Lesson 9-1

5/7/12 Simple Events (p460-464)

→ Probability: the chance of an event happening

→ Outcome: one of the possible results

→ Random: by chance
- ↳ flip a coin
- ↳ rock, paper, scissors
- ↳ roll a die
- ↳ draw a number
- ↳ shortest straw
- ↳ spin a spinner

Formula for Probability

(means a fraction answer)

$$P(\text{event}) = \frac{\#\text{ of favorable outcomes}}{\#\text{ of possible outcomes}}$$

ex) You have a cube.

a) P(odd number) $= \frac{3}{6} = \boxed{\frac{1}{2}}$

b) P(5 or 6) $= \frac{2}{6} = \boxed{\frac{1}{3}}$

Don't forget to reduce

c) P(prime number) $= \frac{3}{6} = \boxed{\frac{1}{2}}$

d) P(not equal to 4) $= \boxed{\frac{5}{6}}$

→ Complementary Events: 2 events that add up to "1"

ex) The probability of rolling a "3" on a cube is 1/6. What is the complementary event?

$\frac{5}{6}$ ∴ $\frac{1}{6} + \frac{5}{6} = \frac{6}{6} = 1$

Whiteboard Time

ex) You have a set of cards that are numbered from 1-20.

→ P(a multiple of 5): $\frac{4}{20} = \frac{1}{5}$

→ P(a 3, 6, or 8): $\frac{3}{20}$

→ P(not a 3, 6, or 8): $\frac{17}{20}$

→ P(not 18): $\frac{19}{20}$

→ P(factor of 4): $\frac{3}{20}$

∴ 1, 2, 4 are the factors of 4

Lesson 9-2

5/9/12 Sample Space (p 464-470)

Sample Space: all the possible outcomes listed

ex) Sally-Jo can't decide what to wear to school. She wants to wear either shorts or pants for bottoms and either a hoodie or t-shirt for a top. Find the sample space for all outfit.

Option #1: Tree Diagram

Top	Bottoms	Sample Space
Hoodie	Shorts	hoodie, shorts
	pants	hoodie, pants
T-shirt	Shorts	t-shirt, shorts
	pants	t-shirt, pants

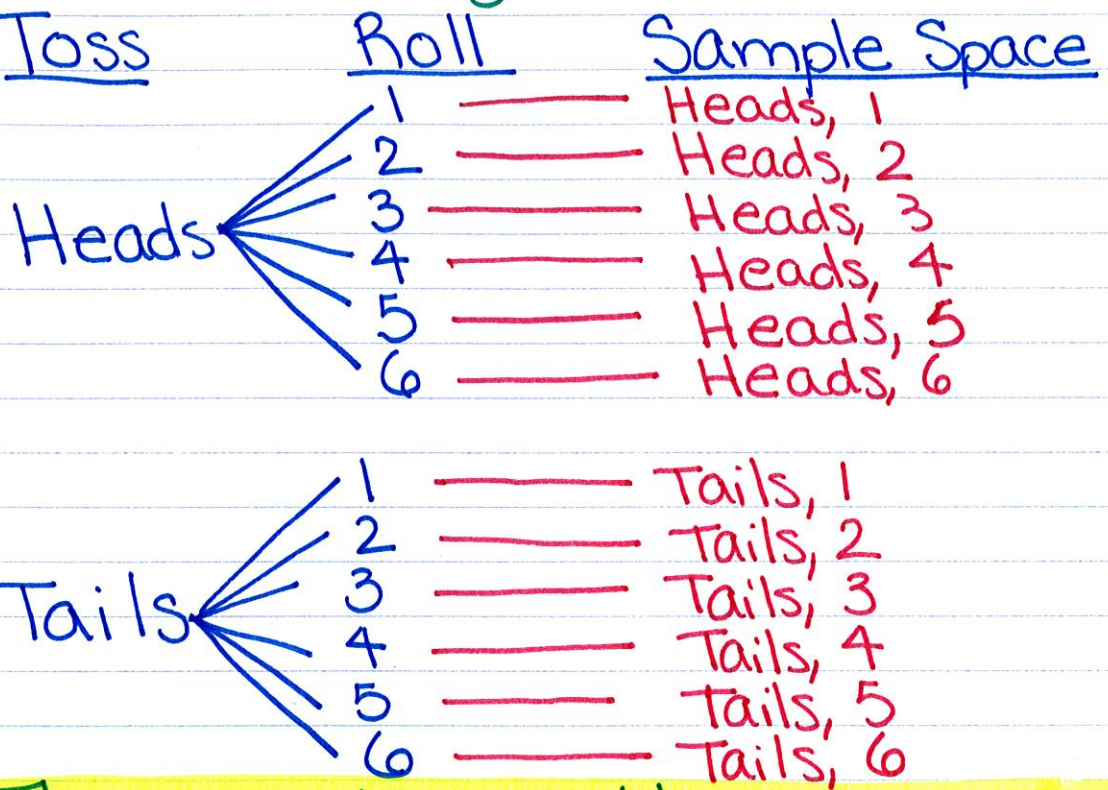
There are 4 possible outcomes.

Option #2: Chart

Tops	Bottoms
hoodie	pants
hoodie	Shorts
t-shirt	pants
t-shirt	Shorts

There are 4 possible outcomes.

ex) Find the sample space for tossing a coin and then rolling a cube.



There are 12 possible outcomes.

Toss	Roll
Heads	1
Heads	2
Heads	3
Heads	4
Heads	5
Heads	6
Tails	1
Tails	2
Tails	3
Tails	4
Tails	5
Tails	6

There are 12 possible outcomes.

Lesson 9-3 (p471-474)

5/11/12 The Fundamental Counting Principle

Key Concept: uses multiplication (instead of a tree diagram or chart) to find the number of possible outcomes.

Ex) Find the total number of outcomes when a cube is rolled & a coin is tossed.

Tree Diagram/Chart vs. **Fundamental Counting Principle**

Roll	Toss
1	H
1	T
2	H
2	T
3	H
3	T
4	H
4	T
5	H
5	T
6	H
6	T

* There are 12 possible outcomes.

Roll × Toss

$6 \times 2 =$

(possible outcomes) × (possible outcomes)

12 possible outcomes

How many events do I have? ... How many numbers will I multiply?

ex) Find the total number of outcomes from a lunch menu consisting of a SOUP (tortellini or lentil), SALAD (caesar or macaroni), and a SANDWICH (roast beef, ham, or turkey).

$$\underset{\text{(soup)}}{2} \times \underset{\text{(salad)}}{2} \times \underset{\text{(sandwich)}}{3} = \boxed{12 \text{ possible outcomes}}$$

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ex) Tossing 3 coins

$$\underset{\text{(Toss \#1)}}{2} \times \underset{\text{(Toss \#2)}}{2} \times \underset{\text{(Toss \#3)}}{2} = \boxed{8 \text{ possible outcomes}}$$

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ex) Choosing a 4 letter password using only vowels

$$\underset{\text{(Vowel \#1)}}{5} \times \underset{\text{(Vowel \#2)}}{5} \times \underset{\text{(vowel \#3)}}{5} \times \underset{\text{(Vowel \#4)}}{5} = \boxed{625 \text{ possible outcomes}}$$

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ex) Choosing a 4-cylinder, 6-cylinder, or 8-cylinder engine and a 2-wheel or 4-wheel drive.

$$\underset{\text{(engine type)}}{3} \times \underset{\text{(type of drive)}}{2} = \boxed{6 \text{ possible outcomes}}$$