#learning

Today we will explore the notion of outcomes and the basic counting rule.

Keys to Success:

- I can identify the possible outcomes in a situation
- I can use the counting principle (aka multiplication) to determine the total number of possible outcomes

WARM UP

1) What is the equation of a line that has a slope of 4, and goes through the point (-2, 6)?

2) Simplify: $(4x - 3)(2x + 5)$

Fractions review
(No really, you need this.)

Adding & subtraction:

- You *need* a common denominator.
- Look for the lowest common multiple

$\frac{1}{5}+\frac{3}{5}=\frac{4}{5}$ Do not add the denominator.

$\frac{1}{5}+\frac{1}{4}=$

$\frac{5}{6}-\frac{1}{4}=$

Multiplication:

- Easy! Multiply the numerators, and multiply the denominators.

$\frac{1}{5} \times \frac{3}{5} = \frac{3}{25}$ $\frac{2}{3} \times \frac{1}{6} = \frac{2}{18}$ or $\frac{1}{9}$

Dividing:

- Flip over the second fraction, then multiply!

$$\frac{1}{5} \div \frac{3}{5} = \frac{1}{5} \times \frac{5}{3}$$

$$= \frac{5}{15}$$ (can divide top and bottom by 5)

$$= \frac{1}{3}$$

YOU practice!

1) $\frac{1}{4}+\frac{2}{4}$

2) $\frac{3}{8}+\frac{2}{5}$

3) $\frac{7}{9}-\frac{4}{6}$

4) $\frac{3}{4}\times\frac{4}{7}$

5) $\frac{2}{6}\div\frac{3}{5}$

Try Workbook – page 134

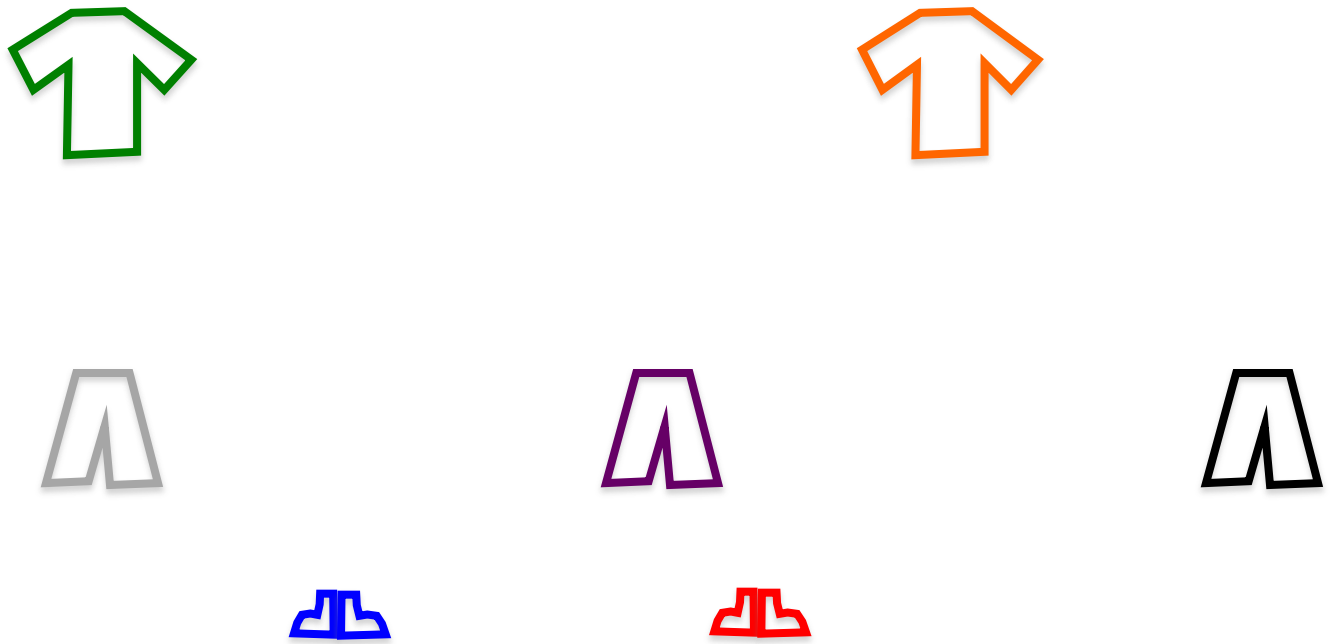
Team Question

Ms. Elst brought in breakfast for her PDC.

She had 3 types of bagels (regular, sesame, everything), and 3 different cream cheeses (chocolate, regular, garlic). How many different ways could her students make a bagel?

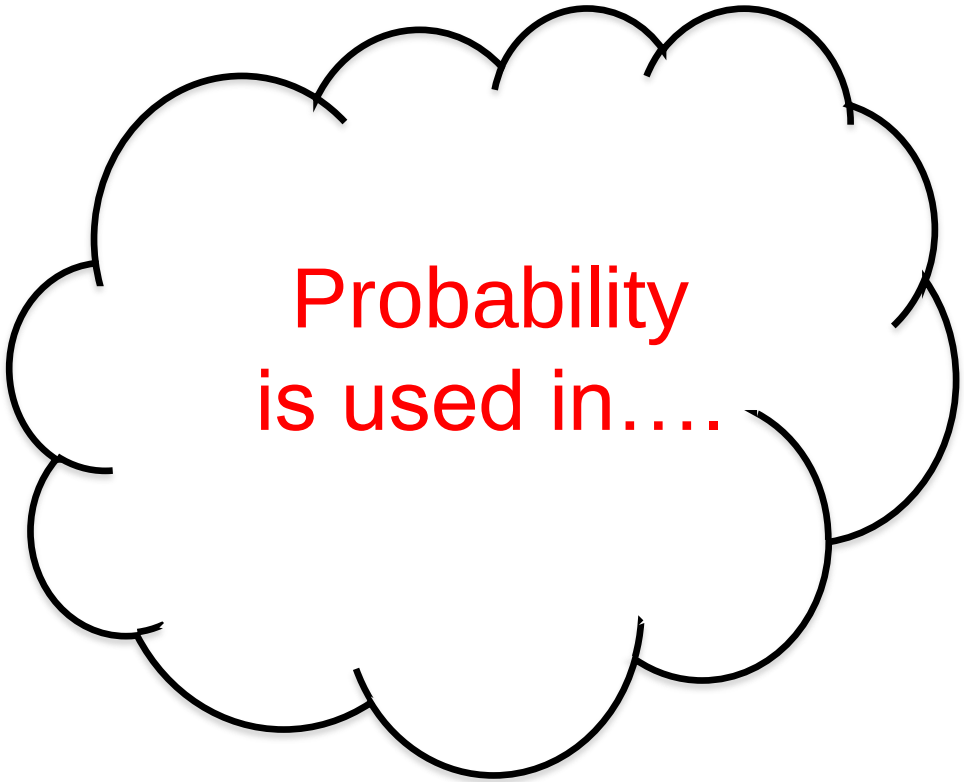
Basic Counting Principle

How many outfits can be worn with 2 different shirts, 3 pants and 2 pairs of shoes.



World 9 - Probability

9-1: Outcomes


Probability
is used in….

What is Probability?

- *Probability* is the measure of the likeliness that a specific event will occur:

- *Ex: There is a 40% of rain tomorrow in Ottawa.*

- *Today we're going to start with basics: COUNTING!*

eg. 1: You have several 6-sided die in your pocket. How many outcomes are possible if you

a) Roll 1 die:

{1, 2, 3, 4, 5, 6} (this is the list of all possible outcomes)

# of possible outcomes: 6

b) Roll 2 dice:

(# outcomes of die 1) x (# outcomes of die 2)

6 x 6 = 36

c) Rolling 3 dice:

6 x 6 x 6= 216

You could solve this problem using a tree diagram.

e.g. 2

How many outcomes exist when

a) Flipping a coin?
b) Flipping a coin three times?
c) Flipping a coin twice and then rolling a die 3 times?

Example 3

You're presented the following menu at the new school cafeteria. You may choose one from each category.

Main Dish

Pasta, Sandwich, or Stir Fry

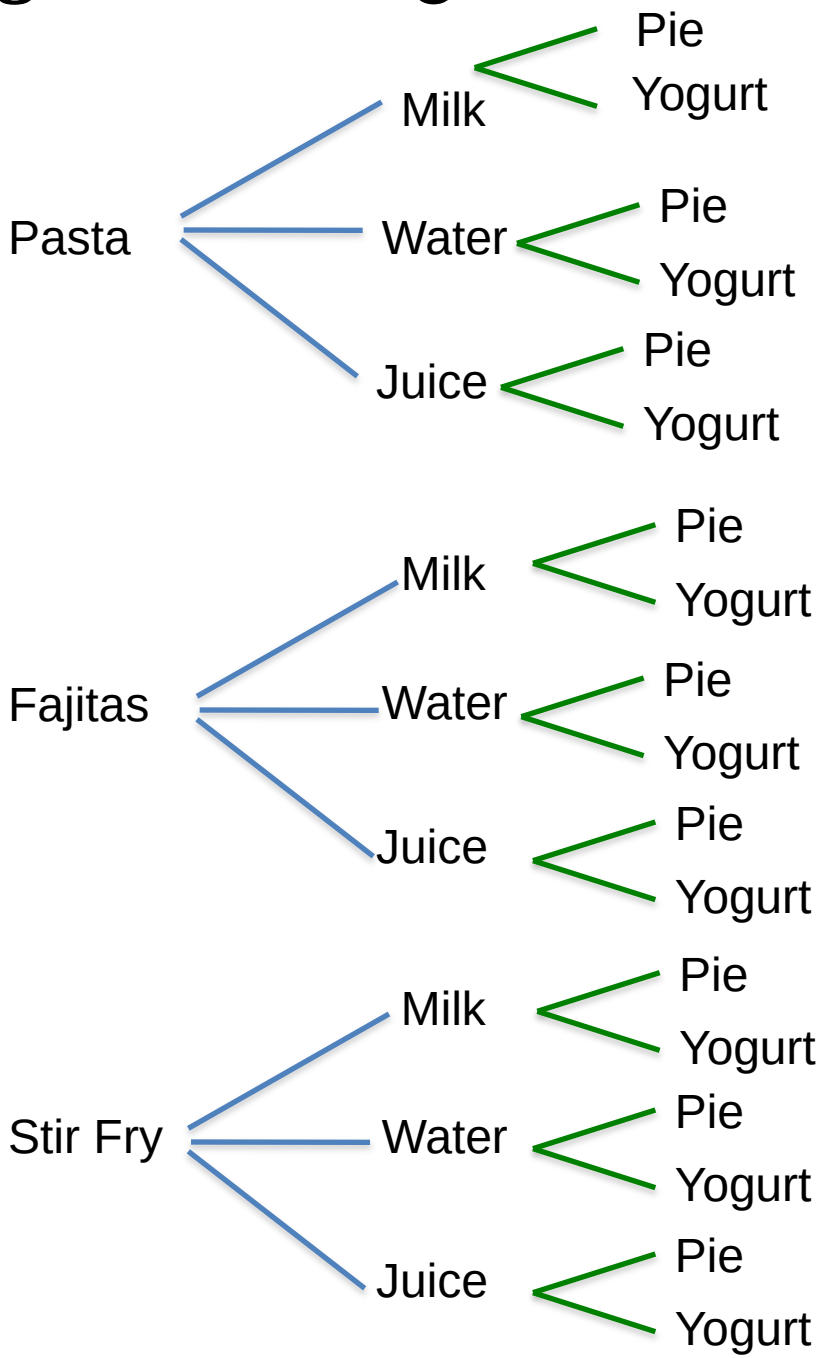
Drink

Milk, Water, or Juice

Dessert

Yogurt or Fruit

eg. 3 Tree Diagram: Possible Dinners…..



Once you have made your tree diagram, count the number of items in the last *column* to get the total number of options.

The total number of different options you have to choose from is 18.

Or…the faster way…

3 main choices x 3 drink choices x 2 desserts

= 18 choices!

eg. 3 How many possible Quebec license plates start with 3 numbers followed by 3 letters.

10	10	10	26	26	26

10 *because there are* 10 *possible digits to choose from*. $\{1,2,3,4,5,6,7,8,9,0\}$

26 *because there are* 26 *letters in the alphabet*.

$10 \times 10 \times 10 \times 26 \times 26 \times 26 = 17576000$ *different license plates*.

Summary

Basic Counting Principle:

In any experiment involving several steps,

Total # of outcomes = # of outcomes from step 1 x # of outcomes from step 2 x … x # of outcomes from step "n"

Practice – Workbook, page 135