

26 VERMONT



$\frac{2}{\text{vowel}}$ $\frac{5}{\text{consonant}}$ $\frac{4}{\text{consonant}}$ $\frac{3}{\text{consonant}}$ $\frac{5}{\text{consonant}}$

18

$\frac{26}{\text{letters}}$ $\frac{26}{\text{letters}}$ $\frac{9}{\text{\# non zero digits}}$ $\frac{9}{\text{\# non zero digits}}$ $\frac{9}{\text{\# non zero digits}}$
 +
 $\frac{26}{\text{letters}}$ $\frac{26}{\text{letters}}$ $\frac{9}{\text{\# non zero digits}}$ $\frac{9}{\text{\# non zero digits}}$ $\frac{9}{\text{\# non zero digits}}$

ex 10 turtles.

choose. Pres., VP, treasurer.

$$\frac{10!}{7!} = \frac{10}{\text{Permutation}} \frac{9}{10P_3} \frac{8}{P_3} = 720$$

ex 10 shirts, you' only want to hang 7 of them.

$$\frac{10!}{3!} = \frac{10}{\text{}} \frac{9}{\text{}} \frac{8}{\text{}} \frac{7}{\text{}} \frac{6}{\text{}} \frac{5}{\text{}} \frac{4}{\text{}} \\ {}_{10}P_7 = 604,800$$

math \rightarrow prb $\rightarrow nPr$

$${}_nP_r = \frac{n!}{(n-r)!}$$

Combinations

ex 10 shirts, and how many ways can you pick 7 of them to crumple into a bag.

10 9 8 7 6 5 4

4 books on the shelf.

4 3 2 1 = 24

Generally the # of ways to rearrange n things is $n!$.

ex 10 shirts I want choose 7 of them.

$${}_{10}C_7 = \frac{10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4}{7!}$$

ex

22 students. How many
different gardening committees
of size 5 can you form.

$$\frac{{}^{22}P_5}{5!} = {}^{22}C_5$$