

Math Challenge 2008 (Pony Express Problems)

1. A circular target with a radius of 12 inches is to have a circular bull's-eye painted in the center so that the area of the bull's-eye is 1% of the total area of the target. What should be the radius of the bull's-eye?

Ans: 1.2 in

2. Four numbers have a sum of 45. If 2 is added to the first number, 2 is subtracted from the second number, 2 is multiplied by the third number, and 2 is divided into the fourth number, the results will be equal. Find the product of the four numbers.

Ans: 9600

3. If $k = 2^{2008}$, then what is the value of $2^{2006} + 2^{2007} + 2^{2008} + 2^{2009} + 2^{2010}$ in terms of k ?

Ans: $\frac{31}{4}k$

4. One day a store brought in \$4400.00 in gross receipts by selling 60 items of clothing consisting of pants, jackets, and suits. If the pants sold for \$30.00, jackets for \$80.00, and suits for \$120.00, what is the largest number of suits that the store could have sold?

Ans: 25

5. Two highways, one 50 feet wide and the other 60 feet wide, meet at a 60 degree angle. What is the area of the intersection of the two roads? (Round off answer to the nearest square foot.)

Ans $\approx 3464 \text{ ft}^2$

6. Lines L_1 and L_2 both contain the point (3,4). The slope of line L_1 is one more than the slope of line L_2 . Line L_2 crosses the y-axis "K" units above the point where L_1 crosses the y-axis. Find the value of K.

Ans: $k=3$