

Name: _____

Period: _____

Algebra 2
Chapter 11: Probability and Statistics

Targets	Learning Targets	Got it	Ok	No way
T11-1	I can identify types of data collection and improve flaws in the design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T 11-2	I can describe a distribution of data and select appropriate measures of center and spread.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T 11-3	I can construct a relative frequency table and find an expected value.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T 11-4	I can use Tree and Venn diagrams to find probabilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Date	Lesson/Activity	Homework Assignment o = only do odd problems	Turned In?
4/11 4/14	T11-1 11.1 Design a Study	11.1 Pg.727 #10-21, 23, 26, 28-29	
	T11-1 Survey Question		
4/15 4/16	T 11-2 11.2 Distribution of Data	11.2 Pg.739 #5-10, 13, 21-23	
4/21 4/22	T11-3 11.3 Probability Distribution	Probability Distribution and Expected Value Worksheet	
4/23 4/24	T 11-4 Tree Diagrams	Tree Diagram Worksheet	
4/25 4/28	T 11-4 Venn Diagrams	Venn Diagram Worksheet	
4/29 4/30	Review	Ch. 11 ART	
5/1 5/2	Ch. 11 Test	<i>You must have all stamps in order to be eligible for retakes.</i>	

Retake/Revision Problems for Stats

T Stat- 1	I can find the mean, median, mode, and 5-number summary of a set of data.	Stat 1 Retake Worksheet Measures of Center
T Stat- 2	I can create and interpret a box plot given a set of data.	Stat 2 Retake Worksheet 5# Summary and Box and Whisker Plots
T Stat- 3	I can find and interpret the standard deviation of a set of data.	Stat 3 Retake Worksheet Standard Distribution

You may revise and turn in your project for additional credit. However I need to see you have done the STAT homework (WS's above) first.

11.3 Probability Distribution and Expected Value

Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

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|--|--|
| <p>1. The number of bytes in the memory of a computer.</p> <p>2. The world population.</p> <p>3. The mass of a banana.</p> <p>4. The speed of a car.</p> | <p>5. The number of strikes thrown by a pitcher.</p> <p>6. The mass of a cell.</p> <p>7. The number of chapters in a book.</p> <p>8. The number of chips in a package.</p> |
|--|--|

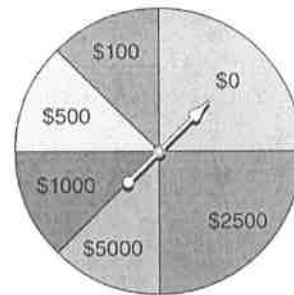
9. **CARDS** Chuck is drawing a card from a special deck that includes the following cards.

Card Value	1	2	3	4	5	6	7
Frequency	6	10	9	4	8	7	6

What is the expected value of the drawn card?

10. **GAMES** A contestant won two spins of the wheel.

a. Construct a relative-frequency table.



Sum (\$)										
Relative Frequency										
Sum (\$)										
Relative Frequency										

b. What is the expected value of two spins?

11. **DRAWINGS** Sarah can buy a \$10 ticket for each of the following drawings.

Drawing 1					
Prize Value	\$0	\$10	\$50	\$100	\$500
Frequency	0.80	0.14	0.03	0.02	0.01

Drawing 2					
Prize Value	\$0	\$10	\$100	\$500	\$1000
Frequency	0.90	0.075	0.015	0.005	0.005

a. What is the expected value of two drawings?

b. Which drawing would you recommend for Sarah? Explain your reasoning.

For the following problems create a relative frequency table and find the expected value. Would you play the game? Explain your reasoning.

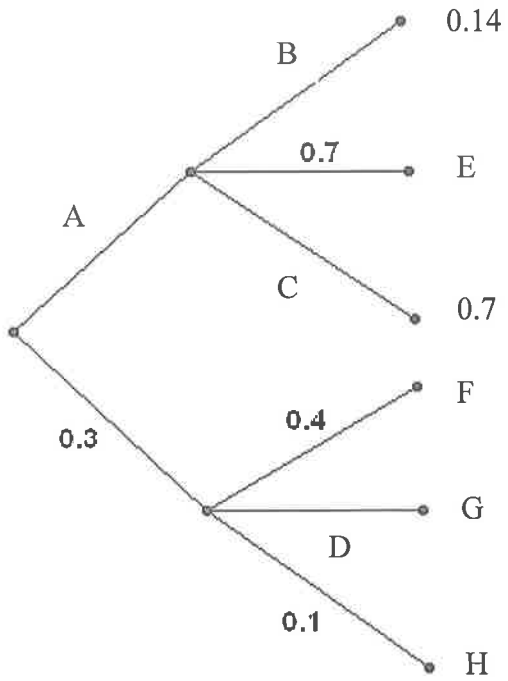
12. You play a game in which you flip a fair coin three times. You pay \$5 to play this game. If you get 3 heads, you win \$15 (for a net profit of \$10). If you get 2 heads you win \$5 (for a net profit of \$0). Otherwise you win nothing (for a net loss of \$5). What is the expected value of your net profit?

13. A game consists of rolling a colored die with three red sides, two green sides, and one blue side. A roll of a red loses. A roll of green pays \$2.00. A roll of blue pays \$5.00. The charge to play the game is \$2.00. Would you play the game? Why or why not?

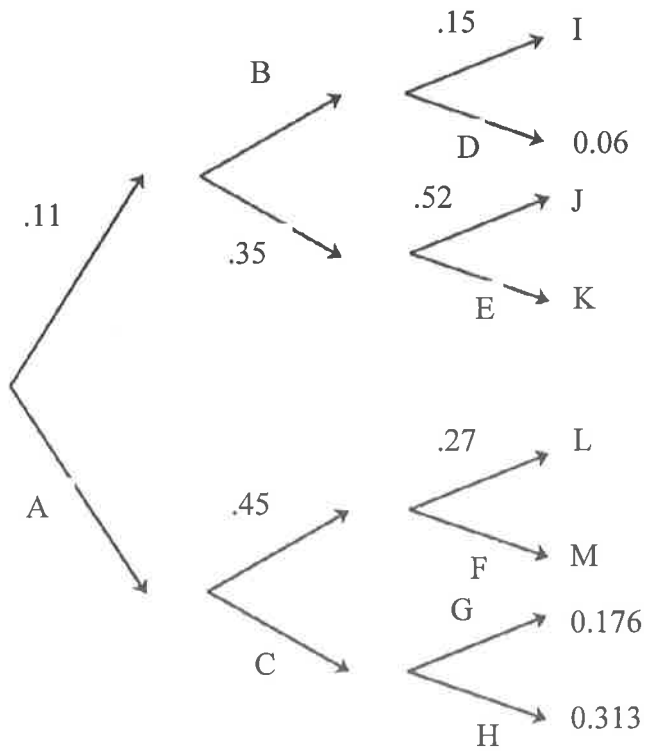
14. A game consists of drawing a single card from a standard 52-card deck. A player receives 40¢ for a heart and 50¢ for an ace (90¢ for the ace of hearts). If the cost of a draw is 15¢, should a person play the game? Explain.

- a. What is the probability of getting red twice?
 - b. What is the probability of getting black at least once?
 - c. What is the probability of getting the same color twice?
 - d. What is the probability of getting different colors?
4. 1 One box contains 2 white balls and 6 yellow balls. A second box contains 2 white balls and 5 yellow balls. A ball is chosen at random from each box. Complete this tree diagram and hence answer the following:
- a. What is the probability of getting two yellow balls?
 - b. What is the probability of getting white at least once?
 - c. What is the probability of getting two balls of different colors?
 - d. What is the probability of getting two balls of the same color?
5. A student spins a spinner with 3 equal parts of red, blue and green three times.
- a. Create a tree diagram and a list to show all the possible outcomes.
 - b. What is the probability of spinning a Red, Blue and Blue in that order?
 - c. What is the probability of spinning exactly one blue and one green in any order?
 - d. $P(\text{GGG}) =$

Complete the following tree diagrams.



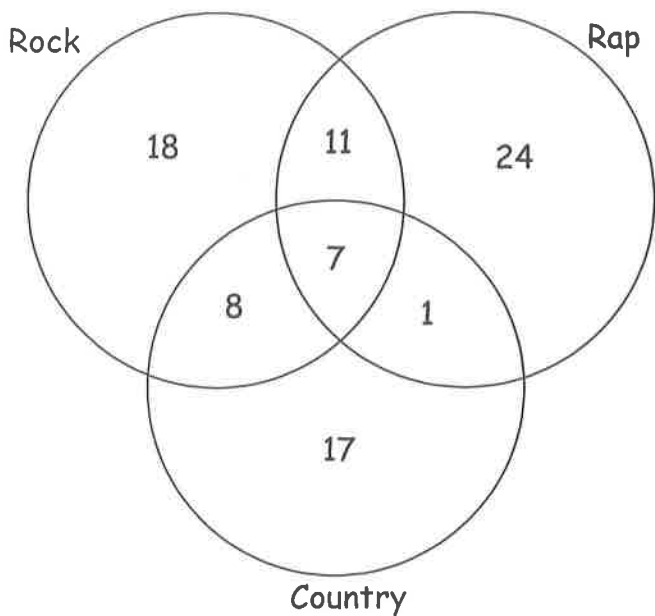
- A =
- B =
- C =
- D =
- E =
- F =
- G =
- H =



- A =
- B =
- C =
- D =
- E =
- F =
- G =
- H =
- I =
- J =
- K =
- L =
- M =

Venn Diagram Worksheet

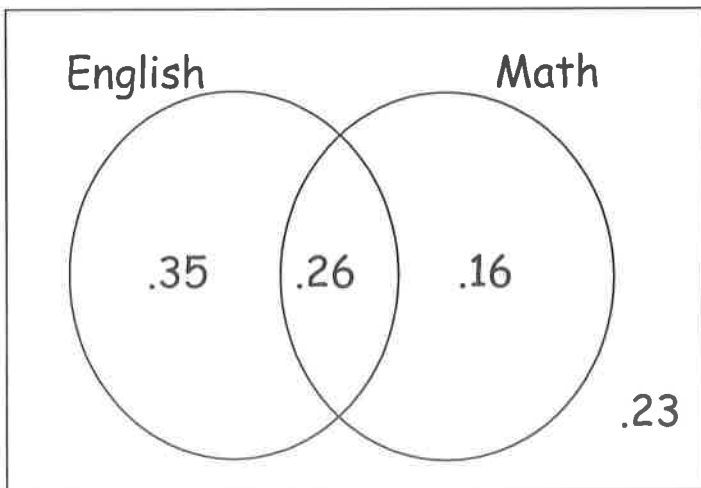
Use the Venn Diagram below to answer question #1 - 5.



1. How many total people are represented in the diagram? _____
2. $P(\text{Country}) =$ _____
3. $P(\text{rap}) =$ _____
4. If one person is chosen at random, what are the odds against picking a person who likes all three types of music?

Odds against all three

5. $P(\text{Rap or Rock}) =$
6. $P(\text{Rock} | \text{Country}) =$



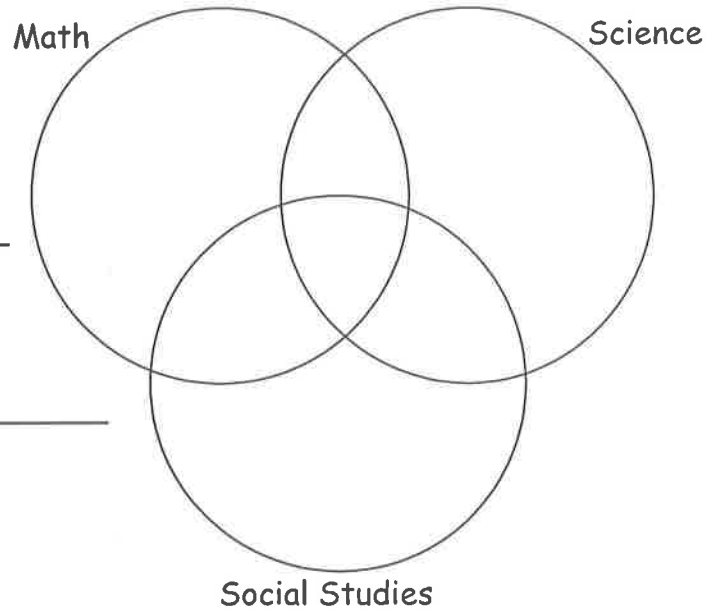
1. $P(E) =$
2. $P(E \text{ and } M) =$
3. $P(M \text{ or } E) =$
4. $P(M \text{ and Not } E) =$
5. $P(\text{Not } M \text{ and Not } E) =$
6. $P(E | M) =$

Use the following information to fill in the Venn Diagram below.

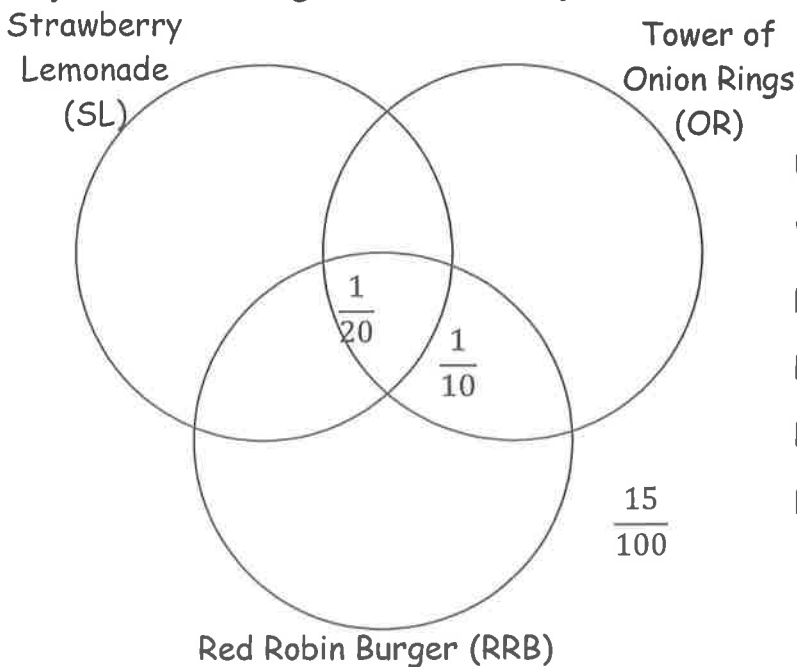
125 people were asked if they liked Math, Science, or Social Studies. Everyone answered that they liked at least one.

- | | |
|---------------------------|------------------------------------|
| 56 like Math | 18 like Math and Science |
| 43 like Science | 10 like Science and Social Studies |
| 35 like Social Studies | 12 like Math and Social Studies |
| 6 like all three subjects | |

- How many people like Math only? _____
- How many people like Science only? _____
- How many people like Social Studies only? _____
- $P(\text{Math or Science}) =$ _____
- $P(\text{Math or Science or Social Studies}) =$ _____
- $P(\text{Social Studies and Math}) =$ _____
- $P(\text{Science} | \text{Math}) =$ _____



100 people seated at different tables at Red Robin, costumers were asked if their party had ordered any of the following items: Strawberry Lemonade, Tower of Onion Rings, or Red Robin Burger.



Use the following information to fill in the Venn Diagram:

- $P(\text{RRB}) = 50/100$
- $P(\text{SL and OR}) = 20/100$
- $P(\text{at least two items}) = 45/100$
- $P(\text{OR or RRB}) = 75/100$