

Curriculum Outcome

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

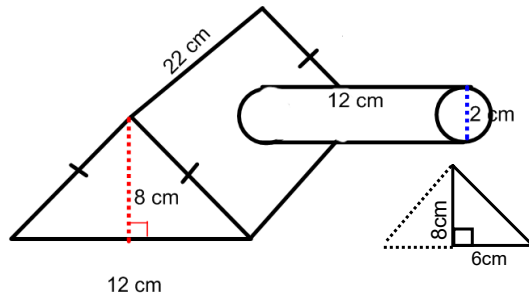
(N6) Determine an approximate square root of positive rational numbers that are non-perfect squares.

(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 total surface area



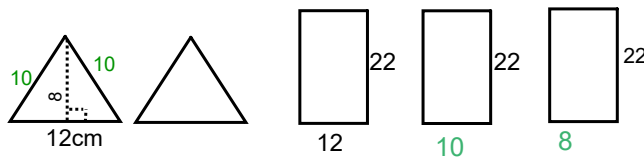
$$c^2 = a^2 + b^2$$

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

$$c^2 = 64 + 36$$

$$\sqrt{c^2} = \sqrt{100}$$

$$c = 10 \text{ cm}$$



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

$$A = \frac{12 \times 8}{2}$$

$$A = \frac{96}{2}$$

$$A = 48 \times 2$$

$$A = 96$$

$$A = b \times h$$

$$A = 12 \times 22$$

$$A = 264$$

$$A = b \times h$$

$$A = 22 \times 10$$

$$A = 220$$

$$A = b \times h$$

$$A = 22 \times 10$$

$$A = 220$$

$$SA = 96 + 264 + 220 + 220$$

$$SA = 800 \text{ cm}^2$$

Cylinder

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

$$= 2 \times (3.14) \times (1 \text{ cm})^2 + 2 \times (3.14) (1 \text{ cm}) \times (12 \text{ cm})$$

$$= 2 \times (3.14) \times 1 + 2 \times (3.14) (1 \text{ cm}) \times (12 \text{ cm})$$

$$= 6.28 \text{ cm}^2 + 75.36 \text{ cm}^2$$

$$= 81.64 \text{ cm}^2$$

Overlap

$$TSA = \text{Triangular Prism} + \text{Cylinder} - \text{Overlap}$$

$$= 800 \text{ cm}^2 + 81.64 \text{ cm}^2 - 6.28 \text{ cm}^2$$

$$= 875.36 \text{ cm}^2$$

Test
Coming up



Test Review

Section 1.1 to 1.2 Square roots and perfect squares

$$\text{Area of a square} = (\text{side})^2$$

$$\text{Side of square} = \sqrt{\text{area of square}}$$

Perfect Squares: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225

- square root is 2.4

means find the perfect square # so multiply by itself

- is it a perfect square

take the square root and if the decimal stops or repeats then the number was perfect

- square root of fraction take square root of top and bottom

- bench marks find the perfect square that the number falls between

section 1.3 & 1.4

Surface area of composite objects

Perfect Squares

$$(1)^2 = 1 \times 1 = 1$$

$$(2)^2 = 2 \times 2 = 4$$

$$(3)^2 = 3 \times 3 = 9$$

$$(4)^2 = 4 \times 4 = 16$$

$$(5)^2 = 5 \times 5 = 25$$

$$(6)^2 = 6 \times 6 = 36$$

$$(7)^2 = 7 \times 7 = 49$$

$$(8)^2 = 8 \times 8 = 64$$

$$(9)^2 = 9 \times 9 = 81$$

$$(10)^2 = 10 \times 10 = 100$$

$$(11)^2 = 11 \times 11 = 121$$

$$(12)^2 = 12 \times 12 = 144$$

$$(13)^2 = 13 \times 13 = 169$$

$$(14)^2 = 14 \times 14 = 196$$

$$(15)^2 = 15 \times 15 = 225$$

$$(16)^2 = 16 \times 16 = 256$$

$$(17)^2 = 17 \times 17 = 289$$

$$(18)^2 = 18 \times 18 = 324$$

$$(19)^2 = 19 \times 19 = 361$$

$$(20)^2 = 20 \times 20 = 400$$

$$(21)^2 = 21 \times 21 = 441$$

$$(22)^2 = 22 \times 22 = 484$$

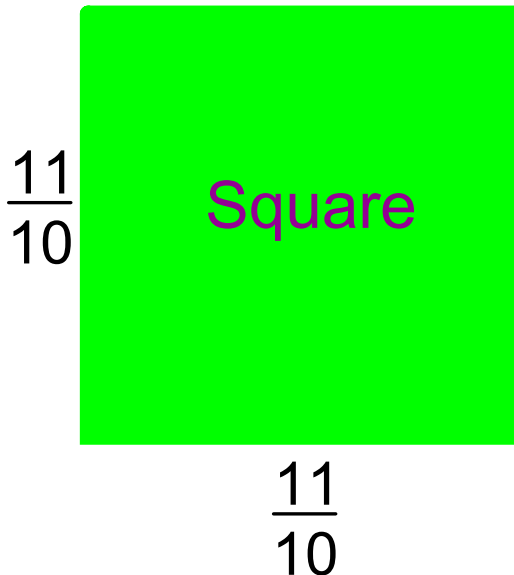
$$(23)^2 = 23 \times 23 = 529$$

$$(24)^2 = 24 \times 24 = 576$$

$$(25)^2 = 25 \times 25 = 625$$

What is the area of the following

What is the area?



$$\text{Area} = (\text{base})^2$$

$$\text{Area} = \left(\frac{11}{10}\right)^2$$

$$\text{Area} = \frac{121}{100}$$

What is the perimeter?

$$P = \text{side} + \text{side} + \text{side} + \text{side}$$

$$= \frac{11}{10} + \frac{11}{10} + \frac{11}{10} + \frac{11}{10}$$

$$= \frac{44}{10}$$

$$\text{Area of square} = \frac{49}{81} \text{ cm}^2$$

What is the length of the sides?

$$\text{Area} = (\text{base})^2$$

$$\frac{49}{81} = (\text{base})^2$$

$$\sqrt{\frac{49}{81}} = \sqrt{(\text{base})^2}$$

$$\frac{7}{9} = \text{base}$$

What is the perimeter of the square

$$P = \text{side} + \text{side} + \text{side} + \text{side}$$

$$= \frac{7}{9} + \frac{7}{9} + \frac{7}{9} + \frac{7}{9}$$

$$= \frac{28}{9}$$

With a Calculator

How do we know if a number is a perfect square using a calculator?

→ When you take the square root on your calculator and it gives you a decimal the ends then it is a perfect square.

$$\sqrt{1.25}$$

$$= 1.1180\dots$$

Decimal does not end

so

NOT a Perfect Square

$$\sqrt{0.81}$$

$$= 0.9$$

Decimal ends

so

Perfect Square

Without a Calculator

- change your decimal to a fraction
- if you can take the square root of the top and the bottom then the number is a perfect square

Example:

Determine if the decimal is a perfect square?

a)

$$\sqrt{0.25}$$

$$\sqrt{\frac{25}{100}}$$

$$\frac{5}{10}$$

0.25 is
Perfect Square

b)

$$\sqrt{2.5}$$

$$\sqrt{\frac{25}{10}}$$

$$\frac{5}{?}$$

2.5 is NOT a
Perfect Square

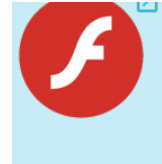
c)

$$\sqrt{1.69}$$

$$\sqrt{\frac{169}{100}}$$

$$\frac{13}{10}$$

1.69 is
Perfect Square



Estimate the square root of 7.5.

Method #1

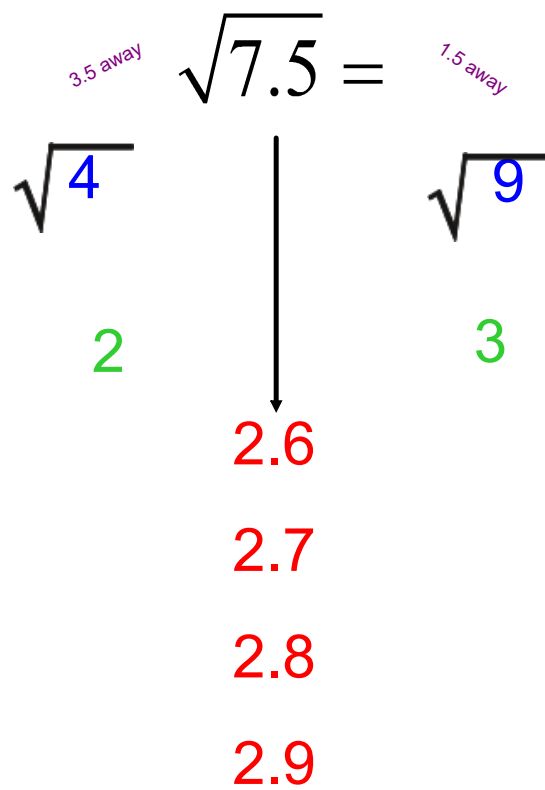
Method #2

With Calculator:

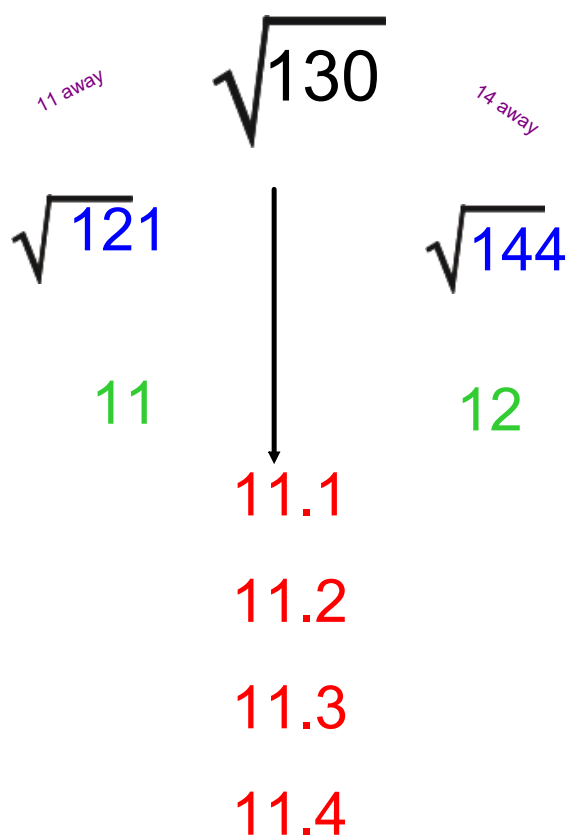
Without Calculator:

Using Benchmarks:

$$\sqrt{7.5} = 2.73861..$$



Estimate the square root of 130




**Find a number
that has a square root
between 10 and 11.**

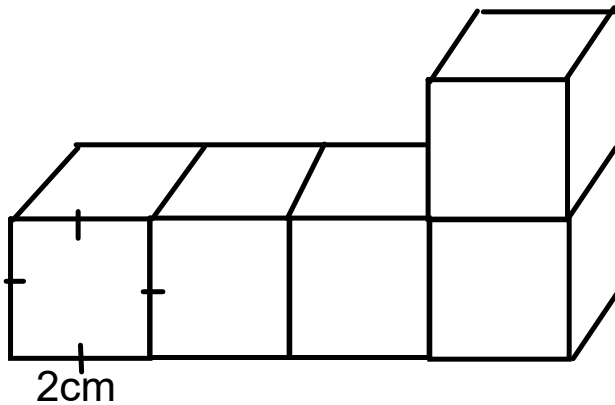
$$\sqrt{x} = 10$$

$$x = 100$$

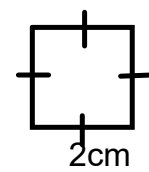
$$\sqrt{y} = 11$$

$$y = 121$$


$$\sqrt{115} = 10.72$$



Area of one face



$$A = b^2$$

$$A = 2^2$$

$$A = 4\text{cm}^2$$

$$5 \text{ cubes} \times 6 \text{ faces} = 30 \text{ faces}$$

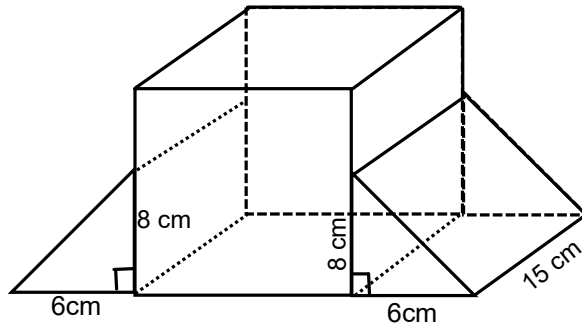
$$\underline{\quad} - 8 \text{ overlap faces}$$

22 visible faces

$$\underline{\quad} \times 4\text{cm}^2$$

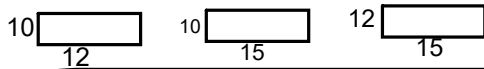
$$88\text{cm}^2$$

The rectangular prism is 12 cm by 10 cm by 15 cm

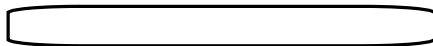
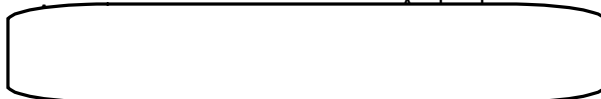
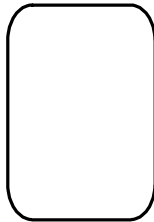
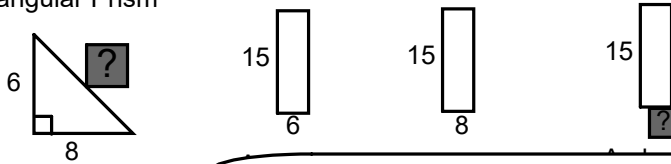


Calculate the surface area of the composite shape:

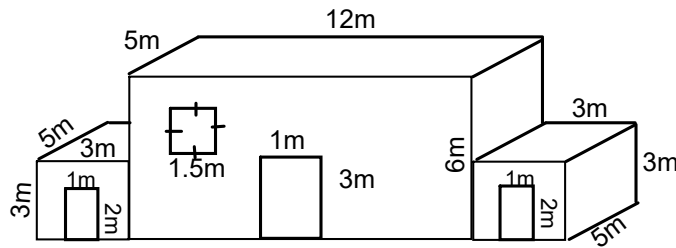
Rectangular Prism (12,10,15)



Triangular Prism



Calculate the area of this WAREHOUSE



Big Prism (5,12,6)

5 $\frac{\quad}{12}$	5 $\frac{\quad}{6}$	12 $\frac{\quad}{6}$	$Sa = 60 + 60 + 144$ $= 264m^2$
$A = b \times h$	$A = b \times h$	$A = b \times h$	
$A = 5 \times 12$	$A = 6 \times 5$	$A = 12 \times 6$	
$A = 60$	$A = 30$	$A = 72$	
	$2A = 60 m^2$	$2A = 144 m^2$	

Small Prism (3,3,5)

5 $\frac{\quad}{3}$	5 $\frac{\quad}{3}$	3 $\frac{\quad}{3}$	$Sa = 15 + 30 + 18$ $= 63 m^2$
$A = b \times h$	$A = b \times h$	$A = b \times h$	
$A = 5 \times 3$	$A = 3 \times 5$	$A = 3 \times 3$	
$A = 15$	$A = 15$	$A = 9$	
	$2A = 30 m^2$	$2A = 18 m^2$	

Second Small Prism (3,3,5)

5 $\frac{\quad}{3}$	5 $\frac{\quad}{3}$	3 $\frac{\quad}{3}$	$Sa = 15 + 30 + 18$ $= 63 m^2$
$A = b \times h$	$A = b \times h$	$A = b \times h$	
$A = 5 \times 3$	$A = 3 \times 5$	$A = 3 \times 3$	
$A = 15$	$A = 15$	$A = 9$	
	$2A = 30 m^2$	$2A = 18 m^2$	

Window

$A = b \times h$
 $A = 1.5 \times 1.5$
 $A = 2.25 m^2$

door

$A = b \times h$
 $A = 1 \times 3$
 $A = 3 m^2$

door

$A = b \times h$
 $A = 1 \times 2$
 $A = 2 m^2$

door

$A = b \times h$
 $A = 1 \times 2$
 $A = 2 m^2$

Total window & doors = $2.25 + 3 + 2 + 2$

$= 9.25 m^2$

$Tsa = \text{Big} + \text{small} + \text{small} - \text{over lap} - \text{over lap} - \text{windows \& doors}$

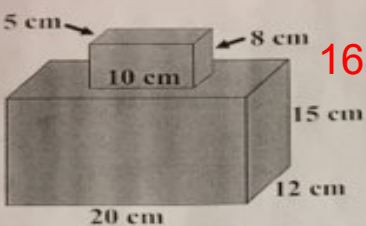
big sm sm ol ol wd

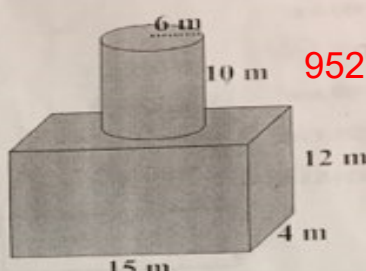
$Tsa = 264 + 63 + 63 - 30 - 30 - 9.25$

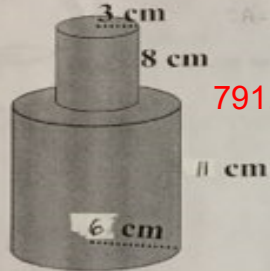
$Tsa = 320.75 m^2$

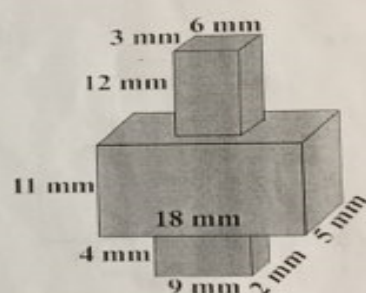
UNIT 3 ASSIGNMENT – SURFACE AREA OF COMPOSITE OBJECTS

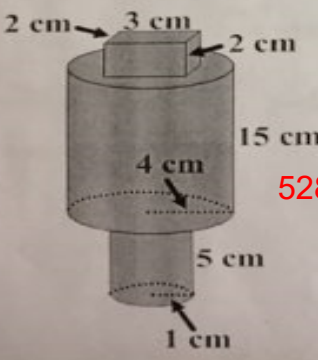
Determine the surface area of each composite object. Round answers to the nearest tenth, where necessary. Show ALL work on loose-leaf.

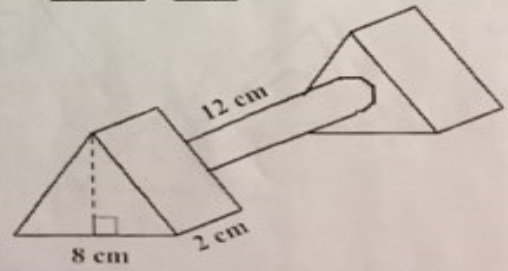
1.  **1680 cm²**

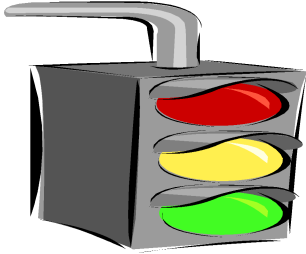
2.  **952.8 m²**

3.  **791.3 cm²**

4.  **990 mm²**

5.  **528.9 cm²**

6. The cylinder below is connected to two IDENTICAL EQUILATERAL TRIANGULAR prisms. The cylinder's diameter is 10 cm.  **426.8 cm²**



Class / Homework Review For Test

- Handout: Surface Area Worksheet

Questions: 1-6

answers were on the board

- Questions from Textbook:

page 45 - 46

#1

12ac

#2(b, d, f, h)

#13ab

#3(a,b,c,d,e)

#15(bc)

#4(a,d)

#16(bc)

#5 (a, c, e)

#19(a)

#6 (b,d)

#9

and the Warehouse question