

Name \_\_\_\_\_ Date: \_\_\_\_\_ Per: \_\_\_\_\_

## Conditional Probability

1. Use the sample space of the sum of two standard number cubes to help find the probability of each outcome below.

White →	1	2	3	4	5	6
Red ↓						
1	(1, 1) = 2	(1, 2) = 3	(1, 3) = 4	(1, 4) = 5	(1, 5) = 6	(1, 6) = 7
2	(2, 1) = 3	(2, 2) = 4	(2, 3) = 5	(2, 4) = 6	(2, 5) = 7	(2, 6) = 8
3	(3, 1) = 4	(3, 2) = 5	(3, 3) = 6	(3, 4) = 7	(3, 5) = 8	(3, 6) = 9
4	(4, 1) = 5	(4, 2) = 6	(4, 3) = 7	(4, 4) = 8	(4, 5) = 9	(4, 6) = 10
5	(5, 1) = 6	(5, 2) = 7	(5, 3) = 8	(5, 4) = 9	(5, 5) = 10	(5, 6) = 11
6	(6, 1) = 7	(6, 2) = 8	(6, 3) = 9	(6, 4) = 10	(6, 5) = 11	(6, 6) = 12

- a.  $P(\text{sum is 6 IF you know the sum is even}) = P(6 \mid \text{even}) =$
- b.  $P(\text{sum is even IF you know the sum is 6}) = P(\text{even} \mid 6) =$
- c.  $P(\text{sum is prime IF you know the sum is odd}) = P(\text{prime} \mid \text{odd}) =$
- d.  $P(\text{sum is 5 IF you know the sum is odd}) = P(5 \mid \text{odd}) =$
- e.  $P(\text{sum is 5 IF you know the sum is even}) = P(5 \mid \text{even}) =$
- f.  $P(\text{sum is 6 IF you rolled doubles}) = P(6 \mid \text{doubles}) =$

2. Find the probability of drawing the card described.

- a.  $P(\text{King} \mid \text{Face Card}) =$
- b.  $P(\text{Face Card} \mid \text{King}) =$
- c.  $P(\text{Ace} \mid \text{Not a Face Card}) =$
- d.  $P(\text{Ten of Clubs} \mid \text{Black Card}) =$
- e.  $P(\text{Ten of Clubs} \mid \text{Ten}) =$
- f.  $P(\text{Ten of Clubs} \mid \text{Not a Face Card}) =$
- g.  $P(\text{Nine of Hearts} \mid \text{Face Card}) =$
- h.  $P(\text{King or Queen} \mid \text{Red Card}) =$

3. A survey of 500 people was conducted to find what type of soda they prefer between Coke, Pepsi, and their diet drinks. The researchers were trying to decide if males and females had the same taste in soda. Add up the rows and columns to complete the table below showing the results of the survey.

	Males	Females	Total
Coke	84	61	145
Diet Coke	52	93	
Pepsi	45	35	
Diet Pepsi	79	51	
Total	260		

Now use the table to answer the questions that follow.

- a. Were there more males or females in the study?      b. What does the cell with 93 in it represent?

Find the following probabilities:

- c.  $P(\text{Coke})$       d.  $P(\text{Female})$
- e.  $P(\text{Prefer Coke if female})$   
 $P(\text{Coke} | \text{Female})$       f.  $P(\text{Female if prefer Coke})$   
 $P(\text{Female} | \text{Coke})$
- g. If we have randomly picked a Diet Pepsi drinker out of this group, what is the probability it is a female?
- h. If we have randomly picked a male out of this group - which is more likely - that he likes a Coke product (diet or regular) OR a Pepsi product (diet or regular)?

**Use the Conditional Probability Formula to solve for the missing probabilities.**

4. A math teacher gave her class two tests. 25% of the class passed both tests and 45% of the class passed the first test. What percent of those who passed the first test also passed the second test?
5. In New York State, 48% of all teenagers own a skateboard and 24% own a skateboard and roller blades. What is the probability that a teenager owns roller blades given that the teenager owns a skateboard?
6. In Europe, 80% of all households have a television. 56% of all households who have a television also have a DVD player. What is the probability that a household has a television and a DVD player?