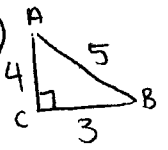
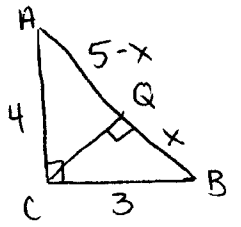
Solutions

Chiles Mini Mu
Geometry
Green Eggs & Ham

1. (C) If a, then b, the converse is, if b, then a.

2. (A) 

$A = \frac{1}{2}bh = \frac{1}{2}(4)(3) = 6$

3. (C) 

$y^2+(5-x)^2=4^2$ $\quad x^2+y^2=3^2$
$y^2-10x+x^2=-9$ $\quad x^2+y^2=9$
$x^2+y^2-10x=-9$
$-x^2+y^2 \quad = 9$
$-10x=-18$
$x=\frac{18}{10}=\frac{9}{5}$
$\left(\frac{9}{5}\right)^2+y^2=3$
$y^2=\frac{225}{25}-\frac{81}{25}=\frac{144}{25}$
$y=\frac{12}{5}$

4. (D) The circumcenter and orthocenter can be found outside a triangle.

5. (B) $A=\frac{1}{2}(b_1+b_2)h=\frac{1}{2}(10+18)4=56$

6. (C) $SA=2lw+2lh+2wh=2(6)(5)+2(6)(4)+2(5)(4)=148$

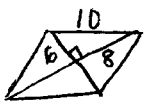
7. (B) $V=\frac{4}{3}\pi r^3=\frac{4}{3}(27)\pi=36\pi$

8. (B) $SA=4\pi r^2=4\pi(16)=64\pi$

9. (D) Use Heron's formula $\rightarrow s=18$
$\sqrt{18(18-9)(18-12)(18-15)}=\sqrt{2916}=54$

10. (A) $\overline{GT}$ is $\perp$ to $\overline{GO}$, $m\angle GOT=80^\circ$
$m\angle 1=180^\circ-(80^\circ+90^\circ)=10^\circ$

11. (A) $S=R\sqrt{3}=6\sqrt{3}$
area of $\triangle OUS=\frac{(6\sqrt{3})^2\sqrt{3}}{4}=27\sqrt{3}$
area of circle $M=\pi r^2=36\pi$
Area of segment $=\frac{1}{3}(36\pi-27\sqrt{3})=12\pi-9\sqrt{3}$

12. (C) 

$4(10)=40$

13. (D) $4(2x-5)=7(x+6)$
$8x-20=7x+42$
$x=62$
$\overline{TA}=4+(2x-5)$
$=4+(119)$
$=123$

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14. (C) Area of circle $= \pi r^2 = 36\pi$

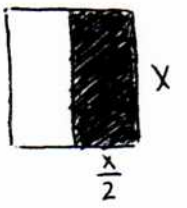
$60° = \frac{1}{6}(360°) \rightarrow \frac{36\pi}{6} = 6\pi$

15. (B) Start $\rightarrow (0,0) \rightarrow (0,-3) \rightarrow (-7,-3) \rightarrow (-7,3) \rightarrow (-4,3)$

$d = \sqrt{(-4-0)^2 + (3-0)^2} = \sqrt{16+9} = \sqrt{25} = 5$

16. (D) $\left|\frac{60h-11m}{2}\right| = \left|\frac{60(3)-11(14)}{2}\right| = \left|\frac{180-154}{2}\right| = \left|\frac{26}{2}\right| = 13°$

17. (C)

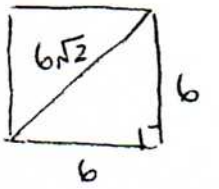


$(\frac{x}{2})(x) = 18$

$\frac{x^2}{2} = 18$

$x^2 = 36$

$x = 6$



18. (B) $C = a\pi = b\pi = A$

$2\pi r = \pi r^2$

$2r = r^2$

$r = 2$

19. (E) $\sqrt{-3 \cdot 27} = \sqrt{-81} \rightarrow$ undefined

20. (B) Area of old plate $= \pi r^2 = 36\pi$

Area of new plate $= 36\pi + (\frac{1}{2})(36\pi) = 54\pi$

$r^2 = 54 \qquad r = 3\sqrt{6}$

21. (C) $S = 180(n-2) = 180(12-2) = 1800$

22. (C) $d = \sqrt{(4-1)^2 + (3-7)^2} = \sqrt{9+16} = \sqrt{25} = 5$

23. (D) $360° / 40° = 9 \rightarrow$ nonagon

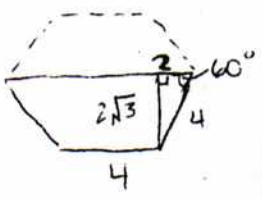
24. (D) $\frac{2}{x} = \frac{x}{6} \rightarrow x^2 = 12 \rightarrow x = \sqrt{12} = 2\sqrt{3}$

$\frac{2}{y} = \frac{y}{8} \rightarrow y^2 = 16 \rightarrow y = 4$

25. (A)

$2x + 46 = 90 \rightarrow 2x = 44 \rightarrow x = 22$

26. (C)



Area of trapezoid $= \frac{1}{2}(4+8)2\sqrt{3} = 12\sqrt{3}$

Area of hexagon $= 2(12\sqrt{3}) = 24\sqrt{3}$

$\frac{24\sqrt{3}}{4} = 6\sqrt{3}$ full $\qquad 24\sqrt{3} - 6\sqrt{3} = 18\sqrt{3}$

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27. (D) $3s+60+2s+80=180$

$5s+140=180$

$5s=40$

$s=8$

$m+a=180^\circ+s=188^\circ$

28. (A) $E=F+V-2$

$66=F+39-2$ $\quad F=29$

29. (D) $x+6$ will be the largest side

$x+(3x-17)>x+7$

$4x-17>x+7$

$3x>24$

$x>8$

30. (B) $7y=-14x+91$ $\quad x\text{-int}=\frac{13}{2}$

$y=-2x+13$ $\quad y\text{-int}=13$

$A=\frac{1}{2}(bh)=\frac{1}{2}\left(\frac{13}{2}\right)(13)=\frac{169}{4}\approx 4$