

Welcome Back! :)

...A look at our 2 weeks:

Tues. 5/29 - Probability Topics

Wed. 5/30 - **Unit 8 Test**

Thurs. 5/31 - Final Review

Paulson absent Friday 6/1

Fri. 6/1 - Final Review

Mon. 6/4 - Final Review

Tues. 6/5 - **FINAL EXAMS**

Wed. 6/6 - **FINAL EXAMS**

(studyhall)

1, 2, 3, 4

1, 5, 6, 7

## Class Plan

1) Warm-up

2) Unit 8 Probability Review -  
part 2.



## Warm-up: Egg Roulette

What is the probability that a raw egg is picked? Ahhh!

4 eggs are raw

8 eggs are boiled



Model the possible outcomes for Anna and Jimmy's 1st two picks with a tree diagram.



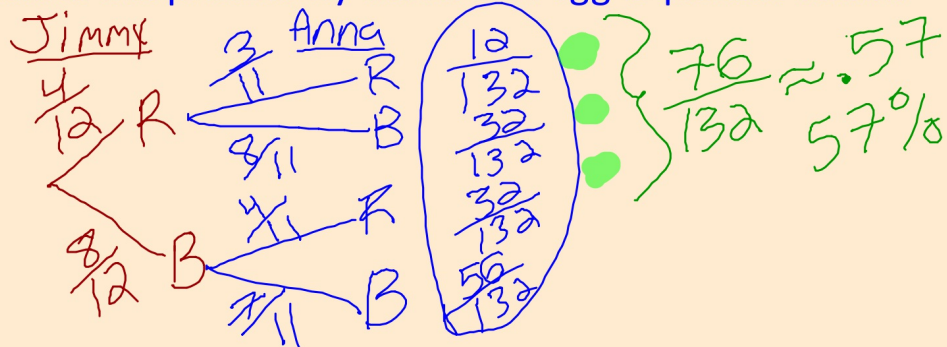
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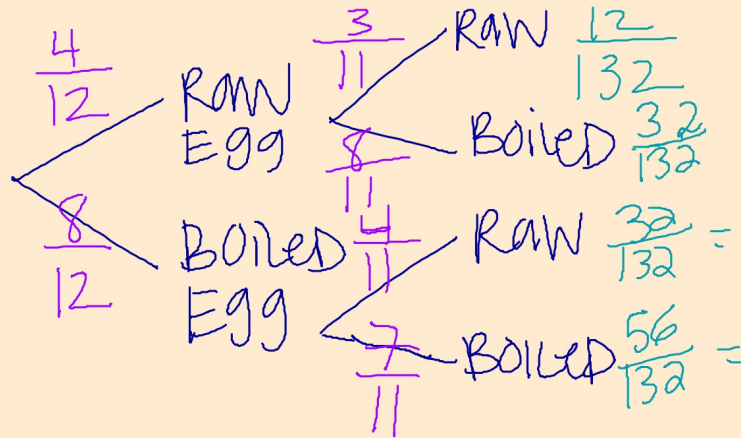


## Warm-up: Egg Roulette

Model the possible outcomes for Anna and Jimmy's 1st two picks

What is the probability that a raw

Anna Kendrick     Jimmy Fallon



## Warm-up:

<https://mrowe.com/2018/05/20/egg-russian-roulette/>



### Egg Russian Roulette – A Cracking Probability Lesson | How ...

mrowe.com

On Friday morning I was sitting at home having coffee before I left for school, still dissatisfied with my most recent lesson with my usually receptive Year 8 class.

## Warm-up:

Ms. Paulson loves Wheel of Fortune and is considering getting a SPIN ID! (2 letters, 7 digits)

How many total spin ID's could be generated?



How many spin ID's could be generated using *YOUR* 2 initials?



## Warm-up:

Ms. Paulson loves Wheel of Fortune and is considering getting a SPIN ID! (2 letters, 7 digits)

How many total spin ID's could be generated?



$$\begin{array}{cccccccc} \underline{26} \times \underline{26} \times \underline{10} \times \underline{10} \times \underline{10} \times \underline{10} \times \underline{10} \times \underline{10} \times \underline{10} & 26^2 \times 10^7 \\ A-Z & A-Z & \overset{\#}{0-9} & \overset{\#}{0-9} & \# & \# & \# & \# & \# & = 6,760,000,000 \end{array}$$

How many spin ID's could be generated using *YOUR* 2 initials?

(Over 6 Billion!)

$$10^7 = 10,000,000 \text{ (10 million)}$$





# Theoretical Probability

- 1) A coin is tossed and a die is rolled simultaneously.  
a) Illustrate all the outcomes in the diagram below:

Coin	H1	H2	H3	H4	H5	H6
	T1	T2	T3	T4	T5	T6
	Dice					

b) Find the probability of getting:

i) A head and an even number

H2, H4, H6

$$\frac{3}{12}$$

ii) A head and a not a 3

iii) A 5 or a 6

iv) a head or an even number

$$\frac{4}{12}$$

# Theoretical Probability Solutions

- 1) A coin is tossed and a die is rolled simultaneously.  
 a) Illustrate all the outcomes in the diagram below:

Coin	H1	H2	H3	H4	H5	H6
	T1	T2	T3	T4	T5	T6
	Even		Even		Even	
	Dice					

b) Find the probability of getting:

i) A head and an even number  
 $\{H2, H4, H6\}$   $\frac{3}{12} = \frac{1}{4}$

ii) A head and a not a 3  
 $\{H1, H2, H4, H5, H6\}$   $\frac{5}{12}$

iii) A 5 or a 6

$$P(H5, H6, T5, T6)$$

$$= \frac{4}{12} = \frac{1}{3}$$

iv) a head or an even number

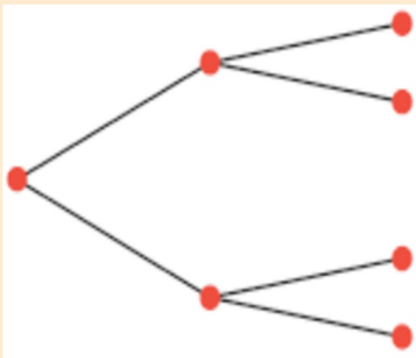
$$P(H) = \frac{6}{12} \quad P(\text{Even}\#) = \frac{3}{12}$$

$$\{H1, H2, H3, H4, H5, H6, T2, T4, T6\}$$

$$\frac{9}{12} = \frac{3}{4} = 75\%$$

## Tree Diagram - No replacement

2) Lila has a bag with 9 red blocks and 13 purple blocks. Each time Lila pulls a block out of a bag, she sets the block on a table – it is **not** put back in the bag. She selects one block and then a second block.



a. Complete the diagram showing probabilities on each branch **and at the end of each path.**

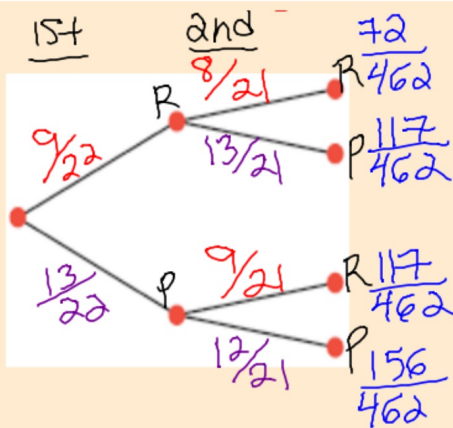
b. Find the probability of:

i) The 1<sup>st</sup> and the 2<sup>nd</sup> block is purple.

ii) Neither of the blocks are purple.

## Tree Diagram - No replacement

2) Lila has a bag with 9 red blocks and 13 purple blocks. Each time Lila pulls a block out of a bag, she sets the block on a table – it is **not** put back in the bag. She selects one block and then a second block.

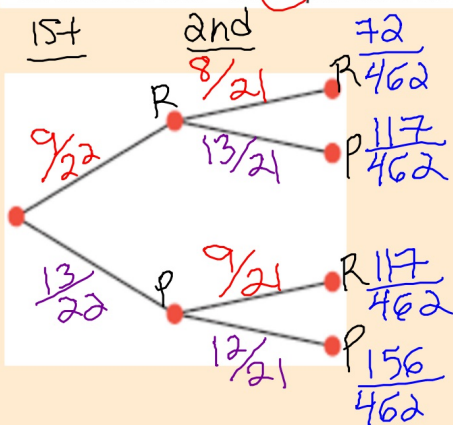


iii) At least one block is purple.

iv) Explain why the outcome of the second block is affected by the first block is chosen from the bag.

## Solutions $P(R) = \frac{9}{22}$ $P(P) = \frac{13}{22}$

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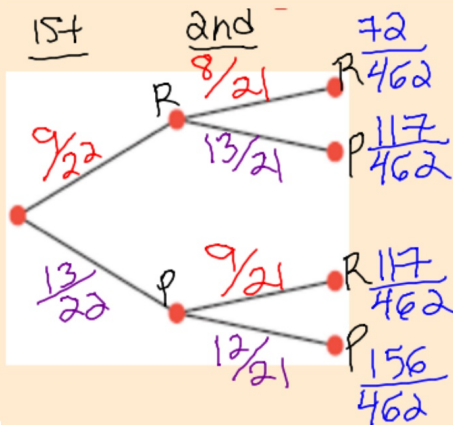
$$P(P+P) = \frac{156}{462} = \frac{26}{77} \approx 34\%$$

ii) Neither of the blocks are purple.

$$\begin{aligned} \text{(Same as } P(R+R)) &= \frac{72}{462} \\ &= \frac{12}{77} \approx 16\% \end{aligned}$$

## Solutions

2) Lila has a bag with 9 red blocks and 13 purple blocks. Each time Lila pulls a block out of a bag, she sets the block on a table – it is **not** put back in the bag. She selects one block and then a second block.



iii) At least one block is purple.

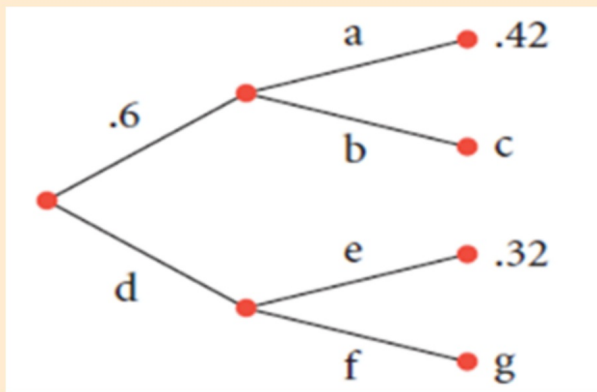
$$\begin{aligned} P(\text{PP} + \text{PR} + \text{RP}) &= \\ \frac{156 + 117 + 117}{462} &= \frac{390}{462} \\ &= \frac{65}{77} \approx 84\% \end{aligned}$$

iv) Explain why the outcome of the second block is affected by the first block is chosen from the bag.

The 1<sup>st</sup> block is not returned to the bag.

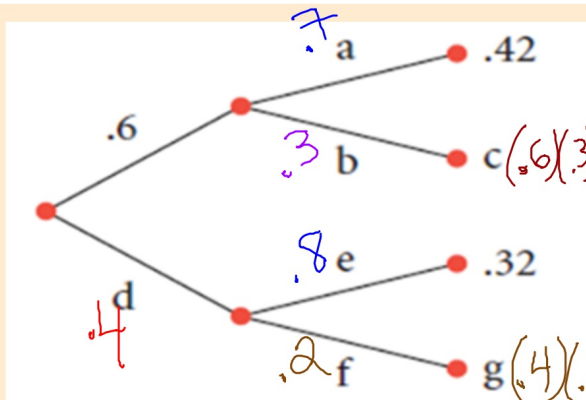
## Tree Diagram

3) Complete each branch and path of the tree diagram below:



## Solutions

3) Complete each branch and path of the tree diagram below:



$$\begin{aligned} 6 + d &= 1 \\ d &= .4 \end{aligned}$$

$$\frac{6(a) = .42}{.6 \quad .6}$$

$$a = .7$$

$$\begin{aligned} 7 + b &= 1 \\ b &= .3 \end{aligned}$$

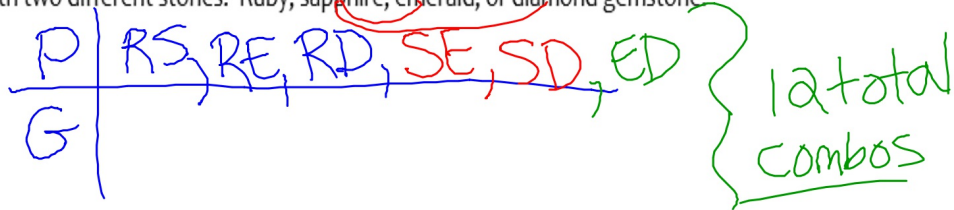
$$\frac{.4(e) = .32}{.4 \quad .4} \quad e = .8$$

$$\begin{aligned} 8 + f &= 1 \\ f &= .2 \end{aligned}$$



## Counting Principle, combinations & permutations

a) A jeweler is selling two types of ring bands – either platinum or gold. List all the rings that could be filled with two different stones: Ruby, sapphire, emerald, or diamond gemstone



b) A spinner can land on either red, blue, green, yellow, or purple. You flip a coin and then spin the spinner. How many outcomes are there?

## Solutions

### 4) Counting principle, combinations, and permutations.

a) A jeweler is selling two types of ring bands – either platinum or gold. List all the rings that could be filled with two different stones: Ruby, sapphire, emerald, or diamond gemstone.

PRS, PRE, PRD

PSE, PSD

PED

GRS, GRE, GRD

GSE, GSD

GED

} 12 rings  
with 2 diff.  
stones

b) A spinner can land on either red, blue, green, yellow, or purple. You flip a coin and then spin the spinner. How many outcomes are there?

HR, HB, HG, HY, HP

TR, TB, TG, TY, TP

} 10 outcomes

#### 4) Counting principle, combinations, and permutations.

c) A padlock's combination is four digits long. How many combinations could you have for the padlock?

d) A basketball player attempts seven free throws. Each attempt results in a score or a miss. How many total outcomes are there for the player?

## Solutions

### 4) Counting principle, combinations, and permutations.

c) A padlock's combination is four digits long. How many combinations could you have for the padlock?

$$\frac{10}{1^{\text{st}} \text{ digit}} \times \frac{10}{2^{\text{nd}}} \times \frac{10}{3^{\text{rd}}} \times \frac{10}{4^{\text{th}}} = 10,000 \text{ padlock combinations}$$

d) A basketball player attempts seven free throws. Each attempt results in a score or a miss. How many total outcomes are there for the player? Score or Miss

$$\frac{2}{1^{\text{st}}} \times \frac{2}{2^{\text{nd}}} \times \frac{2}{3^{\text{rd}}} \times \frac{2}{4^{\text{th}}} \times \frac{2}{5^{\text{th}}} \times \frac{2}{6^{\text{th}}} \times \frac{2}{7^{\text{th}}} = \underline{128 \text{ outcomes}}$$