TEAM SOLUTIONS

1. 12 yards
2. 10
3. $2\frac{1}{7}$
4. -10^{12}
5. 606
6. 30
7. 210
8. 8
9. -4
10. $\frac{1}{16}$
11. 64
12. $2y^2\sqrt[3]{5}$
13. 30
14. 25 minutes
15. $\sqrt{8}$ or $2\sqrt{2}$

TEAM SOLUTIONS - FEBRUARY

1. Let x = yards in the living room. $\frac{3}{4}x$ = yards in the kitchen, and $\frac{1}{2}x$ = yards in the dining room. $x + \frac{3}{4}x + \frac{1}{2}x = 36$; $3x + 4x + 2x = 144$; $9x = 144$; $x = 16$. Three fourths of 16 was used in the dining room..... **12 yards** was used in the dining room.

2. 2. $A = \frac{1}{2}bh$; $24 = \frac{1}{2}(6)h$; $24 = 3h$; height = 8. The measure of the hypotensuse will be found using the Pythagorean theorem. $36 + 64 = c^2$; $c^2 = 100$; $\mathbf{c = 10}$

3. $\frac{7}{3} = \frac{5}{x}$; $7x = 15$; $\mathbf{x = 2\frac{1}{7}}$

4. Slope $= \frac{\Delta}{B} = \frac{-10^{B}}{10} = \mathbf{-10^{12}}$

5. Tom starts with x, gives Leila $\frac{x}{2} + 1$, leaving him with $x - \left(\frac{x}{2} + 1\right)$ or $\frac{x - 2}{2}$

   he gives Karl $\frac{1}{2}\left(\frac{x - 2}{2}\right) + 1$, leaving him with $\frac{x - 2}{2} - \left[\frac{1}{2}\left(\frac{x - 2}{2}\right) + 1\right]$ or $\frac{x - 6}{4}$

   he gives Jarrod $\frac{1}{2}\left(\frac{x - 6}{4}\right) + 1$, leaving him with $\frac{x - 6}{4} - \left[\frac{1}{2}\left(\frac{x - 6}{4}\right) + 1\right]$ or $\left(\frac{x - 14}{8}\right)$

   he gives **Charlene** $\frac{x - 14}{8} = 74$; $x - 16 = 592$; $\mathbf{x = 606}$

   Using **logic**: **There** has to be a difference of 2 between Charlene and Jarrod, so Charlene has 74, Jarrod has **76**. Everyone elses will be doubled to produce the pattern created. Charlene has 74, Jarrod has 76, Karl has 152, and Leila has 304 totaling 606.

6. Ahead = x, Behind = x + 9. In line was a total of x + x + 9 + 1 (don't forget to count yourself). So, 3x = 2x + 10, x = 10. 10 people ahead, 19 people behind, **30 in line** counting yourself.

7. the picture. The area of the picture is 10y. Since the frame is 2 inches on both sides the dimensions of the frame will be 4 larger than the pictures, (14 by 4 + y), and the area 56 + 14y. Subtracting the picture leaves us with the area of the frame as 56 + 4y which we know to be 100. Solving for y we will find the dimensions of the picture is to be 10 by 11, which means the area of the framed picture is 14 by 15, making the **area of the framed picture 210.**

8. The only integers that multiply to be -15, and adds to be 2 are -3 and 5. Since x is greater than y, x = 5, y = -3. 5 - (-3) = **8.**

9. f(x) = 5x - 17, f(2) = 5(2) - 17 = -7. g(x) = -2x + 3, f(3) = -2(3) + 3) = -3
f(2) - g(3) = -7 - (-3) = **-4.**

10. The perimeter of the triangle (2x + 4y + 4) is 22, and the perimeter of the rectangle (4y + 4x) is 34. $\begin{cases} 2x + 4y = 18 \\ 4x + 4y = 34 \end{cases}$ multiplying the top equation by - 2

$\begin{cases} -4x - 8y = -36 \\ 4x + 4y = 34 \end{cases}$ $-4y = -2$; $y = \frac{1}{2}$; $2x + 4\left(\frac{1}{2}\right) = 18$; $2x = 16$; $x = 8$

The ratio of y to x is $\frac{1/2}{8} = \frac{1}{2} \div 8 = \frac{1}{16}$

11. if xy = 1, and $x = 4^{-3}$, then $(4^{-3})y = 1$, $y = 4^3$. $\frac{y^3}{x^2} \frac{(4^3)^3}{(4^{-3})^{-2}} = \frac{4^9}{4^6} = 4^3 = 64$

12. Begin by factoring: $(x^2 + y^2)\sqrt[3]{5} - (x^2 - y^2)\sqrt[3]{5}$; $\sqrt[3]{5}\left[(x^2 + y^2) - (x^2 - y^2)\right]$

Simplifying the intermost parentheses: $(2y^2)\sqrt[3]{5}$

13. let the number of applicants = x. We know $\frac{1}{2}x$ was turned down because of qualifications, 3 more were turned down on interview, and that $\frac{2}{5}x$ remian. This accounts for all the applicants so

$\frac{2}{5}x + \frac{1}{2}x + 3 = x$, $x = 30$

14. Because it is inversely proportional we know that the amount of homework a student does, times the temperature outside will produce a constant. So (45)(50) = 2250. Since our constant is 2250, the amount of homwork times 90 must also = 2250, meaning the student does **25 minutes** of homework.

15. Beginning with the right triangle on the right side of the diagram, using the pythagorean theorem, we can compute the hypotenuse of that triangle, which will also be the measure of the leg of the second triangle. This pattern will continue until we reach the last triangle, giving us the measure of x. If observant a pattern develops making the work much faster. $x = \sqrt{8} = 2\sqrt{2}$