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UNIT 3: SQUARE ROOTS AND SURFACE AREA

SECTION 1.3: SURFACE AREAS OF OBJECTS MADE FROM RIGHT RECTANGULAR PRISMS

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MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Shape and Space 2" OR "SS2" which states:

SS2: "Determine the surface area of composite 3-D objects to solve problems."

What does THAT mean???

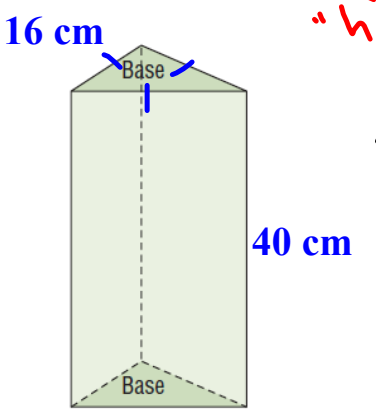
SCO SS2 means that we will stack two or more 3-D objects (right rectangular prisms, right triangular prisms, right cylinders) on top of each other. We will find the area of each face (side) of each object then add them all up to find the total surface area of the object. We will also have to subtract any overlapping sides from the total.

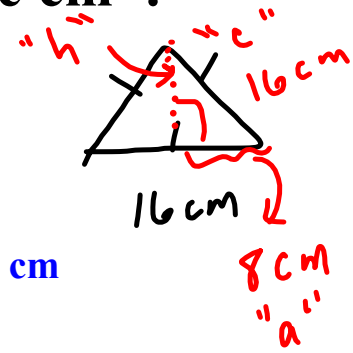
You only need to remember 6 formulas in the surface area section of this unit which you already knew before grade 9:

1. **Area of a rectangle/square:** bh
2. **Area of a triangle:** $\frac{bh}{2}$
3. **Area of a circle:** πr^2
4. **Circumference of a circle:** $2\pi r$ OR πd
5. **The Pythagorean Theorem:** $a^2 + b^2 = c^2$
6. **Surface Area of a Cylinder:** $2\pi r^2 + 2\pi rh$

WARM-UP: 90° angle

A right triangular prism is 40 cm high. Its bases are equilateral triangles with side lengths 16 cm. What is the surface area of the prism to the nearest whole cm^2?





$a^2 + h^2 = c^2$

$8^2 + h^2 = 16^2$

$64 + h^2 = 256$

$h^2 = 256 - 64$

$\sqrt{h^2} = \sqrt{192}$

$h \doteq 13.8564$

$SA = \cancel{2}\left(\frac{bh}{\cancel{2}}\right) + 3bh$

$\doteq 16(13.8564) + 3(16)(40)$

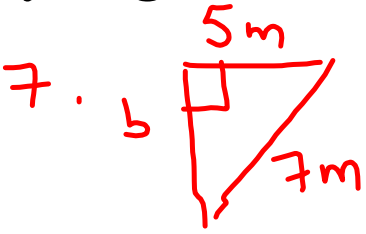
$\doteq 222.7024 + 1920$

$\doteq 2141.7024$

$\doteq 2142\ cm^2$

HOMEWORK QUESTIONS???
(Pythagorean Theorem Worksheet, #1 - #20)

7.



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

$5^2 + b^2 = 7^2$

$25 + b^2 = 49$

$b^2 = 49 - 25$

$\sqrt{b^2} = \sqrt{24}$

$b \doteq 4.9$

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

$b^2 = 7^2 - 5^2$

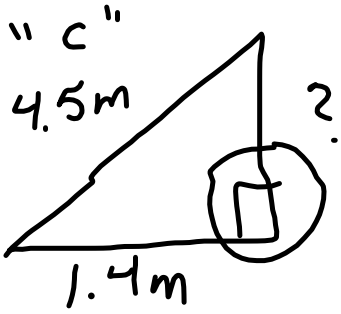
$b^2 = 49 - 25$

$\sqrt{b^2} = \sqrt{24}$

$b \doteq 4.9$

HOMEWORK QUESTIONS???
(Pythagorean Theorem Worksheet, #1 - #20)

20.



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

$1.4^2 + b^2 = 4.5^2$

$1.96 + b^2 = 20.25$

$b^2 = 20.25 - 1.96$

$\sqrt{b^2} = \sqrt{18.29}$

$b \doteq 4.3\text{m}$

Section 1.3: Surface Area of Objects Made from Right Rectangular Prisms

If you wanted to determine the surface area of these cube houses, what would you need to know?

Page 25: Investigate

Number of Cubes	Surface Area (square units)
1	6
2	10
3	14
4	18
5	22

What happens to the surface area each time you add a cube?

Why does the surface area change in this way?