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.

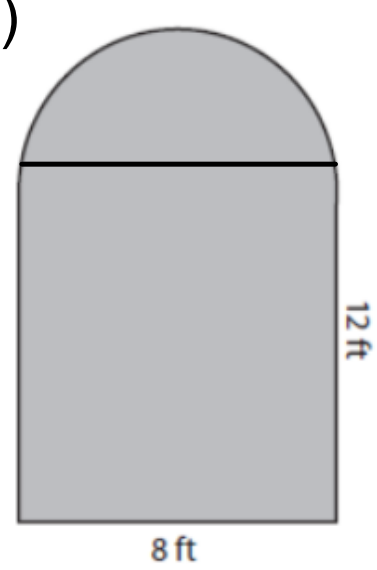
(SS2) Determine the surface area of composite 3-D objects to solve problems

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

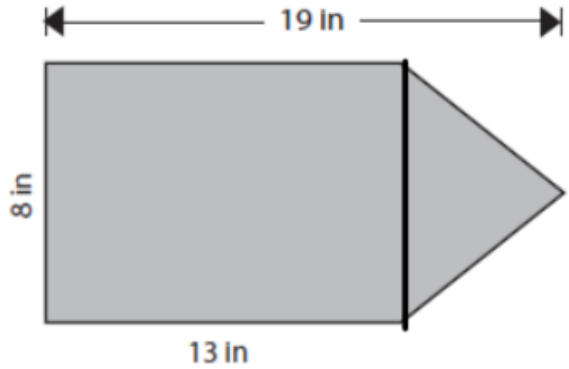
Warm Up

What is the surface area of each shape?

a)



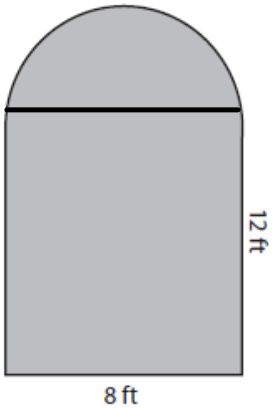
b)



Answer Key

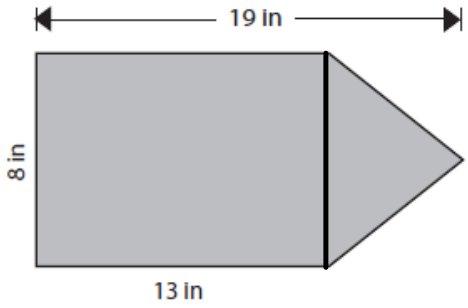
Find the area of each figure. Round the answer to 2 decimal places if necessary.

1)



Area = 121.12 ft^2

2)

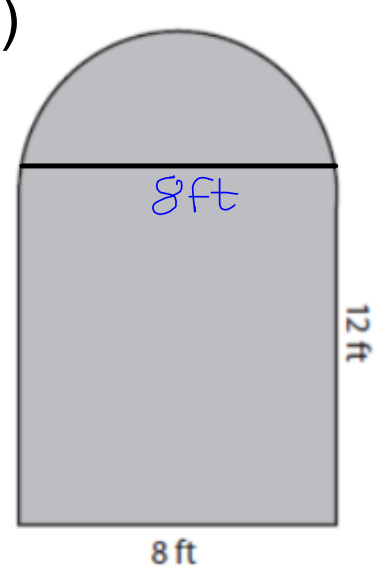


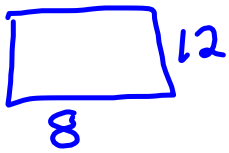
Area = 128 in^2

Warm Up

What is the surface area of each shape?

a)





$A = b \times h$

$A = 8 \times 12$

$A = 96\ ft^2$

$A = \pi r^2$

$A = \pi (4)^2$

$A = \pi (16)$

$A = 50.3\ ft^2$

$\div 2$

$\frac{1}{2}A = 25.2\ ft^2$

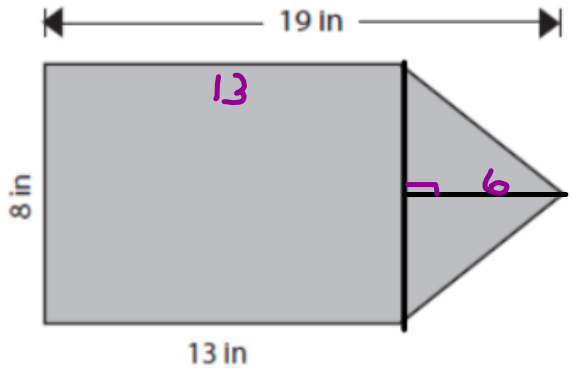
$TSA = 96 + 25.2$

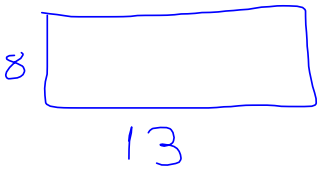
$= 121.2\ ft^2$

Warm Up

What is the surface area of each shape?

b)

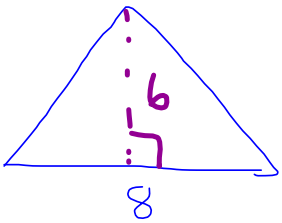




$A = b \times h$

$A = 13 \times 8$

$A = 104\ in^2$



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

$A = \frac{6 \times 8}{2}$

$A = 24\ in^2$

$TSA = 104 + 24$

$= 128\ in^2$

Surface Area

Copy Down

Surface area is the total area of all of the faces of the object.

Steps needed to find Surface area are:

1. **Draw all of the faces with dimensions displayed on them.**
2. **Find the area of each face.**
3. **Then add up the areas of all of the faces.**

Homework

Master 1.22b

Activating Prior Knowledge

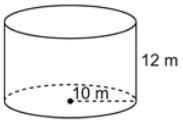
Surface Areas of Right Prisms and Right Cylinders **Quick Review**

The surface area of a right rectangular prism is:
2 × area of top face + 2 × area of front face × 2 × area of side face

The surface area of a right triangular prism is:
Sum of the areas of the rectangular faces + 2 × area of triangular base

The surface area of a right cylinder is:
2 × area of circular base + circumference of base × height of cylinder

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

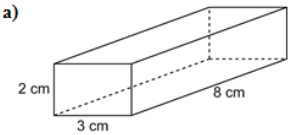


Solution
The area of the circular base is: $\pi (10)^2$
The circumference of the base is: $2\pi (10)$
The height is: 12
The surface area is: $2 \times \pi (10)^2 + 2 \times \pi (10) \times 12 \doteq 1382.30$
The surface area of the cylinder is approximately 1382.3 m^2.

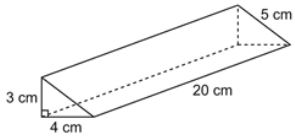
Check

1. Calculate the surface area of each object.

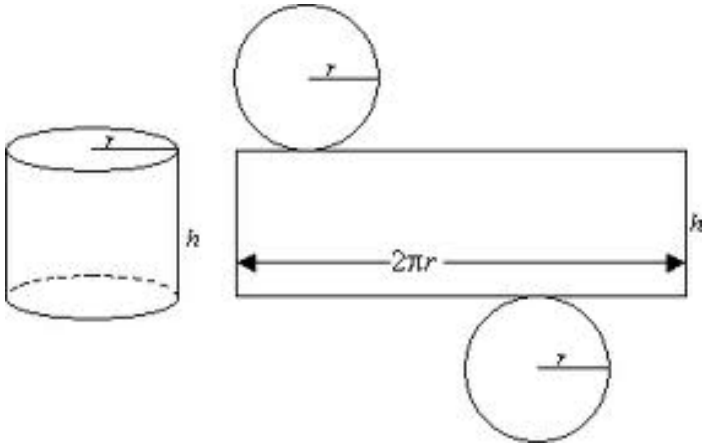
a)



b)



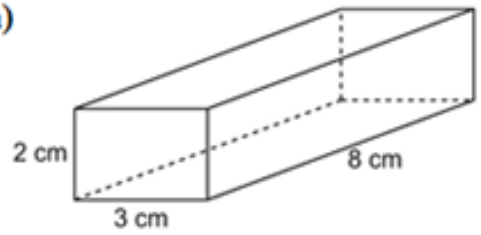
2. A cylinder has base radius 12 cm and height 15 cm. Determine the surface area of the cylinder to the nearest tenth of a square metre.


r
r
h
2πr
h
r

Check

1. Calculate the surface area of each object

a)



2, 3, 8

$92\ cm^2$

2 ② 3

$A = b \times h$

$A = 3 \times 2$

$A = 6$

$2A = 12$

2 ② 8

$A = b \times h$

$A = 2 \times 8$

$A = 16$

$2A = 32$

3 ② 8

$A = b \times h$

$A = 3 \times 8$

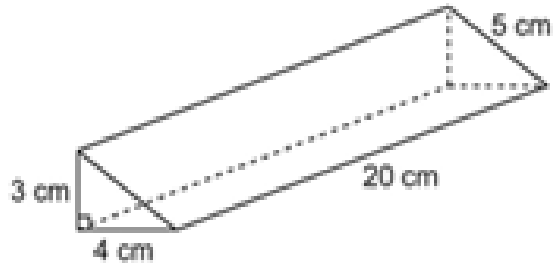
$A = 24$

$2A = 48$

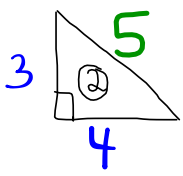
$TSA = 12 + 32 + 48$

$= 92\ cm^2$

b)



252 cm²



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

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

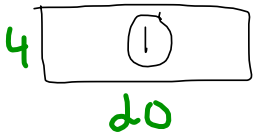
$A = 6$

$2A = 12$

$A = b \times h$

$A = 3 \times 20$

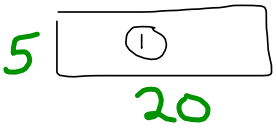
$A = 60\ cm^2$



$A = b \times h$

$A = 4 \times 20$

$A = 80\ cm^2$



$A = b \times h$

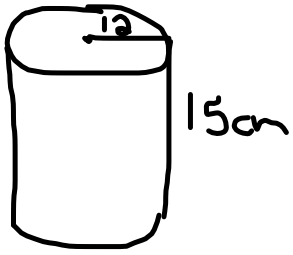
$A = 5 \times 20$

$A = 100\ cm^2$

$TSA = 12 + 60 + 80 + 100$

$= 252\ cm^2$

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.



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

$SA = 2\pi(12)^2 + 2\pi(12)(15)$

$SA = 2\pi(144) + 2\pi(12)(15)$

$SA = 904.8 + 1130.97$

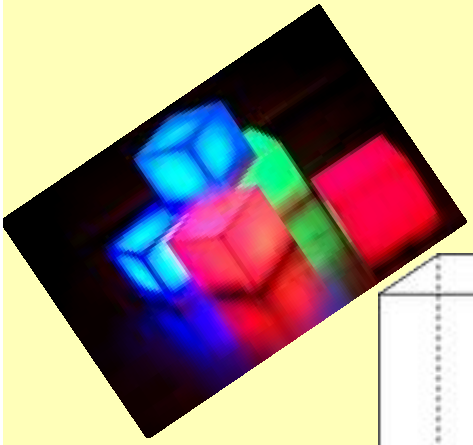
$SA = 2035.8\ cm^2$

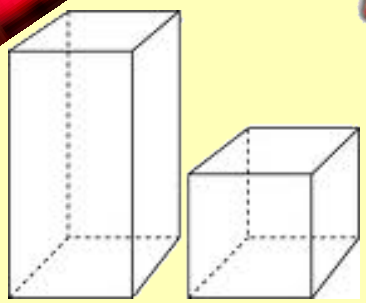
3.14

2034.72

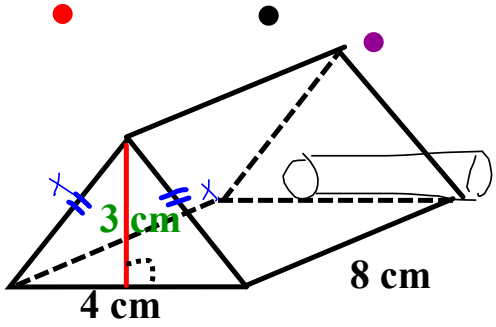
Intro to High School Math

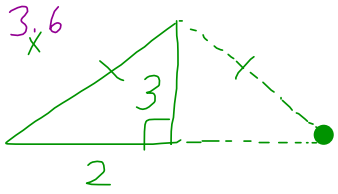
Section 1.3:
Surface Area of Objects Made from Right Rectangular Prisms





Ans: 101.6 cm²





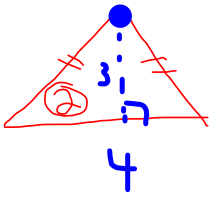
$c^2 = a^2 + b^2$

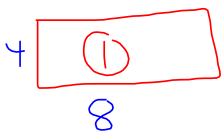
$c^2 = 3^2 + 2^2$

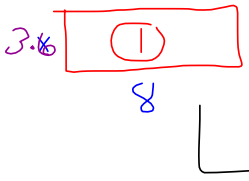
$c^2 = 9 + 4$

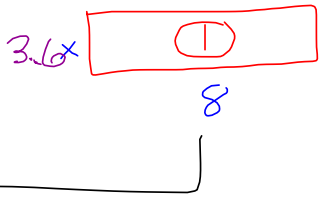
$\sqrt{c^2} = \sqrt{13}$

$c = 3.6$









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

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

$A = 6$

$2A = 12\ cm^2$

$A = b \times h$

$A = 4 \times 8$

$A = 32\ cm^2$

$A = b \times h$

$A = 3.6 \times 8$

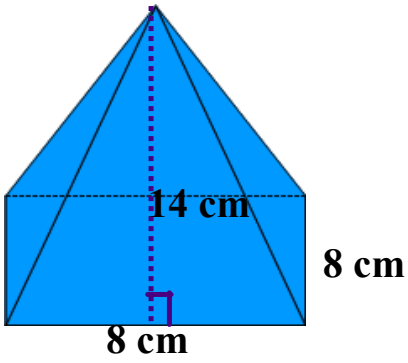
$A = 28.8\ cm^2$

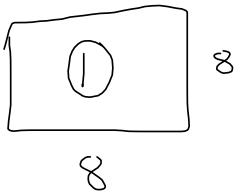
$2A = 57.6\ cm^2$

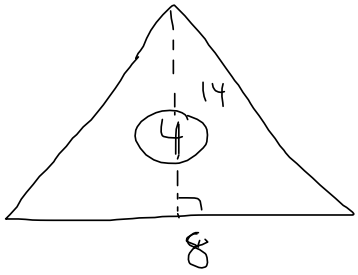
$TSA = 12 + 32 + 57.6$

$= 101.6\ cm^2$

What is the surface area of the following shape?







$A = b \times h$

$A = 8 \times 8$

$A = 64 cm^2$

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

$A = \frac{8 \times 14}{2}$

$A = 56 cm^2$

$4A = 224 cm^2$

$TSA = 64 + 224$

$= 288 cm^2$

Cone

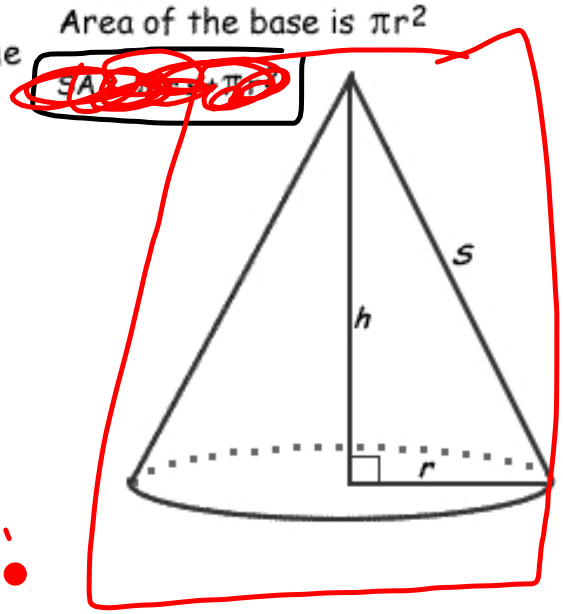
Surface Area

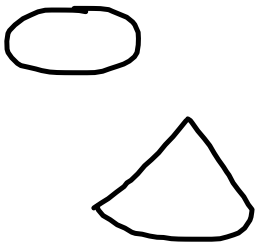
We will need to calculate the surface area of the cone and the base.

Area of the cone is πrs

Area of the base is πr^2

Therefore the Formula is:





Cone:

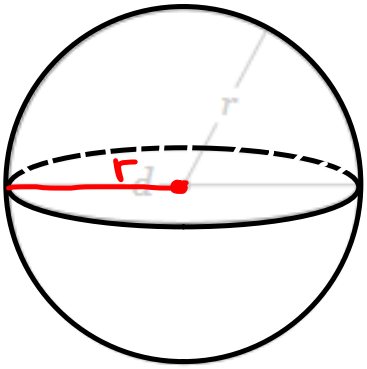
$$SA = \pi r^2 + \pi r s$$

Sphere

Solve for surface area

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

r Radius Enter value



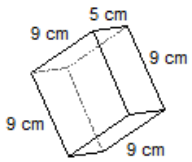
Worksheet

Mathematics 9 Name_____

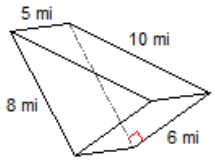
Grade 8 Review

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

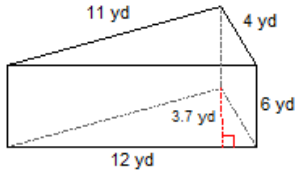
1)



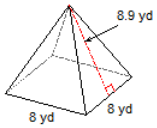
3)



5)



7)



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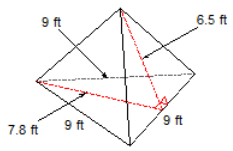

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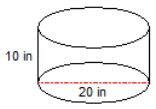

13)