# Curriculum Outcome

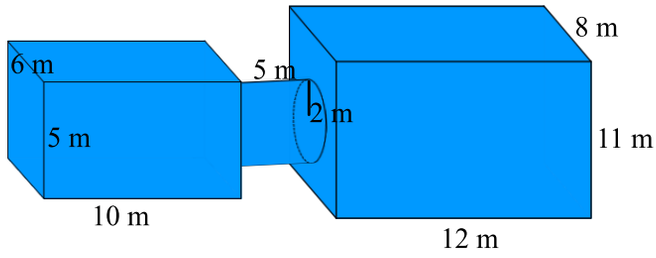
(N5) Determine the square root of positive rational numbers that are perfect squares.

(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.**

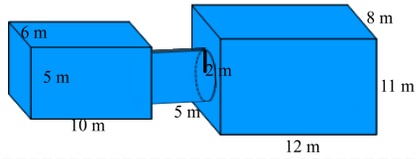

Find the surface area of the object



# Solutions

Find the surface area of the object

*** IMPORTANT

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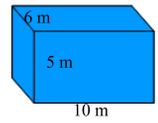
Small **Prism** (6,5,10)

A= b x h
A = 6 m x 10 m
= 60 $m^2$
2 A=120

A= b x h
A = 6 m x 5 m
= 30 $m^2$
2A = 60

A= b x h
A = 5 m x 10 m
= 50 $cm^2$
2A = 100




SA small = 120 $m^2$ + 60 $m^2$ + 100 $m^2$
= 280 $m^2$

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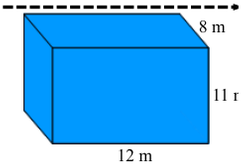
Large **Prism** (12, 11, 8)

A= b x h
A = 8 m x 12 m
= 96 $m^2$
2A= 192

A= b x h
A = 8 m x 11 m
= 88 $m^2$
2A = 176

A= b x h
A = 12 m x 11 m
= 132 $cm^2$
2A = 264




SA Large = 192 $m^2$ + 176 $m^2$ + 264 $m^2$
= 632 $m^2$

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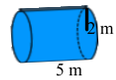
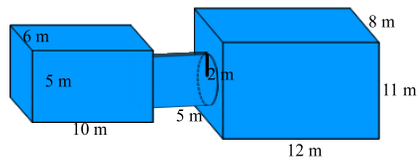
**Cylinder**




Area of Cylinder = $2\pi r^2 + 2\pi rh$
= 2(3.14) $(2)^2$ + 2(3.14) (2) (5)
= 2(3.14) ( ) + 2(3.14) ( ) ( )
= 25.12 + 62.8
= 87.92 $m^2$

4 circles
overlap
25.12
+ 25.12
50 24




Total Surface Area = cylinder + Prism + Prism - Total Overlap
= 87.92 + 280 + 632 - 50.24 $m^2$

= 949.68 $m^2$

# Class / Homework

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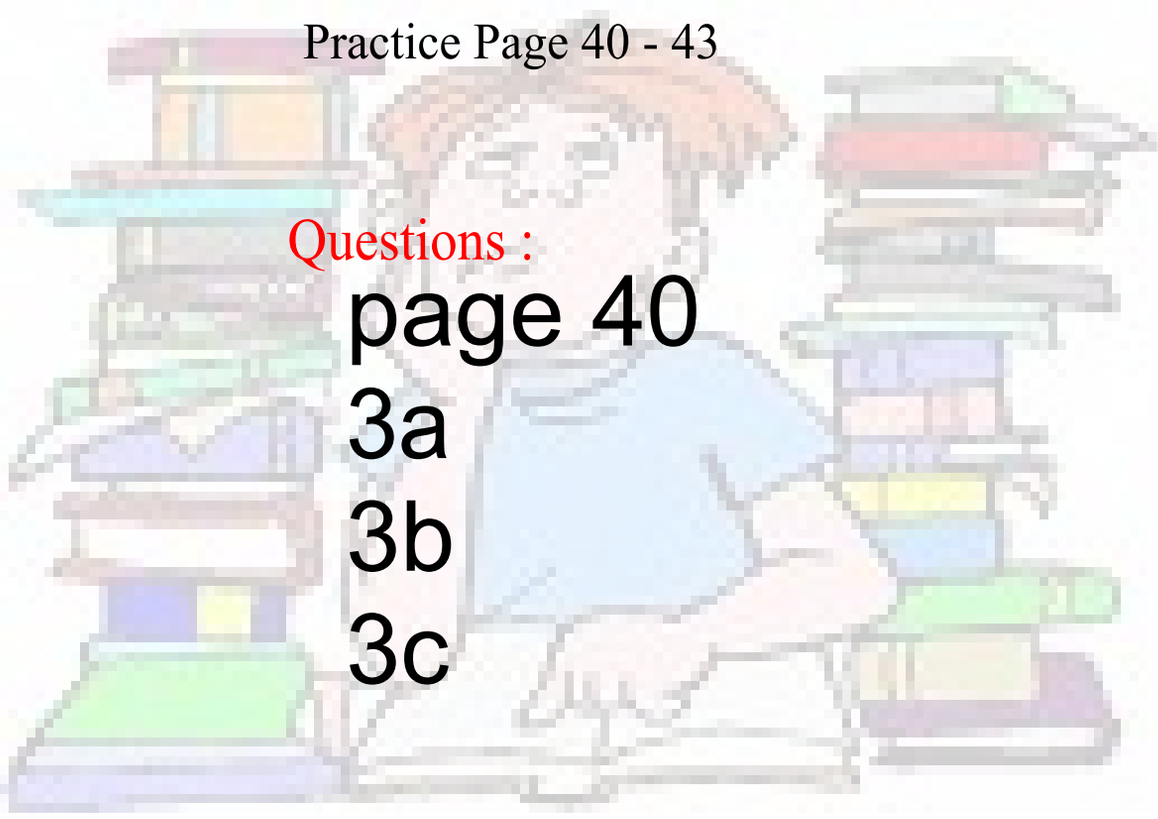

Questions :

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3c

Homework solutions

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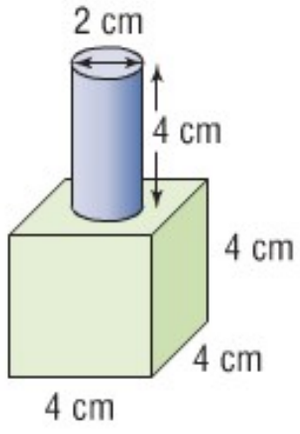
3 a) cylinder on a cube




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

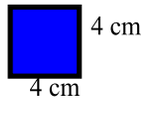
$= 2(3.14)(1\text{cm})^2 + 2(3.14)(1\text{cm})(4\text{cm})$

$= 2(3.14)(1\text{cm}) + 2(3.14)(1\text{cm})(4\text{cm})$

$= 6.28\ \text{cm}^2 \quad + \quad 25.12\ \text{cm}^2$

$= 31.4\ \text{cm}^2$


Cube




area = 4cm x 4cm

$= 16\ \text{cm}^2$

Area = 6 faces x (area of one face)

$= 6 \times (16\ \text{cm}^2)$

$= 96\ \text{cm}^2$

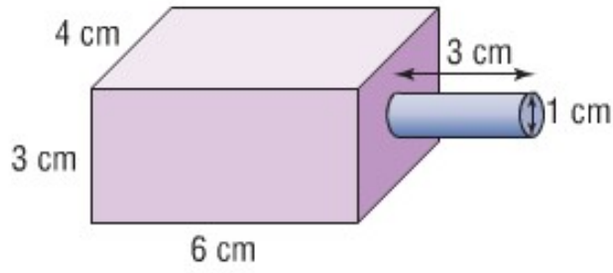
Total SA = Cylinder + Cube - Overlap

$= 31.4\ \text{cm}^2 + 96\ \text{cm}^2 - 6.28\ \text{cm}^2$

$= 121.12\ \text{cm}^2$

$= 121\ \text{cm}^2$

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




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

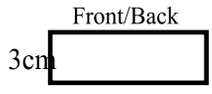
$= 2(3.14)(0.5cm)^2 + 2(3.14)(0.5cm)(3cm)$

$= 2(3.14)(0.25cm) + 2(3.14)(0.5cm)(3cm)$

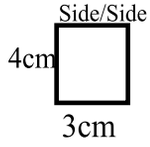
$= 1.57\ cm^2 \quad + \quad 9.42\ cm^2$

$= 10.99\ cm^2$

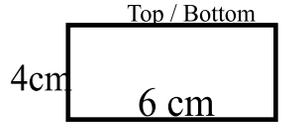
Rectangular Prism




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




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




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

**Rectangular Prism SA** $= 2(18\ cm^2) + 2(12cm^2) + 2(24cm^2)$

$= 36\ cm^2 \quad + 24cm^2 \quad + 48cm^2$

$= 108cm^2$

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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

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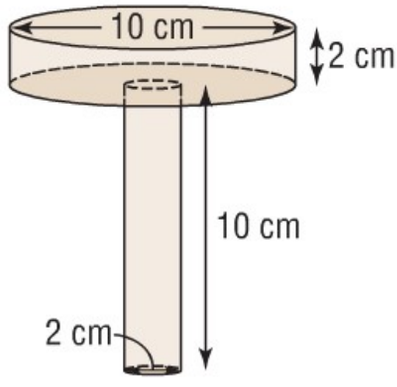
3c c) cylinder on a cylinder




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

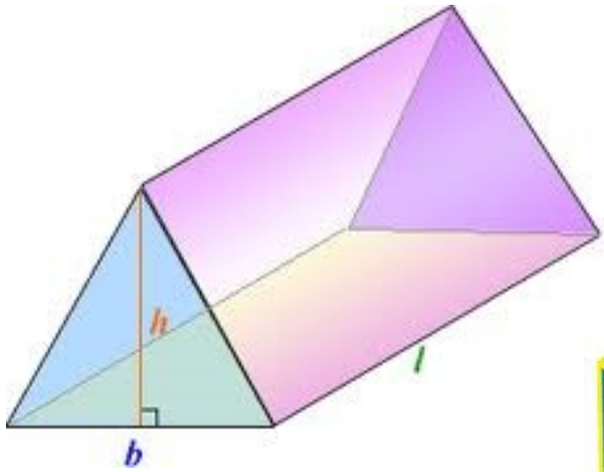
**$= 2(3.14)(5cm)^2 + 2(3.14)(5cm)(2cm)$**
**$= 2(3.14)(25cm) + 2(3.14)(5cm)(2cm)$**
**$= 157\ cm^2 + 62.8cm^2$**
**$= 219.8\ cm^2$**

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

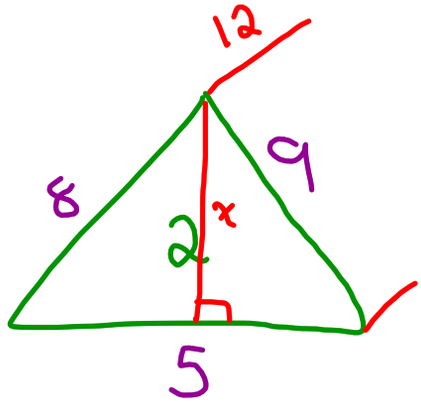
# Surface Area Of Other Composite Objects

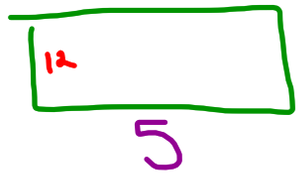
# Triangular Prisms

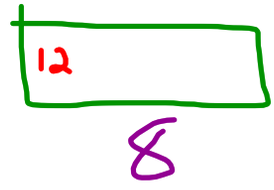


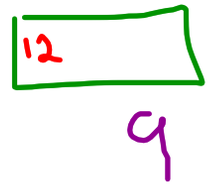


Triangular Prism

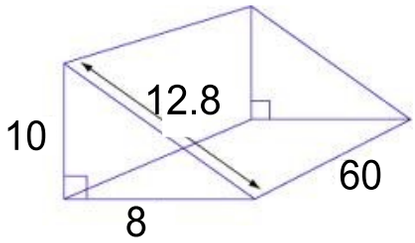


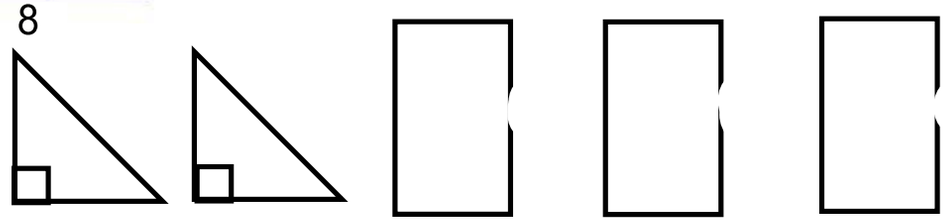



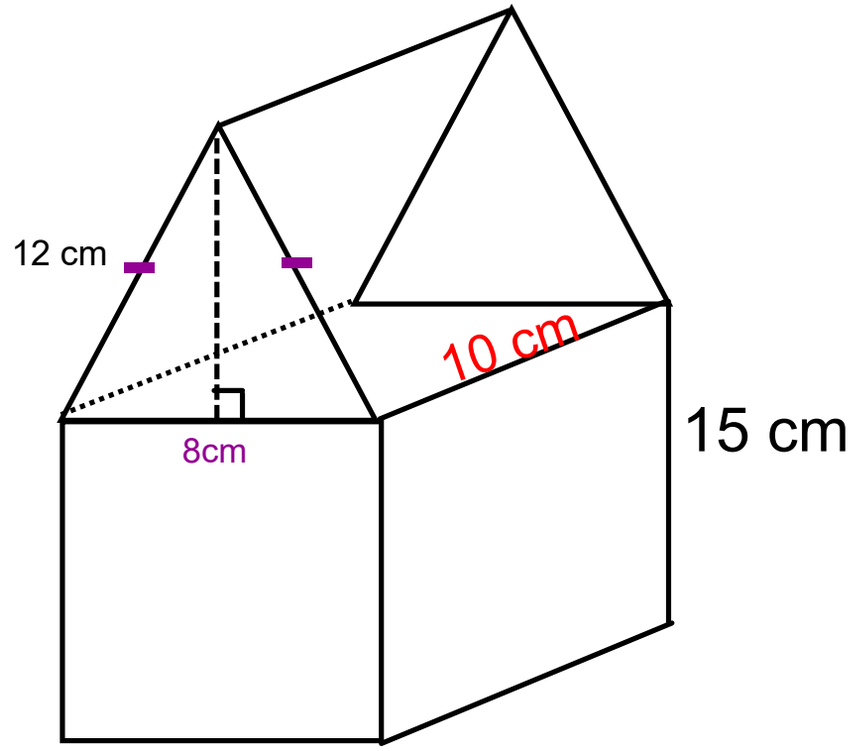
# Determine the surface area.

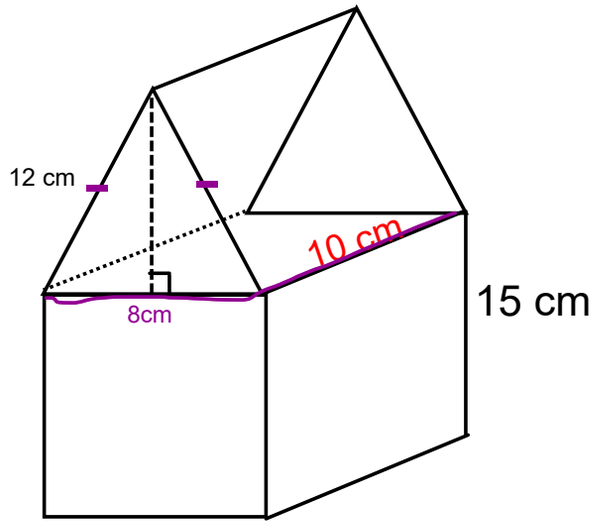


$A = \frac{b \times h}{2}$ $A = L \times W$ $A = L \times W$ $A = L \times W$

SA =


12 cm
10 cm
15 cm
8cm




Rectangular Prism

overlap

Front/Back

8cm

10 cm

A = b x h
= 80 cm$^2$
= 160 cm$^2$

Side/Side

8cm

15cm

A = b x h
= 120 cm$^2$
= 240 cm$^2$

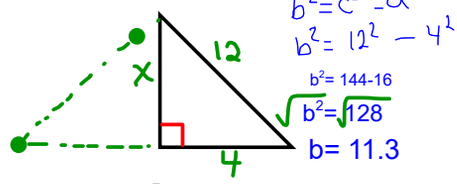
Top / Bottom

10cm

15 cm

A =b x h
= 150 cm$^2$
= 300 cm$^2$

**Rectangular Prism SA = 700 cm$^2$**




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

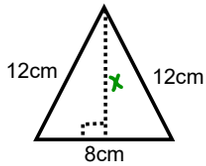
$b^2 = 12^2 - 4^2$

$b^2 = 144 - 16$

$b^2 = \sqrt{128}$

b= 11.3

Triangle Prism




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

= $\frac{4 \times 11.3}{2}$ cm

= 45.2 cm$^2$

2A= 90.4 cm$^2$

Left Side

10cm

12cm

A = b x h
= 120 cm$^2$

Bottom

10cm

12cm

A = b x h
= 120 cm$^2$

Top

10cm

8cm

A = b x h
= 80 cm$^2$

SA= 410.4 cm$^2$

Tsa= Triangular Prism + Rectangular Prism - overlap

= 410.9 + 700 -160

= 950.4 cm$^2$

# Class / Homework

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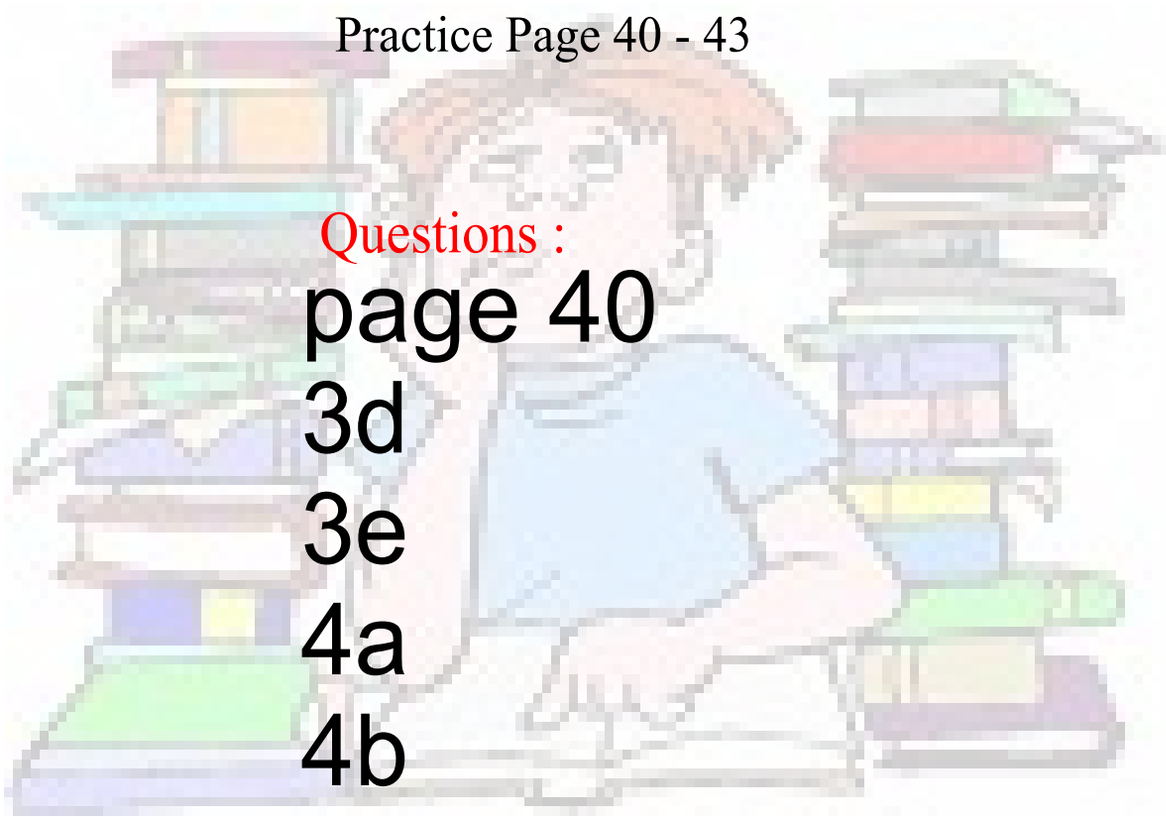

Questions :

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3d

3e

4a

4b