9.3 Fried Freddy's

A Solidify Understanding Task

Danielle was surprised by the results of the survey to determine the 'favorite ice cream' between chocolate and vanilla (See task 9.2 *Chocolate vs. Vanilla*). The reason, she explains, is that she had asked several of her friends and the results were as follows:

	Chocolate	Vanilla	Total
Female	23	10	33
Male	6	8	14
Total	29	18	47

1. In this situation, chocolate is most preferred. How would you explain to her that this data may be less 'valid' compared to the data from the previous survey?

Using a sufficiently large number of trials helps us estimate the probability of an event happening. If the sample is large enough, we can say that we have an estimated probability outcome for the probability of an event happening. If the sample is not randomly selected (only asking your friends) or not large enough (collecting four data points is not enough information to estimate long run probabilities), then one should not estimate large scale probabilities. Sometimes, our sample increases in size over time. Below is an example of data that is collected over time, so the estimated probability outcome becomes more precise as the sample increases over time.

Freddy loves fried food. His passion for the perfect fried food recipes led to him opening the restaurant, "Fried Freddies." His two main dishes are focused around fish or chicken. Knowing he also had to open up his menu to people who prefer to have their food grilled instead of fried, he created the following menu board:

PROBABILITY- 9.3

Fried Freddy's $7.95

Choose dish: Chicken or Fish

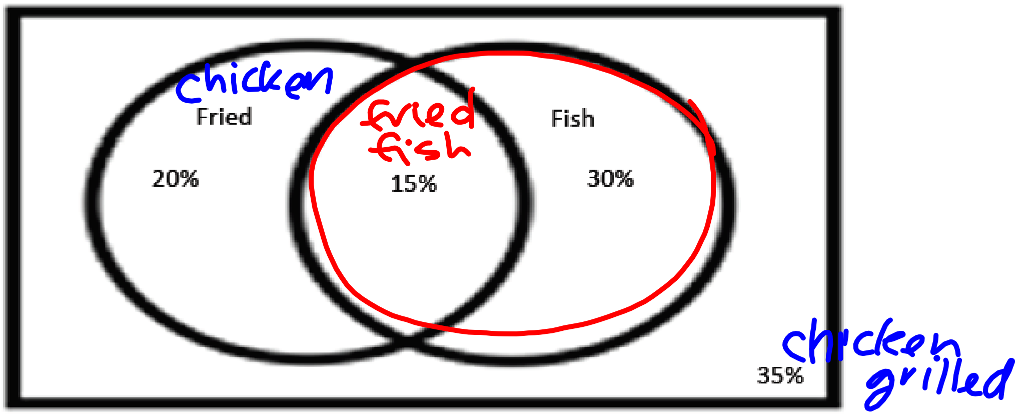
Choose cooking preference: Grilled or Fried

After being open for six months, Freddy realized he was having more food waste than he should because he was not predicting how much of each he should prepare in advance. His business friend, Tyrell, said he could help.

2. What information do you think Tyrell would need?

How much he is currently cooking

Luckily, Freddy uses a computer to take orders each day so Tyrell had lots of data to pull from. After determining the average number of customers Freddy serves each day, Tyrell created the following Venn diagram to show Freddy the food preference of his customers:

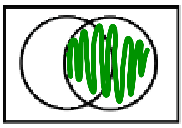


To make sense of the diagram, Freddy computed the following probability statements:

3. What is the probability that a randomly selected customer would order fish?

   P(fish) = 45%

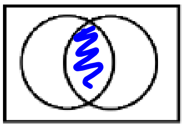
   Shade the part of the diagram that models this solution.



4. What is the probability that a randomly selected customer would order fried fish?

   P(fried $\cap$ fish) = P(fried and fish) = 15%

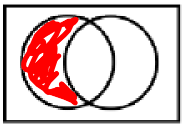
   Shade the part of the diagram that models this solution.



5. What is the probability that a person prefers fried chicken?

   P(fried$\cap$chicken) = P(fried and chicken) = 20%

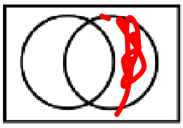
   Shade the part of the diagram that models this solution.



6. What is the estimated probability that a randomly selected customer would want their fish grilled?

   P(grilled and fish) = P(grilled $\cap$ fish) = 30

   Shade the part of the diagram that models this solution.



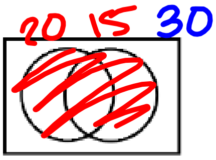
7. If Freddy serves 100 meals at lunch on a particular day, how many orders of fish should he prepare with his famous fried recipe? $15 = .15 \cdot 100$

8. What is the probability that a randomly selected person would choose fish or fried?

   P(fried∪fish) = P(fried or fish) = 65

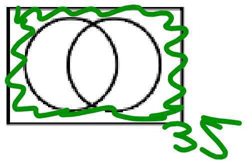
   P(fried)+P(fish) - center once

   Shade the part of the diagram that models this solution.



9. What is the probability that a randomly selected person would NOT choose fish or fried? 35%

   Shade the part of the diagram that models this solution.



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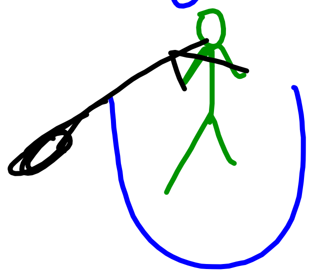


9.3

READY, SET, GO! Name Period Date

READY

Topic: Independent and Dependent Events

In some of the situations described below the first event effects the subsequent event (dependent events). In others each of the events is completely independent of the others (independent events). Determine which situations are dependent and which are independent.

1. A coin is flipped twice. The first event is the first flip and the second event is the next flip.

2. A bag of marbles contains 3 blue marbles, 6 red marbles and 2 yellow marbles. Two of the marbles are drawn out of the bag. The first event is the first marble taken out the second event is the second marble taken out.

3. An attempt to find the probability of there being a right-handed or a left-handed batter at the plate in a baseball game. The first event is the 1st batter to come to the plate. The second event is the second player to come up to the plate.

4. A standard die is rolled twice. The first event is the first roll and the second event is the second roll.

5. Two cards are drawn from a standard deck of cards. The first event is the first card that is drawn the second event is the second card that is drawn.

SET

Topic: Addition Rule, Interpreting a Venn Diagram

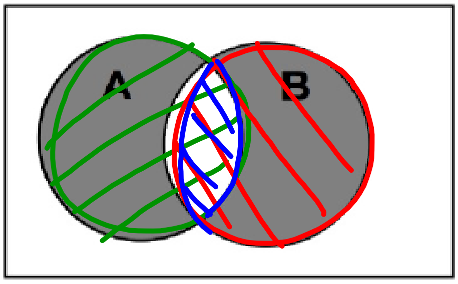
6. Sally was assigned to create a Venn diagram to represent $P(A \text{ or } B)$. Sally first writes

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, what does this mean? Explain each part.

both

center

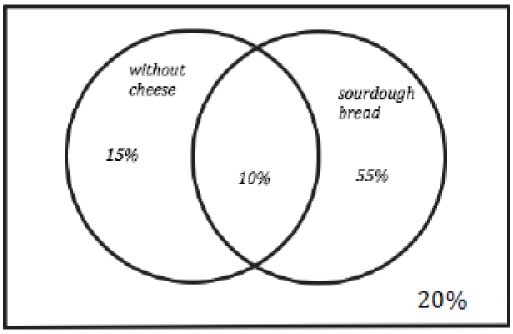
7. Sally then creates the following diagram.



Sally's Venn diagram is incorrect. Why?

because the center should be counted, but only once.

The Venn diagram to the right shows the data collected at a sandwich shop for the last six months with respect to the type of bread people ordered (sourdough or wheat) and whether or not they got cheese on their sandwich. Use this data to create a two-way frequency table and answer the questions.



8. Two-way frequency table

9. What is the probability that a randomly selected customer would order sourdough bread?
   P(sourdough bread) =

10. What is the probability that a randomly selected customer would order sourdough bread without cheese?
    P(sourdough ∩ no cheese) = P(sourdough and no cheese) =

11. What is the probability that a person prefers wheat bread without cheese?
    P(wheat ∩ no cheese) = P(wheat and no cheese) =

12. What is the estimated probability that a randomly selected customer would want their sandwich with cheese?
    P(sourdough cheese and wheat cheese) = P(________________) =

13. If they serve 100 sandwiches at lunch on a particular day, how many orders with sourdough should be prepared without cheese?

14. What is the probability that a randomly selected person would choose sourdough or without cheese?
    P(sourdough ∪ no cheese) = P(sourdough or no cheese) =

15. What is the probability that a randomly selected person would NOT choose sourdourgh or no cheese?

GO

Topic: Equivalent Ratios and Proportions

Use the given ratio to set up a proportion and find the desired value.

16. If 3 out of 5 students eat school lunch then how many students would be expected to eat school lunch at a school with 750 students?

17. In a well developed and carried out survey it was found that 4 out of 10 students have a pair of sunglasses. How many students would you expect to have a pair of sunglasses out of a group of 45 students?

18. Data collected at a local mall indicted that 7 out of 20 men observed were wearing a hat. How many would you expect to have been wearing hats if 7500 men were to be at the mall on a similar day?