

Geometry 1-BE | MONDAY 3-14-11

- ① Find the equation of the line through $(-2, 6)$, $(5, -4)$.
 - ② Find the equations of the lines parallel to and perpendicular to $y = -\frac{1}{4}x + 6$ and through $(-3, -8)$
 - ③ Evaluate $-4 - |-2 - 9|$
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Ch. 12 - 3 Surface Area of Prisms

Recall: A prism is a polyhedron with 2 parallel, congruent bases. The other faces are parallelograms. Prisms are named by their bases.

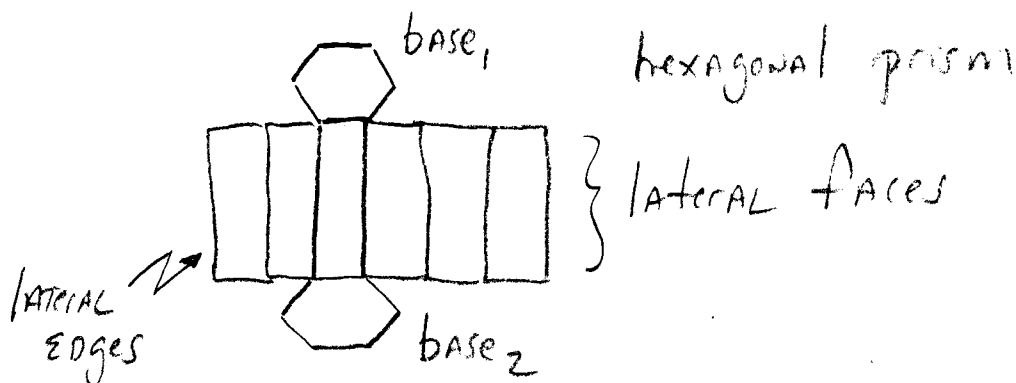
Other prism terms:

Lateral faces: the faces that are not bases, i.e. the parallelograms that are not bases.

Lateral edges: the parallel lines formed by intersecting lateral faces

Lateral area: the sum of the areas of the lateral faces.

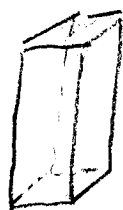
(Ex)



Altitude of
A prism

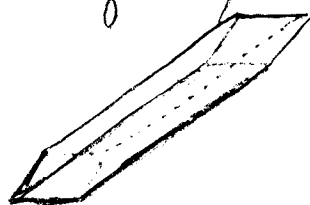
A line segment perpendicular to the bases, the perpendicular distance between bases is the height, h .

Right prism



a prism that has lateral edges perpendicular to the bases. The lateral edges are Altitudes

oblique prism



A prism whose lateral edges are not perpendicular to the bases

Lateral Area
of A Right
Prism

$$L_{RP} = P \cdot h$$

↓
perimeter
of base

Total Area of
a Right Prism

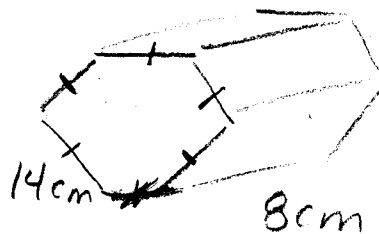
$$A = L_{RP} + 2B$$

↑

Area of
one base

EX1
Pg 650

Find the lateral area of the pentagonal prism

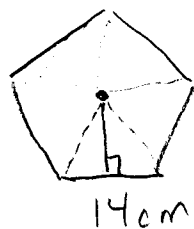


Each lateral side
is $14 \cdot 8 = 112 \text{ cm}^2$
 $\times 5 \text{ sides}$

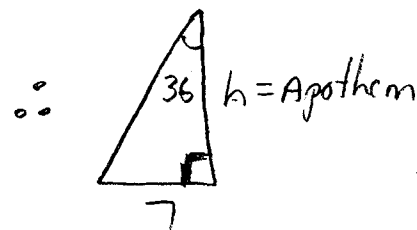
$$\boxed{560 \text{ cm}^2} -$$

$$\underline{\text{or}} \quad L_{\text{pr}} = Ph = (14 \cdot 5) \cdot 8 = \boxed{560 \text{ cm}^2} -$$

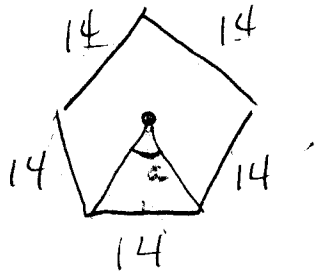
Find the total Area:



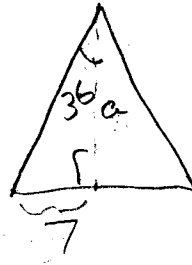
$$\text{C.A.} = \frac{360}{5} = 72^\circ$$



$$\text{A}_{\text{base}} = \frac{1}{2} Ph \text{ or } \frac{1}{2} Pa \quad \leftarrow \text{apothem}$$



$$C.A. = \frac{360}{5} = 72^\circ$$



$$\tan 36^\circ = \frac{7}{a}$$

$$\frac{a \tan 36 = 7}{\tan 36 \quad \tan 36}$$

$$a = \frac{7}{.7265}$$

$$a = 9.635$$

$$A_{\Delta} = \frac{1}{2}(14)9.635 = 67.45$$

$\times 5$

$$A_{\text{Base}} = 337.25$$

$\times 2$

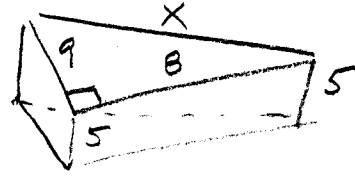
$$A_{\text{Sides}} = 671.50$$

560.00

$$\boxed{1234.50 \text{ cm}^2}$$

EX 2
Pg 650

SURFACE AREA of Triangular Prism
FIND S.A.



$$L = (5 \cdot 8) + (5 \cdot 9) + (5 \cdot X)$$

$$X^2 = 9^2 + 8^2 = 81 + 64 = 145$$

$$X = \sqrt{145}$$

$$L = 40 + 45 + 5\sqrt{145} = 85 + 5\sqrt{145}$$

$$A_{\text{base}} \Rightarrow \begin{array}{c} 9 \\ \triangle \\ 8 \end{array} \quad \frac{1}{2}(8)9 = 36$$

$$\therefore \text{Total Area} = \underbrace{2 \cdot 36}_{\text{BASES}} + \underbrace{85 + 5\sqrt{145}}_L$$

$$= 72 + 85 + 5\sqrt{145}$$

$$= 157 + 5\sqrt{145}$$

$$= 157 + 5(12.042)$$

$$= 157 + 60.21 = \boxed{217.2 \text{ UNITS}^2}$$

Homework: Pg 651 # 6, 8, 9, 11.