

HW

Name: _____ Date: _____ Block: _____

Conditional probability HW

1). A number is selected, at random, from the set $\{1,2,3,4,5,6,7,8\}$. Find:

a) $P(\text{odd}) = 4/8 = 1/2$ 1, 3, 5, 7

b) $P(\text{prime}|\text{odd}) = 100\% (4/4)$

2). A penny and a nickel are tossed. Find the probability that the penny shows heads, given that the nickel shows heads.

$1/2$

3). The probability that Sue will go to Mexico in the winter and to France in the summer is 0.40. The probability that she will go to Mexico in the winter is 0.60. Find the probability that she will go to France this summer, given that she just returned from her winter vacation in Mexico.

$\frac{.40}{.60} = 2/3 = 66\%$

4) A special deck of cards contains only the face cards and aces from a standard deck of cards. = $4 \times 4 = 16$ cards

a) If one card is dealt, what is the probability that the card is an ace? $4/16 = 1/4$

b) If one card is dealt, what is the probability that the card is a black ace? $2/16 = 1/8$

c) If two cards are dealt, what is the probability that both cards are face cards? $12/16 \times 11/15 = 11/70$ or 16%

5)

Given the following table of grades from Mrs. Hardcase's English classes:

Grades	A	B	C	D	F	Totals
Males	12	6	17	14	7	56
Females	8	9	13	8	6	44
Totals	20	15	30	22	13	100

a). What is the probability that a student got an "A" given they were a male? $12/56$

b). What is $P(\text{Passed}|\text{Female})$ $\frac{38}{44}$

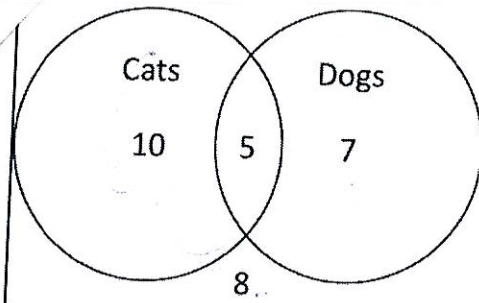
↑
denom.

c). What is the $P(\text{Male}|\text{Failed})$

↑
denom.

$\frac{7}{13}$ male Failed

people were asked if they had a dog, cat, both or neither.



Choose one of these people at random. Find:

$$P(\text{cat} | \text{dog}) = \frac{5}{12}$$

$$P(\text{dog} | \text{cat}) = \frac{5}{15}$$

$$P(\text{dog} | \text{cat}^c) = \frac{7}{15}$$

$$P(\text{cat}^c | \text{dog}^c) = \frac{8}{18}$$

↑ everything NOT cat (8) ↑ everything NOT Dog = (10+8)
 just the 8

8th grader School transportation survey

	Male	Female	Total
Walk	34	46	80
Car	28	17	45
Bus	15	12	27
Bike	52	17	69
Total	129	92	221

Choose one person from the survey. Find:

$$P(\text{bus} | \text{male}) = \frac{15}{129} \quad P(\text{female} | \text{bike}) = \frac{17}{69}$$

$$P(\text{walk} | \text{female}) = \frac{46}{92} \quad P(\text{male} | \text{car}) = \frac{28}{45}$$

Ex.1 A bag has 3 green marbles, 5 red marbles, 6 green blocks and 10 red blocks.

Pick 1 item.

$$P(\text{red}) = \frac{15}{24}$$

$$P(\text{red} | \text{marble}) = \frac{5}{8}$$

$$P(\text{green}) = \frac{9}{24} = \frac{3}{8} \quad P(\text{block}) = \frac{16}{24} = \frac{2}{3} \quad P(\text{green and block}) = \frac{6}{24}$$

Is the color affected by the type of object?

NO