Algebra 2

8-03 Conditional Probability

Conditional Probability

- Probability that B occurs given that A has already occurred

$$P(B|A)$$

A family has three rabbits and two guinea pigs. They randomly select a pet to get brushed and then randomly select a different pet to get a treat. Find the probability that they select a rabbit to get a treat given that they selected the guinea pig to get brushed.

A quality-control inspector checks for defective parts. The two-way table shows the results. Find each probability.

P(pass | defective)

		Result	
		Pass	Fail
Part Type	Defective	5	24
	Non-defective	208	9

P(pass | non-defective)

Conditional Probability Formula

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)}$$

Find *P*(pass | non-defective) using the formula for conditional probability.

		Result	
		Pass	Fail
Part Type	Defective	5	24
	Non-defective	208	9

At a clothing store, 75% of customers buy a pair of pants, 24% of customers buy a belt, and 20% of customers buy a pair of pants and a belt.
What is the probability that a customer who buys a pair of pants also buys a belt?

What is the probability that a customer who buys a belt also buys a pair of pants?

An airline company strives to not lose luggage. A manager is evaluating three flights in order to determine which flight loses luggage the least often. At the end of each day, the manager records whether or not luggage was lost on the flights that day. The table shows the results. Which flight loses luggage the least often?

Flight	Lost Luggage	No Lost Luggage
A	𝍸 𝍸	III
B	𝍸 IIII	𝍸
C	𝍸 𝍸 II	I

422 #1, 3, 5, 7, 9, 10, 11, 13, 15, 16, 17, 18, 19, 21, 23, 29, 31, 33, 35, 37 = 20