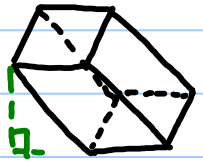
3/26 MON

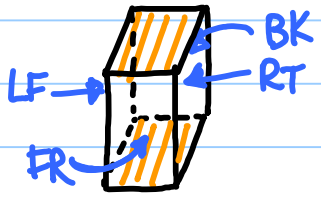
12.2 Surface Areas of Prisms & Cylinders

Right Prism - lateral edge is the altitude. ("height")

Oblique Prism - lateral edge is not the altitude.

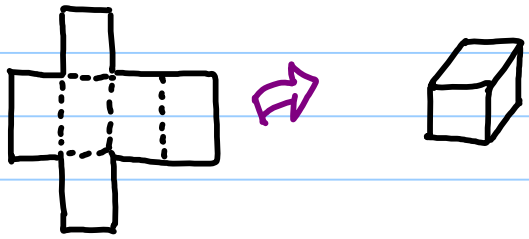


* **Lateral Area** - Sum of the lateral faces (not the bases)



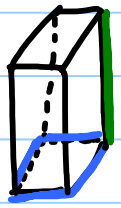
Surface Area - Sum of ALL of the surfaces

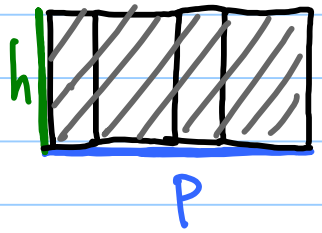
Net - 2D figure that folds to form a solid



Thm 12.1
Lateral Area of a Prism

$L = P \cdot h$ (h: height (dist between bases); P: perimeter (of the base))

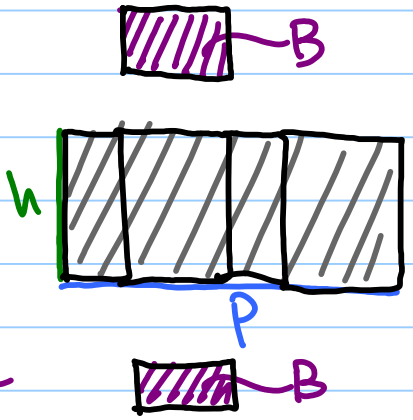




L (or LA) "rectangle"

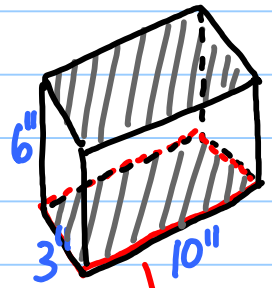
Thm 12.2
Surface Area of a Prism

$S = Ph + 2B$ (P: perimeter; 2x; B: area of the base)



S (or SA)

ex1) Find the lateral & surface area of a rectangular prism.



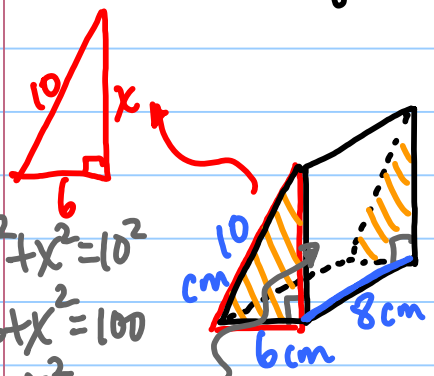
$L = Ph$
$= (3+10+3+10)\cdot 6$
$= 26 \cdot 6$
$= 156 \text{ inches}^2$

rectangle: $A = bh$

$S = Ph + 2B$
$= 156 + 2(b \cdot h)$
$156 + 2(10 \cdot 3)$
$= 156 + 60 = 216 \text{ in}^2$

height of rect.

ex 2) Find the lateral & surface area of the triangular prism.



$6^2 + x^2 = 10^2$
$36 + x^2 = 100$
$x^2 = 64$
$x = 8$
pythag thm

$L = Ph$
$(10+6+8)\cdot 8$
$= 24 \cdot 8$
$= 192 \text{ cm}^2$

right $\triangle$: $A = \frac{1}{2}bh$

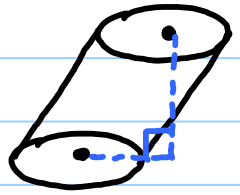
$S = Ph + 2B$
$192 + 2\left(\frac{1}{2} \cdot 6 \cdot 8\right)$
$= 192 + 48 = 240 \text{ cm}^2$

height of $\triangle$

Right Cylinder

- axis (segment connects centers of the circular bases) → altitude

Oblique Cylinder -



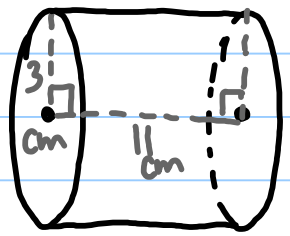
Thm 12.3 - Lateral Area of a Cylinder

$L = 2\pi rh$
c

Thm 12.4 - Surface Area of a Cylinder

$S = 2\pi rh + 2\pi r^2$
c area of ⊙

ex 3)



Find lateral & surface area of the right cylinder

$L = 2\pi r \cdot h$

$2\pi(3)(11)$

$\approx 207.3\ cm^2$

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

$= 2\pi(3)(11) + 2\pi(3)^2$

$\approx 263.9\ cm^2$