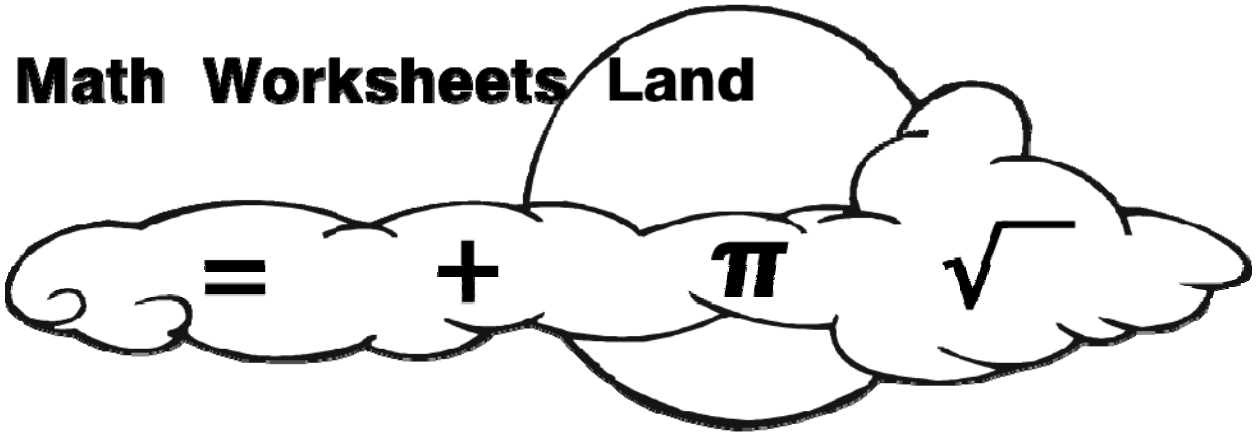
Name _____ Date _____

High School Statistics and Probability

Common Core Sample Test Version 2



Our High School Statistics and Probability sample test covers the twenty most common questions that we see targeted for this level. For complete tests and break downs of each section, please check out web site listed below.

High School Statistics and Probability Common Core Math Tests:

http://www.mathworksheetsland.com/tests/hsstatsandprob.html

For Full Statistics and Probability Worksheets, Quizzes, and Homework Samples:

http://www.mathworksheetsland.com/stats/

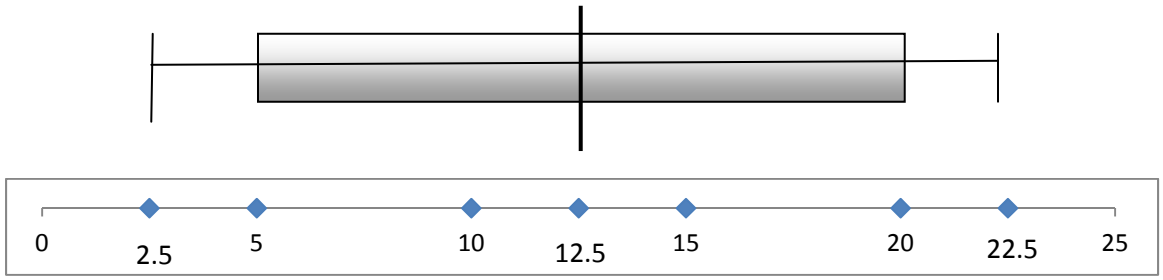
Name _____ Date _____

Sample Test OUTLINE

1. Making and Understanding Box and Whisker Plots
2. Outliers in Data Sets
3. Scatter Plots of Linear Functions
4. Using Two Way Tables
5. Determining Dependent and Independent Events
6. Permutations and Combinations
7. Calculating the Payoff of a Game of Chance
8. The Expected Value of Random Variables
9. Mean and Standard Deviation Distributions
10. Predicting the Outcome of Events
11. Addition Rule of Probability
12. Probability Distribution
13. Standard and Absolute Deviation
14. Multiplication Rule of Probability
15. Interpreting Slope and Rate of Change in Context
16. Two-Way Tables
17. Using Probabilities to Make Fair Decisions
18. Estimating the Mean of Sample Surveys
19. Validating the Data Generating Processes
20. Correlation vs. Causation

Name _____ Date _____

1. What is the lower quartile?

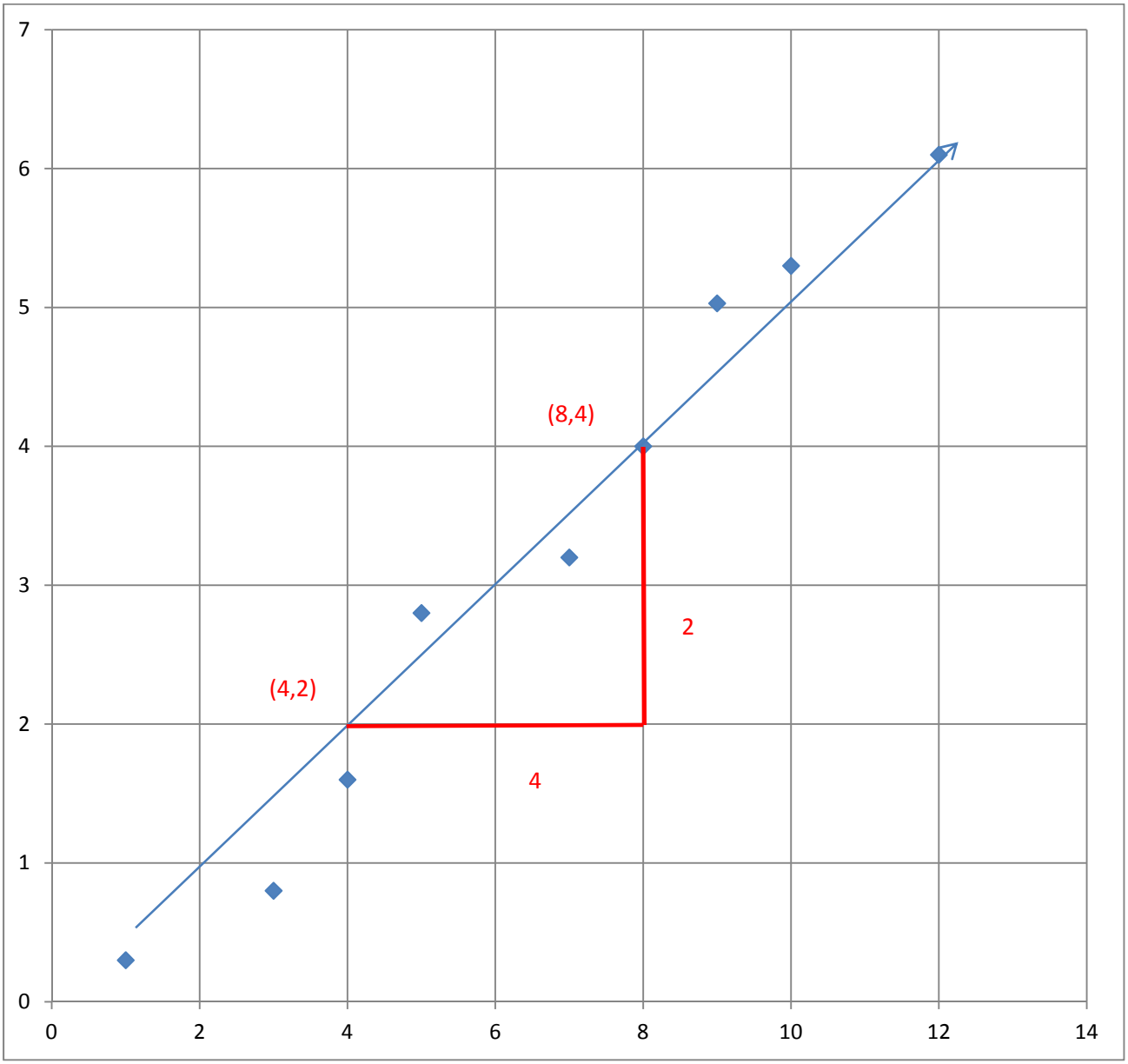


2. The following table displays the number of points scored by each player in a basketball game. If the outlier is not included, what is the mean number of points?

NAME	points
John	48
Cesar	12
Tony	18
Marvin	15
Joe	10
Dewayne	16
Charles	21

Name _____ Date _____

3. What is the equation of the trend line in the following scatter plot?



Name _____ Date _____

4. **Construct and complete a two-way table given the following information:**

133 people attended a concert. There were 30 males and 26 females seated on the main floor. 31 females were seated on the balcony.

	MAIN FLOOR	BALCONY	TOTAL
MALES			
FEMALES			
TOTAL			

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5. **Sylvia has 9 coins in her pocket. If she pulls out a coin and lays it on the table then pulls out another, is this an independent or dependent event?**

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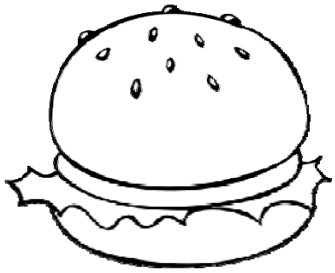
6. **The local hamburger stand offers 15 different toppings for their hamburgers. How many combinations of burgers can be ordered with 3 toppings each?**



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7. **In a survey of dog lovers, 42% of families own 1 dog, 10% of families own 5 dogs, 28% of families own 2 dogs, and 20% of families own 3 dogs. What is the expected number of dogs in a family?**

Name _____ Date _____

8. **Charlotte attends a carnival that has a roulette wheel. She bets $1 on the number 3. She wins $20 if the wheel lands on her one of her numbers. What is the expected value of the game if there are 15 numbers on the wheel?**

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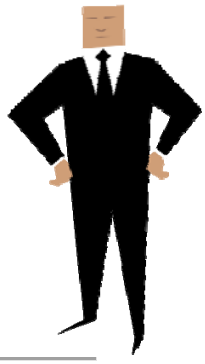
9. **Given the following set of data, calculate the standard deviation.**

{3,6,12,12,20,22}



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10. **In a regular deck of cards with no jokers, what is the probability of drawing a diamond or spade if the ace of spades is missing?**

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11. **In a bag of M&Ms, there are 9 green, 10 red, 12 yellow, and 11 brown M&Ms. What is the probability of drawing a green or red one?**

---

12. **Make a table of the probability distribution for the sum of two dice thrown.**

Name _____ Date _____

13. Find the mean absolute deviation of the following set:

{1,2,2,3,4,6,5,3,1,1}

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14. From Question #11, find the probability of drawing a red M&M followed by a green M&M if each M&M is returned to the bag after drawing.

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15. Rachel is charged $5 to borrow her brother Don's car. For each mile she drives, she pays him an additional ten cents. Write an equation that represents the amount she owes her brother. How much does it cost her to drive 10 miles?

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16. The following table displays the number of students that wear denim twice a week to school. What is the percentage of junior students that wear denim twice a week to school?

GRADE	NUMBER OF STUDENTS
Freshmen	250
Sophomore	188
Junior	223
Senior	210

Name _____ Date _____

17. **Jaden bets his friend Jordan $5 that he can roll a 4 in 3 tries with one die. Is this a fair bet?**

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18. **A parental survey was conducted on the support of banning cell phone use during class time. It was estimated to have a 2.3 margin of error with a confidence level of 90%. Only 15% of parents supported the ban. What is the minimum number of parents that needed to be surveyed to reach the margin of error of 2.3? Use 1.645 for the z score.**

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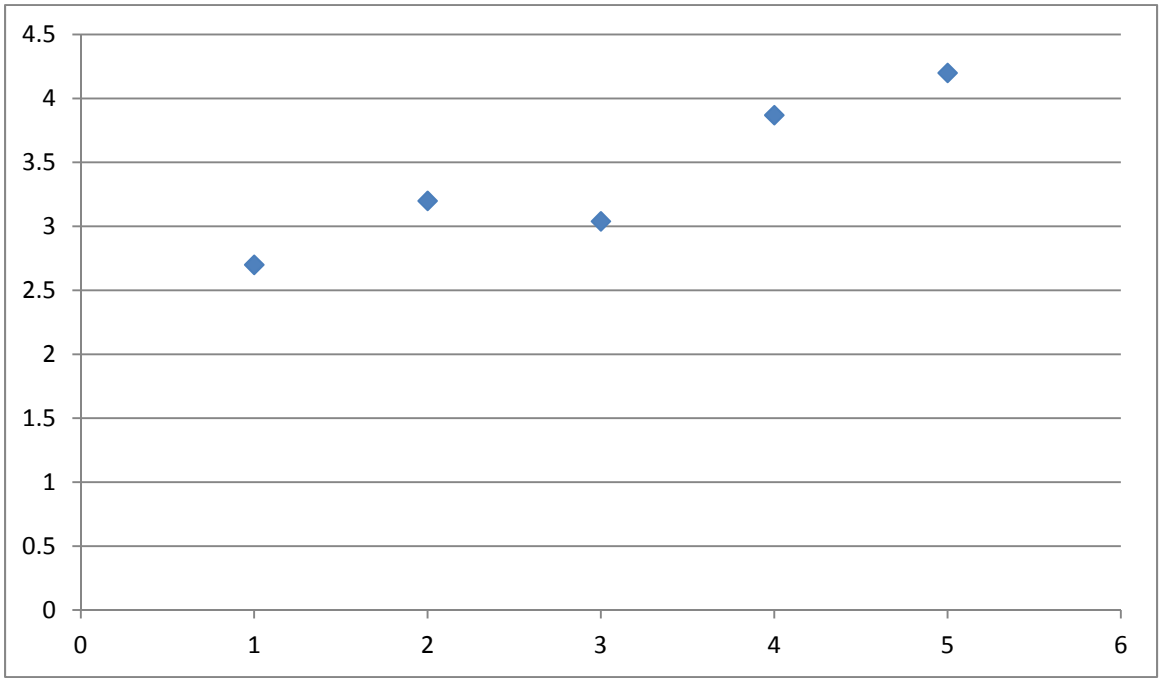
19. **A model says that drawing an ace from a regular deck of cards has the probability of 1/13. If you draw 3 aces in a row, would you question the model?**

Name _____ Date _____

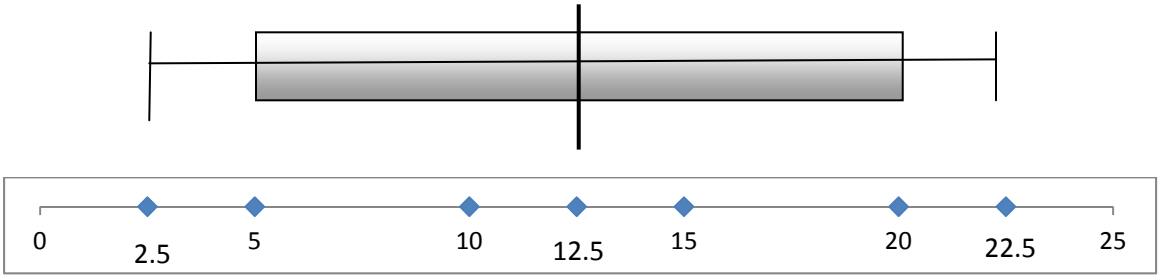
20. What type of correlation does the following scatter plot depict?



Name _____ Date _____

QUIZ 3 – ANSWER KEY

1. What is the lower quartile? 5



2. The following table displays the number of points scored by each player in a basketball game. If the outlier is not included, what is the mean number of points?

The outlier is John with 48 points. The average of the others' points is 15.3.

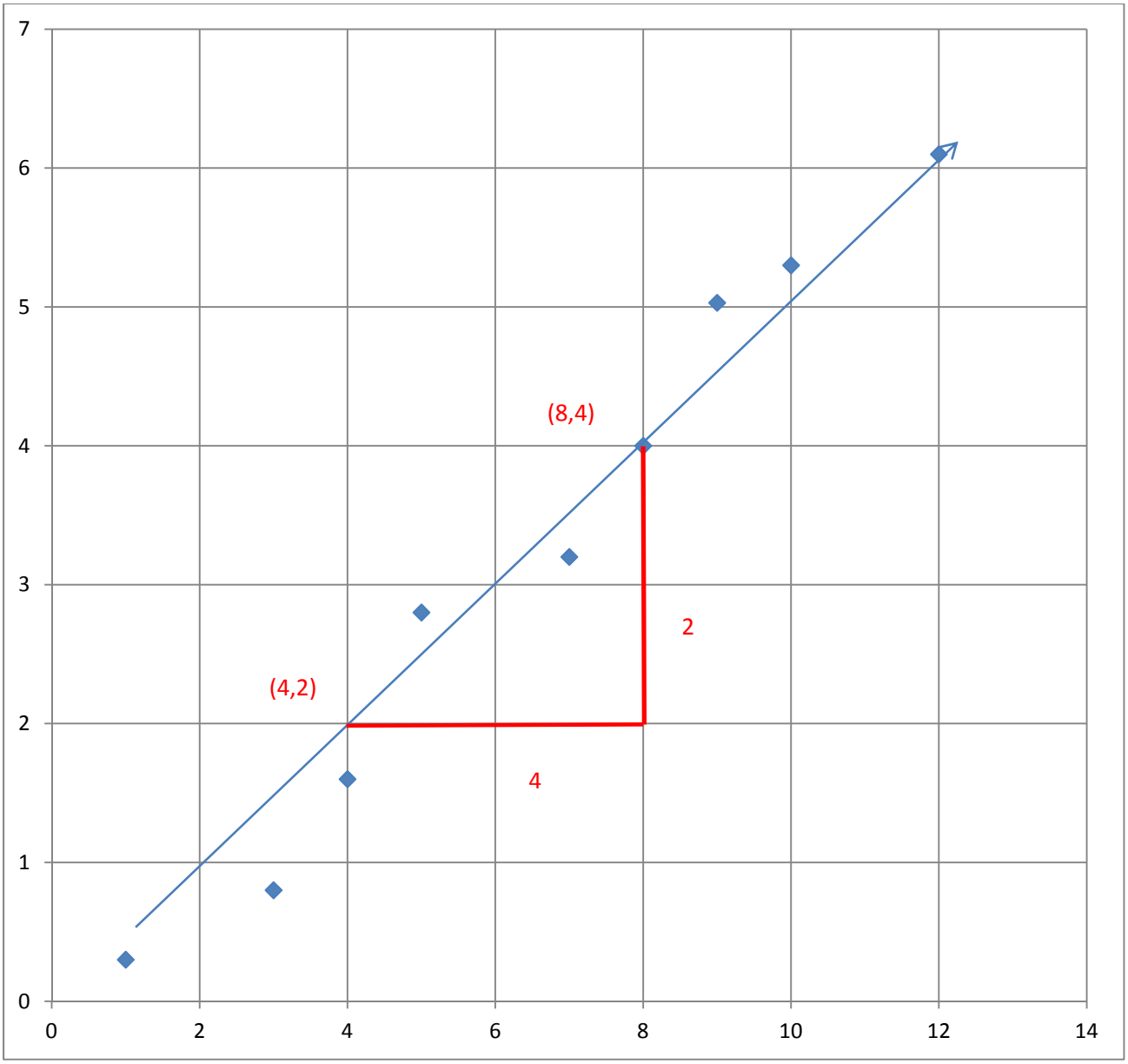
NAME	points
John	48
Cesar	12
Tony	18
Marvin	15
Joe	10
Dewayne	16
Charles	21

Name _____ Date _____

3. What is the equation of the trend line in the following scatter plot?

m = ½, use point slope formula of a line to get the equation.

$y-y_1 = m(x-x_1)$ $y= ½ x$



Name _____ Date _____

4. **Construct and complete a two way table given the following information:**

133 people attended a concert. There were 30 males and 26 females seated on the main floor. 31 females were seated on the balcony.

	MAIN FLOOR	BALCONY	TOTAL
MALES	30	46	76
FEMALES	26	31	57
TOTAL	56	77	133

5. **Sylvia has 9 coins in her pocket. If she pulls out a coin and lays it on the table then pulls out another is this an independent or dependent event? Dependent**

6. **The local hamburger stand offers 15 different toppings for their hamburgers. How many combinations of burgers can be ordered with 3 toppings each?**

Order doesn't matter so the number of combinations of a group of n objects taken r at a time is:

$$C(n,r)=\frac{n!}{r!(n-r)!} = 455$$

7. **In a survey of dog lovers 42% of families own 1 dog, 10% of families own 5 dogs, 28% of families own 2 dogs and 20% of families own 3 dogs. What is the expected number of dogs in a family?**

No. of dogs	5	3	2	1
Probability	0.1	0.20	0.28	0.42

Expected Value is the sum of probabilities times the number of dogs.

EV = 0.5+0.6+0.56+0.42=2.08

8. **Charlotte attends a carnival that has a roulette wheel. She bets $1 on the number 3. She wins $20 if the wheel lands on her one of her numbers. What is the expected value of the game if there are 15 numbers on the wheel?**

Payoff **$20** **-$1**

Probability **1/15** **14/15**

20(1/15) – 1(14/15) = 0.40

Name _____ Date _____

9. Given the following set of data calculate the standard deviation.

{3,6,12,12,20,22}, mean = 12.5 standard deviation = 16.7

10. In a regular deck of cards with no jokers what is the probability of drawing a diamond or spade if the ace of spades is missing? There are 52 cards, with a spade missing there are only 51 cards. There are 13 diamonds in the deck and 12 spades.

The probability of drawing a diamond or spade is 25/51.

11. In a bag of M&M's there are 9 green, 10 red,12 yellow and 11 brown M&M's. What is the probability of drawing a green or red one? There are 42 M&M's total. 19 are green or red. The probability of drawing a green or red M&M is 19/42.

12. Make a table of the probability distribution for the sum of two dice thrown.

1	2	3	4	5	6	7	8	9	10	11	12
	1/36	1/18	1/12	1/9	5/36	1/6	5/36	1/9	1/12	1/18	1/36

13. Find the mean absolute deviation of the following set:

{1,2,2,3,4,6,5,3,1,1}

Mean = 2.8

Absolute value of each number and the mean divided by the number of values = 1.4 = MAD

14. From Question #11 find the probability of drawing a red M&M followed by a green M&M if each M&M is returned to the bag after drawing.

9/42 * 10/42 = 5/98 = 0.051

Name _____ Date _____

15. **Rachel is charged $5 to borrow her brother Don's car. For each mile she drives she pays him an additional ten cents. Write an equation that represents the amount she owes her brother. How much does it cost her to drive 10 miles?**

m = miles driven, y = 0.10m+5

y = total cost = 0.10(10) + 5 = $6

16. **The following table displays the number of total students that wear denim twice a week to school. What is the percentage of junior students that wear denim twice a week to school? 25.6%**

GRADE	NUMBER OF STUDENTS
Freshmen	250
Sophomore	188
Junior	223
Senior	210

17. **Jaden bets his friend Jordan $5 that he can roll a 4 in 3 tries with one die. Is this a fair bet?**

The probability that Jaden will roll a 4 in 3 tries with one die is: 1/6+1/6+1/6 =3/6=1/2 or a 50% probability he will, therefore it is a fair bet.

18. **A parental survey was conducted on the support of banning cell phone use during class time. It was estimated to have a 2.3 margin of error with a confidence level of 90%. Only 15% of parents supported the ban. What is the minimum number of parents that needed to be surveyed to reach the margin of error of 2.3? Use 1.645 for the z score.**

911 parents

19. **A model says that drawing an ace from a regular deck of cards has the probability of 1/13. If you draw 3 aces in a row would you question the model?**

No. To draw conclusions about the validity of the model a very large number of draws would be required.

20. **What type of correlation does the following scatter plot depict? Positive (Increases; Rising Trend)**