

1. $r = 3$ so $V = \frac{4}{3}\pi(3)^3 = 36\pi \text{ in.}^3$

2. $26^2 = 6^2 + 8^2 + h^2 \rightarrow h = 24 \text{ in.}$

3. $\frac{2\pi r}{2} = 4\pi \rightarrow r = 4$

$$A = \frac{\pi(4)^2}{2} = 8\pi$$

4. The number of lines of symmetry of a regular polygon equals the number of sides of the regular polygon. Therefore, the answer is 20.

5. $\frac{5}{20} = \frac{3}{b} \rightarrow b = 12$

$$\frac{5}{20} = \frac{4}{h} \rightarrow h = 16$$

$$A = \frac{1}{2}(12)(16) = 96 \text{ cm}^2$$

6. $\frac{x}{12} + \frac{x}{8} = 1 \rightarrow x = \frac{24}{5}$ hours or 4.8 hours

7. $\pm \frac{1}{2} \begin{vmatrix} 8 & -4 & 1 \\ 2 & 4 & 1 \\ -2 & y & 1 \end{vmatrix} = 25 \rightarrow y = 1$

8. There are 30° between each number on the clock. Since we are looking for an angle measuring 112.5° , the angle between the hour hand and the 12 will be $112.5 - 90 = 22.5^\circ$. That means that the angle between the 11 and the hour hand will be $30 - 22.5 = 7.5^\circ$. Therefore, the fraction of the hour that is past 11:00 is $\frac{7.5}{30} = \frac{75}{300} = \frac{1}{4}$. So the time is a quarter past 11:00 or 11:15. Therefore, the angle between the hour and minute hand will be 112.5° in 15 minutes.

9. Let $RT = x$, so $ST = 10 - x$.

$$\frac{8}{x} = \frac{12}{10-x} \rightarrow x = 4$$

$$(12 + 6 + PT) - (8 + 4 + PT) = 6 \text{ cm}$$

10.

1	2	3	4	5	...	n
0	2	6	12	20	...	$n(n-1)$

$$10(10-1) = 90 \text{ matches}$$

11.

0	1	2	3	4	5	6	7	8	9	10
1	2	4	7	11	16	22	29	37	46	56

56 intersecting lines

12. $6e^2 = 294 \rightarrow e = 7$
 $V = 7^3 = 343 \text{ cm}^3$

13. $180 - \frac{130+60}{2} = 180 - 95 = 85^\circ$

14. $\begin{cases} x^2 - y^2 = 28 \\ 4x - 4y = 8 \end{cases} \rightarrow x = 8$

$$\text{diagonal} = 8\sqrt{2} \text{ cm}$$

15. $\frac{360}{n} = 45 \rightarrow n = 8$
 $(8-2)180 = 1080^\circ$

16. $M = \left(\frac{-3+5}{2}, \frac{2+-4}{2} \right) = (1, -1)$

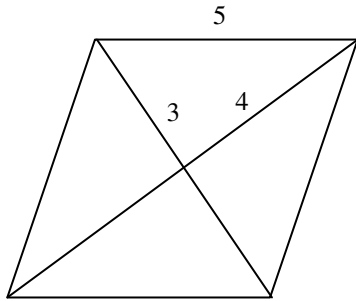
$$m = \frac{-4-2}{5--3} = -\frac{3}{4}$$

$$m_{\perp} = \frac{4}{3}$$

$$y+1 = \frac{4}{3}(x-1) \rightarrow y = \frac{4}{3}x - \frac{7}{3}$$

$$m-b = \frac{4}{3} - \frac{-7}{3} = \frac{11}{3}$$

17. $P = 4 \times 5 = 20 \text{ cm}$



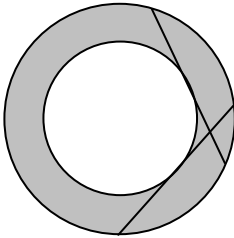
25. $\frac{s^2\sqrt{3}}{4} = 16\sqrt{3} \rightarrow s = 8$

$$r = \frac{1}{3}(4\sqrt{3}) = \frac{4\sqrt{3}}{3}$$

$$A = \pi \left(\frac{4\sqrt{3}}{3} \right)^2 = \frac{16\pi}{3}$$

18. $3 - \frac{1}{3}(3 - -1) = \frac{5}{3}$

19. 5 regions



20. $\frac{x}{x - .25x} = \frac{x}{.75x} = \frac{1}{.75} = \frac{4}{3}$
 $\left(\frac{4}{3} \right)^3 = \frac{640}{V} \rightarrow V = 270$

21. $20 + 4 = 24 \text{ faces}$

22. $\frac{4}{CD} = \frac{CD}{9} \rightarrow CD = 6$
 $A = \frac{1}{2}(13)(6) = 39 \text{ cm}^2$

23. $180 - x = 4(90 - x) \rightarrow x = 60$
 Complement = $90 - 60 = 30^\circ$

24. $y + 6 = \frac{2}{3}(x + 6)$
 $0 + 6 = \frac{2}{3}(x + 6) \rightarrow x = \frac{3}{2}$