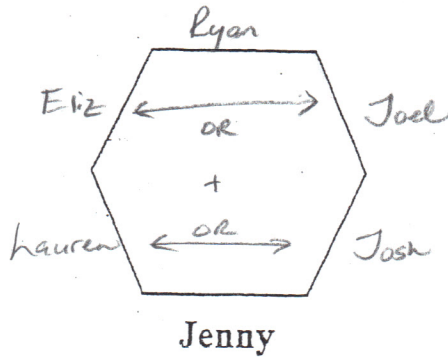
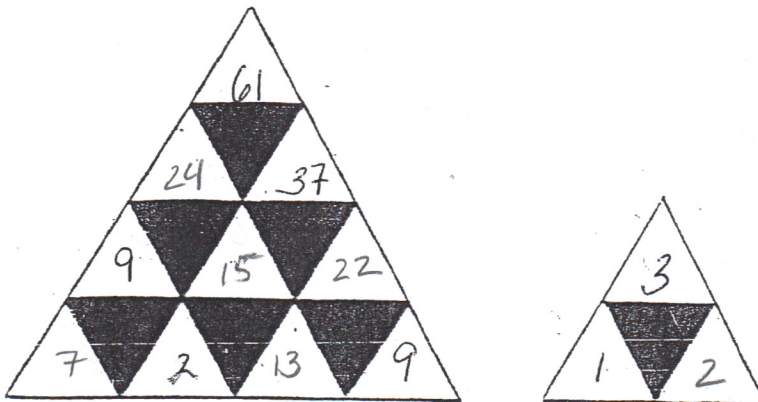


Math Bowl
April 10, 2013

1. Six people sit at a six-sided table. Josh sits across from Elizabeth and next to Jenny. Lauren sits next to Elizabeth, and across from Joel, who sits next to Ryan. Show where each person sits at the table below. Jenny is already shown in her correct location.



2. Fill in the empty triangles so that each number is the sum of the numbers below it.



3. It's February and not a leap year. Susie marks her events for the month on her calendar. Every other day starting on Feb 1, she does volunteer work. Every four days, starting with Feb 1, she has cooking class. Starting on the same day, she has aerobics classes every three days. How many days in the month of February do all three activities occur on the same day?

~~1~~ 2 3 4 ~~5~~ 6 ~~7~~
 8 ~~9~~ 10 11 12 ~~13~~ 14
 15 16 ~~17~~ 18 ~~19~~ 20 ~~21~~
 22 23 24 ~~25~~ 26 27 28

3 days

4. Simplify

$$4 * 6 \div 3 + 2 - 6$$

$$24 \div 3 + 2 - 6$$

$$8 + 2 - 6$$

4

5. Simplify the expression

$$2 \cdot (9 - 16 \div 4 + (7 \cdot 2^2))$$

$$2 \cdot (9 - (16 \div 4) + (7 \cdot 4))$$

$$2 \cdot (9 - 4 + 28)$$

$$2 \cdot (5 + 28)$$

$$2 \times 33$$

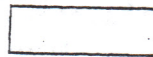
66

6. Which of the following shapes are not a parallelogram?

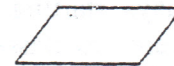
a)



b)



c)



d)



e)



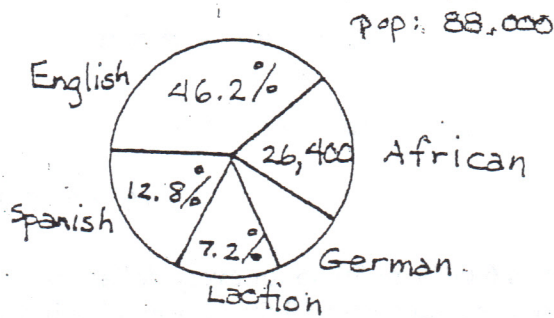
f)



a, d, e

Math Bowl
April 10, 2013

1. The circle graph shows information concerning the ethnic background of the population of Calculusville. How many residents are German? (You may use a calculator)

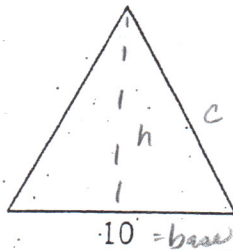


$$\begin{array}{r} 46.2 \\ 12.8 \\ 7.2 \\ \hline 66.2\% \end{array}$$

$$\begin{array}{r} 88,000 \times 0.662 = 58,256 \\ + 26,400 \\ \hline 84,656 \end{array}$$

$$\begin{array}{r} 88,000 \\ - 84,656 \\ \hline 3,344 \end{array}$$

2. The area of this isosceles triangle is 60. If the base is 10 find the perimeter.



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

$$60 = \frac{1}{2} \cdot 10 \cdot h$$

$$60 = 5h$$

$$12 = h$$

$$a^2 + b^2 = c^2$$

$$12^2 + 5^2 = c^2$$

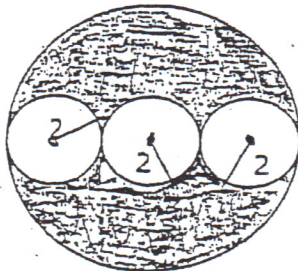
$$144 + 25 = c^2$$

$$169 = c^2$$

$$13 = c$$

$$10 + 13 + 13 = 36$$

3. Find the area of the shaded region if the smaller circles are tangent (they touch one another). Leave your answer in terms of π

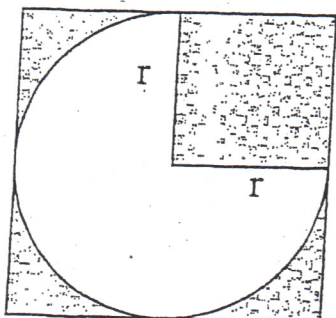


$$A_{\text{small } \circ} = 3 \cdot \pi (2^2) = 12\pi$$

$$A_{\text{large } \circ} = \pi (6^2) = 36\pi$$

$$36\pi - 12\pi = 24\pi$$

4. Find the area of the shaded region. The radius of the circle is 6. Assume that the circle is inscribed in the large square. Leave your answer in terms of π



$$A_0 = \pi(6^2) = 36\pi$$

$$36\pi \div 4 = 9\pi$$

$$36\pi - 9\pi = 27\pi$$

$$A_{\square} = 12 \times 12 = 144$$

$$144 - 27\pi$$

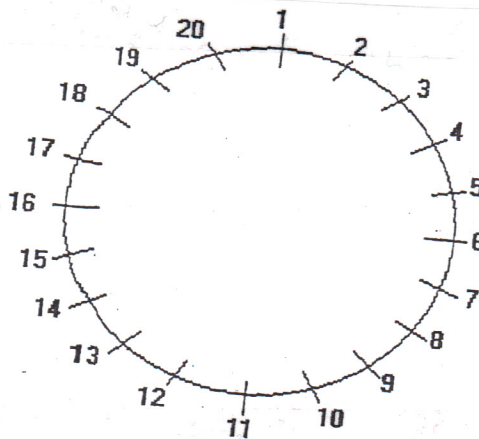
5. In Madison, Wisconsin, the sales tax is 6.00%, or \$0.06 for every dollar spent. If Dean buys a beaker for \$2.00 and a Bunsen burner for \$9.50, how much will he have to pay, including tax?

$$\begin{array}{r} 2.00 \\ 9.50 \\ \hline 11.50 \\ \times 0.06 \\ \hline 0.6900 \end{array}$$

$$\begin{array}{r} 11.50 \\ + 0.69 \\ \hline 12.19 \end{array}$$

$$\$12.19$$

6. Mrs. Cinderelli took her class outside to play a game of duck-duck goose. When the students were standing in the circle, the sixth student was right across from the sixteenth student. If each student is the same distance away from the next person, how many students are in the circle?



20