

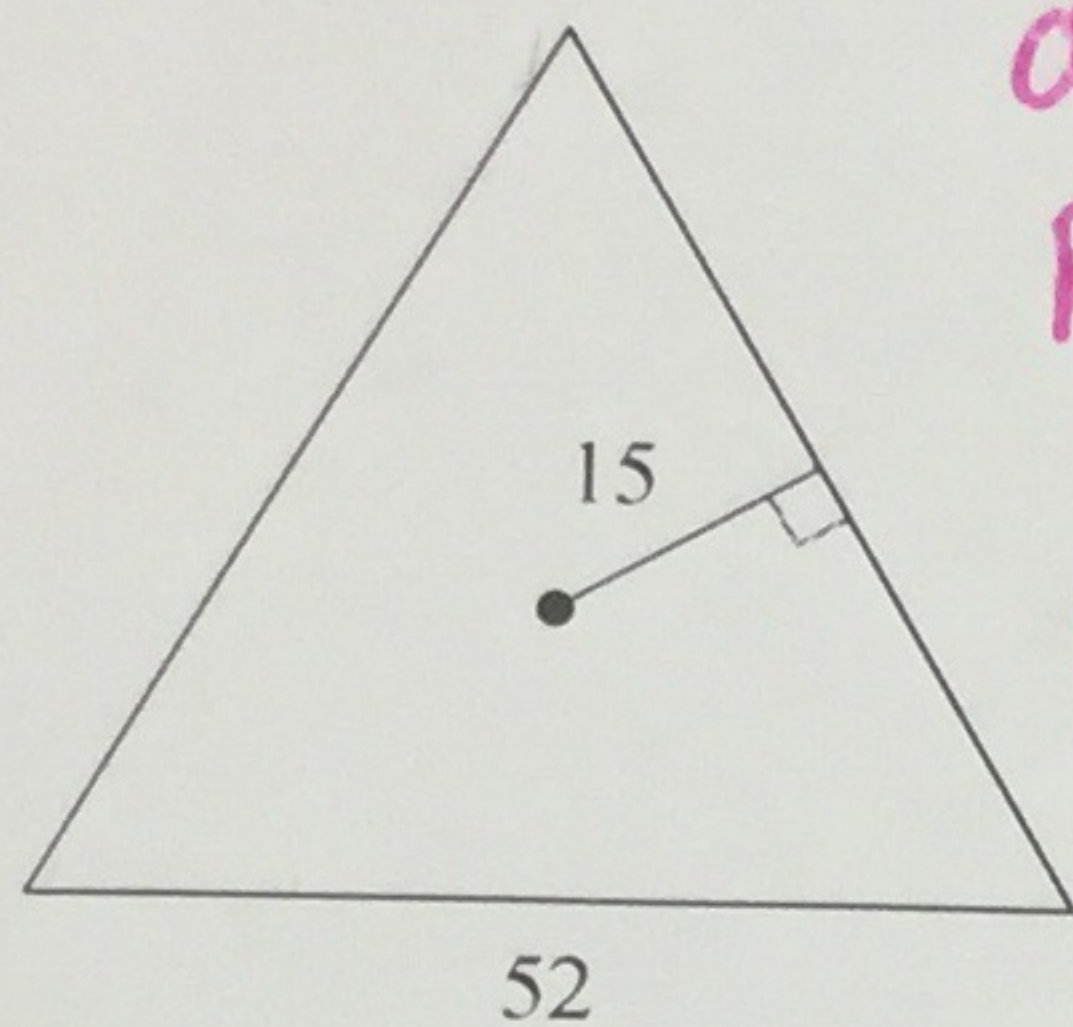
Area of Regular Polygons Hwk

Date \_\_\_\_\_

Period \_\_\_\_\_

Find the area of each regular polygon. Round your answer to the nearest tenth if necessary.

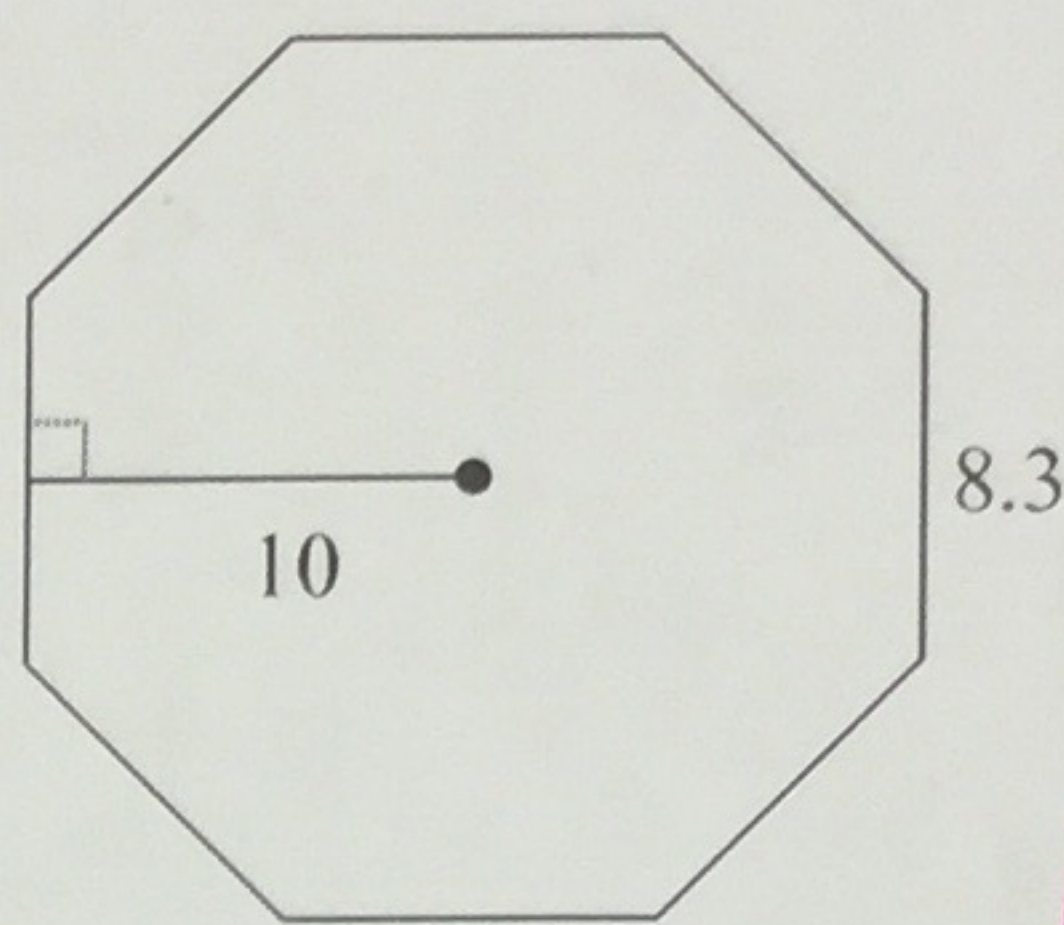
1)



1170

$a = 15$   
 $P = 52(3) \text{ or } 156$   
 $A = \frac{1}{2} (15)(156)$   
 $[A = 1170]$

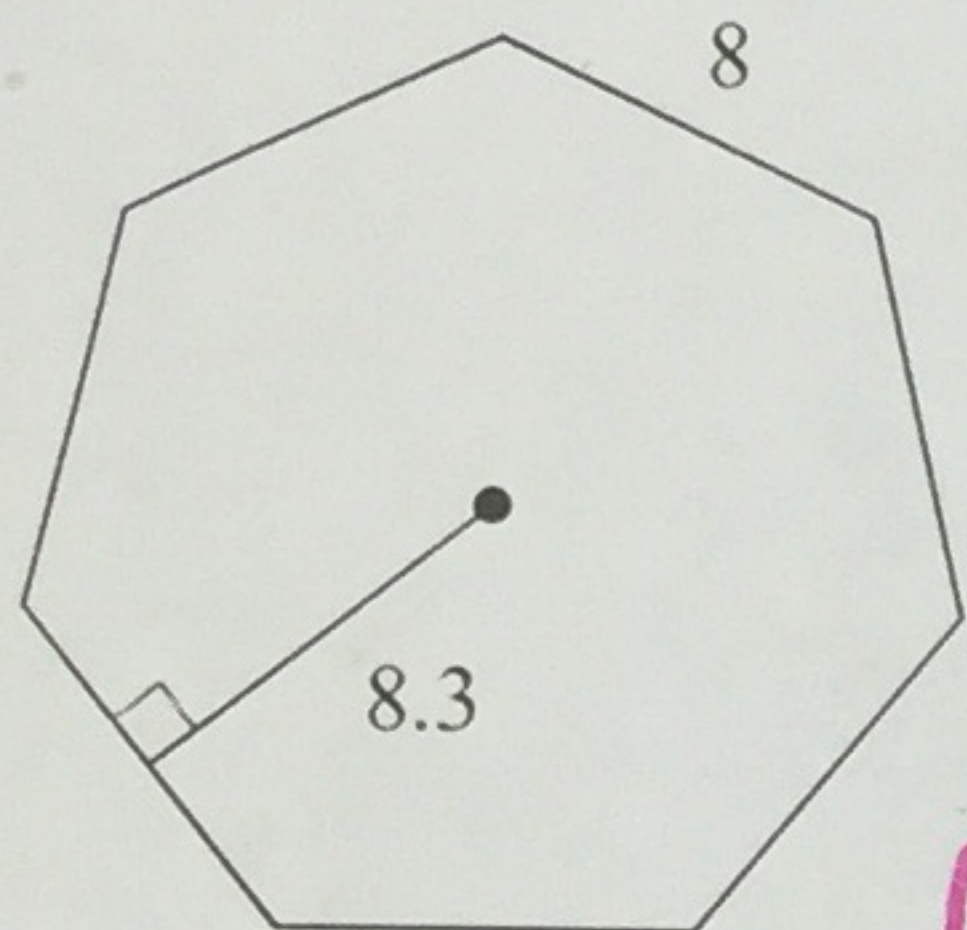
2)



332

$a = 10$   
 $P = 8.3(8) \text{ or } 66.4$   
 $A = \frac{1}{2} (10)(66.4)$   
 $[A = 332]$

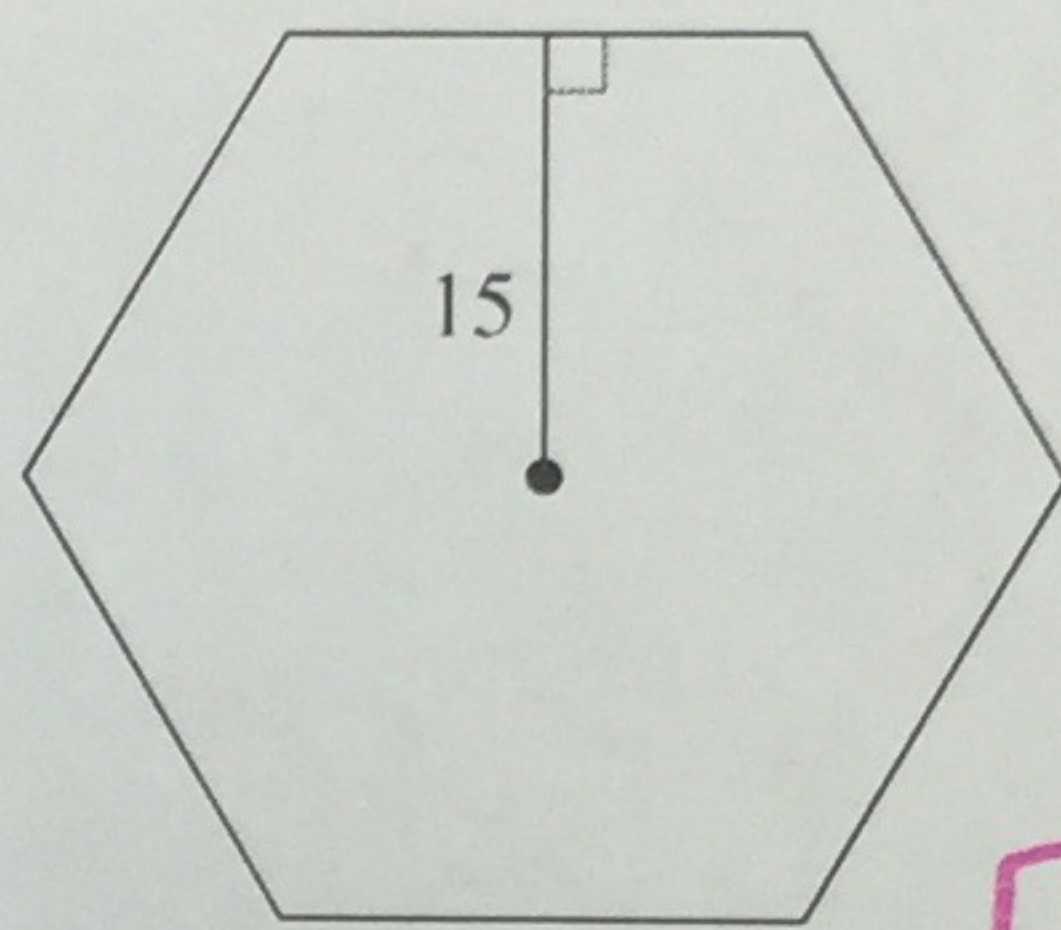
3)



232.4

$a = 8.3$   
 $P = 8(7) \text{ or } 56$   
 $A = \frac{1}{2} (8.3)(56)$   
 $[A = 232.4]$

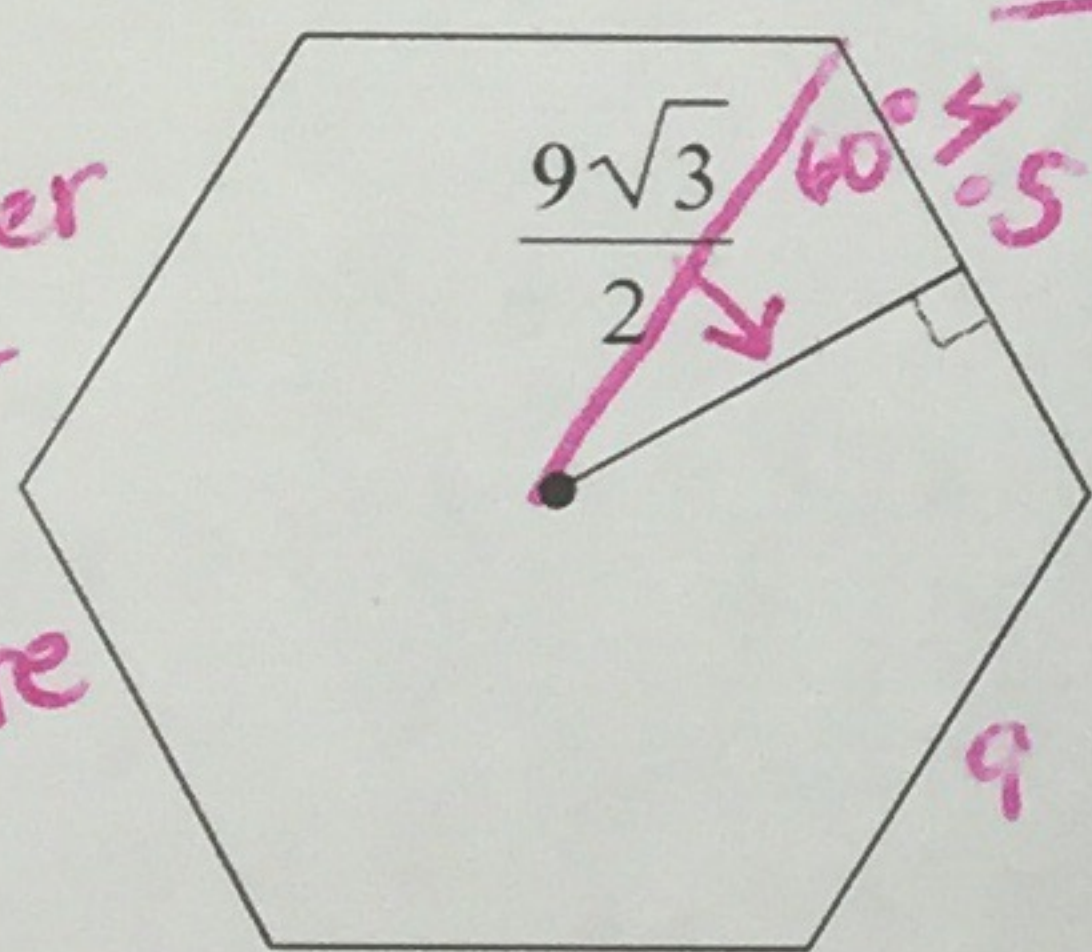
4)



778.5

$a = 15$   
 $P = 17.3(6) \text{ or } 103.8$   
 $A = \frac{1}{2} (15)(103.8)$   
 $[A = 778.5]$

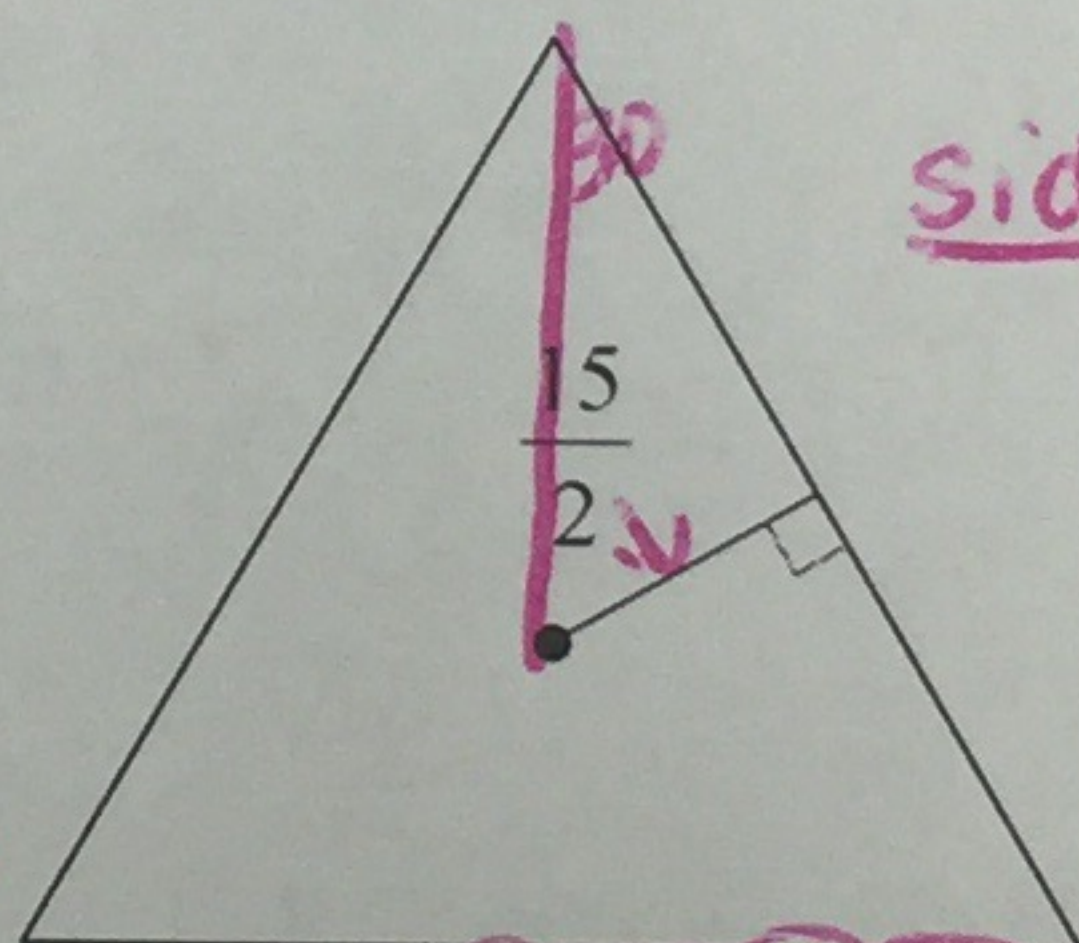
5)



210.4

angle measure  
 $\frac{180(6-2)}{6} = 120 \div 2 = 60$   
side length  
 $\tan(60) = \frac{9\sqrt{3}}{2}$   
 switch  $\frac{2}{9\sqrt{3}} = \tan(60)$   
 $\frac{2}{a} = \tan(60)$   
 $\frac{2}{a} \div \tan(60) = 4.5$   
 so one side = 9  
 $A = \frac{1}{2} \left( \frac{9\sqrt{3}}{2} \right) (54)$   
 $[A = 210.4]$

6)



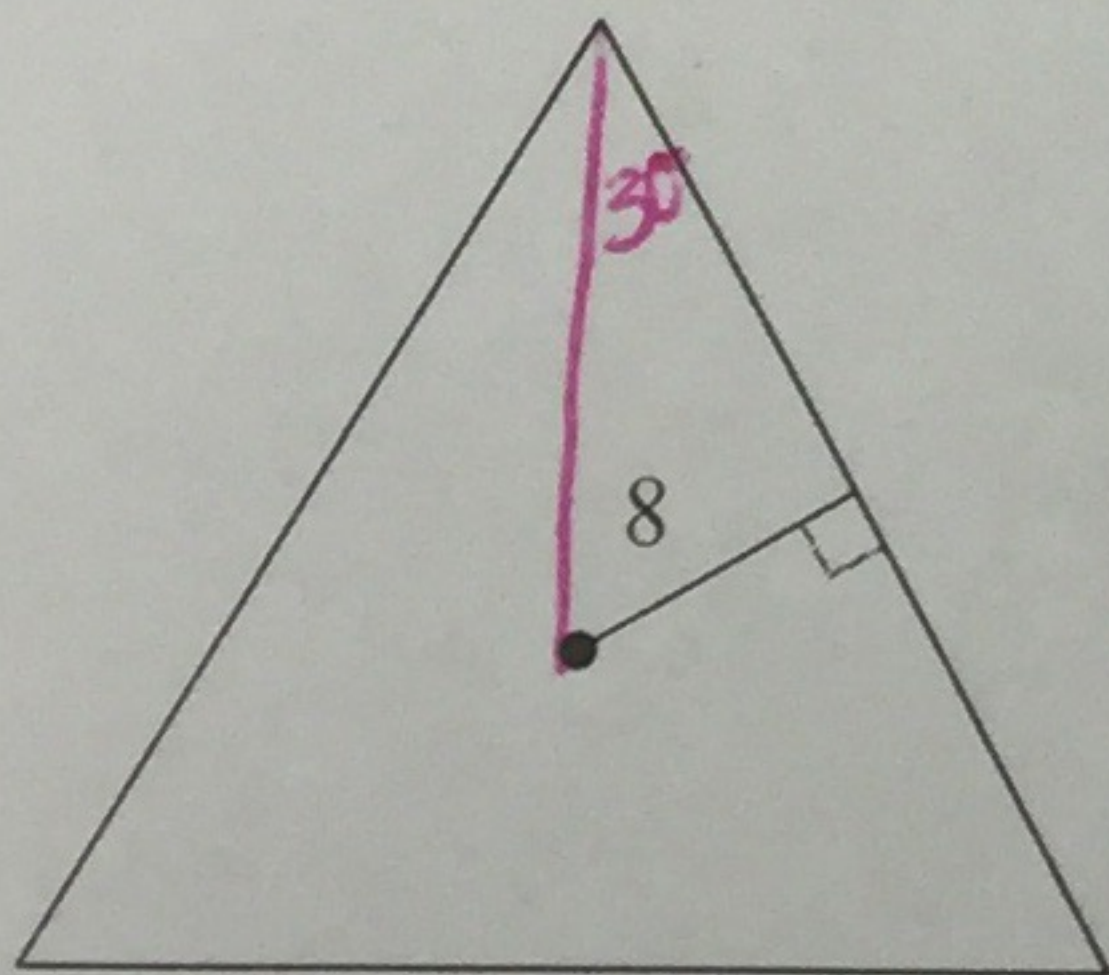
292.5

angle  $\frac{180(3-2)}{3} = 60 \div 2 = 30^\circ$   
side  $\tan 30 = \frac{15/2}{a}$   
 $15/2 \div \tan(30) = 13$   
 1 side = 26  
 $A = \frac{1}{2} (15/2)(78)$   
 $[A = 292.5]$

\* remember to bisect the  $\angle$  measure

$a = \frac{9\sqrt{3}}{2}$   
 $P = 9(6) \text{ or } 54$

7)

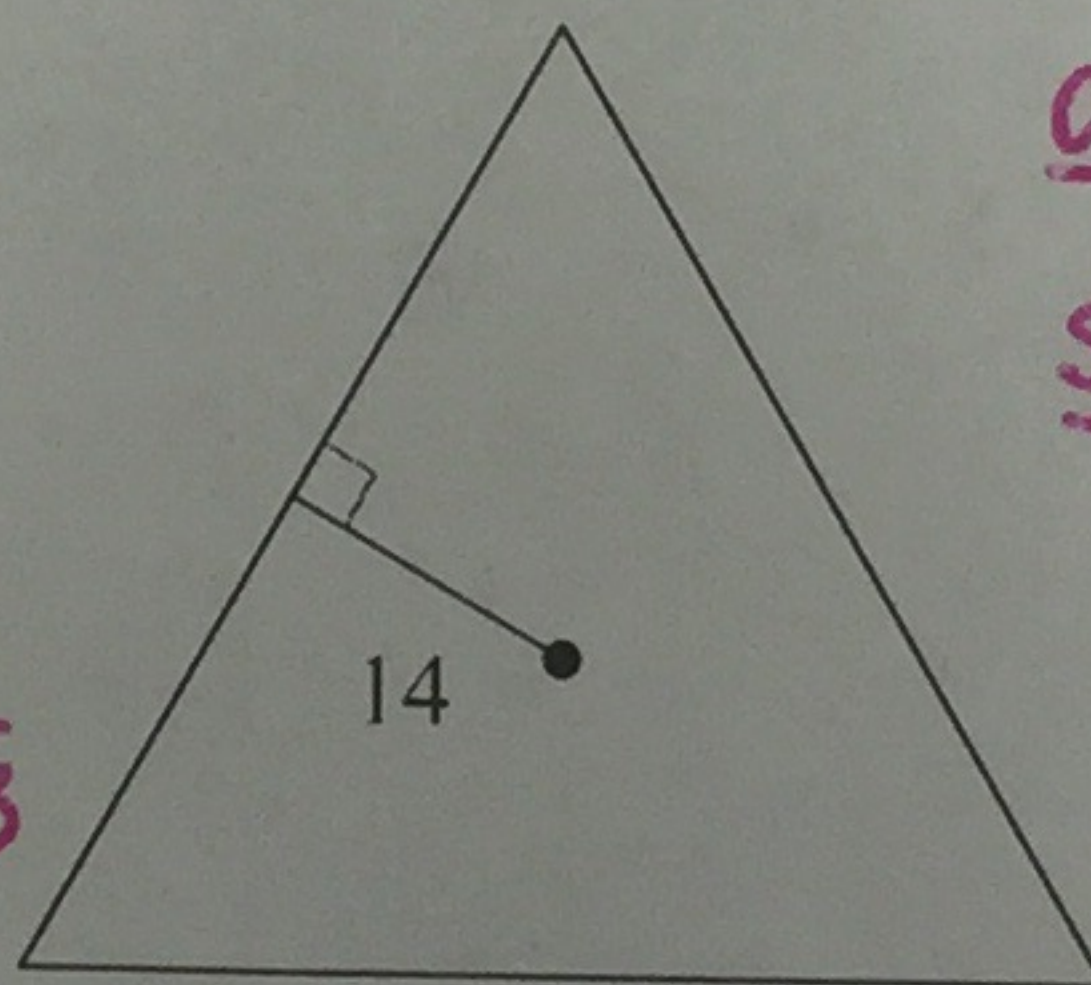


332.6

$a = 8$   
 $P = 16\sqrt{3}(3) \text{ or } 48\sqrt{3}$

$A = \frac{1}{2} (8)(48\sqrt{3})$   
 $[A = 332.6]$

8)



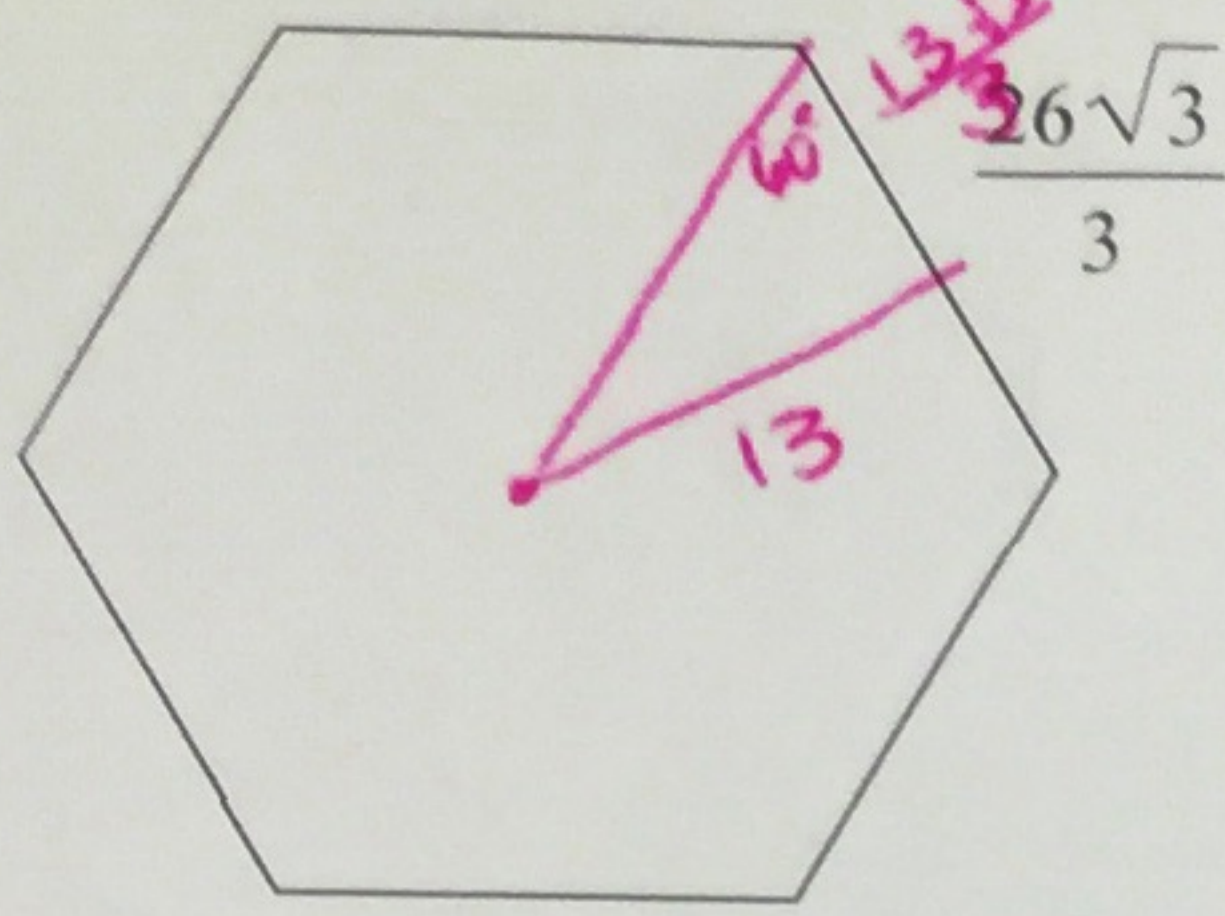
1018.4

$a = 14$   
 $P = 28\sqrt{3}(3) \text{ or } 84\sqrt{3}$

angle  $\rightarrow 30^\circ$   
side  $\rightarrow 14\sqrt{3} \times 2 = 28\sqrt{3}$   
 $A = \frac{1}{2} (14)(84\sqrt{3})$   
 $[A = 1018.4]$



9)

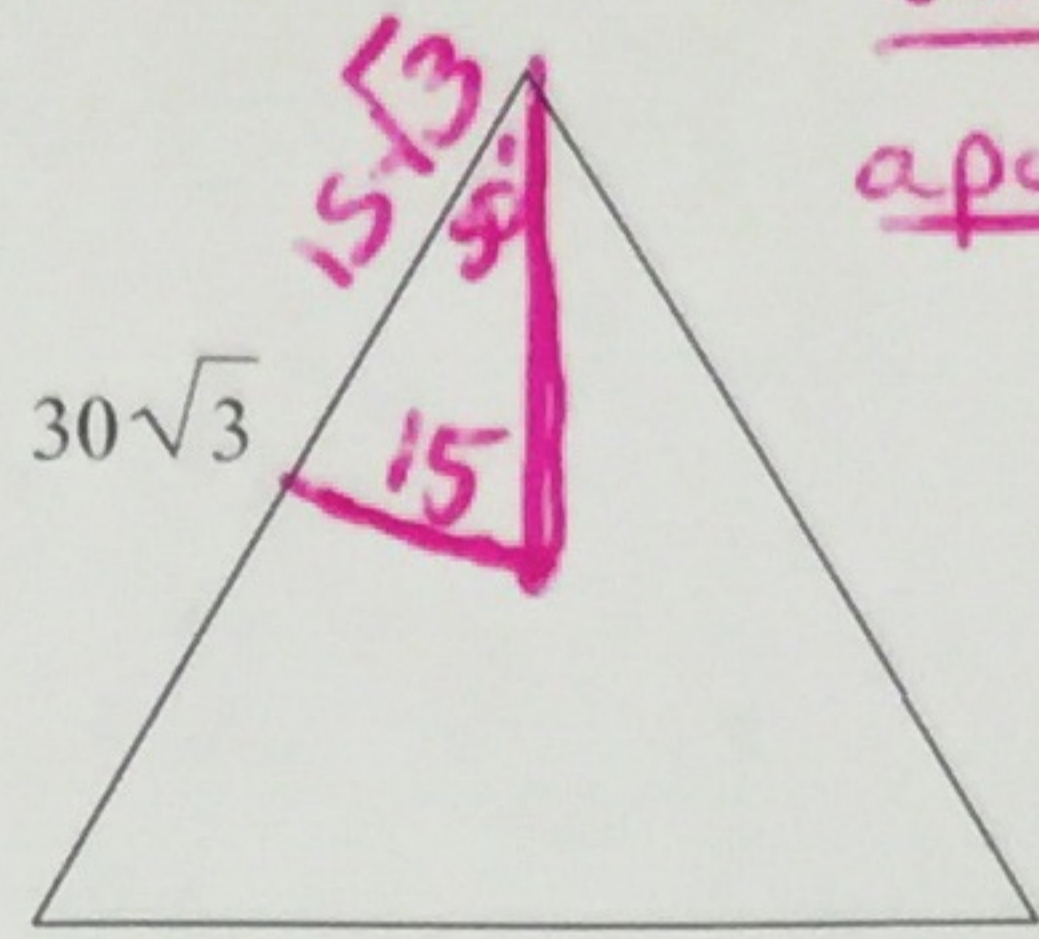


divide in half  
 angle  $\rightarrow 60^\circ$   
 apothem  $\rightarrow \tan(60) = \frac{a}{13}$   
 $\tan(60) \times \frac{13\sqrt{3}}{3} = 13$

$a = 13$   
 $P = \frac{26\sqrt{3}}{3} (6)$  or  $52\sqrt{3}$

$A = \frac{1}{2} (13)(52\sqrt{3})$   
 $[A = 585.4]$

10)

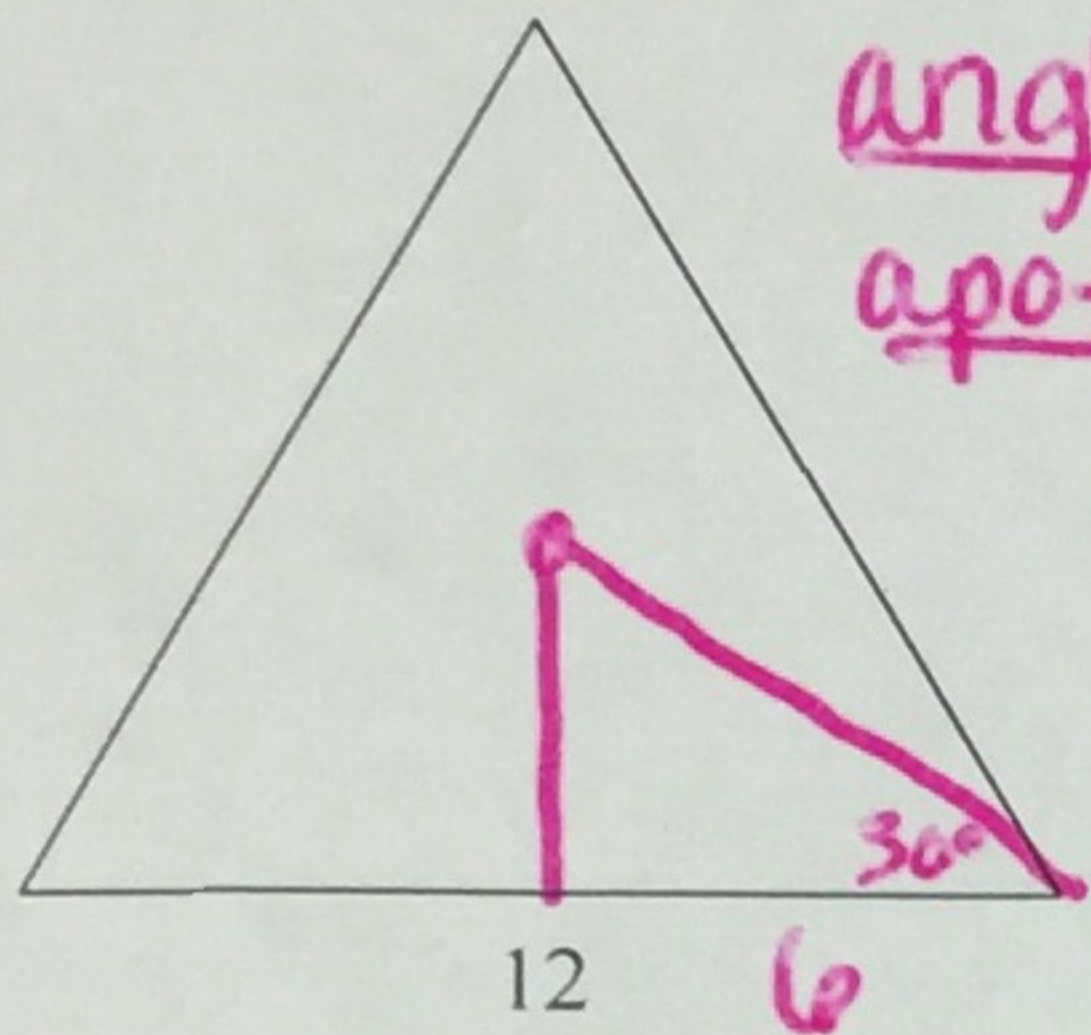


angle  $\rightarrow 30^\circ$   
 apothem  $\rightarrow \tan 30 = \frac{a}{15\sqrt{3}}$   
 $15\sqrt{3} \times \tan(30) = 15$   
 $A = \frac{1}{2} (15)(90\sqrt{3})$

1169.1  $a = 15$   
 $P = 30\sqrt{3}(3)$  or  $90\sqrt{3}$

$[A = 1169.1]$

11)

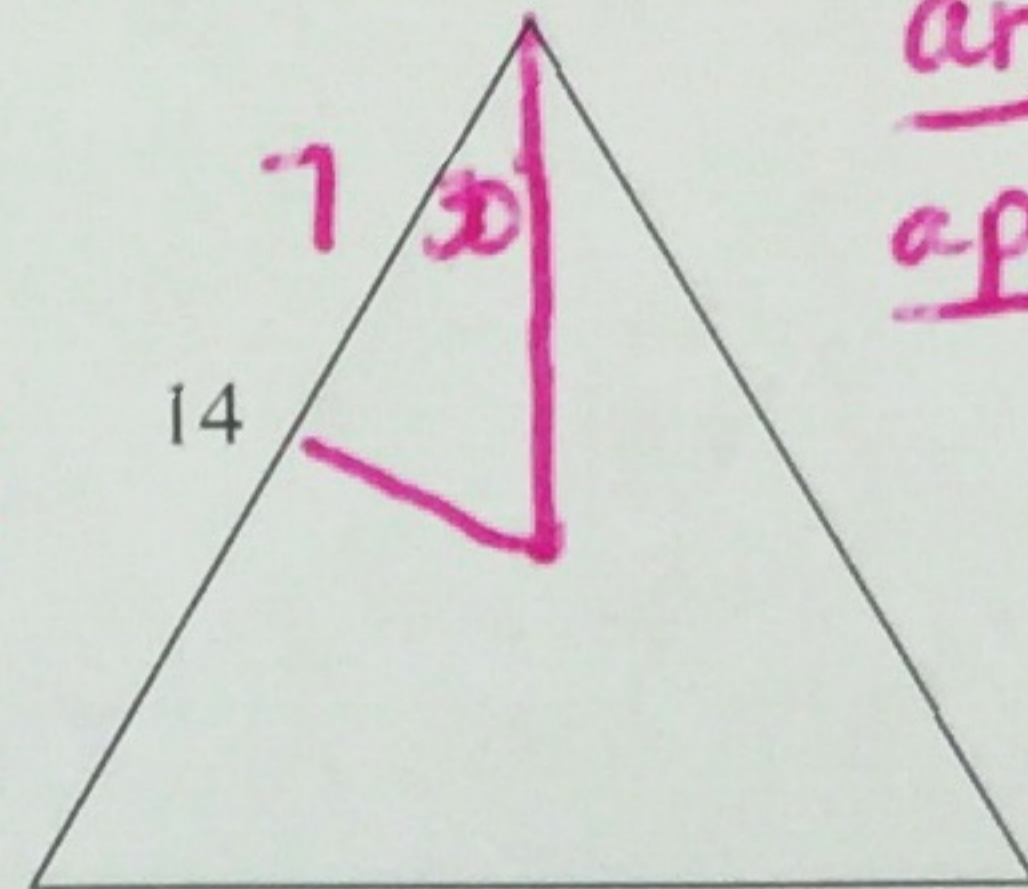


angle  $\rightarrow 30^\circ$   
 apothem  $\rightarrow \tan(30) = \frac{a}{6}$   
 $6 \times \tan(30) = 2\sqrt{3}$

62.4  $a = 2\sqrt{3}$   
 $P = 12(3)$  or  $36$

$A = \frac{1}{2} (2\sqrt{3})(36)$   
 $[A = 62.4]$

12)



angle  $\rightarrow 30^\circ$   
 apothem  $\rightarrow \tan 30 = \frac{a}{7}$   
 $7 \times \tan(30) = \frac{7\sqrt{3}}{3}$

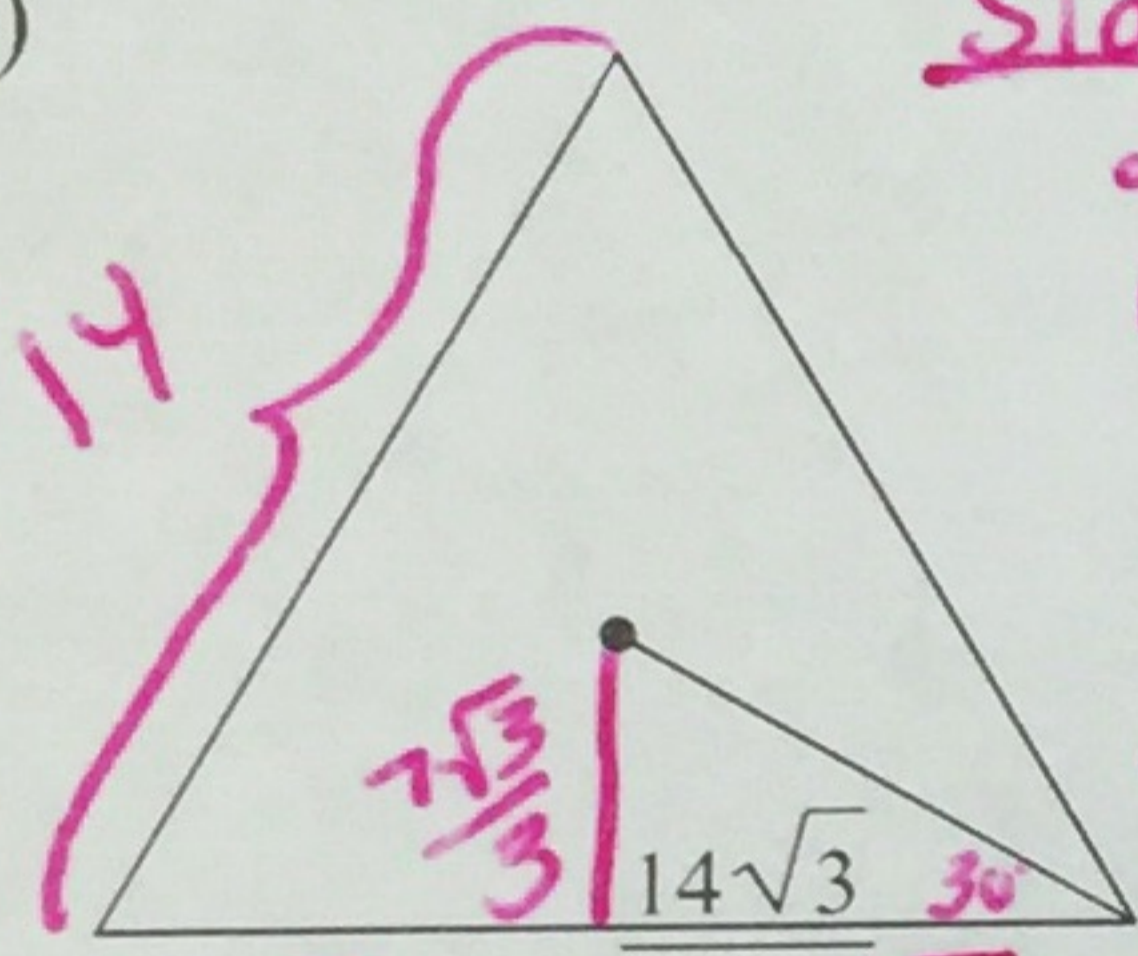
84.9  $a = \frac{7\sqrt{3}}{3}$   
 $P = 14(3)$  or  $42$

$A = \frac{1}{2} (\frac{7\sqrt{3}}{3})(42)$

$[A = 84.9]$

In these you have to find short legs & long legs

13)

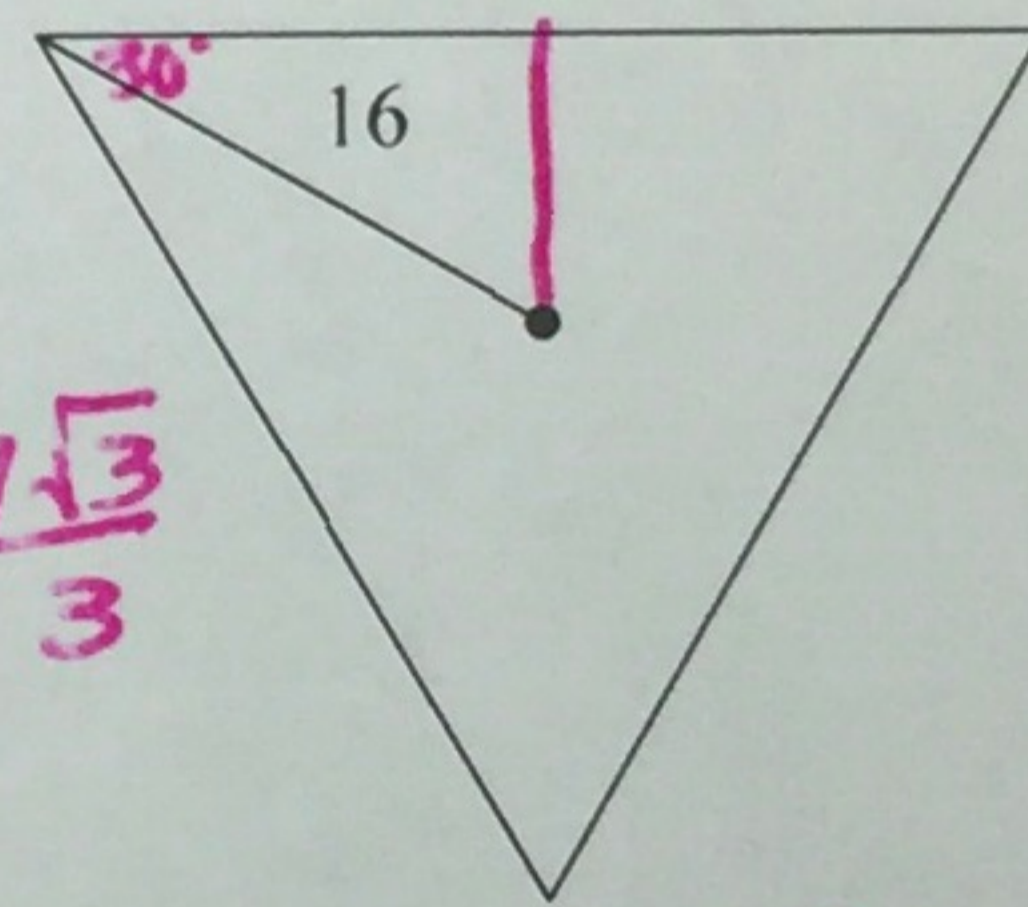


Sides (30-60-90)  
 • apothem -  $\sin(30) = \frac{a}{14}$   
 (short)  $\frac{14\sqrt{3}}{3}$   
 $\frac{14\sqrt{3}}{3} \times \sin(30) = \frac{7\sqrt{3}}{3}$   
 • long leg -  $\cos(30) = \frac{a}{14}$   
 $\frac{14\sqrt{3}}{3} \times \cos(30) = 7$

84.9  $a = \frac{7\sqrt{3}}{3}$   
 $P = 14(3)$  or  $42$

$A = \frac{1}{2} (\frac{7\sqrt{3}}{3})(42)$   
 $[A = 84.9]$

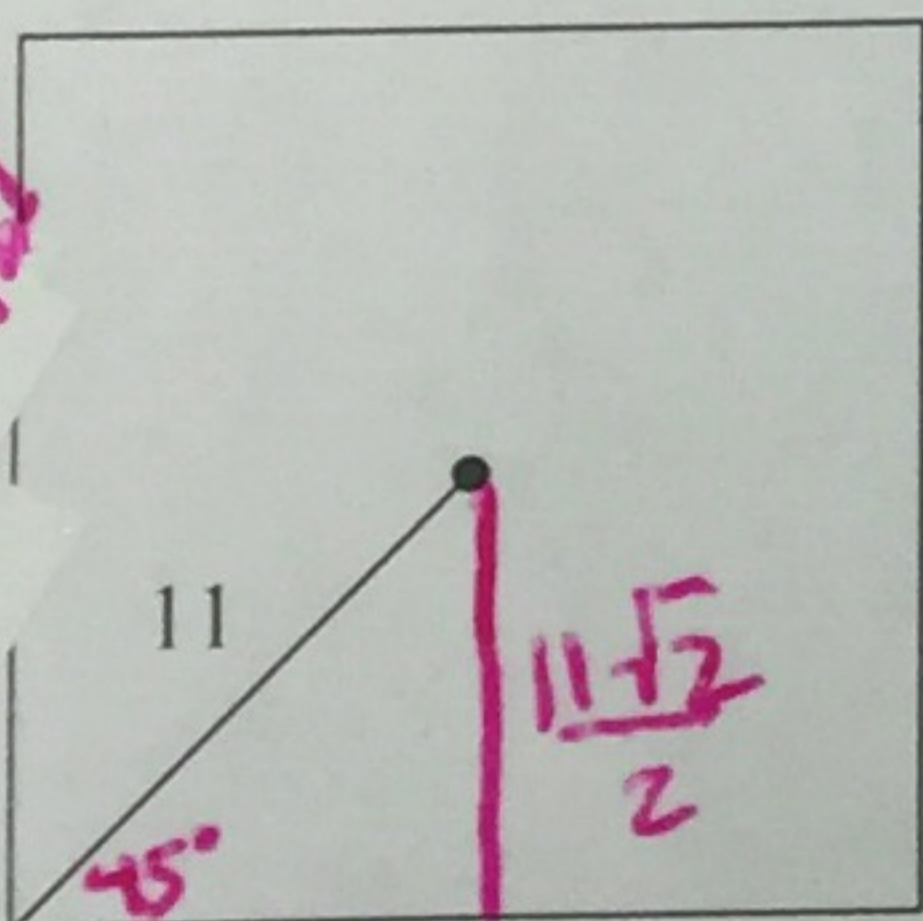
14)



Sides (30-60-90)  
 • apothem:  $\sin 30 = \frac{a}{16}$   
 $\sin 30 \times 16 = 8$   
 • long:  $8\sqrt{3}$   
 $A = \frac{1}{2} (8)(48\sqrt{3})$

332.6  $a = 8$   
 $P = 16\sqrt{3}(3)$  or  $48\sqrt{3}$   $[A = 332.6]$

15)

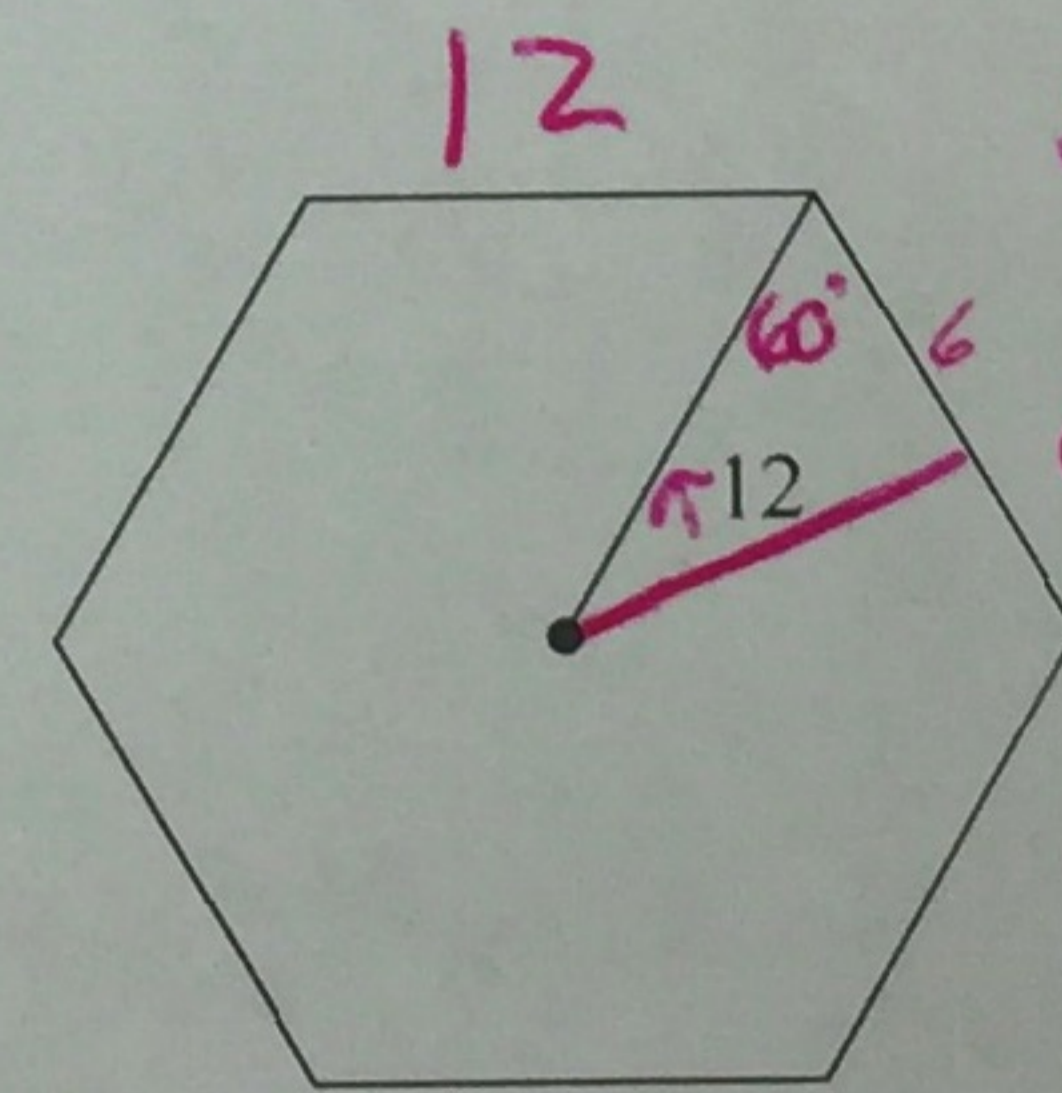


Sides (45-45-90)  
 • apothem:  $\sin 45 = \frac{a}{11}$   
 $\sin 45(11) = \frac{11\sqrt{2}}{2}$

242  $a = \frac{11\sqrt{2}}{2}$   
 $P = 11\sqrt{2} \rightarrow 44\sqrt{2}$

$A = \frac{1}{2} (\frac{11\sqrt{2}}{2})(44\sqrt{2})$   
 $[A = 242]$

16)



Sides (30-60-90)  
 • apothem:  $\sin 60 = \frac{a}{12}$   
 $\sin(60) \times 12 = 6\sqrt{3}$   
 • short leg = 6

374.1  $a = 6\sqrt{3}$   
 $P = 12(6)$  or  $72$

$A = \frac{1}{2} (6\sqrt{3})(72)$   
 $[A = 374.1]$