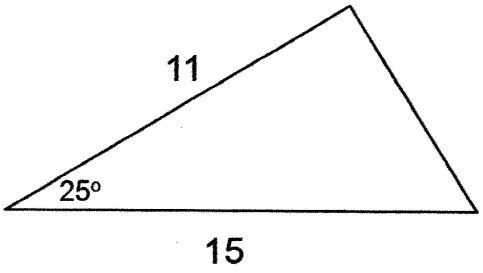
Practice #14 Geo Trig and are of polygons Thursday, April 2, 2020

Find the area of each of these four polygons to the nearest hundredth.

1. 

Area =

2. Regular 18-gon with an apothem equal to 10. Area =

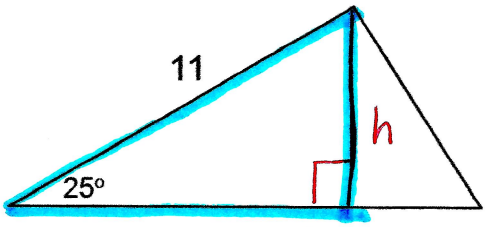
3. Regular Dodecagon (12 sides) with sides that are 5 each. Area =

4. Regular decagon (10 sides) with radius equal to 12. Area =

Practice #14 Geo Trig and are of polygons Thursday, April 2, 2020 ANSWERS

Find the area of each of these four polygons to the nearest hundredth.

1.



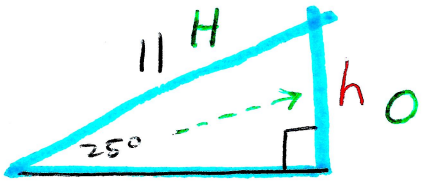
15 = base

Area = 34.88

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

$= \frac{1}{2}(15)(4.65)$

$A = 34.88$



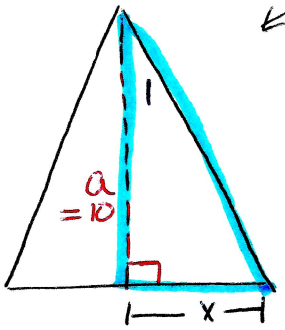
SOH CAH TOA

$\sin 25° = \frac{h}{11}$

$h = 11 \cdot \sin 25° = 4.65$

2. Regular 18-gon with an apothem equal to 10. Area =

$a = 10$



one of 18 $\cong \Delta$s central $\angle = \frac{360°}{18} = 20°$

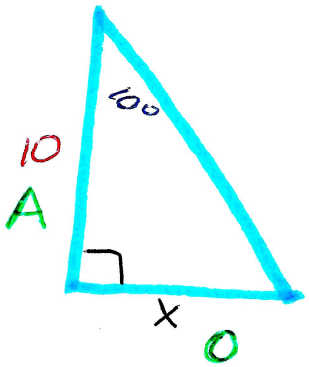
$\angle 1 = \frac{1}{2}$ central $\angle = \frac{20°}{2} = 10°$

$x = 1.76$

side $= 2x = 2(1.76) = 3.52$

perimeter $= 18(3.52) = 63.36$

$P = 63.36$



SOH CAH TOA

$\tan 10° = \frac{x}{10} \rightarrow x = 10 \tan 10° = 1.76$

$A = \frac{1}{2}a \cdot P$

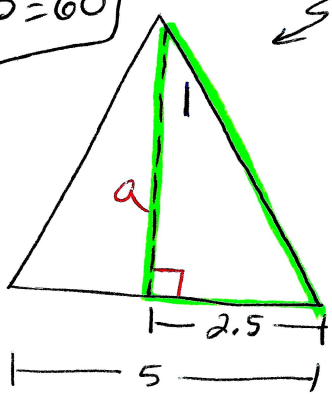
$= \frac{1}{2}(10)(63.36)$

$A = 316.80$

3. Regular Dodecagon (12 sides) with sides that are 5 each. Area =

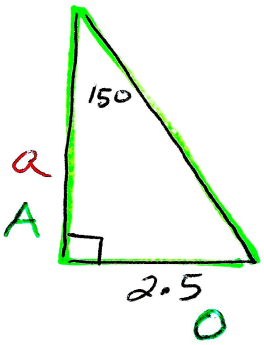
perimeter = (5)(12)

P = 60



Central ∠ = $\frac{360°}{12}$ = 30°

∠1 = ½ central ∠ = ½(30) = 15°



SOHCAHTOA

$\frac{\text{Tan}15°}{1} = \frac{2.5}{a}$

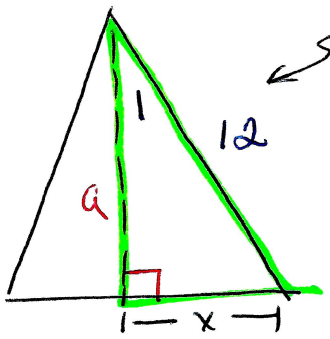
$a = \frac{(2.5)(1)}{\text{Tan}15°} = \frac{2.5}{\text{Tan}15}$

a = 9.33

$A = \frac{1}{2} a \cdot P = \frac{1}{2}(9.33)(60)$

A = 279.90

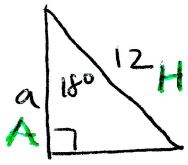
4. Regular decagon (10 sides) with radius equal to 12. Area =



central ∠ = $\frac{360°}{10}$ = 36°

∠1 = ½ central ∠ = ½(36) = 18°

For a

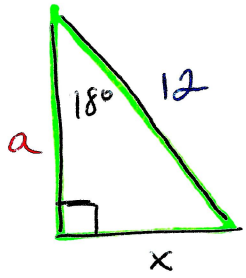


SOHCAHTOA

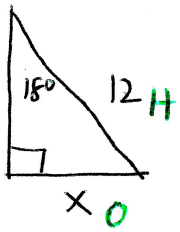
$\cos 18° = \frac{a}{12}$

$a = 12 \cos 18°$

a = 11.41



For perimeter – find X



SOHCAHTOA

$\sin 18° = \frac{x}{12}$

$x = 12 \sin 18°$

X = 3.71

side = 2x = 2(3.71) = 7.42

perimeter = 10 · side

= 10(7.42)

P = 74.2

$A = \frac{1}{2} a \cdot P$

$= \frac{1}{2}(11.41)(74.2)$

A = 423.31