Curriculum Outcome

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

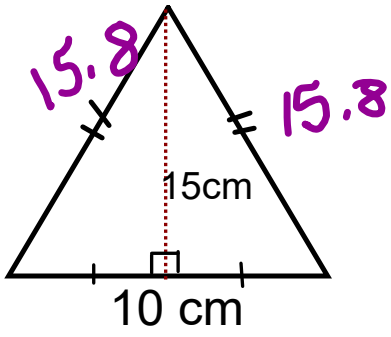
(N6) Determine an approximate square root of positive rational numbers that are non-perfect squares.

(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.**

Grade 9 Warm Up

For each of the following Calculate the
i) Area
ii) perimeter

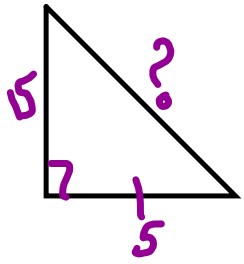


$A_{tri} = \frac{b \times h}{2}$

$A_{tri} = \frac{10\text{ cm} \times 15\text{ cm}}{2}$

$A_{tri} = \frac{150\text{ cm}^2}{2}$

$A_{tri} = 75\text{ cm}^2$



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

$c^2 = 5^2 + 15^2$

$c^2 = 25 + 225$

$c^2 = 250$

$\sqrt{c^2} = \sqrt{250}$

$c = 15.8$ cm

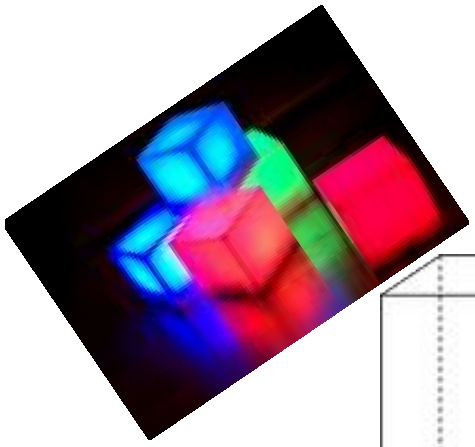
P=s+s+s

P = 10+15.8+15.8

P= 41.6 cm

Intro to High School Math

Section 1.25
Surface Area of Objects Made from Right Rectangular Prisms



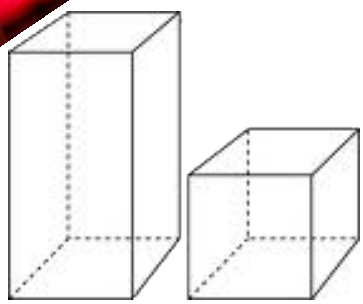
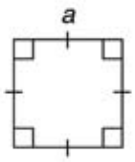
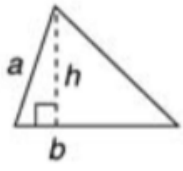
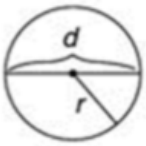


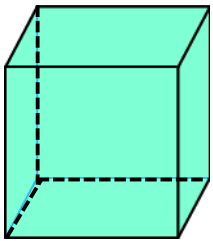
Figure	Name	Perimeter/ Circumference	Area
 (a)	square	P= a+a+a+a or P= 4a	A= $(Side)^2$
(b)	rectangle	P= l+w+l+w P= 2l+2w	A= Length x Width
 (d)	triangle	P= a+b+c	A= $\frac{\text{Base x Height}}{2}$
 (g)	circle	C=πd or C= 2π r	A = πr^2

Surface Area

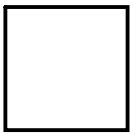
What do I mean when I say surface?

ans: Surface is the face of an object

How many surfaces does each shape have?

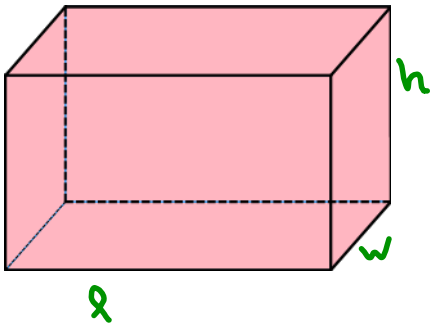


Cube has ____6____ face



$A = b \times h$

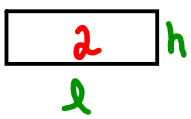
$A = base^2$



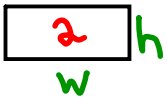
Rectangular prism has ____6____ face

l , h , w

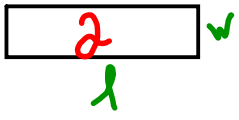
front/back

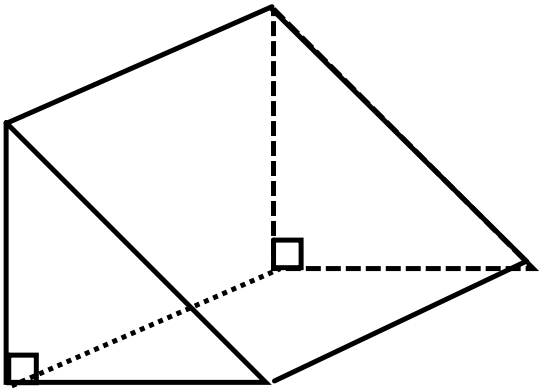


left/right

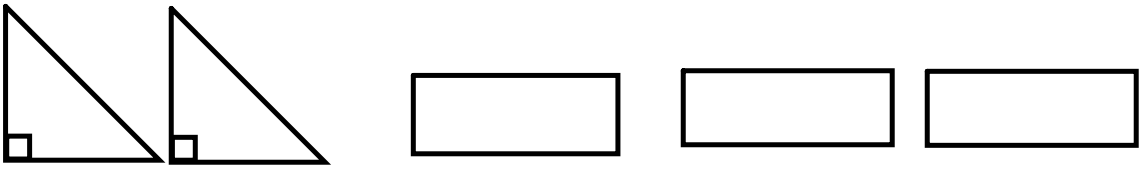


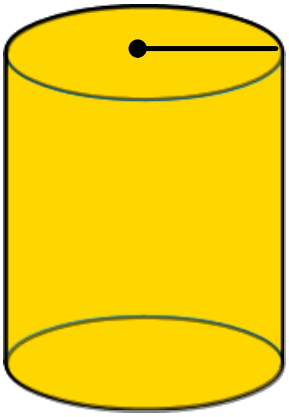
top/bottom



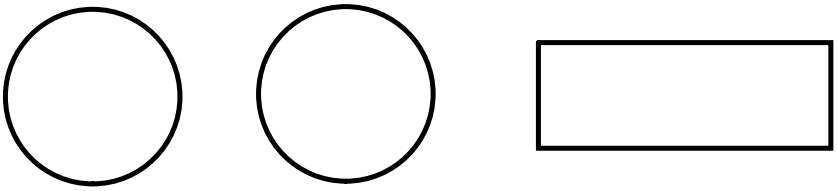


Triangular prism has
5 face





Cylinder has 3 faces



Copy Down

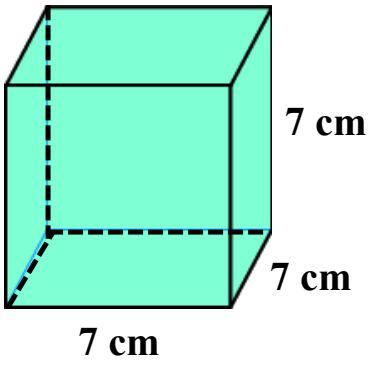
Surface Area

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

Steps needed to find Surface area are:

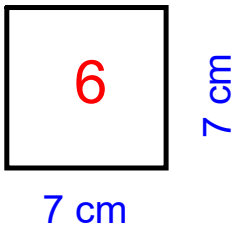
1. **Sketch all of the faces with dimensions displayed on them.**
2. **Find the area of each face.**
3. **Then add up the areas of all of the faces.**

Determine the surfaces area of each shape?



Cube has 6 faces

1. Draw all of the faces with dimensions displayed on them.



2. Find the area of each face.

$A = b \times h$

$A = 7cm \times 7cm$

$A = 49\ cm^2$

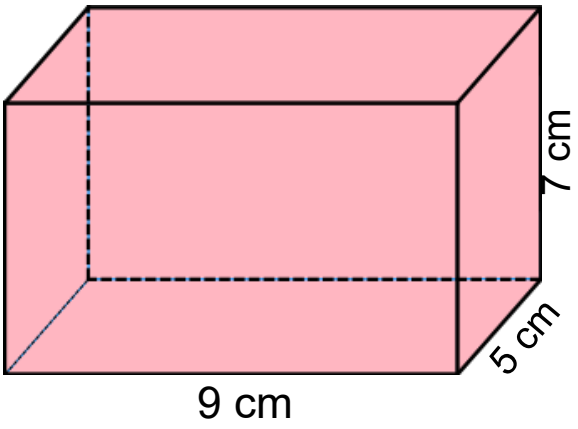
3. Then add up the areas of all of the faces.

SA = 6 x (Area of one face)

$SA = 6 \times 49\ cm^2$

$SA = 294\ cm^2$

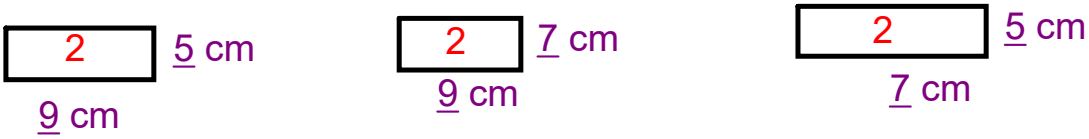
Determine the surfaces area of each shape?



Rectangular prism has 6 face

1. List the three dimensions: 9cm, 5cm, 7cm

T/B F/B L/B



2. Find the area of each face.

$A_1 = b \times h$

A = **9 cm** x **5 cm**

A = 45 cm²

$2A_1$= 90 cm²

$A_2 = b \times h$

A = **9 cm** x **7 cm**

A = 63 cm²

$2A_2$= 126 cm

$A_3 = b \times h$

A = **7 cm** x **5 cm**

A = 35 cm²

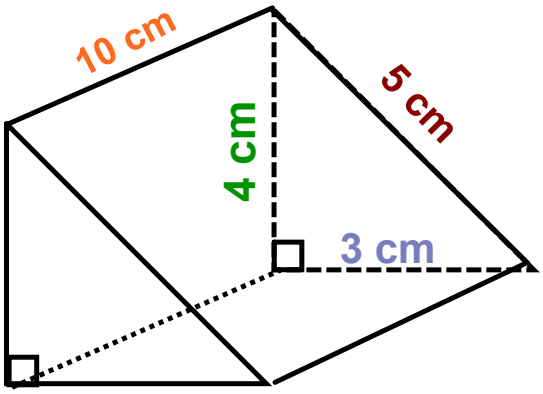
$2A_3$= 70 cm²

3. Then add up the areas of all of the faces.

$SA = 2A_1 + 2A_2 + 2A_2$

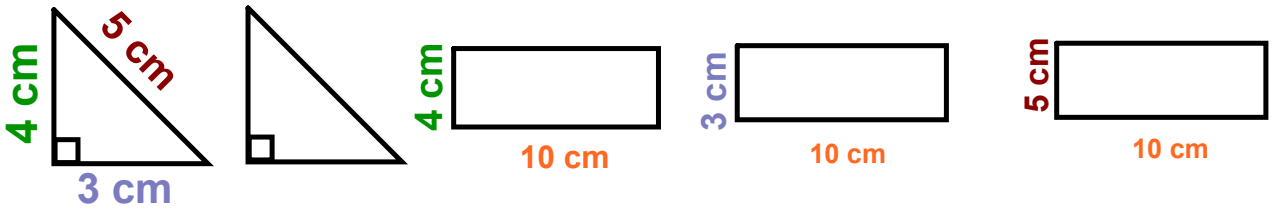
$SA = 90cm^2 + 126cm^2 + 70cm^2$

$SA = 286cm^2$



Triangular prism has 5 face

1. **Draw all of the faces with dimensions displayed on them.**



2) Find the area of each face:

$A_{tri} = \frac{b \times h}{2}$

$A_{tri} = \frac{3cm \times 4\ cm}{2}$

$A_{tri} = \frac{12\ cm^2}{2}$

$A_{tri} = 6\ cm^2$

$2A_{tri} = 12\ cm^2$

$A_1 = b \times h$

$A = 4\ cm \times 10\ cm$

$A_1 = 40\ cm^2$

$A_2 = b \times h$

$A = 3\ cm \times 10\ cm$

$A_2 = 30\ cm^2$

$A_3 = b \times h$

$A = 5\ cm \times 10\ cm$

$A_3 = 50\ cm^2$

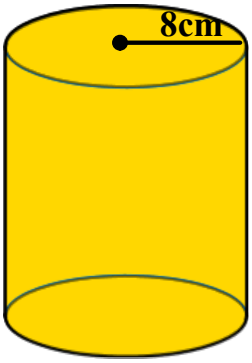
3. **Then add up the areas of all of the faces.**

$$SA = 2A_{tri} + A_1 + A_2 + A_3$$

$$= 12\ cm^2 + 40\ cm^2 + 30\ cm^2 + 50\ cm^2$$

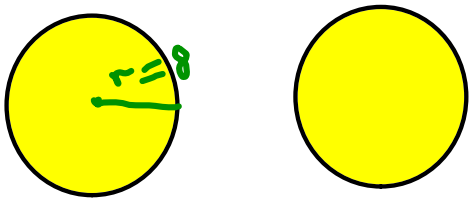
$$= 132\ cm^2$$

Determine the surfaces area of each shape?



Cylinder has 3 faces

Lets think about this



$A = \pi r^2$

but there are two circles

$2\pi r^2$

$2\pi r$

Area = base x height

$2\pi r$ x height

Formula

2 circles rectangle

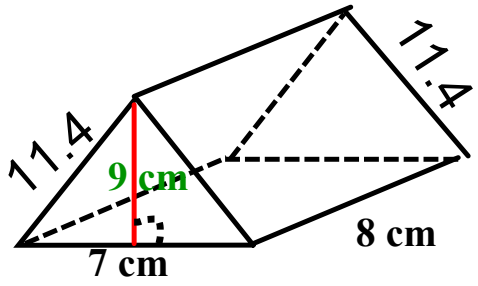
$$Sa = 2\pi r^2 + 2\pi r h$$

$= 2 \times (3.14) \times (8_{cm})^2 + 2 \times (3.14) (8_{cm}) \times (18_{cm})$

$= 2 \times (3.14) \times 64 + 2 \times (3.14) (8_{cm}) \times (18_{cm})$

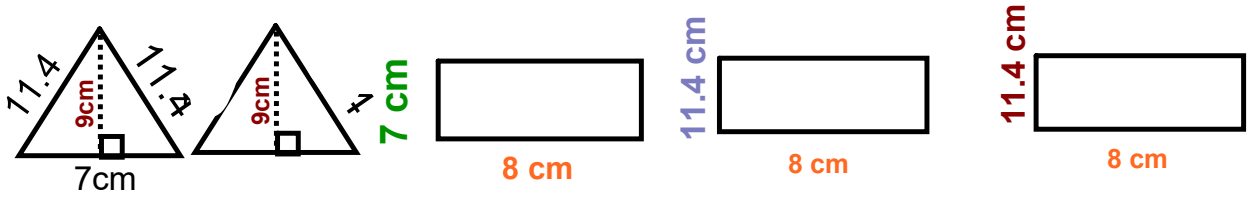
$= 401.92\ cm^2 + 904.32\ cm^2$

$= 1306.24\ cm^2$



Triangular prism has 5 face

1. **Draw all of the faces with dimensions displayed on them.**



2) Find the area of each face:

$A_{tri} = \frac{b \times h}{2}$

$A_{tri} = \frac{7cm \times 9\ cm}{2}$

$A_{tri} = \frac{63\ cm^2}{2}$

$A_{tri} = 31.5\ cm^2$

$2A_{tri} = 63\ cm^2$

$A_1 = b \times h$

$A = 7\ cm \times 8\ cm$

$A_1 = 56\ cm^2$

$A_2 = b \times h$

$A = 11.4cm \times 8\ cm$

$A_2 = 91.2\ cm^2$

$A_3 = b \times h$

$A = 11.4cm \times 8$

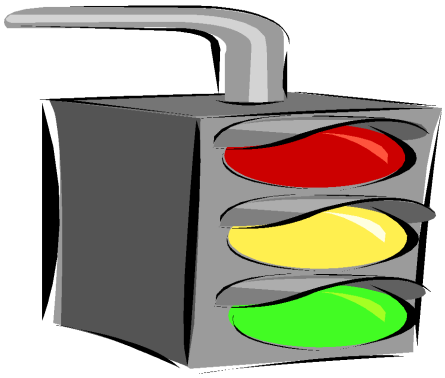
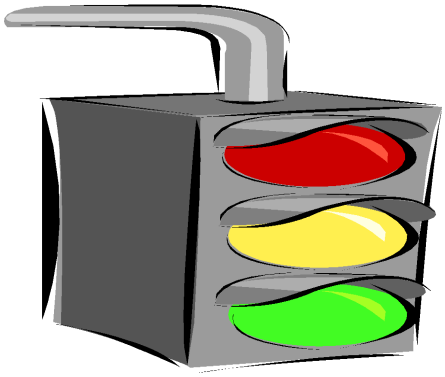
$A_3 = 91.2\ cm^2$

3. **Then add up the areas of all of the faces.**

$$SA = 2A_{tri} + A_1 + A_2 + A_3$$

$$= 63\ cm^2 + 56\ cm^2 + 91.2\ cm^2 + 91.2\ cm^2$$

$$= 301.4\ cm^2$$



Now it is time for Home Learning