Geometry 1-BE | Monday 3-12-12

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 $(-3, -5)$

3. Evaluate $-4 - |-2 - 9|$

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:

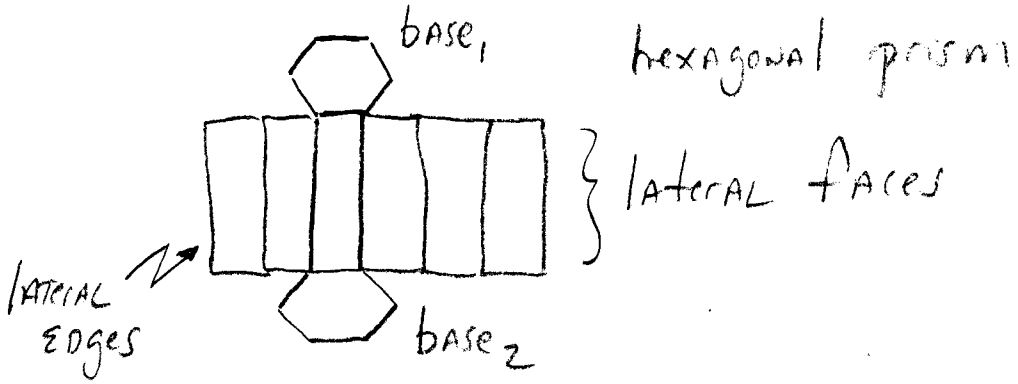
lateral faces: the faces that are not bases, i.e. the parallelograms that are not bases.

lateral edges: the parallel lines formed by intersecting lateral faces

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

{L}

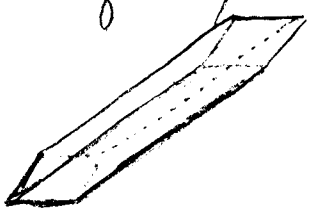
(Ex)



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 <u>not</u> perpendicular to the bases



Lateral Area of a Right Prism

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

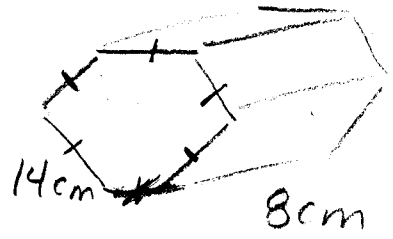
P ↓ Perimeter of base

Total Area of a Right Prism

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

B ↑ Area of one base

EX 1 Pg 650 Find the lateral area of the pentagonal prism



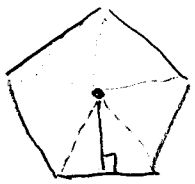
Each lateral side is $14 \cdot 8 = 112\ cm^2$

$\times 5$ sides

$560\ cm^2$

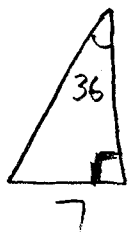
or $L_{RP} = Ph = (14 \cdot 6) \cdot 8 = 560\ cm^2$

Find the total area:

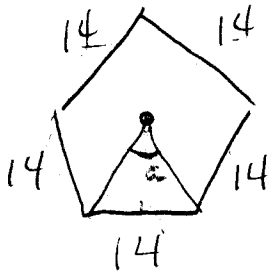


$C.A. = \frac{360}{5} = 72°$

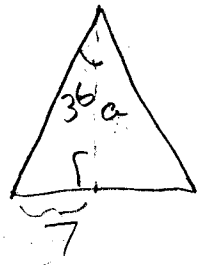
$\therefore$



$A_{base} = \frac{1}{2}Ph$ or $\frac{1}{2}Pa$ (a = apothem)



$C.A. = \frac{360}{5} = 72°$



$\tan 36° = \frac{7}{a}$

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

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

$a = 9.635$

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

$\times 5$

$A_{BASE} = 337.25$

$\times 2$

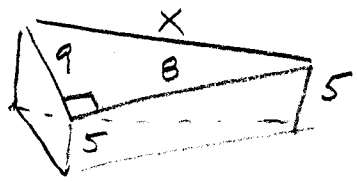
$A_{SIDES} = 674.50$

560.00

1234.50 cm^2

Ex 2 Pg 650 Surface Area of Triangular Prism

Find S.A.

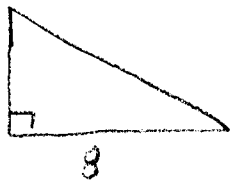


$$L = (5 \cdot 8) + (5 \cdot 9) + (5 \cdot x)$$

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

$$x = \sqrt{145}$$

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

$A_{BASE} \Rightarrow$ 

$$\frac{1}{2}(8)9 = 36$$

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

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

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

$$= 157 + 5(12.042)$$

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

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