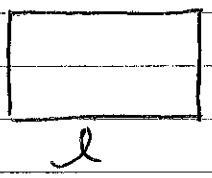
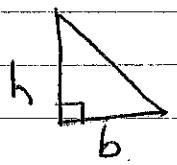
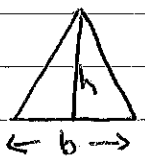
4.1 Math 10 AW - notes

Area - the whole surface of an object.
(different than perimeter which is only the outside)

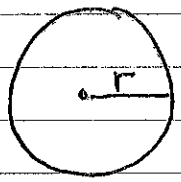


$A = l \times w$

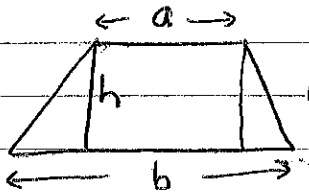




$A = \frac{b \times h}{2}$



$A = \pi r^2$ or $\pi \times r \times r$



$A = \frac{a+b}{2} \times h$

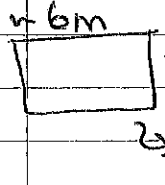
referent - refers to a measurement

Common referents

pinky fingernail ~ 1 cm
knuckle of thumb to end of thumb ~ 1 inch
floor to hip ~ 1 m (1 yd)
middle of chest to end of arm ~ 1 m (1 yd)
elbow to middle of hand ~ 1 foot
stride ~ 1 m (1 yd)
size of foot + a little more ~ 1 foot

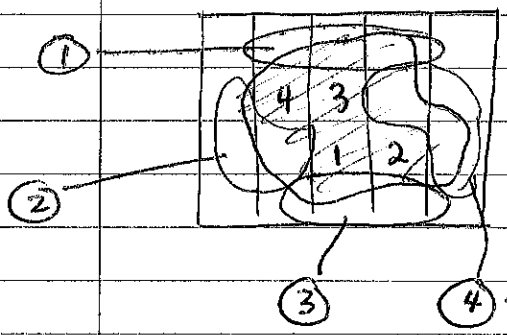
To estimate - start with what you know.

Area of lawn - estimate one side then the other side then multiply.



4.2 Math 10 AW - notes

Estimate using a grid.

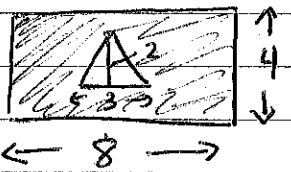


① count fully filled squares → 4

② group partially filled squares into wholes ≈ 4

③ add - 4+4 = 8 (approx.) squares

4.3 Area of 2-D shapes (see formulas at start of chapter)



To find area of shaded part find <u>both areas</u> and <u>subtract</u>

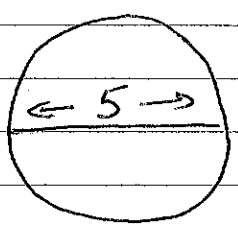
$A_{\square} = l \times w$

$A_{\Delta} = \frac{b \times h}{2}$

$A_{\square} = 8 \times 4 = 32$ $\quad A_{\Delta} = \frac{3 \times 2}{2} = 3$

Total area (shaded) $= 32 - 3$
$= 29$

$A = \pi r^2$



$r = \frac{d}{2}$ so $r = \frac{5}{2}$ or 2.5

$A = \pi r^2$
$= (3.14)(2.5)(2.5)$
$= 19.625$

4.4 Math 10Aw - notes

When converting area units - make sure you use the right section on the conversion sheet.

Because even though $1yd = 3ft$

$1yd^2 = 1yd \times 1yd$

$= 3ft \times 3ft$

$= 9ft^2$ ← this number tells you how many times you have to mult or divide the conversion

ex 1

$23m^2 = \_\_\_\_ cm^2$ ← conversion from m → cm = 100 but you need to x 100 twice

↳ $23 \times 100 \times 100 = 230000\ cm$

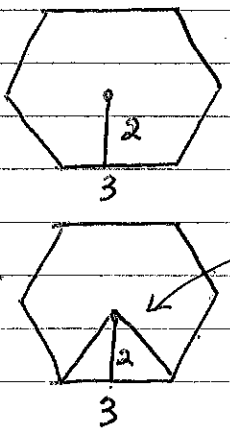
ex 2 176 sq inches = ____ sqft (sq means in^2) → 1ft = 12 inches ∴ inches ÷ 12 = ft

* do it twice

$176 \div 12 \div 12 = 1.22\ sqft$

4.7 Math 10AW - notes

Area of Regular Polygons:



to find the area of shapes like this
① find area of the triangle
② multiply this by # of sides

① $A_\Delta = \frac{b \times h}{2} = \frac{3 \times 2}{2} = 3cm^2$

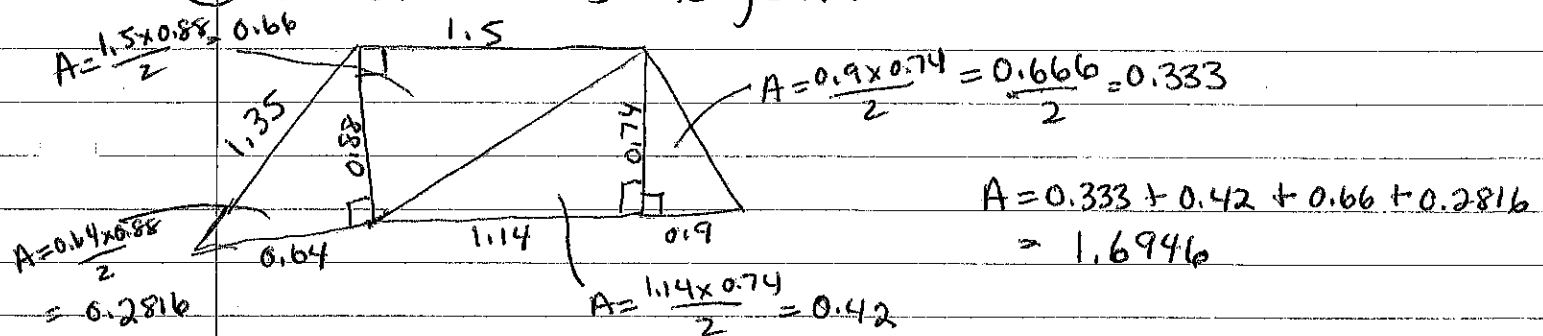
② $3 \times 6 \text{ sides} = 18cm^2$

Geometry words:

penta = 5
hexa = 6
hepta = 7 (aka septa)
octa = 8
nona = 9
deca = 10

4.8 Area of Irregular Polygons

① Divide area into regular shapes
② Find area of each shape
③ add areas together

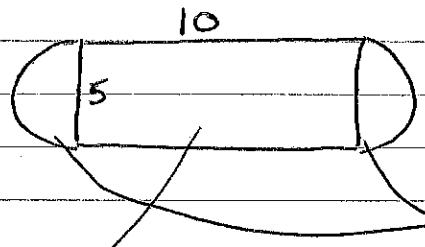


4.9 Math 10AW - notes

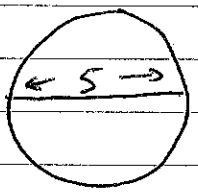
Area of Composite Shapes

① break into regular shapes
② find areas
③ add together.

ex 1



put together these will make one whole circle with a d = 5

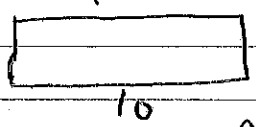


$r = \frac{5}{2} = 2.5$

$A = \pi r^2$

$A = (3.14)(2.5)(2.5)$

$= 19.625$



$A = l \times w$

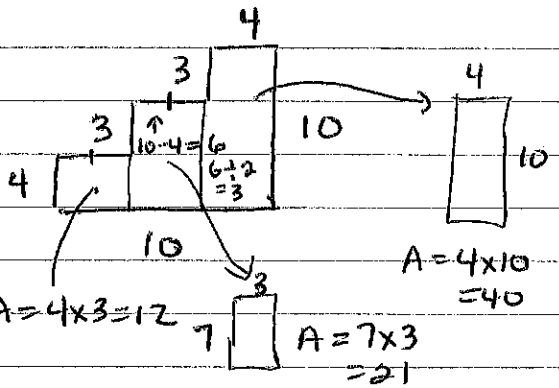
$= 10 \times 5$

$= 50$

ADD $50 + 19.625$

$= 69.625.$

ex 2



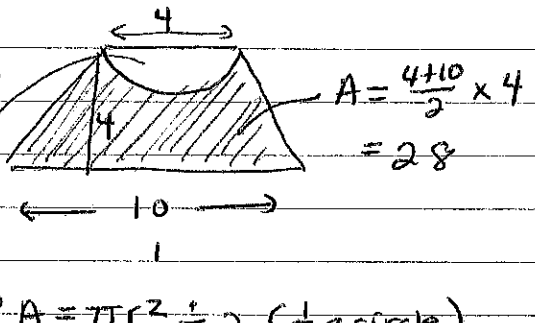
$A = 4 \times 10$

$= 40$

$A_{total} = 12 + 21 + 40$

$= 73$

ex 3



$A = \frac{4+10}{2} \times 4$

$= 28$

$A = \pi r^2 \div 2$ ($\frac{1}{2}$ a circle)

$= \frac{\pi(2)(2)}{2}$

$= 6.28$

$A_{total} = 28 - 6.28$

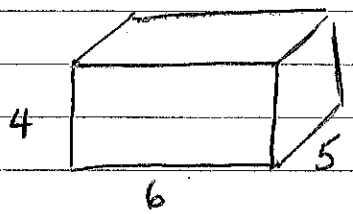
$= 21.72.$

4.10 Math 10 AW - notes.

Surface Area = Area of **all** surfaces.

To organize? - look for same/equal sides
such as front + back
side + side
top and bottom.

ex 1



? What sides are the same?

Front + Back	Front	Back
$\text{Area}_{\text{Front}} = 4 \times 6 = 24$	24	24

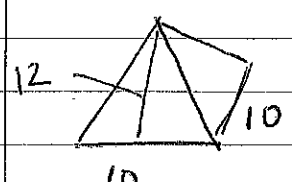
side + side	side	side
$\text{Area}_{\text{side}} = 5 \times 4 = 20$	20	20

Top + Bottom	Top	Bottom
$\text{Area}_{\text{bottom}} = 6 \times 5 = 30$	30	30

Surface Area - add all areas together $= 24 + 24 + 20 + 20 + 30 + 30$

$= 148$

ex 2



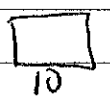
? what sides are the same?

* All 4 triangles

$\text{Area}_{\Delta} = \frac{b \times h}{2} = \frac{10 \times 12}{2} = 60$ → since 4 triangles are the same multiply by 4

$A = 60 \times 4 = 240$

* Don't forget the bottom



$A = 10 \times 10 = 100$

ADD = Surface Area = $240 + 100 = 340$.