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3.3 Problem Solving with Combinations

Example 1: A tray of candies contains 1 red, 1 blue, 1 yellow, 1 green and 1 purple. In how many ways can you take some candy?

$$\frac{2}{R} \times \frac{2 \times 2}{B} \times \frac{2 \times 2}{4} \times \frac{2}{P} = 2^{S} - 1$$

$$= 31 \text{ ways}$$
nothing taken

The total # of combinations containing at least one item chosen from a group of n distinct items is:

Example 2: In how many ways can a committee with at least one member be appointed from a board with 12 members?

Example 3: In how many ways can a committee with 8 members or less be appointed from a board with

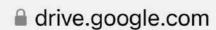
12 members?

* How do we know these orn't primitations? Languege used?

* How would no change question to be a permutation?

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MDM4U Unit 3: Combinations

Example 4: Mr. Subway has 8 possible toppings for their sandwiches. In how many ways could you build

Example 5: A basket of fruit contains 3 apples, 2 mangoes, 5 plums and 9 bananas. In how many ways can you select some fruit to eat?

$$\frac{4}{A} \times \frac{3}{M} \times \frac{6}{P} \times \frac{10}{8} - 1 = 7/9 \text{ ways.}$$

If some items are alike, then the total number of selections from p items of one kind, q items of another kind, and so on is:

BUT ... don't forget to think whether NOT picking any items makes sense. If at least one item is chosen, then the total number of selections is:

Example 6: Lauren wants to plant a garden. She has 4 red, 3 yellow and 5 pink tulip bulbs. In how many ways can Lauren select some bulbs to plant her garden?

$$(4+1) \times (3+1) \times (5+1) - 1$$

= $(5)(4)(6) - 1$.
= $(19) \text{ ways}$.

* How car you change question to permittedion?

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