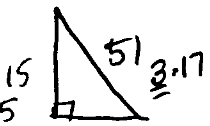
* geometry honors

Ch. 9 Pre-Test Solutions

③ $10\sqrt{360}$

$10\sqrt{36}\sqrt{10}$

$10 \cdot 6 \cdot \sqrt{10}$ $\quad 60\sqrt{10}$

④ 

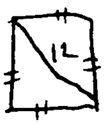
Primitive! 5·12·17

$5 \cdot 12 = 60$ $\quad 60$

⑤ $149, 12, \sqrt{5}$ rt Δ?

$12^2 + (\sqrt{5})^2 \overset{?}{=} 149^2$

$144 + 5 \overset{?}{=} 149^2$ $\quad$ no

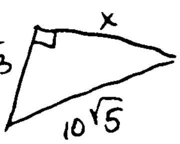
⑥ 

$S = 12\frac{\sqrt{2}}{2}$

~~$2s^2 = 12^2$~~

~~$2s^2 = 144$~~

$6\sqrt{2}$

⑦ 

$x^2 + (4\sqrt{3})^2 = (10\sqrt{5})^2$

$x^2 + 48 = 500$

$x^2 = 452$

$x = \sqrt{452}$ → $x = \sqrt{4}\sqrt{113}$

$2\sqrt{113}$

⑧ 

$5^2 + (5\sqrt{6})^2 = r^2$

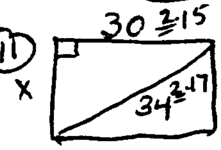
$25 + 150 = r^2$

$r^2 = 175$

$r = \sqrt{175}$

$r = \sqrt{25}\sqrt{7}$

$r = 5\sqrt{7}$

⑪ 

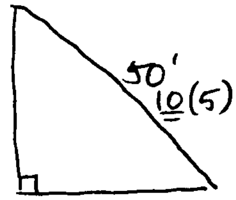
P=?

Primitive! 8·15·17!

$x = 8(2) = 16$

$P = 2(16) + 2(30)$

$= 32 + 60$ $\quad$ 92 cm

⑫ 

$1^2 + b^2 = 5^2$

$1 + b^2 = 25$

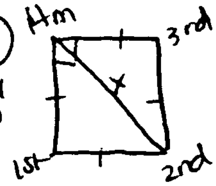
$b^2 = 24$

$b = 2\sqrt{6}$

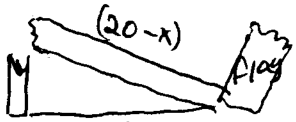
$h = 10(2\sqrt{6})$

$h = 20\sqrt{6}$

$h = 48'$

⑬ 

$80\sqrt{2}\,'$

⑭ 

$x^2 + 42^2 = (20 - x)^2$

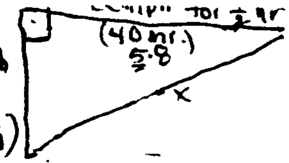
$\cancel{x^2} + 1764 = 400 - 40x + \cancel{x^2}$

$1364 = -40x$

$x = \frac{-341}{10}\,'$

I know there's no such thing as having negative length but that's what happens when you make up a problem off the top of your head!

⑮ 

⑯ 

15mph for 3 hrs (45mi) 5·9

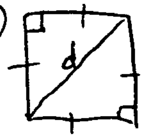
$9^2 + 8^2 = x^2$

$81 + 64 = x^2$

$145 = x^2$ → $x = \sqrt{145}$

$\sqrt{145}$ mi

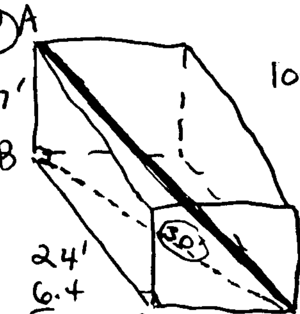
≈ 12 miles

⑰ 

$d = 8\sqrt{6} \cdot \sqrt{2}$

$8\sqrt{4}\sqrt{3}$

$16\sqrt{3}$

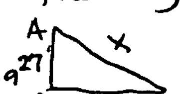
⑱ 

length longest stick?

Primitive! 3·4·5!

----- diagonal is 6·5 = 30′!

$m\overline{BD} = 30'$ Now use ΔABD to solve the length of the longest stick ($\overline{AD}$).



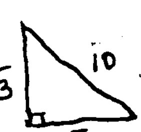
$9^2 + 10^2 = x^2$

$81 + 100 = x^2$

$181 = x^2$

$x = \sqrt{181}$ ft.

⑲ 



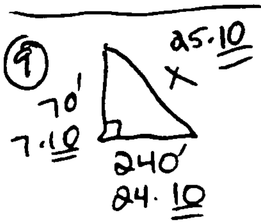
$A = \frac{1}{2}bh$

$= \frac{1}{2}(10)(5\sqrt{3})$ $\quad 25\sqrt{3}$ in

$r=\sqrt{25}\sqrt{7}$

$r=5\sqrt{7}$

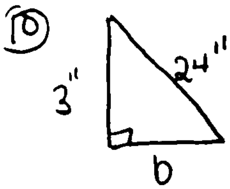
9



primitive! 7-24-25

250'

10



A=?

$3^2+b^2=24^2$

$9+b^2=576$

$b^2=567$

$b=\sqrt{567}$

$b=\sqrt{81}\sqrt{7}$

$b=9\sqrt{7}$

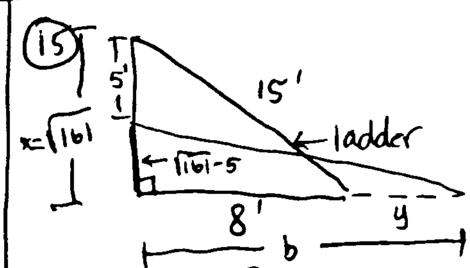
$A=\frac{1}{2}bh$

$=\frac{1}{2}(9\sqrt{7})(3)$

$=\frac{27\sqrt{7}}{2}$

of your ...

15



$x^2+8^2=15^2$

$x^2+64=225$

$x=\sqrt{161}$

$(\sqrt{161}-5)^2+b^2=15^2$

$b\approx 12.87966519$

$y\approx 12.87966519-8$

$y\approx 4.9$ ft

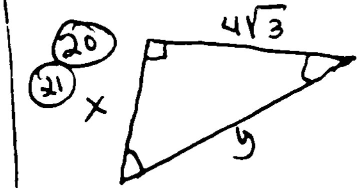
$A=\frac{1}{2}bh$

$=\frac{1}{2}(10)(5\sqrt{3})$

$25\sqrt{3}$ in

20

21



$x=4\sqrt{3}$

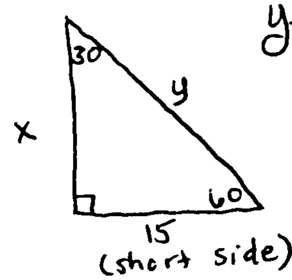
$y=4\sqrt{6}$

22 x=?

23 y=?

$x=15\sqrt{3}$

$y=30$



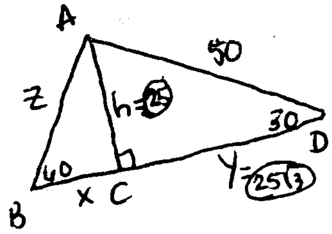
In a 30-60-90 Δ, if short side has length x, then long leg is $x\sqrt{3}$ and a hyp. is 2x

(24) x = ?

(25) h = ?

(26) y = ?

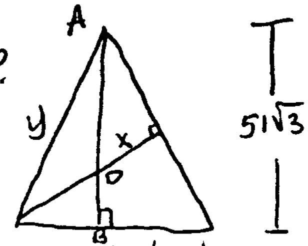
(27) z = ?



Notice ΔABC, ΔACD, and ΔABD are all 30-60-90 Δs. If $AD = 50$ then $h = 25$ and $y = 25\sqrt{3}$. h in ΔABC is the long side so if it equals 25 then the short side, x, is $\frac{25\sqrt{3}}{3}$ and $z = \frac{50\sqrt{3}}{3}$.

(32) x = ?

(33) y = ?



equilateral

$\overline{AB}$ is ÷ed

$2:1 \rightarrow \frac{51\sqrt{3}}{3} = 17\sqrt{3}\,(\overline{BD}) = x$

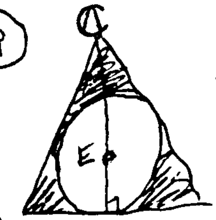
If $\overline{AB} = 51\sqrt{3}$ then $BC = 51$

$AC = 102$.

$x = 17\sqrt{3}$

$y = 102$

(39)



ΔABC is equil.

$A_{SR} = ?$

$AB = 64$ cm

$\pi = 3.14$

$\sqrt{3} = 1.73$

round to nearest sq cm.

If ABC 64, $BD = 32$, CD, $32\sqrt{3}$, $ED = \frac{32\sqrt{3}}{3}$

$A_{SR} = A_{\Delta} - A_{\odot}$

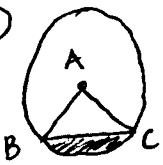
$= \frac{1}{2}bh - \pi r^2$

$= \frac{1}{2}(64)(32\sqrt{3}) - \pi\left(\frac{32\sqrt{3}}{3}\right)^2$

$= 1024\sqrt{3} - \pi\frac{(1024)(\cancel{3})}{\cancel{9}\,3}$

$\boxed{1024\sqrt{3} - \frac{1024\pi}{3}}$

(28)

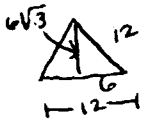


$A_{SR} = ?$

$A_{sector} - A_{\Delta}$

$\frac{a}{360} \cdot \pi r^2 - \frac{1}{2}bh$

ΔABC is equilateral w/ lengths of 12 cm.



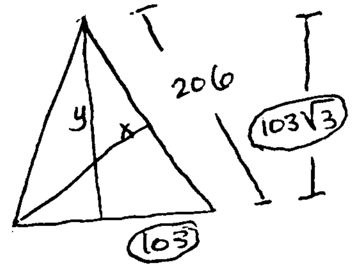
$\frac{60°}{360} \cdot \pi(12)^2 - \frac{1}{2}(12)(6\sqrt{3})$

$\frac{1}{6} \cdot \pi(144) - 36\sqrt{3}$

$24\pi - 36\sqrt{3}$ cm^2

(34) x = ?

(35) y = ?

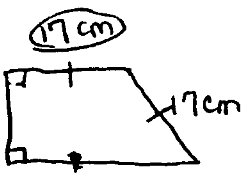


$\frac{103\sqrt{3}}{3} = x$

$x = \frac{103\sqrt{3}}{3}$

$y = \frac{206\sqrt{3}}{3}$

(29)



$A = \frac{1}{2}(b_1 + b_2)h$

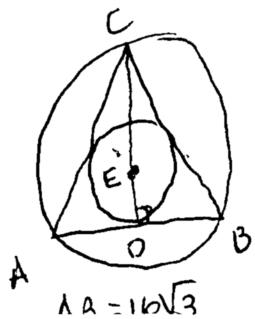
$= \frac{1}{2}(17 + 40)h$

$= \frac{1}{2}(57)h$

(36) $A_{\Delta ABC} = ?$

(37) $A_{inscr.\odot} = ?$

(38) $A_{circum\odot}$?

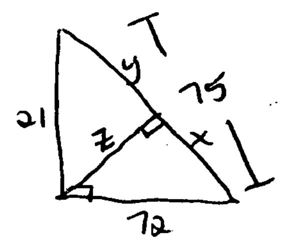


$AB = 16\sqrt{3}$

(40) x = ?

(41) y = ?

(42) z = ?



$\frac{75}{72} = \frac{72}{x}$

$75x = 5184$

$\boxed{x = \frac{5184}{75}}$

$\frac{75}{21} = \frac{21}{y}$

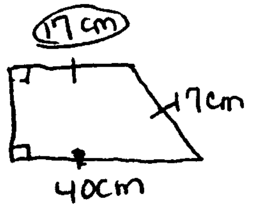
$75y = 441$

$y = \frac{441}{}$

$\frac{1}{6}\cdot\pi(144) - 36\sqrt{3}$

$24\pi - 36\sqrt{3}\ cm^2$

(29)

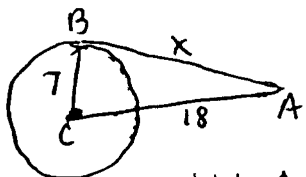


$A = \frac{1}{2}(b_1+b_2)h$

$= \frac{1}{2}(17+40)h$

$= \frac{1}{2}(57)h$

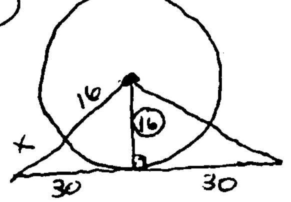
(30)



$\triangle ABC$ is a right $\triangle$ with $\angle B = 90°$ (radius drawn to the pt. of tangency is a right $\angle$). $\triangle ABC$ is also a primitive (7-24-25)
$AC = 7+18$
Therefore, $x = 24$

24

(31)



$$\begin{array}{r} 16 \\ \times 16 \\ \hline 96 \\ 16 \\ \hline 256 \end{array}$$

$16^2 + 30^2 = (x+16)^2$

$256 + 900 = x^2 + 32x + 256$

$1156 = x^2 + 32x + 256$

$0 = x^2 + 32x - 900$

$\frac{103\sqrt{3}}{3} = x$

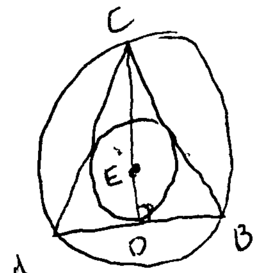
$x = \frac{103\sqrt{3}}{3}$

$y = \frac{206\sqrt{3}}{3}$

(36) $A_{\triangle ABC} = ?$

(37) $A_{inscr.\odot} = ?$

(38) $A_{circum\odot}$?



$AB = 16\sqrt{3}$

If $AB = 16\sqrt{3}$, then $BD = 8\sqrt{3}$ (short side), then $\overline{CD} = 8\sqrt{3}\sqrt{3} = 24$. If $CD = 24$, then $DE = \frac{1}{3}(24) = 8$ (radius of insc. $\odot$).

$A_{\triangle ABC} = \frac{1}{2}bh$

$= \frac{1}{2}(16\sqrt{3})(24)$

$= 192\sqrt{3}$

$A_{inscr.\odot} = \pi r^2$

$= (8)^2\pi$

$= 64\pi$

$A_{circum\odot} = 64\pi(4)$

256π

$A_{\triangle ABC} = 192\sqrt{3}$

$A_{insc\odot} = 64\pi$

$A_{cir\odot} = 256\pi$

$$\begin{array}{c|c} -900 & 32 \\ 36, -25 & \end{array}$$

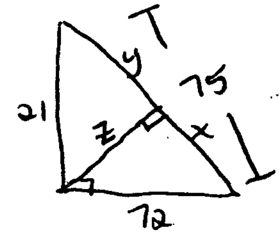
900
90 10
9 10 2 5
3 3 2 5

$2\cdot 2\cdot 3\cdot 3\cdot 5\cdot 5$

(40) $x = ?$

(41) $y = ?$

(42) $z = ?$



$\frac{75}{72} = \frac{72}{x}$

$75x = 5184$

$\boxed{x = \frac{5184}{75}}$

$\frac{75}{21} = \frac{21}{y}$

$75y = 441$

$y = \frac{441}{75}$

$\boxed{y = \frac{147}{25}}$

$\frac{\frac{147}{25}}{z} = \frac{z}{\frac{5184}{75}}$

$z^2 = \frac{\cancel{147}^{49}}{25}\cdot\frac{5184}{\cancel{75}_{25}}$

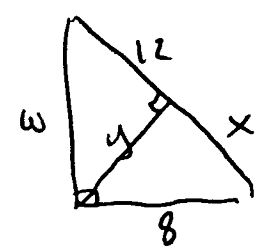
$z = \sqrt{\frac{49}{25}}\cdot\sqrt{\frac{5184}{25}}$

$z = \frac{7}{5}\cdot\frac{72}{5} = \boxed{\frac{504}{25}}$

(43) $w = ?$

(44) $x = ?$

(45) $y = ?$



$w^2 = 192$

$\boxed{w = 8\sqrt{3}}$

$\frac{12}{y} = \frac{y}{x}$; $\frac{x+12}{w} = \frac{w}{12}$

$y^2 = 48$

$\boxed{y = 4\sqrt{3}}$

$\frac{x+12}{8} = \frac{8}{x}$

$x = -16, 4$

$\boxed{x = 4}$