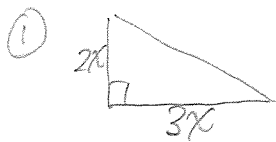


Areas Review KEY



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

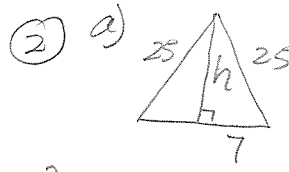
$$48 = \frac{1}{2}(3x)(2x)$$

$$96 = 6x^2$$

$$16 = x^2$$

$$4 = x$$

$base = 12$
 $ht = 8$

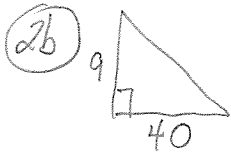


$$h^2 + 7^2 = 25^2$$

$$h = 24$$

$$A = \frac{1}{2}(14)(24)$$

$= 168$



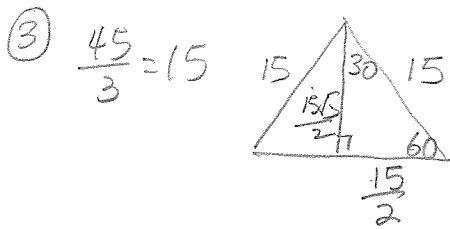
$$A = \frac{1}{2}(40)(9)$$

$= 180$



$$A = \frac{1}{2}(9)(18)$$

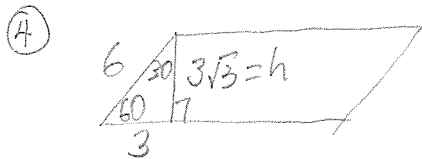
$= 81$



$$h = \frac{15\sqrt{3}}{2}$$

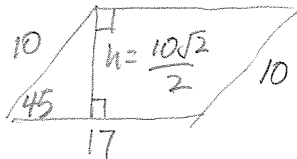
$$A = \frac{1}{2}(15)\left(\frac{15\sqrt{3}}{2}\right)$$

$= \frac{225\sqrt{3}}{4}$



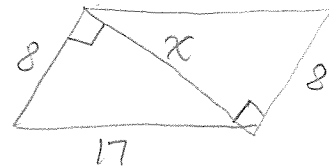
$$A = \frac{1}{2}(14)(3\sqrt{3})$$

$= 42\sqrt{3}$



$$A = 17(5\sqrt{2})$$

$= 85\sqrt{2}$



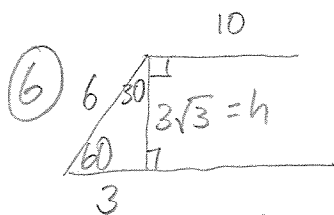
$$8^2 + x^2 = 17^2$$

$$x = 15$$

$$A_{\square} = 2(A_{\Delta})$$

$$= 2\left(\frac{1}{2}(8)(15)\right)$$

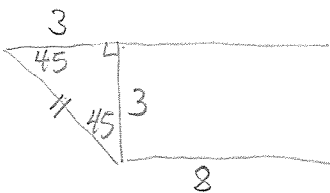
$= 120$



$$b_2 = 16$$

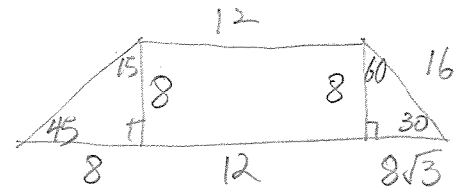
$$A = \frac{1}{2}(3\sqrt{3})(10+16)$$

$= 39\sqrt{3}$



$$A = \frac{1}{2}(3)(8+14)$$

$= 33$



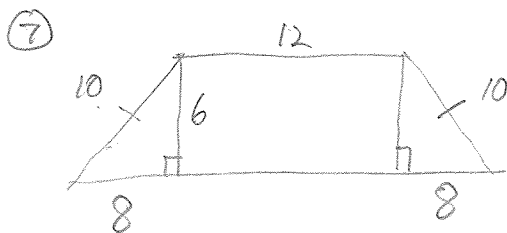
$$h = 8$$

$$b_2 = 20 + 8\sqrt{3}$$

$$A = \frac{1}{2}(8)(12+20+8\sqrt{3})$$

$$= 4(32+8\sqrt{3})$$

$= 128 + 32\sqrt{3}$

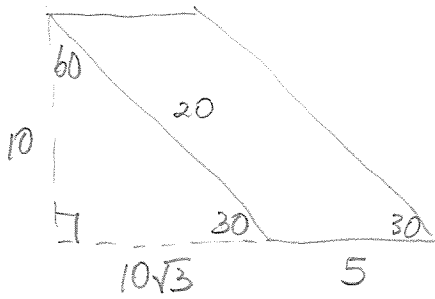


$$A = \frac{1}{2}(6)(12+28)$$

$$= 3(40)$$

$= 120$

8

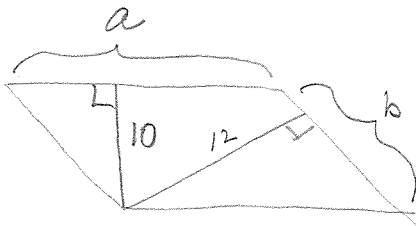


$$h=10$$

$$b=5$$

$$A=50$$

10



$$A=10a$$

$$A=12b$$

$$P=2a+2b$$

$$154=2a+2b$$

$$77=a+b$$

$$a=77-b$$

$$10a=12b$$

$$10(77-b)=12b$$

$$770-10b=12b$$

$$770=22b$$

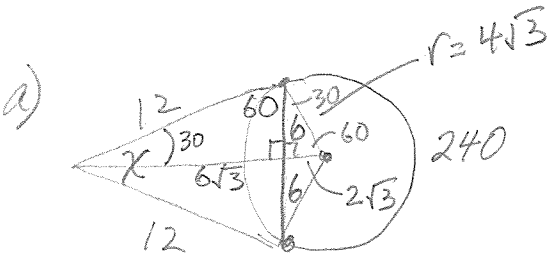
$$35=b$$

$$A=12b$$

$$A=12(35)$$

$$A=420$$

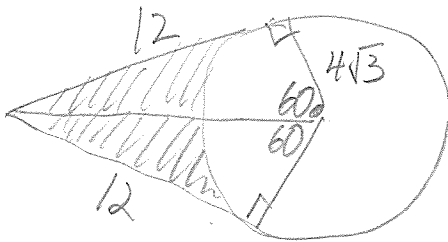
11



$$m\angle x = \frac{1}{2}(240-120)$$

$$=60$$

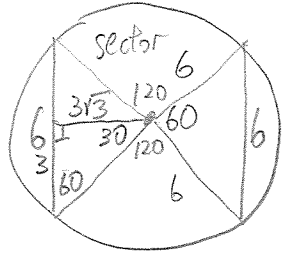
OR



$$A_{\text{shaded}} = A_{2R\Delta} - A_{\text{sector}}$$

$$\begin{aligned} A_{\text{shaded}} &= A_{\Delta} - (A_{\text{sector}} - A_{\text{small}\Delta}) \\ &= \frac{1}{2}(12)(6\sqrt{3}) - \left[\frac{120}{360} \cdot \pi (4\sqrt{3})^2 - \frac{1}{2}(12)(2\sqrt{3}) \right] \\ &= 36\sqrt{3} - \frac{1}{3} 48\pi + 12\sqrt{3} \\ &= 48\sqrt{3} - 16\pi \end{aligned}$$

11b

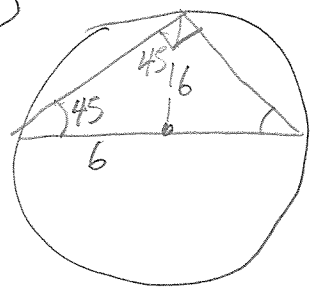


$$A_{\text{shaded}} = 2(A_{\text{sector}}) + 2(A_{\Delta})$$

$$= 2 \cdot \frac{1}{3} \cdot \pi \cdot 6^2 + 2 \cdot \frac{1}{2} (6)(3\sqrt{3})$$

$$= \boxed{24\pi + 18\sqrt{3}}$$

11c

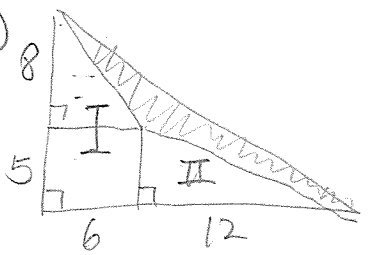


$$A_{\text{shaded}} = A_{\odot} - A_{\Delta}$$

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

$$A_{\text{sh.}} = \boxed{36\pi - 36}$$

20



$$A_{\text{w.}} - A_{\text{trap I}} - A_{\Delta \text{II}} = A_{\text{shaded}}$$

$$\frac{1}{2} (18)(13) - \frac{1}{2} (6)(5+13) - \frac{1}{2} (12)(5) =$$

$$117 - 54 - 30 =$$

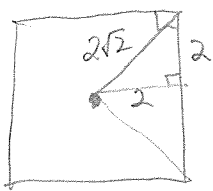
$$\boxed{33 = A_{\text{shaded}}}$$

21 a)

$$A_{\odot} - A_{\text{square}} = A_{\text{sh}}$$

$$\pi (2\sqrt{2})^2 - 4^2$$

$$\boxed{8\pi - 16} = A_{\text{shaded}}$$



b)

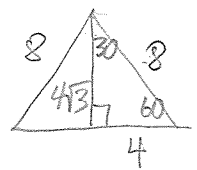
$$A = 6(4) = 24$$

c)

$$A_{\text{square}} - A_{\Delta}$$

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

$$\boxed{64 - 16\sqrt{3}} = A_{\text{shaded}}$$



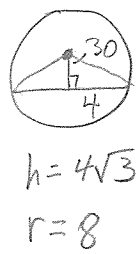
d)

$$A_{\text{sector}} - A_{\Delta} = A_{\text{shaded}}$$

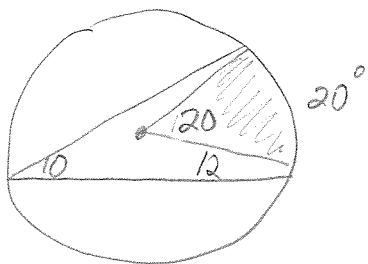
$$\frac{1}{6} \cdot \pi \cdot 8^2 - \frac{1}{2} (8)(4\sqrt{3}) =$$

$$\frac{64\pi}{6} - 16\sqrt{3}$$

$$\boxed{\frac{32\pi}{3} - 16\sqrt{3}} = A_{\text{shaded}}$$



e)

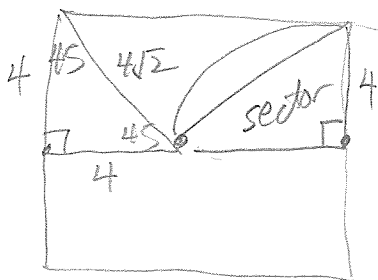


$$A_{\text{shaded}} = \frac{20}{360} (A_{\odot})$$

$$= \frac{1}{18} \cdot \pi 12^2$$

$$= \frac{144\pi}{18} = \boxed{8\pi}$$

f)



$$A_{\text{leaf}} = 2(A_{\text{sector}} - A_{\Delta})$$

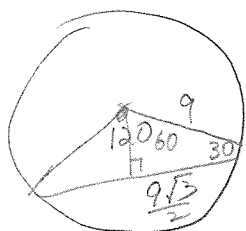
$$= 2\left(\frac{1}{4} \cdot \pi 4^2 - \frac{1}{2}(8)(4)\right)$$

$$A_{\text{leaf}} = 8\pi - 16$$

$$A_{\text{shaded}} = 4(A_{\text{leaf}}) = 4(8\pi - 16)$$

$$= \boxed{32\pi - 64}$$

g)



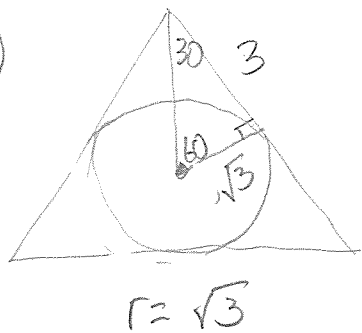
Triangle: $h = \frac{9}{2}$
 $b = \frac{18\sqrt{3}}{2}$

$$A_{\text{shaded}} = A_{\text{sector}} - A_{\Delta}$$

$$= \frac{1}{3}(\pi 9^2) - \frac{1}{2} \frac{18\sqrt{3}}{2} \cdot \frac{9}{2}$$

$$= \boxed{27\pi - \frac{81\sqrt{3}}{4}}$$

h)

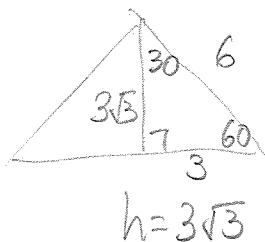


$$r = \sqrt{3}$$

$$A_{\text{shaded}} = A_{\Delta} - A_{\odot}$$

$$= \frac{1}{2}(6)(3\sqrt{3}) - \pi \sqrt{3}^2$$

$$= \boxed{9\sqrt{3} - 3\pi}$$

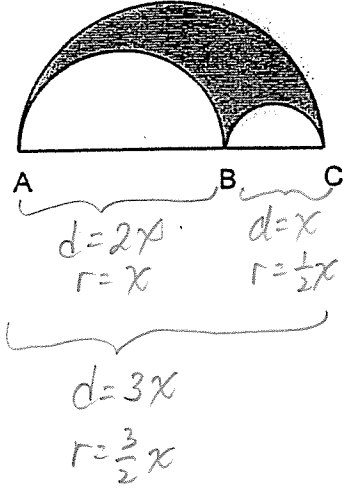


$$h = 3\sqrt{3}$$

Ch. 11 Review KEY

shaded: entire

23. Find the ratio of the shaded area to the entire area if the region is formed by 3 semicircles and $AB:BC = 2:1$.



$$A_{\text{entire}} - A_{\text{large}} - A_{\text{small}} = A_{\text{shaded}}$$

$$\frac{1}{2} \cdot \pi \left(\frac{3}{2}x\right)^2 - \frac{1}{2}\pi x^2 - \frac{1}{2} \cdot \pi \left(\frac{1}{2}x\right)^2 =$$

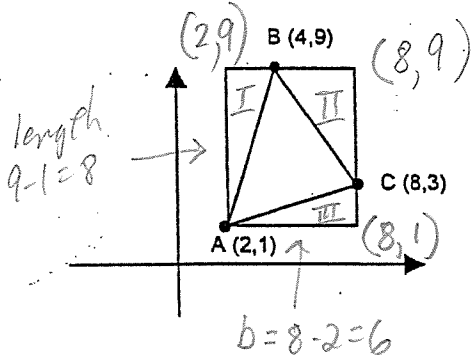
$$\frac{9\pi x^2}{8} - \frac{\pi x^2}{2} - \frac{\pi x^2}{8} =$$

$$\frac{9\pi x^2}{8} - \frac{4\pi x^2}{8} - \frac{\pi x^2}{8} =$$

$$\frac{\pi x^2}{2} = A_{\text{shaded}}$$

shaded: entire
 $\frac{\pi x^2}{2} : \frac{9\pi x^2}{8}$
 $\frac{1}{2} : \frac{9}{8}$
4:9

26. Find the area of $\triangle ABC$. Explain your method and label your work!



$$A_{\text{rectangle}} - A_{\text{I}} - A_{\text{II}} - A_{\text{III}} = A_{\triangle}$$

$$6(8) - \frac{1}{2}(2)(8) - \frac{1}{2}(4)(6) - \frac{1}{2}(6)(2) =$$

$$48 - 8 - 12 - 6 =$$

$$\boxed{22 = A_{\triangle}}$$