

The Pluto's Restaurant

at the Santana Row (San Jose) offers fresh salads and other dishes. When a customer orders a salad, s/he goes through the following steps: (Copied from the store menu)

Step 1: Choose Your Lettuce (Choose only ONE)

| | | |
|-----------------|---------|--------------|
| Farmer's Greens | Romaine | Baby Spinach |
|-----------------|---------|--------------|

Step 2: Choose Your Size (Choose only ONE)

| | |
|------------|------------|
| Side Salad | Main Salad |
|------------|------------|

Step 3: Choose Your Seven (7) Salad Fixings

| Raw Fixings(10 options) | Cooked Fixings(8 options) | Other Fixings(7 options) |
|-------------------------|-----------------------------|--------------------------|
| Broccoli | grilled fennel | Sunflower Seeds |
| Cucumbers | sweet walnuts | Dried Cranberry |
| Red Onions | Green Beans | Pine nuts |
| Beets | Sweet corn | Crunchy Croutons |
| Jicama | Garbanzo Beans | Parmesan Cheese |
| Peas | Sautéed Mushrooms | California Raisins |
| Carrots | Caramelized Balsamic Onions | Crumbled Blue Cheese |
| Granny Smith Apples | Roasted Red Bell Peppers | |
| Plum Tomatoes | | |
| Navel Oranges | | |

Step 4: Choose A Fresh Baked Bread(Choose only ONE)

| | | |
|-----------|-------|----------|
| Sourdough | Wheat | Foccacia |
|-----------|-------|----------|

Step 5: (Optional) Add Meat or Vegetarian Option (Add only ONE)

| | | |
|-------------------------------|----------------------------|------------------------------|
| Grilled Herbed Chicken Breast | Herb Roasted Sonoma Turkey | Grilled Certified Angus Beef |
| Aidells Poultry Sausage | Crispy Chicken Asteroids | Grilled Portobello Mushroom |

Step 6: (Optional) Dress Your Salad with One of Our Homemade Dressings (Choose only ONE)

| | | |
|----------------------|---------------------------------|------------------------|
| Balsamic Vinaigrette | Cilantro Lime Vinaigrette | Gorgonzola Vinaigrette |
| Caesar Dressing | L.F. Yogurt Based Honey Mustard | House Special Dressing |

The Questions

Fiona and her husband, Sal, went to the restaurant to celebrate their 8th anniversary last weekend. Use the setting to answer the following questions.

1. At step 3, how many different ways can a customer fix his salad?
2. At step 3, if a customer picks 2 fixings from Raw Fixings, and 3 fixings from Cooked Fixings, and 2 fixings from Other Fixings, how many different ways can s/he fix her/his salad?
3. Going through all 6 steps, how many different salads can the Pluto's restaurant serve?
4. Fiona loves to have beets, cranberries and crumbled blue cheese whenever she fixes up her salad. At step #3, if she decided to have the rest of her fixings from the Raw Fixings category, what is the probability she got peas in her fixings?
5. In step 4, any customer needs to pick a bread to make a salad dish. According to the past experience, the odds for Sal to pick sourdough bread are 3 to 1. Also, whenever Sal picked sourdough bread, the odds for him to pick Balsamic Vinaigrette as dressing for the salad is 6 to 1. However, if he does not pick sourdough bread, the odds for him to pick Balsamic Vinaigrette as dressing becomes 1 to 4. Knowing Sal's ordering history, what is the likely-hood that Sal will pick Balsamic Vinaigrette as dressing today?