

Problem Solving Session

Friday, October 31, 2014

2:00pm-2:50pm in C630

1. I have a box. Its top has an area of 20 square inches, its front has an area of 10 square inches, and its end has an area of 8 square inches. What are its dimensions?
2. A grandfather and his grandson have the same birthday. For six consecutive birthdays, the grandfather's age was a multiple of the grandson's age. How old were they at the last of these birthdays?
3. Diophantus's youth lasted $\frac{1}{6}$ of his life. He had his first beard in the next $\frac{1}{12}$ of his life. At the end of the following $\frac{1}{7}$ of his life Diophantus got married. Five years from then his son was born. His son lived exactly $\frac{1}{2}$ of Diophantus's life. Diophantus died 4 years after the death of his son. How long did Diophantus live?
4. What 5-digit number has the property that if I put the digit 1 behind it, I get a number that is three times bigger than if I put the digit 1 in front of it?
5. How many squares are there on a chessboard? *Hint: The answer is not 64.*
6. Find a 10-digit number in which the first digit counts the number of zeros in the number, the second digit counts the number of ones in the number, and so on.
7. A spider in the top-left-front corner of a 3 metre tall, 4 metre wide, and 5 metre deep room sees a big fat fly in the bottom-right-back corner. What is the length of the shortest path that the spider can *crawl* to get the fly?