
 \end{aligned}$$

Slant side



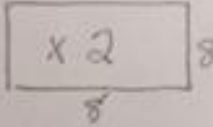
$$\begin{aligned}
 A &= bh \\
 &= 11.3 \times 8 \\
 &= 90.4 \\
 &\times 2 \\
 \hline
 &180.8
 \end{aligned}$$



$$\begin{aligned}
 A &= bh \\
 &= 8 \times 8 \\
 &= 64 \\
 &\times 2 \\
 \hline
 &128
 \end{aligned}$$

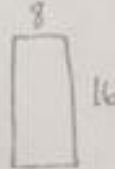
564.8 Ends

1/8



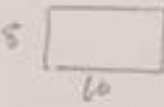
$$\begin{aligned}
 A &= bh \\
 &= 8 \times 8 \\
 &= 64 \\
 &\times 2 \\
 \hline
 &128
 \end{aligned}$$

F/B



$$\begin{aligned}
 A &= bh \\
 &= 8 \times 16 \\
 &= 128 \\
 &\times 2 \\
 \hline
 &256
 \end{aligned}$$

Side



$$\begin{aligned}
 &256
 \end{aligned}$$

640

949

$$\begin{aligned}
 640 + 564.8 &= 1204.8 \\
 - 256 & \\
 \hline
 &948.8 \text{ cm}^2
 \end{aligned}$$