

Curriculum Outcome

(N5) Determine the square root of positive rational numbers that are perfect squares.

(N6) Determine an approximate square root of positive rational numbers that are non-perfect squares.

(SS2) Determine the surface area of composite 3-D objects to solve problems

(N4) **Explain and apply the order of operations, including exponents, with and without technology.**

Warm Up Quiz

- Take out a piece of loose leaf and calculator.
Close up your books

Homework

Master 1.22b

Activating Prior Knowledge

Surface Areas of Right Prisms and Right Cylinders Quick Review

The surface area of a right rectangular prism is:

$$2 \times \text{area of top face} + 2 \times \text{area of front face} + 2 \times \text{area of side face}$$

The surface area of a right triangular prism is:

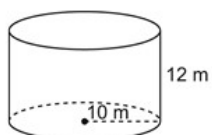
$$\text{Sum of the areas of the rectangular faces} + 2 \times \text{area of triangular base}$$

The surface area of a right cylinder is:

$$2 \times \text{area of circular base} + \text{circumference of base} \times \text{height of cylinder}$$

Example

Determine the surface area of this cylinder to the nearest tenth of a square metre.



Solution

The area of the circular base is: $\pi (10)^2$

The circumference of the base is: $2\pi (10)$

The height is: 12

The surface area is: $2 \times \pi (10)^2 + 2 \times \pi (10) \times 12 \approx 1382.30$

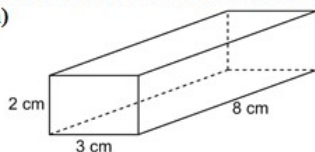
The surface area of the cylinder is approximately 1382.3 m².

92 cm²

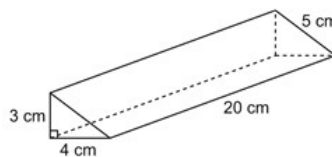
Check

1. Calculate the surface area of each object.

a)



b)



252 cm²

2. A cylinder has base radius 12 cm and height 15 cm. Determine the surface area of the cylinder to the nearest tenth of a square metre.

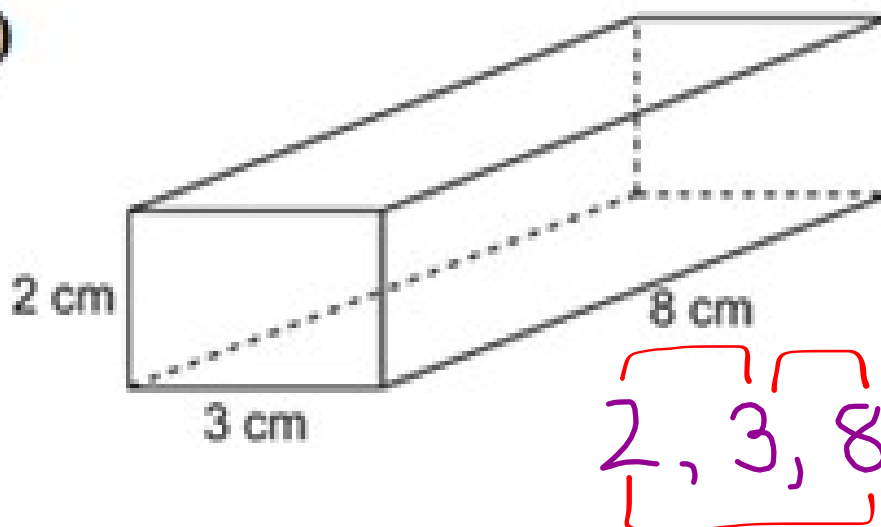
2035.8 cm²

2034.7 cm²

Check

1. Calculate the surface area of each object

a)



$$\begin{array}{|c|} \hline 2 \\ \hline \end{array} \begin{array}{|c|} \hline 2 \\ \hline \end{array}$$

3

$$A = b \times h$$

~~$$A = 2 \times 3$$~~

$$A = 6$$

$$2A = 12$$

$$\begin{array}{|c|} \hline 2 \\ \hline \end{array} \begin{array}{|c|} \hline 2 \\ \hline \end{array}$$

8

$$A = b \times h$$

~~$$A = 2 \times 8$$~~

$$A = 16$$

$$2A = 32$$

$$\begin{array}{|c|} \hline 3 \\ \hline \end{array} \begin{array}{|c|} \hline 2 \\ \hline \end{array}$$

8

$$A = b \times h$$

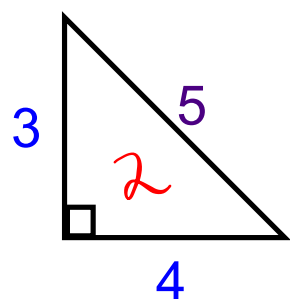
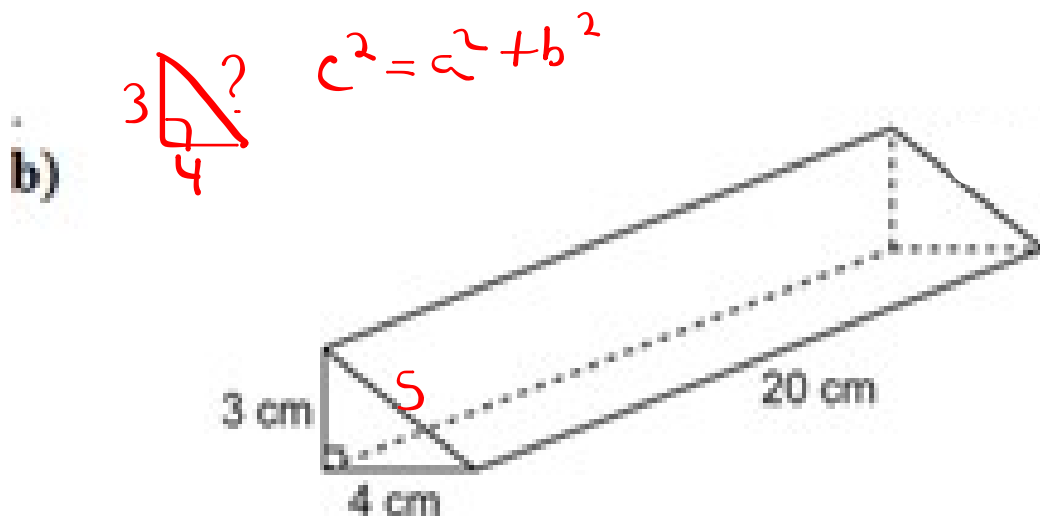
~~$$A = 8 \times 3$$~~

$$A = 24$$

$$2A = 48$$

$$Tsa = 12 + 32 + 48$$

$$= 92 \text{ cm}^2$$

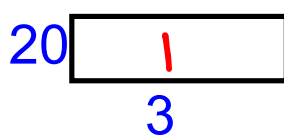


$$A = \frac{b \times h}{2}$$

$$A = \frac{4 \times 3}{2}$$

$$A = 6$$

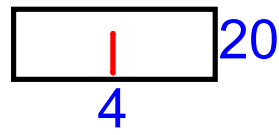
$$2A = 12$$



$$A = b \times h$$

$$A = 3 \times 20$$

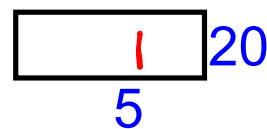
$$A = 60$$



$$A = b \times h$$

$$A = 4 \times 20$$

$$A = 80$$



$$A = b \times h$$

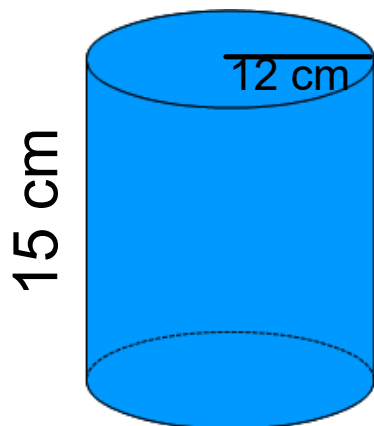
$$A = 5 \times 20$$

$$A = 100$$

$$Tsa = 12 + 60 + 80 + 100$$

$$= 252 \text{ cm}^2$$

2. A cylinder has base radius 12 cm and height 15 cm. Determine the surface area of the cylinder to the nearest tenth of a square metre.



$$\begin{aligned} SA &= 2\pi r^2 + 2\pi rh \\ &= 2\pi (12)^2 + 2\pi (12)(15) \\ &= \underline{904.32} + \underline{1130.4} \\ &= \underline{2034.72 \text{ cm}^2} \end{aligned}$$

$$2035.8 \text{ cm}^2$$

Cylinder

$$S_A = 2\pi r^2 + 2\pi rh$$

Sphere

$$S_A = 4\pi r^2$$

Cone

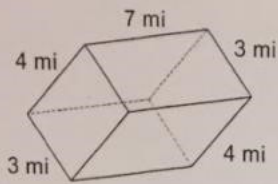
$$S_A = \pi r^2 + \pi rs$$

Surface Area Review

Date

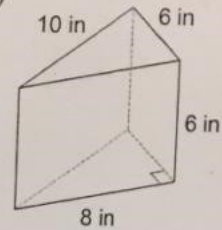
Find the surface area of each figure. Round to the nearest tenth.

1)



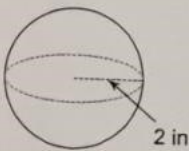
$$122\text{mi}^2$$

2)



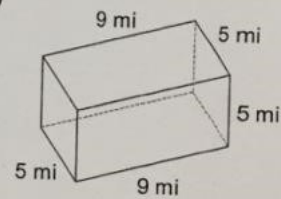
$$192\text{in}^2$$

3)



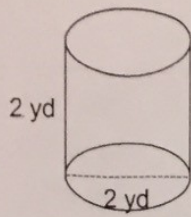
$$50.24\text{ in}^2$$

4)



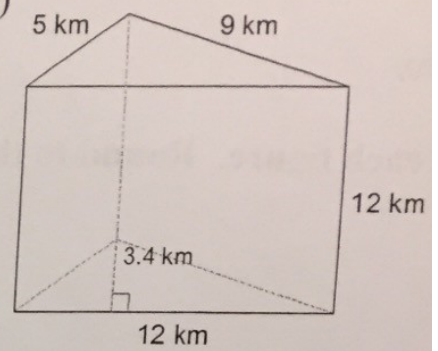
$$230\text{mi}^2$$

5)



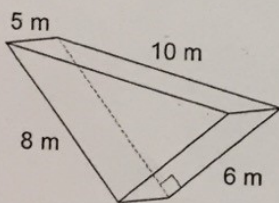
$$18.8 \text{ yd}^2$$

6)



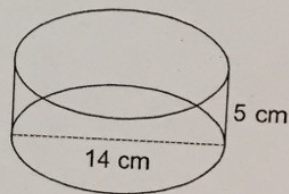
$$352.8 \text{ km}^2$$

7)

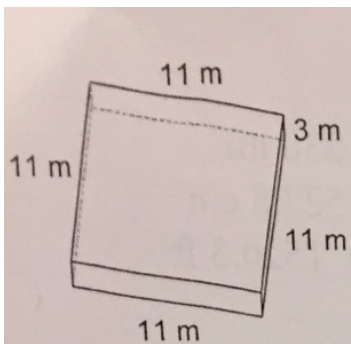


$$168 \text{ m}^2$$

8)

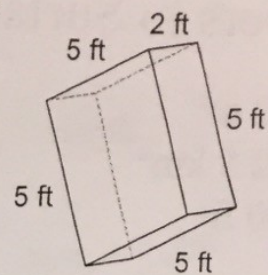


$$527.52 \text{ cm}^2$$



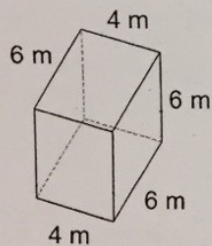
$$374 \text{ m}^2$$

10)



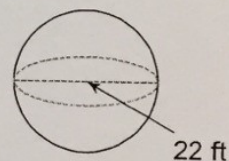
$$90 \text{ ft}^2$$

11)



$$168 \text{ m}^2$$

12)



$$1519.76 \text{ ft}^2$$

$$1520.53 \text{ ft}^2$$