Curriculum Outcome

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

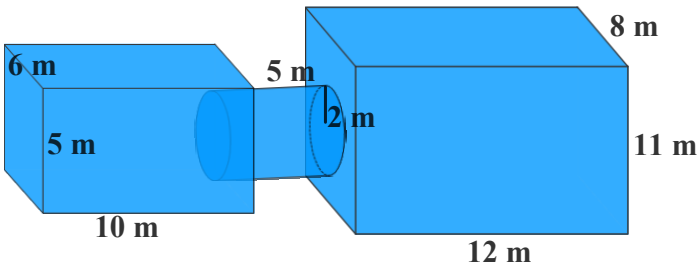
(N6) Determine an approximate square root of positive rational numbers that are non-perfect squares.

(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

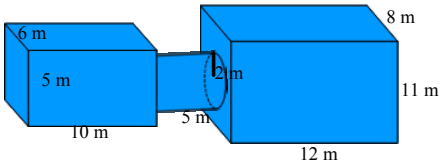
Find the surface area of the object



Solutions

Find the surface area of the object

*** IMPORTANT



Small **Prism** (, ,)

A= b x h

A = x

A= b x h

A = x x

A= b x h

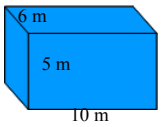
A = x x

=

2 A=

2A =

2A =



SA small =

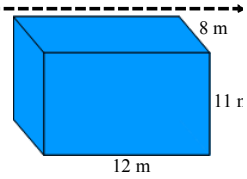
=

Large **Prism** (, ,)

A= b x h

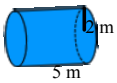
A= b x h

A= b x h



SA Large =

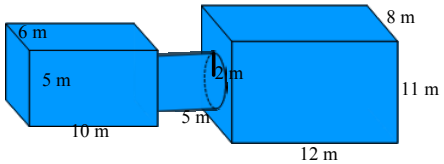
Cylinder



Area of Cylinder = $2\pi r^2 + 2\pi rh$

= 2(3.14) $)^2$ + 2(3.14) ( ) ( )

= 2(3.14) ( ) + 2(3.14) ( ))



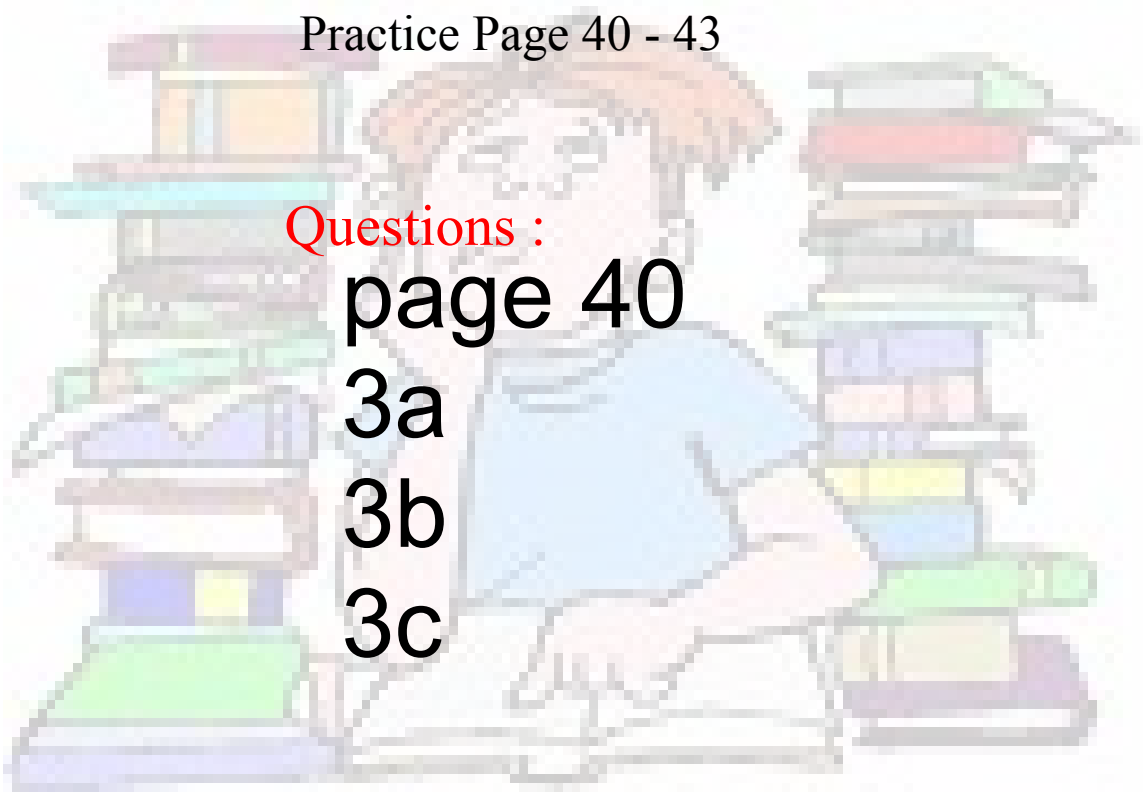
Total Surface Area = cylinder + Prism + Prism - Total Overlap

=

=

Class / Homework

Practice Page 40 - 43



Questions :

page 40

3a

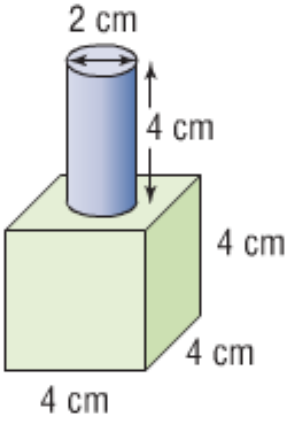
3b

3c

Homework solutions

page 40

3 a) cylinder on a cube



Area of cylinder = $2\pi r^2 + 2\pi rh$

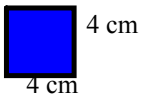
$= 2(3.14)(1cm)^2 + 2(3.14)(1cm)(4cm)$

$= 2(3.14)(1cm) + 2(3.14)(1cm)(4cm)$

$= 6.28\ cm^2 \quad + \quad 25.12\ cm^2$

$= 31.4\ cm^2$

Cube



area = 4cm x 4cm

$= 16\ cm^2$

Area = 6 faces x (area of one face)

$= 6 \times (16\ cm^2)$

$= 96\ cm^2$

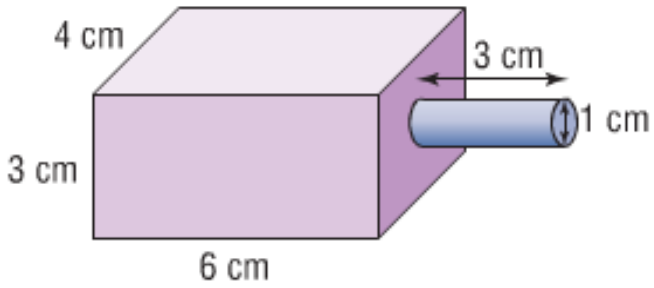
Total SA = Cylinder + Cube - Overlap

$= 31.4\ cm^2 + 96\ cm^2 - 6.28\ cm^2$

$= 121.12\ cm^2$

$= 121\ cm^2$

3 **b)** cylinder on a rectangular prism



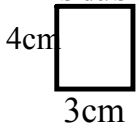
Area of cylinder = $2\pi r^2 + 2\pi rh$
$= 2(3.14)(0.5cm)^2 + 2(3.14)(0.5cm)(3cm)$
$= 2(3.14)(0.25cm) + 2(3.14)(0.5cm)(3cm)$
$= 1.57\ cm^2 + 9.42\ cm^2$
$= 10.99\ cm^2$

Rectangular Prism

Front/Back

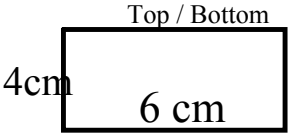
A = 3cm x 6 cm
= 18 cm^2

Side/Side



A = 3cm x 4 cm
= 12 cm^2

Top / Bottom



A = 4cm x 6 cm
= 24 cm^2

Rectangular Prism SA = $2(18\ cm^2) + 2(12cm^2) + 2(24cm^2)$
$= 36\ cm^2 + 24cm^2 + 48cm^2$
$= 108cm^2$

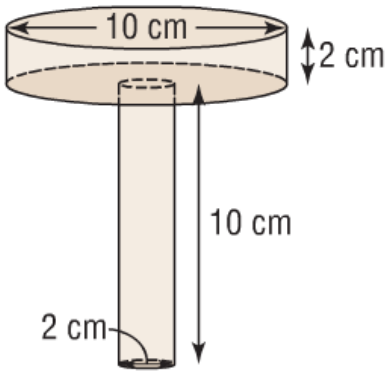
Total SA = Cylinder + Rect Prism - Overlap
$= 10.99\ cm^2 + 108\ cm^2 - 1.57\ cm^2$
$= 117.42\ cm^2$
$= 117\ cm^2$

Homework solutions

page 40

3c

c) cylinder on a cylinder



long tube

Area of cylinder = $2\pi r^2 + 2\pi rh$

$= 2(3.14)(1cm)^2 + 2(3.14)(1cm)(10cm)$

$= 2(3.14)(1cm) + 2(3.14)(1cm)(10cm)$

$= 6.28\ cm^2 + 62.8\ cm^2$

$= 69.08\ cm^2$

puck shape

Area of 2nd cylinder = $2\pi r^2 + 2\pi rh$

$= 2(3.14)(5cm)^2 + 2(3.14)(5cm)(2cm)$

$= 2(3.14)(25cm) + 2(3.14)(5cm)(2cm)$

$= 157\ cm^2 + 62.8cm^2$

$= 219.8\ cm^2$

Total SA = Cylinder + Cylinder - Overlap

$= 69.08\ cm^2 + 219.8\ cm^2 - 6.28\ cm^2$

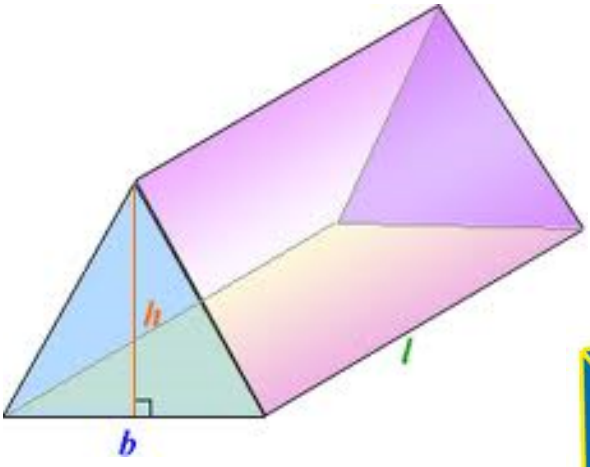
$= 282.6\ cm^2$

$= 283\ cm^2$

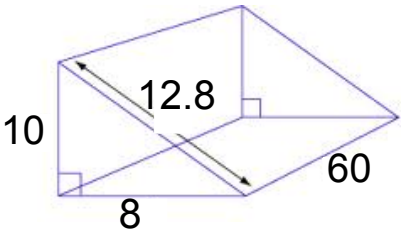
Section 1.4

Surface Area Of Other Composite Objects

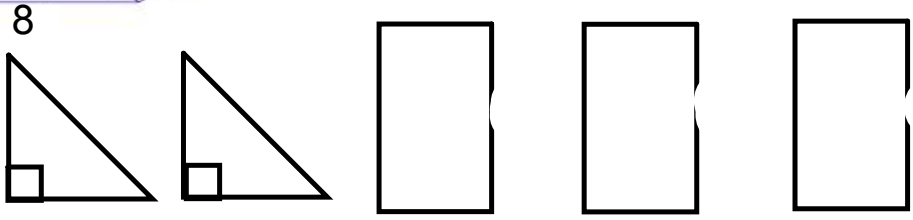
Triangular Prisms



Triangular Prism

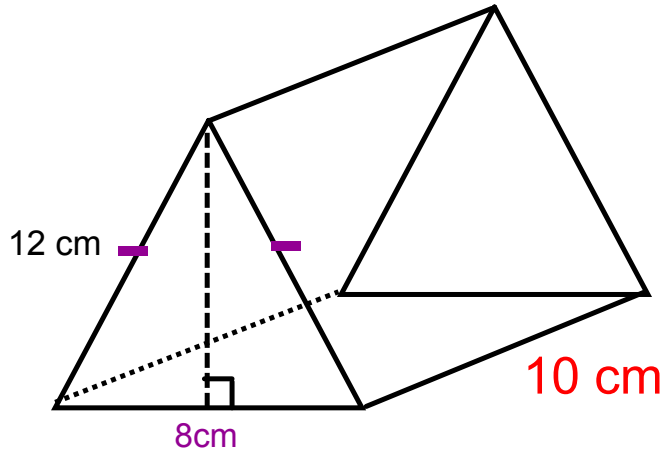


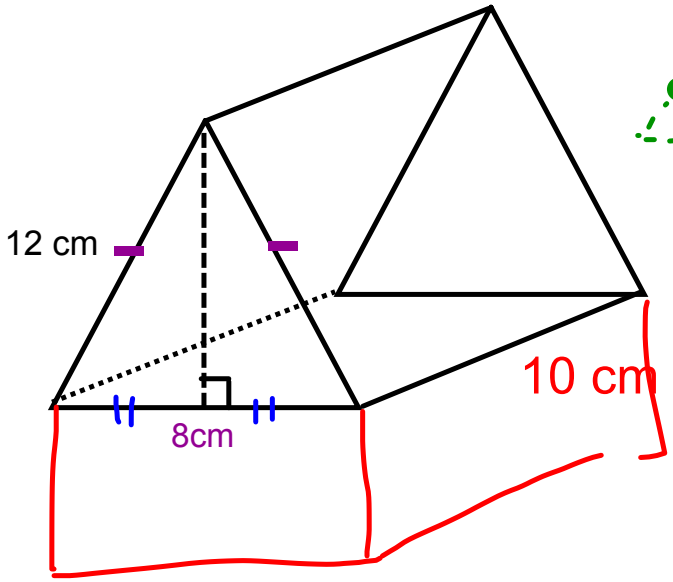
Determine the surface area.

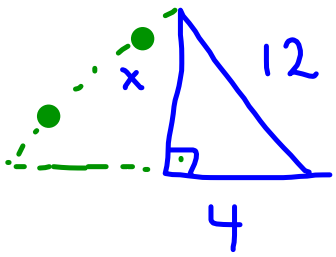


$A = \frac{b \times h}{2}$ $A = L \times W$ $A = L \times W$ $A = L \times W$

SA =


12 cm
10 cm
8cm





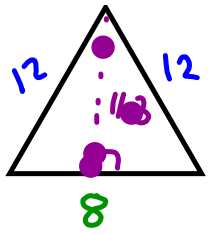
$b^2 = c^2 - b^2$

$b^2 = 12^2 - 4^2$

$b^2 = 144 - 16$

$b^2 = 128$

$b = 11.3$

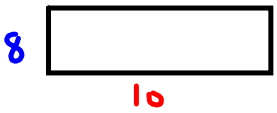


$A = \frac{b \times h}{2}$

$A = \frac{8 \times 11.3}{2}$

$A = 45.2$

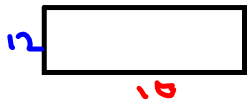
$2A = 90.4$



$A = b \times h$

$A = 8 \times 10$

$A = 80$



$A = b \times h$

$A = 12 \times 10$

$A = 120$

$A = b \times h$

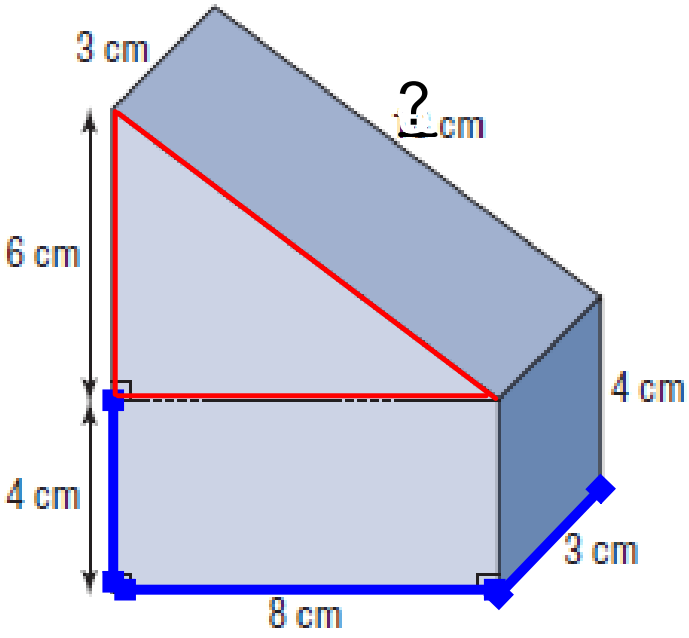
$A = 12 \times 10$

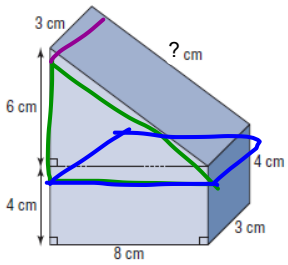
$A = 120$

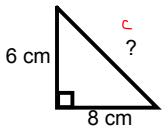
$SA = 120 + 120 + 80 + 90.4$

$= 410.4 \text{ cm}^2$

Find the Surface Area (Show all work)







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

$c^2 = 8^2 + 6^2$

$c^2 = 64 + 36$

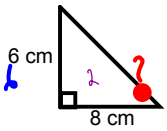
$c^2 = 100$

$c = \sqrt{100}$

$c = 10$ cm

Triangle Prism

Front/Back



$A_1 = \frac{b \times h}{2}$

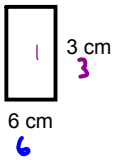
$= \frac{6 \times 8}{2}$

$= \frac{48}{2}$

$= 24 cm^2$

$2A_1 = 48 cm^2$

Left Side

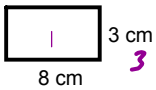


$A_2 = b \times h$

$= 6 \times 3$

$A_2 = 18 cm^2$

Bottom

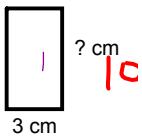


$A_3 = b \times h$

$= 8 \times 3$

$A_3 = 24 cm^2$

Top



$A_4 = b \times h$

$A = 3 \times 10$

$A_4 = 30 cm^2$

$SA_1 = 2A_1 + A_2 + A_3 + A_4$

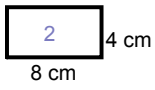
$= 48 + 18 + 24 + 30$

$SA_1 = 120 cm^2$

Rectangle Prism

4, 8, 3

Front/Back



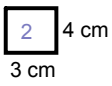
$A_1 = b \times h$

$= 8 \times 4$

$A_1 = 32 cm^2$

$2A_1 = 64 cm^2$

Left/Right



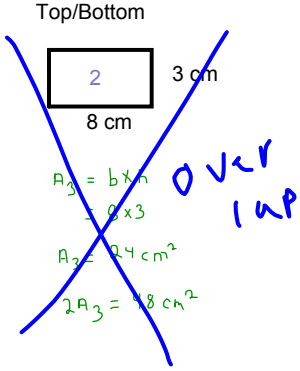
$A_2 = b \times h$

$= 3 \times 4$

$A_2 = 12 cm^2$

$2A_2 = 24 cm^2$

Top/Bottom



$A_3 = b \times h$

$= 8 \times 3$

$A_3 = 24 cm^2$

$2A_3 = 48 cm^2$

over lap

$SA_2 = 2A_1 + 2A_2 + 2A_3$

$= 64 + 24 + 48$

$SA_2 = 136 cm^2$

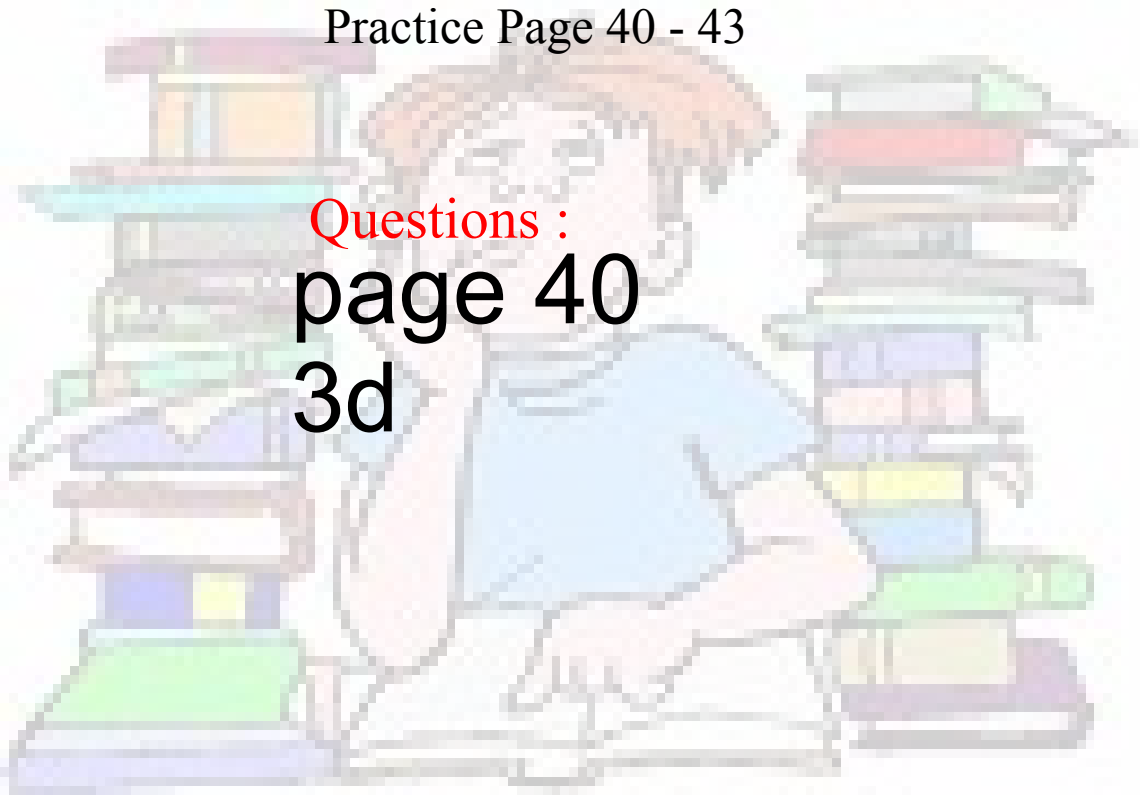
Total Surface Area

$T_{SA} = SA_1 + SA_2 - \text{overlap}$

$= 120 + 136 - 48$

Class / Homework

Practice Page 40 - 43



Questions :

page 40

3d