

Counting

Brent Yorgey, mathlesstraveled.com



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March 23, 2020

1. For breakfast you can have either oatmeal or cereal. On top, you can have either blueberries, strawberries, or blackberries (you have to choose exactly one kind of fruit). What are all the different breakfasts you could choose? How many different breakfasts are there?

2. What if you could also choose to have no fruit? How many different breakfasts would there be now?

3. Now suppose you can still choose either oatmeal or cereal, but there are now seven different fruit choices (banana, pomegranate, strawberry, blueberry, blackberry, raspberry, or tomato). You get to choose exactly one fruit, or you can have no fruit. How many different breakfasts can you choose?

4. What if you could choose cereal, oatmeal, or cream of wheat, and you have the same fruit choices as before? How many different breakfast combinations are there now?

5. For lunch you are going to eat a sandwich and some fruit, but let's forget about the sandwich for now. Suppose there are two types of fruit: grapes and apples. If you have to choose one fruit then of course there are two different lunches you could have. But being limited to only one kind of fruit is boring! For lunch, you can choose any combination of fruits you want: you could have no fruit, or you could choose one fruit, or you could have both. How many different lunch choices do you have?

6. Now suppose there are three kinds of fruit: grapes, apples, and oranges. Again, you can choose any fruits you want. How many different lunch choices do you have? What are they?

7. What if there are four kinds of fruit (grapes, apples, oranges, and dragonfruit)? How many lunch choices do you have now?

8. Remember your sandwich? To make a sandwich you need bread, cheese, meat, and toppings.

- There are three different kinds of bread, and you have to choose one kind.
- There are four different kinds of cheese. You can choose one, or you can decide not to have any cheese.
- There are four different kinds of meat. You have to choose one.
- There are three different toppings (lettuce, tomato, and pickles), and you can choose any combination of toppings you want.

How many different sandwiches can you make?