Warm Up Grade 8

Quiz Day

10 -12 minutes

pg 194
1a)

3cm

1cm

7cm
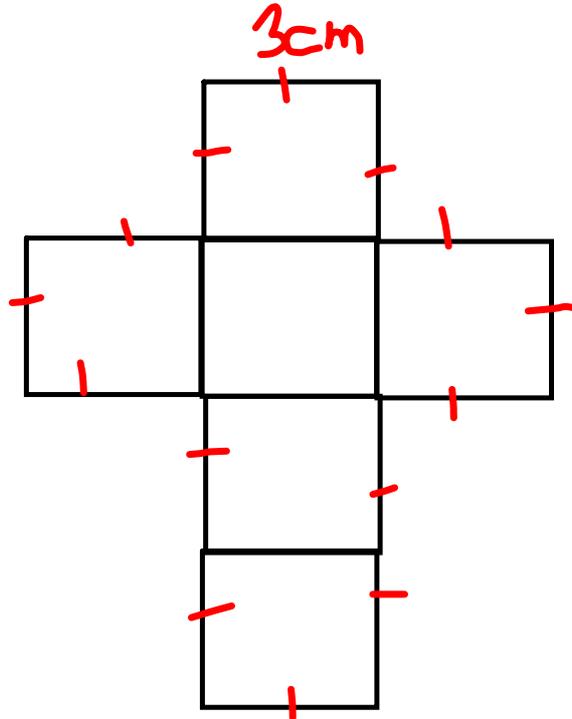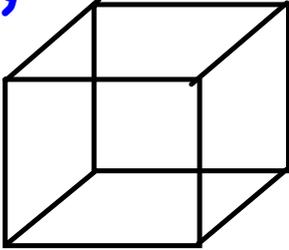
b)
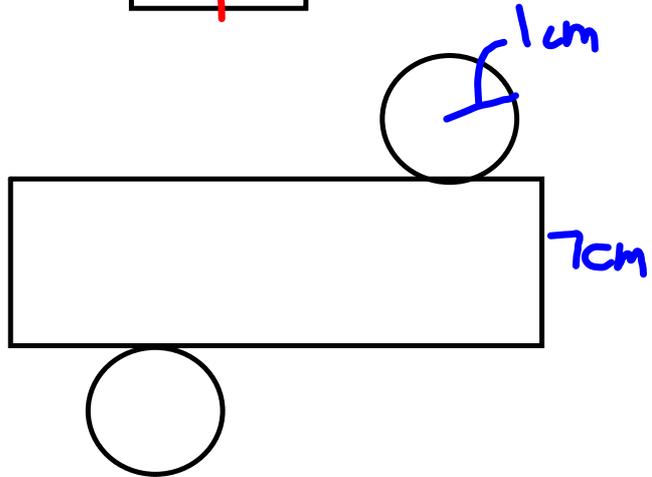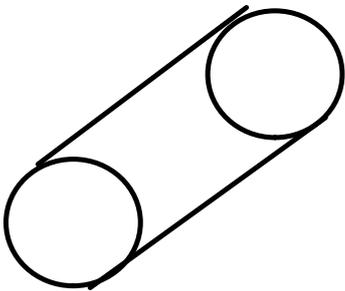
2a) Net - of a triangular pyramid

b) Is not a net, one face will
overlap

c) Net of a pentagonal prism.

3.

2cm

10cm

Top & Bottom

2cm

②

$A = l \times w$
$= 2 \times 2$
$= 4 \, cm^2$

4 sides

2

④

10
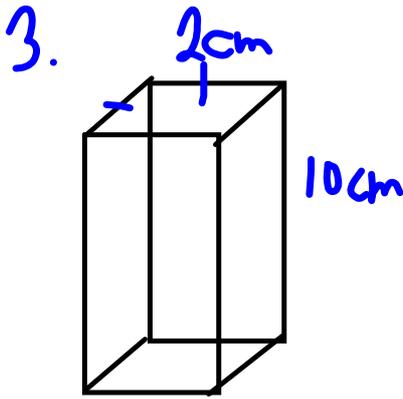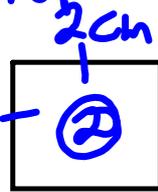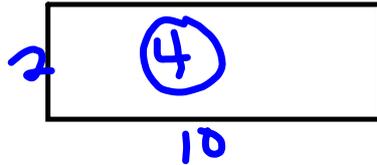
$A = l \times w$
$= 10 \times 2$
$= 20 \, cm^2$

$SA = 2 \times 4 + 4 \times 20$
$= 8 + 80$
$= 88 \, cm^2$

b) 8.7

10cm

10

12

10

Bases

8.7

10
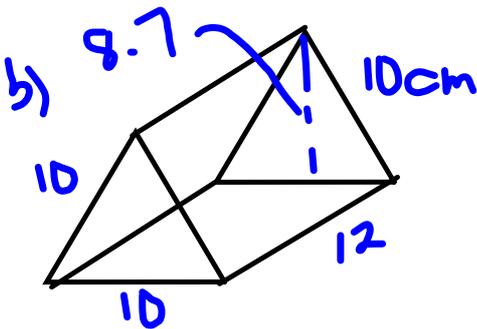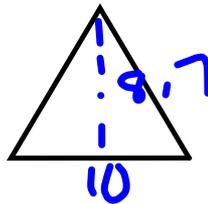
$A = \dfrac{b \times h}{2}$
$= \dfrac{10 \times 8.7}{2}$
$= \dfrac{87}{2}$
$= 43.5 \, cm^2$

3 equal Faces

16

③

12
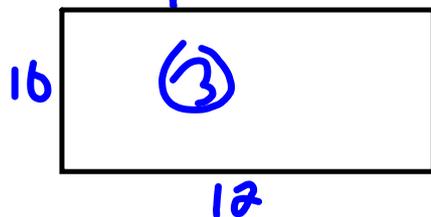
$A = l \times w$
$= 12 \times 10$
$= 120 \, cm^2$

$SA = 2 \times 43.5 + 3 \times 120$
$= 87 + 366$
$= 447 \, cm^2$

4.

223 m

75 m

58 m

don't need top/bottom

75 m

58 m

Front & Back

② 223

58
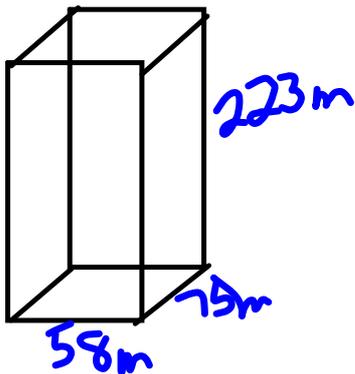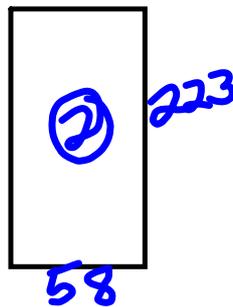
$A = l \times w$
$= 223 \times 58$
$= 12\,934\,m^2$

Sides

② 223

75

$A = l \times w$
$= 223 \times 75$
$= 16\,725\,m^2$
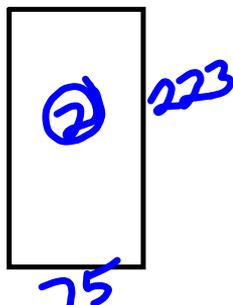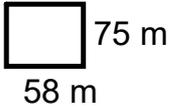
SA of glass = 2(side) + 2(front)

$SA = 2 \times 12\,934 + 2 \times 16\,725$
$= 25\,868 + 33\,450$
$= 59\,318\,m^2$

5
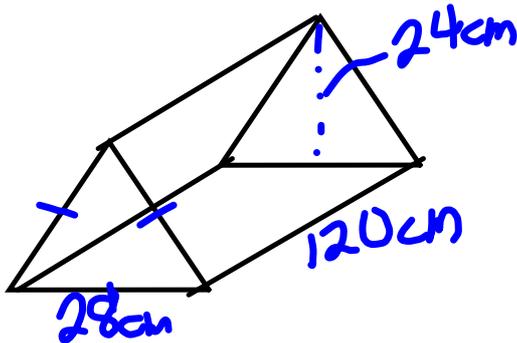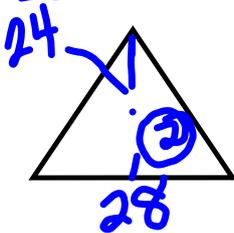
−24cm

120cm

28cm

Bases

24

28

②

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

$= \dfrac{28 \times 24}{2}$

$= \dfrac{672}{2}$

$= 336 cm^2$

3 sides

③

28

120

$A = l \times w$
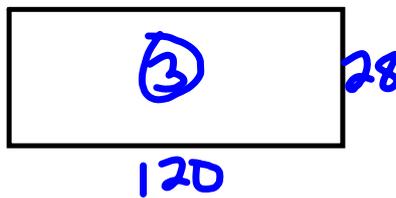
$= 120 \times 28$

$= 3360 cm^2$

$SA = 2 \times 336 + 3 \times 3360$

$= 672 + 10\,080$

$= 10\,752 cm^2$

2. Find the surface area of this right rectangular prism.
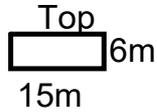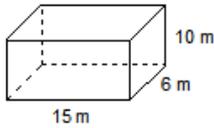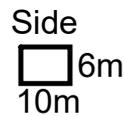
Top
15m □6m

Side
6m
10m

Front
10m
15m

A= l x w

= 15m x 6m

= 90 m^2

A= l x w

= 10m x 6m

= 60 m^2

A= l x w

= 10m x 15m
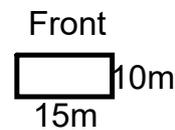
= 150 m^2

Total SA = 2(Top) + 2(Side) + 2(Front)

= 2(90m^2) +2(60m^2) +2(150m^2)

= 180m^2 +120m^2 +300m^2

= 600 m^2

3. The Drama Club plans to paint the outside walls of this box to be used as a second level to their stage. Find the surface area of the box.
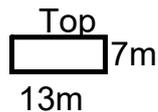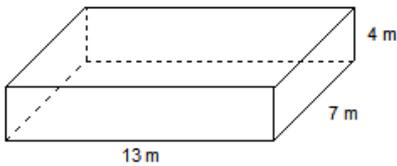
4 m

7 m

13 m

Top
13m □7m

Side
4m
7m

Front
4m
13m

A= l x w

= 13m x 7m

= 91 m^2

A= l x w

= 7m x 4m

= 28 m^2

A= l x w

= 13m x 4m
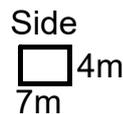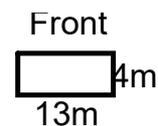
= 52 m^2

Total SA = 2(Side) + 2(Front)

= 2(28m^2) +2(52m^2)

= 56m^2 +104m^2

= 160 m^2

4. The 2 triangular faces of this prism are isosceles triangles with base length 6 cm and height 12 cm. Calculate the surface area of the prism.

12.4 cm

12 cm

20 cm

6 cm

A= l x w

= 12.4 x 20

= 248 cm^2

A= l x w

= 12.4 x 20

= 248 cm^2

12.4　12.4

20　6　20

20

A= l x w

= 6 x 20

= 120 cm^2

Atri = (bxh)/2

= (6 x 12) /2

= (72) / 2
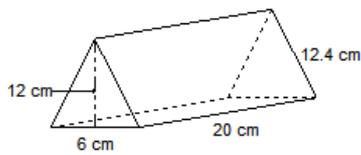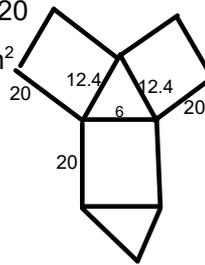
= 36 cm^2

Total SA = 2 Tri + rec + rec + rec

= 2(36) + 120 + 248 + 248

= 72 + 120 +248 + 248

= 688 cm^2

5. The diagram shows an open box in the shape of a right rectangular prism.
A square hole of side 5 cm is cut out of the front face.
What is the total surface area of the box? Show your work.
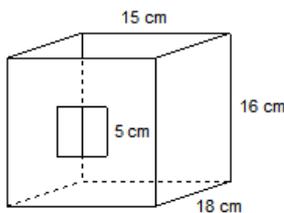
15 cm

16 cm

5 cm

18 cm

Top

15cm

18cm

A= l x w

= 15cm x 18cm

= 270 cm^2

side

16cm

18cm

A= l x w

= 18cm x 16cm

= 256 cm^2

front

15cm

16cm

A= l x w

= 16cm x 15cm

= 240 cm^2

hole

A= l x w

= 5cm x 5cm

= 25 cm^2

Total SA = 2(Top) + 2(Side) + 2(Front)

= 2(270cm^2) +2(256cm^2) +2(240cm^2)

= 540cm^2 +512cm^2 +480cm^2

= 1532 cm^2

1532 cm^2 -25 cm^2

= 1507 cm^2

Volume

Volume is the amount of space an object occupies. It is measured in cubic units, such as, mm^3, cm^3, m^3, ...

How do you find volume?

**http://illuminations.nctm.org/ActivityDetail.aspx?ID=6**
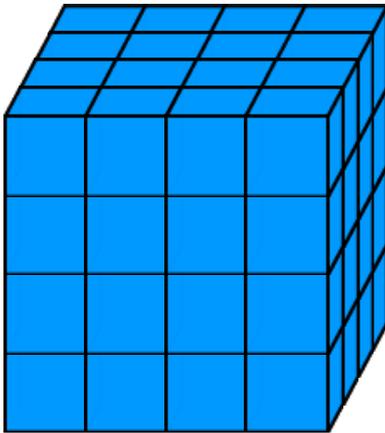
How do we find the volume of this rectangular prism?

Sometimes students say V = *l* x *w* x *h*,

Instead of using this, we will use

H_{prism}

Volume = Area of a base x height
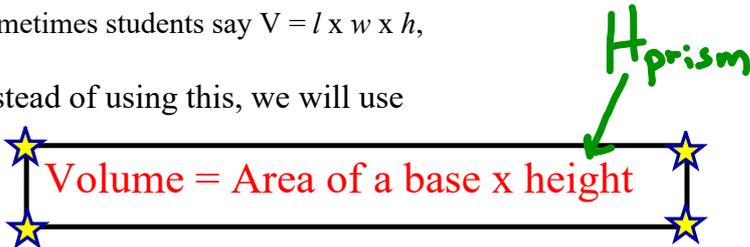
First determine the base of the prism, then find its area, finally multiply this area by the height of the prism.

8 cm H_{prism}

5 cm   w

12 cm   L
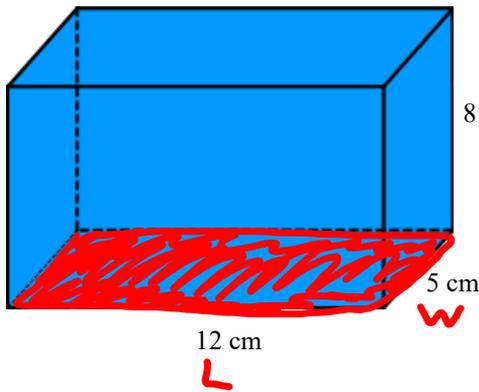
Volume =
　=
　=

$$A_{\square} = L \times W$$
$$= 12cm \times 5cm$$
$$= 60 cm^2$$

Volume = $A_{base} \times H_{prism}$
　= $60cm^2 \times 8$ cm
　= $480 cm^3$

Area of Base =
　=
　=

Find the area and show all work.

Your Turn

a)
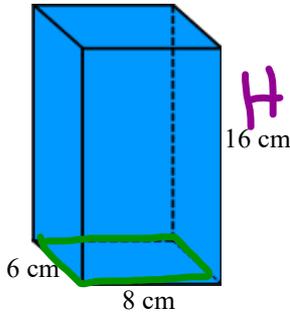
$A_{base\square} = L \times W$

$= 6cm \times 8cm$

$= 48cm^2$

Volume $= A_{base} \times H_{prism}$

$= 48cm^2 \times 16cm$

$= 768 cm^3$

16 cm

6 cm

8 cm

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b)
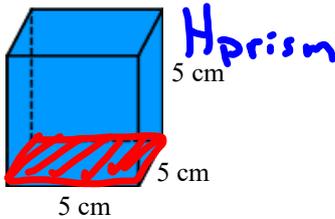
$A_{base\square} = L \times W$

$= 5cm \times 5cm$

$= 25cm^2$

$Vol = A_{base} \times H_{prism}$

$= 25cm^2 \times 5cm$

$= 125 cm^3$

H_{prism}

5 cm

5 cm

5 cm

---

c)
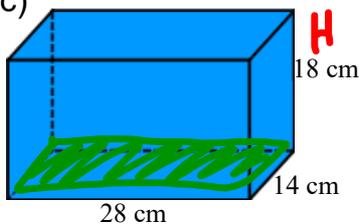
$A_{base\square} = L \times W$

$= 28cm \times 14cm$

$= 392cm^2$

Volume $= A_{base} \times H$

$392cm^2 \times 18cm$

$= 7056cm^3$

H

18 cm

14 cm

28 cm

12cm   8cm

7cm

9cm
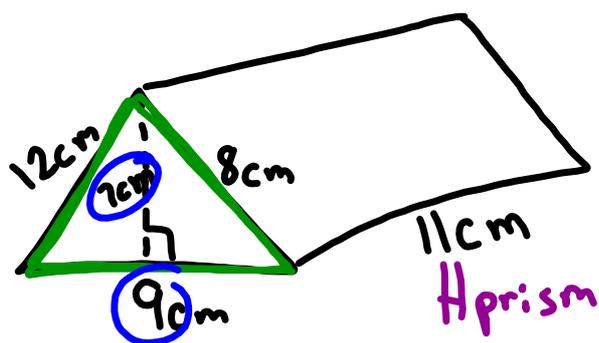
11cm

Hprism

$$A_{base_\triangle} = \frac{b \times h}{2}$$

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

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

$$= 31.5cm^2$$

$$Volume = A_{base_\triangle} \times H_{prism}$$

$$= 31.5cm^2 \times 11cm$$

$$= 346.5cm^3$$

Class/Homework

pg. 198

Abase

Volume

4, #5, #6, #7, #9

They

Give Abase = 40cm^2

a) Volume = Abase × H$_{prism}$

40 cm^2 × 3cm

120cm^2