

How many distinct arrangements of the letters GOOSE are possible?

$${}_5P_5 = 120 \quad \underline{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} = 5!$$

G O O S E } not distinct
G O O S E

$$\frac{5! \leftarrow \text{Total \# of letters}}{2! \leftarrow 2 \text{ repeated O's}} = 60$$

1) SYLLABLES

S - 2

L - 3

$$\frac{9! \leftarrow \text{\# of letters}}{(2! \cdot 3!)} = 30,240$$

↑ repeated S's ↑ repeated L's

2) MISSISSIPPI

I - 4

S - 4

P - 2

$$\frac{11!}{(4! \cdot 4! \cdot 2!)} = 34,650$$

Ms. Mendoza brings in candy for her 25 students. She has 10 Milky Ways, 10 Snickers, and 5 Kit-Kats. How many ways can she distribute the candy?

M M M M M M M M M M
S S S S S S S S S S
K K K K K

$$\frac{25!}{(10!10!5!)} \leftarrow \begin{array}{l} \text{Total \#} \\ \text{of candy bars} \\ = 9,816,086,280 \end{array}$$