

# Today in Math History...

**-23 August 1654**

## **Pascal to Fermat.**

Pascal wrote a letter to Fermat, discussing Fermat's solution to the “*problem of points.*”

Pascal showed that in a game where one needs  $r$  points to win and the other needs  $s$  points to win, the correct division of the stakes is in the ratio of

$$\sum_{k=0}^{r-1} \binom{r+s-1}{k} \text{ to } \sum_{k=r}^{r+s-1} \binom{r+s-1}{k}.$$

*The problem of points, also called the problem of division of the stakes, is a classical problem in probability theory. One of the famous problems that motivated the beginnings of modern probability theory in the 1600s, it led Pascal to the first explicit reasoning about what today is known as an expected value.*