

BE-1B MONDAY 5-5-08

B = gene for brown eyes, dominant.

b = gene for blue eyes, recessive.

* Each person has two of these genes, to have blue eyes, both must be b.

① What is P (blue eyes)?

② What is P (brown eyes, brown eyes)?

③ What is P (blue eyes, blue eyes)?

④ What is P (blue eyes, brown eyes)

OR

P (brown eyes, blue eyes)

* Simple but not correct "2 gene model" for eye color. There is still much to learn about the eye color genes. There are at least 3 for combinations of Brown, Blue, Green and they don't even explain everything, e.g.

- grey eyes

- hazel eyes (light brown to gold?) (1-2%)

- many shades of brown, blue, green, grey, hazel, ... (Amber = wolf eyes)

- eye colors that change over time

- how 2 blue-eyed parents can have a brown eyed child.

definition varies

1.
Look AT THESE probabilities:

$$\begin{array}{lcl} 2 \text{ babies:} & \text{both brown eyes} & \frac{\frac{3}{4} \cdot \frac{3}{4}}{\rightarrow} \frac{9}{16} \\ & 1^{\text{st}} \text{ brown, } 2^{\text{ND}} \text{ blue} & \frac{\frac{3}{4} \cdot \frac{1}{4}}{\rightarrow} \frac{3}{16} \\ & 1^{\text{st}} \text{ blue, } 2^{\text{ND}} \text{ brown} & \frac{\frac{1}{4} \cdot \frac{3}{4}}{\rightarrow} \frac{3}{16} \\ & \text{both blue eyes} & \frac{\frac{1}{4} \cdot \frac{1}{4}}{\rightarrow} \frac{1}{16} \end{array}$$

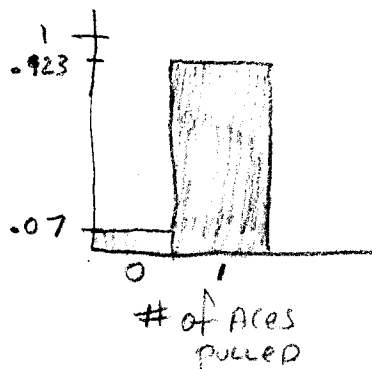
$$+ \frac{16}{16} = 1$$

When you ADD All of the possible outcomes for 1 event, you should get 1

$$\text{EX) } P(\text{pulling Ace from deck}) = \frac{4}{52} = .077 = 7.7\%$$

$$P(\text{NOT pulling Ace}) = \frac{48}{52} = .923 = 92.3\%$$

$$\text{OR } \frac{52}{52} = 1 \checkmark 100\%$$



Probability Distribution

EX1
Pg 777

Pet survey of 100 customers

Number of Pets	Number of Customers
0	3
1	37
2	33
3	18
4	9

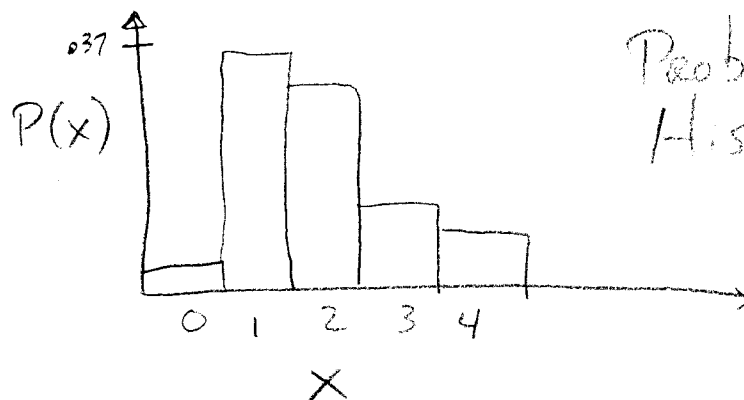


Let X be the number of pets owned, it is called a Random Variable

$$P(X=2) = P(2 \text{ pets}) = P(2) = \frac{33}{100} = 33\%$$

$$P(X \geq 3) = \frac{18+9}{100} = \frac{27}{100} = 27\%$$

↑
USUALLY
CAPITAL X



Probability
Histogram

If you do the Probability distribution correctly, within Roundoff error the %'s should add up to 100%

<u>Number of Pets (x)</u>	<u>Customers</u>	<u>P(x)</u>	<u>%</u>
0	3	.03	3
1	37	.37	37
2	33	.33	33
3	18	.18	18
4	9	.09	9
		<u>1.00</u>	<u>100%</u>

Homework: • Read Ch. 14-4 especially Example 2 on Pg 778

• Pg 779 # 7, 8, 9.

Look AT Pg 779 #4 Sample Space Table for 2 dice

etc...

	1	2	3	4	5	6
1	2	3				
2	3					
3						
4						
5						
6						