

PRACTICE – CONDITIONAL PROBABILITY

Name _____

Show all work neatly.

	Speaks a 2 nd language	Speaks only one language
Male	20	40
Female	30	10

Find the following probabilities.

$P(\text{Male}) =$ _____

$P(\text{Female}) =$ _____

$P(\text{2nd Language}) =$ _____

$P(\text{No 2nd Language}) =$ _____

$P(\text{Male} | \text{2nd Language}) =$ _____

$P(\text{Female} | \text{2nd Language}) =$ _____

$P(\text{2nd Language} | \text{Male}) =$ _____

$P(\text{2nd Language} | \text{Female}) =$ _____

$P(\text{Male} \cup \text{2nd Language}) =$ _____

$P(\text{Female} \cup \text{2nd Language}) =$ _____

$P(\text{Male} \cap \text{2nd Language}) =$ _____

$P(\text{Female} \cap \text{2nd Language}) =$ _____

$P(\text{Male}) \cdot P(\text{2nd Language}) =$ _____

$P(\text{Female}) \cdot P(\text{2nd Language}) =$ _____

What do these symbols mean?

$|$ means _____

\cup means _____

\cap means _____

\cdot means _____

Independent? Why or why not?

Mutually exclusive (disjoint)? Why or why not?

Cat? Yes.

Cat? No.

Find the following probabilities.

Dog? Yes.

9

24

Dog? No.

3

8

$$P(\text{Cat}) = \underline{\hspace{2cm}}$$

$$P(\text{Dog}) = \underline{\hspace{2cm}}$$

$$P(\text{Cat} | \text{Dog}) = \underline{\hspace{2cm}}$$

$$P(\text{Dog} | \text{Cat}) = \underline{\hspace{2cm}}$$

$$P(\text{Cat} \cup \text{Dog}) = \underline{\hspace{2cm}}$$

$$P(\text{Cat} \cap \text{Dog}) = \underline{\hspace{2cm}}$$

$$P(\text{Cat}) \cdot P(\text{Dog}) = \underline{\hspace{2cm}}$$

Independent? Why or why not?

Mutually exclusive? Why or why not?

Now, analyze the results from above to answer the following question.

Francisco asks the students in his school what pets they have. He studies the events shown.

- Event S : The student has a cat.
- Event T : The student has a dog.

Francisco finds that the two events are independent.

Select all the equations that must be true for events S and T .

$P(S|T) = P(S)$

$P(S|T) = P(T)$

$P(T|S) = P(S)$

$P(T|S) = P(T)$

$P(S \cup T) = P(S) \cdot P(T)$

$P(S \cap T) = P(S) \cdot P(T)$

A total of 200 people attend a party, as shown in the table.

A person is selected at random to win a prize. The probability of selecting a female is 0.6. The probability of selecting a child, given that the person is female, is 0.25. The probability of selecting a male, given that the person is a child, is 0.4.

Complete the two-way table to show the number of adults, children, males, and females who attended the party.

	Adults	Children	Total
Male	<input type="text"/>	<input type="text"/>	80
Female	<input type="text"/>	<input type="text"/>	120
Total	150	50	200