1. For each problem statement, examine whether order of selection affects the final result or not. If it does, then it's a permutation, else it's a combination.
   a. Let the 5 girls be A, B, C, D and E. We need any 2 girls. Whether we select first A then B or first B then A, it does not matter, the team still has the same 2 children. Hence, this is a combination selection.
   b. Suppose there is mango, apple, guava and kiwi in the fridge. Gagan wants any two. Whether he selects mango first then kiwi or kiwi first then mango, it does not matter – he will still have those two fruits for lunch. Hence, this is a combination selection.
   c. Mary wants 1 colour for the shirt and 1 colour for the pant. If she chooses red for shirt and blue for pant, she gets 1 outfit. If she chooses blue for shirt and red for pant, she gets a different outfit. So, order of selection does affect the outfit! Hence, this is a permutation selection.
   d. Let the 7 children be A, B, C, D, E, F & G. If teacher chooses B for monitor and G for sports, it is different from selecting B for sports and G for monitor. i.e., order of selection matters! This is a permutation.
   e. Whether Sheela chooses the purse first or the scarf it does not matter, the purse is a purse and the scarf is a scarf! This is a combination selection.
   f. If teacher picks Sheela for garba and Sunita for kolata, that is different from choosing Sheela for kolata and Sunita for garba! Hence, this is a permutation selection.

2. Let's draw the lawn and the borders.
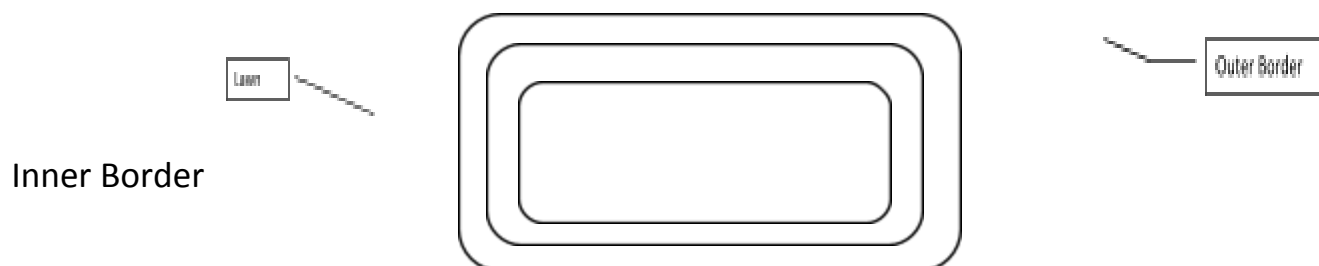
Inner Border

We have 3 varieties of flowers: daisies, pansies, buttercups. The order of selection is important because daisies in the outer border is different from daisies in the inner border. So this is permutation – of 2 items from a set of 3.

$$23P = \frac{3!}{1!} = 3{\times}2{\times}1 = 6$$

i.e., the lawn can be bordered in 6 different ways.

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3. Choosing white for Team A is different from choosing white for Team B – so the order of selection is important. i.e., this is Permutation of 2 items from 4.

$$24P = \frac{4!}{2!} = 12$$

4. Order of selection does not matter since the fruits are going to be juiced together anyway! So this is a case of Combination. The options are:

[orange, banana],   [banana, guava],
[orange, guava],   [banana, melon],
[orange, melon],   [guava, melon]

i.e., 6 options.

5. If Mother chooses apple first she will give it to Tara and if she chooses apple second she will give it to Mina – so here, the order of selection is important! It is a case of Permutation of 2 items out of 4.

$$24P = \frac{4!}{2!} = 12$$

6. Putting daisies into the pink vase gives a different arrangement than putting daisies into the white vase. This problem is like seating 3 children in 3 places on a bench – order of selection matters! Therefore, this is a permutation of 3 items.

$$33P = \frac{3!}{0!} = 6$$

7. Since each room is different, which boy gets which room is important. i.e., order of selection matters. Hence it is a permutation of 5 items.

$$55P = \frac{5!}{0!} = 120$$

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