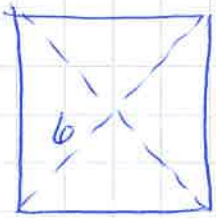
8.1.5 What is the Area?

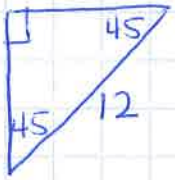
8-47

a)



diagonals are equal and ⊥

I



sides $\frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2}$

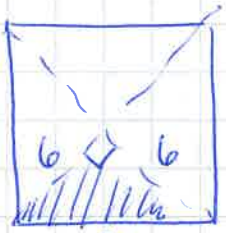
$= 6\sqrt{2}$

$A = 6\sqrt{2} \cdot 6\sqrt{2}$

$A = 36 \cdot 2$

$\boxed{A = 72 \text{ un}^2}$

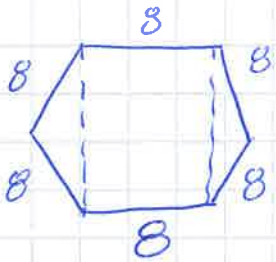
II



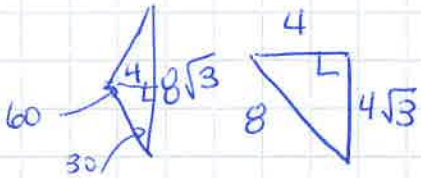
$\frac{6 \cdot 6}{2} = 18$

$18(4) = \boxed{72 \text{ un}^2}$

b)



$\frac{180(n-2)}{n} = \frac{180(6-2)}{6} = 120$

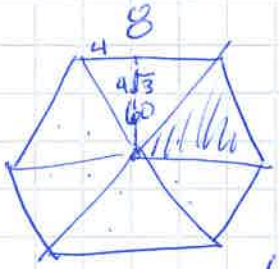


$8\sqrt{3}(8)$ rectangle

$\frac{1}{2}(8\sqrt{3})(4)$ triangle

$2(16\sqrt{3})$ 2 triangles

$\boxed{166.28 \text{ un}^2}$



1 Δ is

$\frac{1}{2}(8)4\sqrt{3}$

$16\sqrt{3}$

$6(16\sqrt{3}) \approx \boxed{166.28 \text{ un}^2}$

$\boxed{8\text{-}48}$

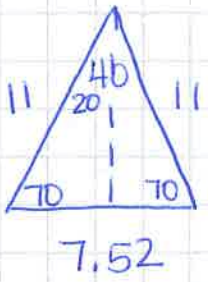
① Break Figure up to rectangles and triangles

② Make Congruent triangles from central point

$\boxed{8\text{-}49}$

a) 9 sides

$\frac{180(7)}{9} = 140$ each angle



$\sin 20 = \frac{x}{11}$

$x = 3.76$

$2x = 7.52$

$\cos 20 = \frac{y}{11}$

$y = 10.34$

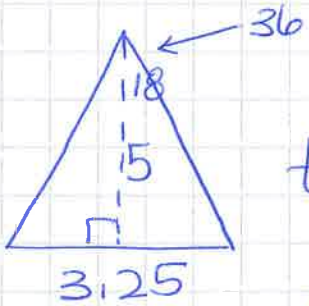
$A = \frac{1}{2}(7.52)(10.34)$

$A = 38.88$

9 triangles $\Rightarrow$ $\boxed{349.91 \text{ un}^2}$

b) 10 sides

$\frac{180(8)}{10} = 144$ each angle



$\frac{360}{10}$

$\tan 18 = \frac{x}{5}$

$x = 1.62$

$2x = 3.25$

$A = \frac{1}{2}(3.25)(5)$

$A = 8.125$

10 triangles $\Rightarrow$

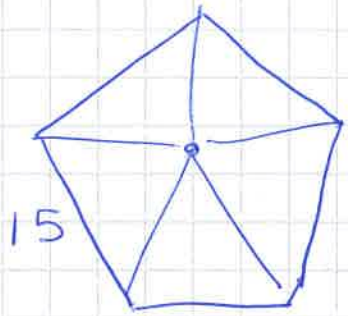
$\boxed{81.25 \text{ un}^2}$

8-50

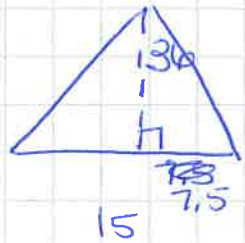
Learning Log

1. sketch 1 of central Δ's
2. find central angle $\left(\frac{360}{n}\right)$
3. sketch in height
4. Use trig to find base (double it)
5. Use trig to find height
6. Find Area of triangle
7. Multiply by # of Δ's that make up the polygon

8-51



$\frac{360}{5} = 72$



$\tan 36 = \frac{7.5}{y}$

$y = 10.32$

$A = 77.4\ (5)$

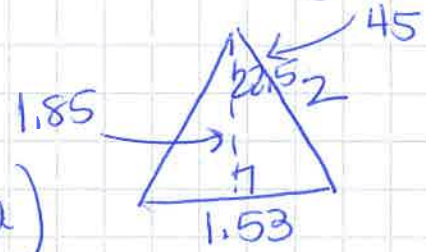
$A = 387 \text{ units}^2$

$\frac{387}{150} \approx 2.58$ so need 3 bags

8-52

Octagon $\frac{360}{8}$

a)



$\sin(22.5) = \frac{x}{2}$ $\cos(22.5) = \frac{y}{2}$

$x = .77$ $y = 1.85$

$2x = 1.53$

$A = \frac{1}{2}(1.53)(1.85)$

$A = 1.42\ (8)$

$A \approx \boxed{11.322 \text{ un}^2}$

b) $P = 1.53(8)$

$P = 12.24\ (48.99)$

$\$599.64$