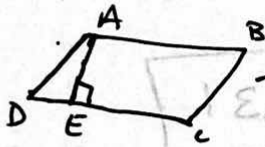
Formal Geometry
Sec 12.1 Notes

Area of Polygon's:

** Be careful as to which base corresponds to which height.

For example:

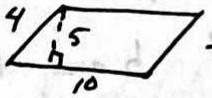


→ ~~EF~~ $\overline{DC}$ is the base, then the height is $\overline{AE}$

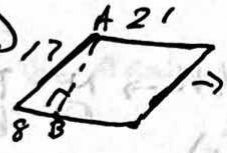
Thus, when Find Area and using base & height you must use the base/height that correspond with eachother.

** Remember, height is ⊥ Distance between 2 bases.

Area of Parallelogram ($A_{\square}$) = $A = bh$ b = base, h = height.

Ex) 

→ $A = 5(10) = 50$

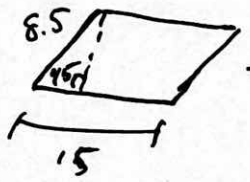
Ex) 

→ must use Pythagorean Thm To Find height ($\overline{AB}$)

so, $8^2 + x^2 = 17^2$
$64 + x^2 = 289$
$x^2 = 225$
$x = 15$

$A = 21(15)$
$A = 315$

OVER

Ex) 

→ You will see & use 45-45-90 / 30-60-90 To help Find heights / bases.

Use 45-45-90 Properties To Find height.
The hypot. is 8.5 so To Find a leg ÷ by $\sqrt{2}$

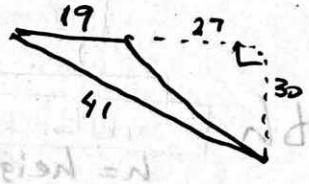
$\frac{8.5}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{8.5\sqrt{2}}{2}$ } change to decimal since 8.5 is Decimal. ≈ 12.02

$A = bh \Rightarrow A = 15(12.02) = \boxed{A = 180.31}$

* Do NOT Round To whole #'s unless it says. Keep & use your decimal places when multiplying

Area of Triangle

$A = \frac{1}{2}bh$: b = base, h = height

Ex) 

Since this Δ is obtuse the height is on exterior.

So IN Relating base To corresponding height } Since ** on Front Page

b = 19 h = 30

$A_\Delta = \frac{1}{2}(19)(30)$

$\boxed{A = 285}$

Ex) 

A = 52

x

Find b and h.

since $A_\Delta = \frac{1}{2}bh$ and we know the Area,

$52 = \frac{1}{2}bh$ → Now plug in For b & h

$52 = \frac{1}{2}(x+5)(x)$

$52 = \frac{1}{2}(x^2+5x)$

multiply both sides by 2 to get rid of 1/2. ← $104 = x^2+5x$

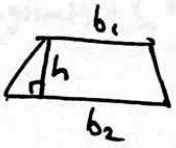
$x^2+5x-104=0$ → get everything on same side.

↳ Now solve by Factoring or Quadratic Formula.

Formal Geometry

Sec 10.2 Notes.

Area of Trapezoid:

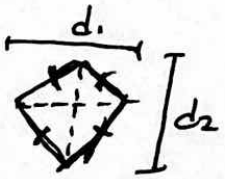


$A_{Trap} = \frac{1}{2} h (b_1 + b_2)$ OR $A_{Trap} = h(\text{Midsegment})$

* If you know the midsegment

* Use all you know about Triangles to help Find height if You need it

Area of Rhombus:

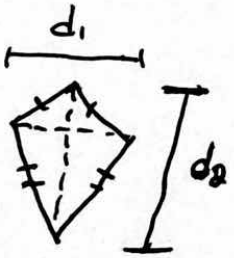


$A_{Rhom} = \frac{1}{2} d_1 (d_2)$

d_1 = one diagonal
d_2 = other diagonal

* Remeber Your Properties of Rhombus especially with Diagonals.

Area of Kite



$A_{Kite} = \frac{1}{2} d_1 (d_2)$

* Again Remember & Know Properties of Kites.

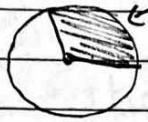
Pg 739 8-13 17-21

- In order To Find Area of Rhombus & Kites You must Know length of Diagonals.

10.3 - Area of Circles / Sectors

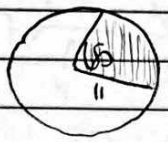
Area circle = πr^2

* space inside a figure (2 dimensional)



Area sector =

$$\frac{\text{Area Sector}}{\text{Area Circle}} = \frac{\text{Measure Arc}}{360}$$

Ex) 

Find area shaded

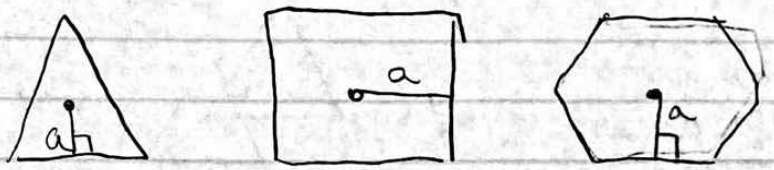
$\frac{x}{\pi 11^2} = \frac{65}{360}$ $\quad 360x = 121\pi(65)$

$360x =$

Area of Polygon = $\frac{1}{2}aP$

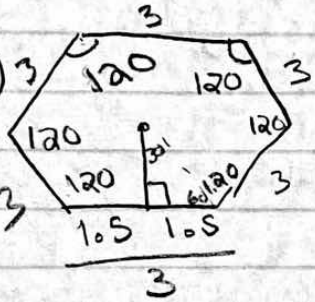
- a = apothem - Segment from center to any side (distance)
- P = Perimeter

Ex)



* Perpendicular?

Ex)



$\frac{360}{6} = 60$

$A = \frac{1}{2}aP$

$= \frac{1}{2}(1.5\sqrt{3})(18)$

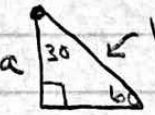
$P = 3(6) = 18$

a = Draw apothem

Draw RT Δ

- Solve RT Δ

$a = 1.5\sqrt{3}$



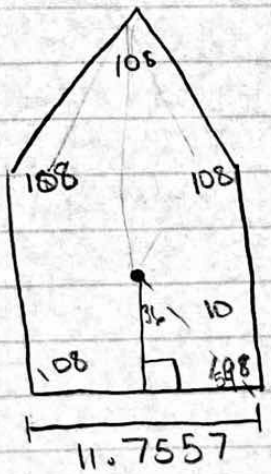
$a = 1.5\sqrt{3}$

$SI = (n-2)180$

$= 4(180)$

$= 720$

Ex)



$SI = (5-2)180$

$= (3)180$

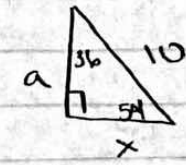
$= 540/4 = \angle$'s

$P = 58.7785$

$\sin 54 = \frac{a}{10}$

$a = \sin 54(10)$

$= 8.09016$



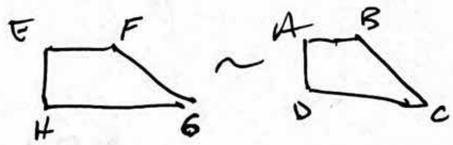
$A = \frac{1}{2}(8.09016)(58.7785)$

Trapezoid: $\frac{1}{2}h(b_1 + b_2)$ Circle: πr^2

Triangle: $\frac{1}{2}bh$ Square + Rectangle: lw

Formal Sec 10.5 Notes

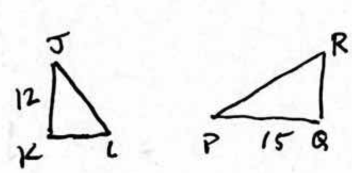
Thm: If 2 Polygons are ~ then their Areas are Proportional to the Square of their S.F.



$\Rightarrow \dfrac{\text{Area of } EFGH}{\text{Area of } ABCD} = \left(\dfrac{EF}{AB}\right)^2$

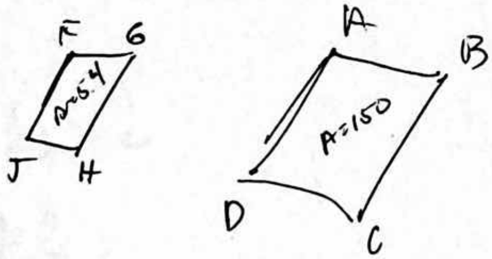
Ex)

$\triangle JKL \sim \triangle PQR$ & area of $\triangle JKL$ is $30\ sq^2$. Find area $\triangle PQR$.



$\dfrac{30}{x} = \left(\dfrac{12}{15}\right)^2$

ex)



Find Scale Factor

$\sqrt{\dfrac{54}{150}} = \sqrt{(SF)^2}$

Pg 766
6-13, 15, 16

~~Pg 805
6-13~~

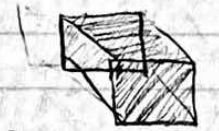
~~Review Pg 699
1-32~~

10.6: Surface Area of Prisms + Cylinders

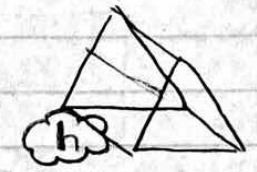
Surface Area: Area of all outer faces

Prism: A solid figure with 2 congruent bases

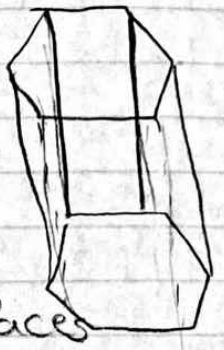
Ex)



Rectangular Prism



Triangular Prism



Lateral Area: Area of lateral faces

* Exclude the bases

Surface Area of Prism: $2(B) + \underbrace{Ph}_{L.A}$ ← Bases

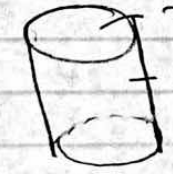
B = Area of Base

P = Perimeter of base

h = height of a figure

Cylinder: A prism w/ 2 circular bases

Ex)



A Cylinder = $\underbrace{2B}_{2\pi r^2} + \underbrace{L.A}_{\text{Circumfrence (height)}}$

$2\pi r\,(h)$

10.6 - Surface Area of Pyramids and Cones

S.A of Pyramid:

Ex)

slant height of figure

Area of 4 Δs +

Area of base

H

, Perimeter of base

SA of Pyramid: $B + \frac{1}{2}Pl$

Area of Base

- Slant height

Cone: Area of O + LA

$\pi r^2 + \pi r l \Rightarrow B + \pi r l$

- Slant height or l

Oblique Cone:

12.4 - Volume of Prism/Cylinders

V: The amt. of space inside a solid figure (3-D)

$V = B(h)$

Area of Base

, Height

Oblique Objects:

- Height