

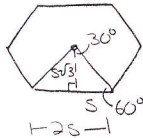
Geometry

10.5-10.8 Study Guide Solutions

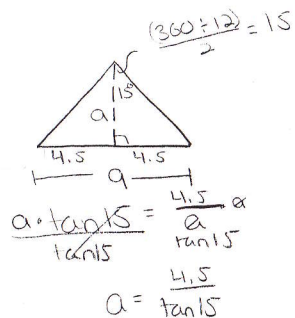
*Check answers in back of SG to see where each question comes from

1 $P(\text{hitting red}) = .6$
 $P(\text{hitting red}) = \frac{\text{area red}}{\text{area of dartboard}}$
 $.6 = \frac{\pi r^2}{\pi 5^2}$
 $4 \cdot 6 = \frac{r^2}{5^2} \cdot 4$
 $\sqrt{2.4} = \sqrt{r^2}$
 $1.549 = r$ **C**

2 $A = \frac{1}{2}ap$ $A = 60$
 $60 = \frac{1}{2} \cdot s \cdot \sqrt{3} \cdot 12s$
 $60 = 6\sqrt{3}s^2$
 $\frac{60}{6\sqrt{3}} = \sqrt{3}s^2$
 $2.4 = s$
 $\text{side} = 2 \cdot 2.4 = 4.8$ **A**



3 $a \text{ apothem} = \frac{4.5}{\tan 15}$
 $\text{side} = 108 \div 12 = 9 \text{ cm}$
 $\text{perimeter} = 108 \text{ cm}$
 $\text{Area} = \frac{1}{2}ap$
 $= \frac{1}{2} \cdot \frac{4.5}{\tan 15} \cdot 108$
 $= 906.88$ **B**

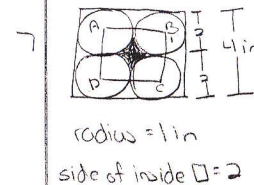


4 a) sleeping = 33% of 360° b) eating = 8% of 360°
 $= .33 \cdot 360$ $= .08 \cdot 360$
 $\text{sleeping} = 118.8^\circ$ **A** $= 28.8^\circ$

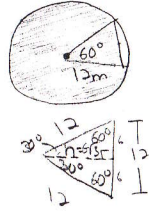
5 $C = \text{dnr}$ $C = 46\pi$
 $\text{diameter} = 46$
 $\text{radius} = 46 \div 2 = 23$
 $\text{Arc Length} = \frac{\text{m}}{360} \cdot \text{circumference}$
 $= \frac{30}{360} \cdot 46\pi$ **A**
 $= 11.5\pi \text{ cm}$

6 $\text{arc length} = 30 \text{ cm}$ $\text{arc measure} = 360^\circ$
 $\text{arc length} = \frac{\text{m}}{360} \cdot 2\pi r$
 $\frac{30}{360} = \frac{30}{360} \cdot 2\pi r$
 $\frac{30}{2\pi} = r$

$A_0 = \pi r^2$
 $= \pi \left(\frac{30}{2\pi}\right)^2$
 $= \pi \cdot \frac{15^2}{\pi}$
 $= 71.7 \text{ cm}^2$ **B**



$A_{\text{shaded}} = A_{\text{sm } \square} - A_0$
 $= s^2 - \pi r^2$
 $= 2^2 - \pi 1^2$
 $= 4 - \pi \text{ in}^2$
A

8 
$$A_{\text{shaded}} = A_O - A_{\text{segment}}$$

$$= \pi r^2 - \left[\frac{\theta}{360} \cdot \pi r^2 - \frac{1}{2}bh \right]$$

$$= \pi 12^2 - \left[\frac{60}{360} \cdot \pi 12^2 - \frac{1}{2} \cdot 12 \cdot 6\sqrt{3} \right]$$

$$= 144\pi - 24\pi + 36\sqrt{3}$$

$$= 120\pi + 36\sqrt{3} \text{ m}^2 \quad \boxed{C}$$

9
$$P(\text{pt on } \overline{KO}) = \frac{KO}{JP}$$

$$= \frac{4}{83} \quad \boxed{D}$$

10
$$A_{\text{parallelogram}} = bh$$

$$= 38 \cdot 27$$

$$= \boxed{1026 \text{ in}^2}$$

11
$$A_{\text{triangle}} = \frac{1}{2}bh$$

$$= \frac{1}{2} \cdot 3.8 \cdot 6$$

$$= \boxed{11.4 \text{ cm}^2}$$

12
$$A_{\text{trapezoid}} = \frac{1}{2}h(b_1 + b_2)$$

$$= \frac{1}{2} \cdot 12.6(19 + 29.2)$$

$$= \boxed{303.66 \text{ in}^2}$$

13
$$A_{\text{kite}} = \frac{1}{2}d_1d_2$$

$$= \frac{1}{2} \cdot 22 \cdot 4$$

$$= \boxed{44 \text{ ft}^2}$$

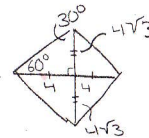
$$d_1 = 8 + 6 = 22$$

$$d_2 = 2 + 2 = 4$$

14
$$A_{\text{rhombus}} = \frac{1}{2}d_1d_2$$

$$= \frac{1}{2} \cdot 8 \cdot 8\sqrt{3}$$

$$= \boxed{32\sqrt{3} \text{ units}^2}$$



$$d_1 = 4 + 4 = 8$$

$$d_2 = 4\sqrt{3} + 4\sqrt{3} = 8\sqrt{3}$$

15
$$\text{apothem} = \sqrt{145.8249}$$

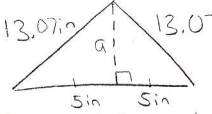
$$\text{side} = 10 \text{ in}$$

$$\text{perimeter} = 8 \cdot 10 = 80 \text{ in}$$

$$\text{Area} = \frac{1}{2}ap$$

$$= \frac{1}{2} \cdot \sqrt{145.8249} \cdot 80$$

$$= \boxed{483.03 \text{ in}^2}$$



$$a^2 + 5^2 = 13.07^2$$

$$a = \sqrt{145.8249}$$

16
$$10 \text{ ft by } 12 \text{ ft} = \$324$$

$$15 \text{ ft by } 18 \text{ ft} = \$?$$

$$\begin{array}{r} 120 = 324 \\ 270 \quad \times \\ \hline 120 \times = 87480 \\ \hline x = 729 \\ \hline \boxed{\$729} \end{array}$$

$$\text{area} = 120 \text{ ft}^2$$

$$\text{area} = 270 \text{ ft}^2$$

17
$$\text{apothem} = \frac{2}{\tan 18}$$

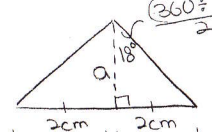
$$\text{side} = 4 \text{ cm}$$

$$\text{perimeter} = 10.4 = 40 \text{ cm}$$

$$\text{Area} = \frac{1}{2}ap$$

$$= \frac{1}{2} \cdot \frac{2}{\tan 18} \cdot 40$$

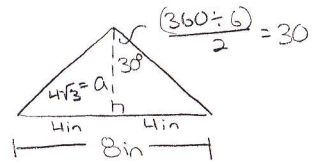
$$= \boxed{123.1 \text{ cm}^2}$$



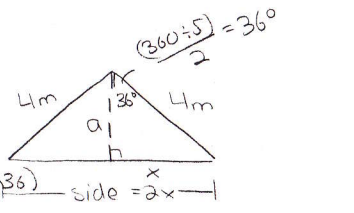
$$\frac{a \cdot \tan 18}{\tan 18} = \frac{\frac{2}{\tan 18} \cdot a}{\tan 18}$$

$$a = \frac{2}{\tan 18}$$

18 apothem = $4\sqrt{3}$
 side = 8 in
 perimeter = $6 \cdot 8 = 48$ in
 Area = $\frac{1}{2} a \cdot p$
 $= \frac{1}{2} \cdot 4\sqrt{3} \cdot 48$
 $= 166.3 \text{ in}^2$

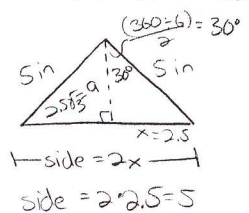


19 apothem = $4(\cos 36)$
 side = $8(\sin 36)$
 perimeter = $5 \cdot 8(\sin 36) = 40(\sin 36)$
 Area = $\frac{1}{2} a \cdot p$
 $= \frac{1}{2} \cdot 4 \cdot \cos 36 \cdot 40 \cdot \sin 36 = \frac{80}{4}$
 $= 38.0 \text{ m}^2$

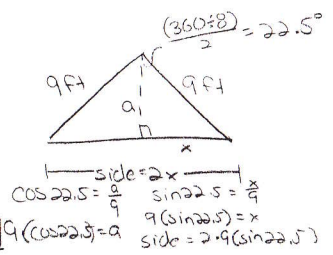


apothem side
 $4(\cos 36) = a$ $4(\sin 36) = x$
 $8(\sin 36) = \text{side}$

20 apothem = $2.5\sqrt{3}$
 side = 5 in
 perimeter = $6 \cdot 5 = 30$ in
 Area = $\frac{1}{2} a \cdot p$
 $= \frac{1}{2} \cdot 2.5\sqrt{3} \cdot 30$
 $= 65.0 \text{ in}^2$



21 apothem = $9(\cos 22.5)$
 side = $18(\sin 22.5)$
 perimeter = $8 \cdot 18(\sin 22.5) = 144(\sin 22.5)$
 Area = $\frac{1}{2} a \cdot p$
 $= \frac{1}{2} \cdot 9(\cos 22.5) \cdot 144(\sin 22.5) = 229.1 \text{ ft}^2$



22 $A_{\Delta} = \frac{1}{2} \cdot 15 \cdot 6(\sin 84)$
 $= 44.8 \text{ cm}^2$

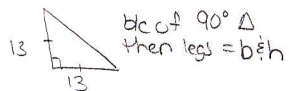
23 minor arcs: $\widehat{LM}, \widehat{MN}, \widehat{NP}, \widehat{PL}$
 semicircles: $\widehat{LMN}, \widehat{MNP}, \widehat{NPL}$
 major arc: $\widehat{LMP}, \widehat{MNL}, \widehat{PLN}, \widehat{NPM}$

24 minor: $\widehat{AB} = 115$
 major: $\widehat{AOB} = 360 - 115 = 245$

25 Length $\widehat{XPY} = \frac{m\widehat{XPY}}{360} \cdot 2\pi r$ $m\widehat{XPY} = 360 - 90 = 270$
 $= \frac{270}{360} \cdot 2\pi \cdot 6$
 Length $\widehat{XPY} = 9\pi \text{ m}$

26 $A_{\text{sector}} = \frac{m\widehat{ARC}}{360} \cdot \pi r^2$
 $= \frac{150}{360} \cdot \pi \cdot 2^2$
 $A_{\text{sector}} = 5.2 \text{ in}^2$

27 $A_{\text{segment}} = A_{\text{sector}} - A_{\Delta}$
 $= 42.25\pi - \frac{1}{2}bh$
 $= 42.25\pi - \frac{1}{2} \cdot 13 \cdot 13$
 $A_{\text{segment}} = 42.25\pi - 84.5 \text{ ft}^2$



28 $P(\text{point in shaded}) = \frac{\text{area of shaded } \Delta}{\text{area of total } \circ}$



$$= \frac{\frac{1}{2}bh}{\pi r^2}$$

$$= \frac{\frac{1}{2} \cdot 12 \cdot 6}{\pi 6^2}$$

$$= \frac{36}{36\pi}$$

$$= .3183\dots$$

$$\boxed{.32 \text{ or } 32\%}$$

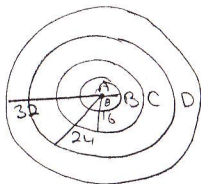
29 $P(\text{fly land on shaded}) = \frac{\text{area of } \Delta}{\text{area of } \square}$

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

$$= \frac{\frac{1}{2} \cdot 6 \cdot 3}{10.7}$$

$$= \frac{9}{70} \text{ or } .13 \text{ or } 13\%$$

30



$$P(\text{dart in C}) = \frac{\pi 24^2 - \pi 16^2}{\pi 32^2}$$

$$= \frac{\pi(24^2 - 16^2)}{\pi 32^2}$$

$$= \frac{320}{1024}$$

$$= \frac{5}{16} \text{ or } .3125 \text{ or } 31.25\%$$