

# GOOD COUNSEL MATH DEPARTMENT

Summer Math Packet for Students entering

## AP Statistics

The problems in this packet are meant to help you review material that you have learned in previous math courses and will need to understand in order to be successful in AP Statistics. Try to complete all problems. Show all of your work on a separate sheet of paper. ALL work should be completed to the best of your ability. **You will be tested on the material during the first two weeks of school.**

Have a great summer. We are looking forward to seeing you this fall.

Student Name \_\_\_\_\_

Previous Course Taken \_\_\_\_\_

1. Mark has a bag of skittles. It contains 5 red, 6 green, 10 purple, 3 yellow, and 1 pink candies. Find

- a)  $P(\text{red}) = \underline{\hspace{2cm}}$
- b)  $P(\text{not purple}) = \underline{\hspace{2cm}}$
- c)  $P(\text{green or yellow}) = \underline{\hspace{2cm}}$

2. Mean =  $\underline{\hspace{2cm}}$                       Median =  $\underline{\hspace{2cm}}$                       Mode =  $\underline{\hspace{2cm}}$

Weights of Junior Varsity Wrestlers (pounds)

170   160   135   135   160  
  
122   188   154   108   135  
  
140   122   103   190   154

3. Total Hours per Week that Students Spend Playing Video Games

Hours	Frequency
5	12
10	8
12	6
15	10
18	5
20	3
25	9

Mean =  $\underline{\hspace{2cm}}$                       Median =  $\underline{\hspace{2cm}}$                       Mode =  $\underline{\hspace{2cm}}$

4. Betsy has earned a 95, 75, 90, 83, 69, and 80 on her algebra quizzes this quarter. There is one more quiz.

- a. What score does she need to have a B average of at least 80%? Show work.
  
- b. If one of her scores was a 25% instead of a 75%, would it still be possible for her to get a B?

6. Stem	Leaf	
0	1, 3, 3, 4, 6	a. Write out the data set based on the stem and Leaf plot
1	0, 2, 4, 4, 4	
2	6, 7	
3	1, 9	b. Find the mean.
4	3	

Key: 1|0 = 10

c. Find the median.

d. Find the mode.

7. A ten-sided die, numbered 1 through 10, is rolled. Find each probability.

a) P(odd or greater than 4) \_\_\_\_\_

b) P(less than 3 or greater than 7) \_\_\_\_\_

8. Fairfield College is considering a new course evaluation form for all the classes taught on campus. One concern is the amount of time necessary to fill out the form. A random sample of 30 students were asked to fill out the form for the class they had at 10:00 am. The times in minutes to fill out the form were as follows:

18	19	8	12	18	20	15	17	19	23
22	30	21	16	44	17	15	12	18	26
19	23	35	16	12	5	2	3	9	12

Make a stem and leaf display. Be sure to indicate the scale. Comment on the distribution.

9. In an effort to estimate the size of elk herds wintering in the Rocky Mountain National Park, the rangers used a small airplane to spot count groups of elk in the park. They found 15 groups of elk and recorded the size of each of group as:

21	15	19	16	18	17	17	20
25	7	16	10	16	18	12	

a. Compute the mean, the median and the mode of the data.

b. Describe what each number tells you about the sizes of groups of elk in the Rocky Mountain National Park.

10. What number could you add to the data set below that will make the mean, median, and mode equal?

1    4    2    5    9    8    6

11. Ten equal scores have a mean of 90. If one score is doubled, and the other nine remain the same, what is the mean of the new set of scores?

12. Twenty four people were asked to rate the flavor of Jane's Jams brand grape jelly, on a scale of 1 to 10. The results were as follows:

8    7    6    9    9    5    3    8  
10    9    8    8    6    5    6    7  
8    9    1    9    7    8    6    2

- a) Find the minimum, lower quartile, median, upper quartile and maximum.
- b) Make a box and whisker plot.

13. A coin is tossed 1000 times. What is the probability that the 785<sup>th</sup> toss is heads?

14. Suppose you roll a single 6 sided die.

- a) What is the probability that the number on the face is a 3 or a 6?
- b) What is the probability that the number on the face is not a 2?
- c) What is the probability that an even number is rolled?

15. An ecology class did an experiment to determine the distance that a car will travel on one gallon of gasoline at different speeds. A random sample of 12 cars of about the same age, model and condition were filled with gasoline and driven around an oval track at a constant speed for a fixed distance. The gas mileage was then calculated. The results are summarized below. X represents the speed of the car in miles per hour, and Y represents the gas mileage in miles per gallon.

X	30	35	40	45	50	55	60	65	70	75	80	85
Y	39	36	37	35	35	31	33	30	26	27	25	24

- a) Draw a scatter diagram for this data.
- b) Find the equation of the least squares line.
- c) Graph the least squares line on your diagram.
- d) Predict the gasoline mileage when the speed is 58 mph.

16. You draw one card from a standard deck on 52 cards.

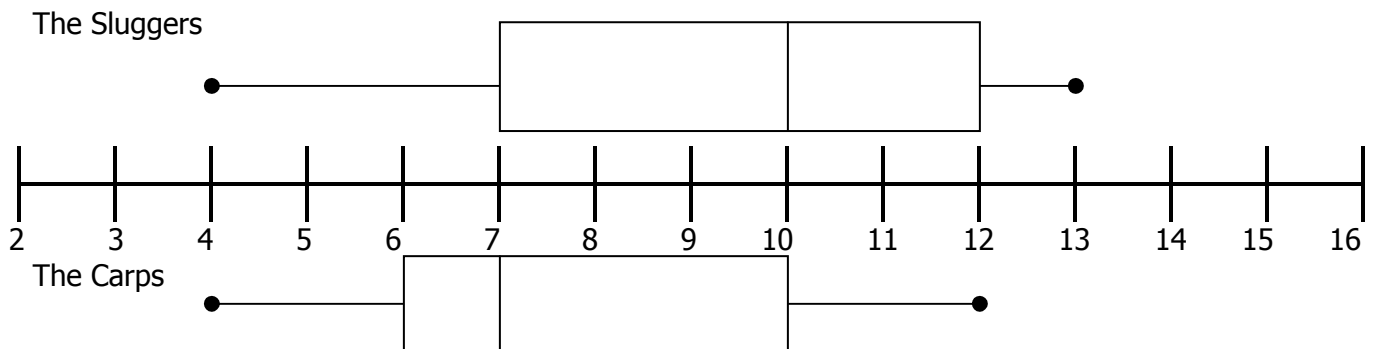
- a) What is the probability that the card is the ace of spades?
- b) What is the probability that the card is a spade?
- c) What is the probability that the card is an ace or a spade?

There are 30 employees at McDonald's. The table below shows their annual wages.

Income	Frequency
\$15,000	12
20,000	9
23,000	4
25,000	3
29,000	2

- Find the mean and median salaries for the employees at McDonald's. Use mathematics to explain how you determined your answer. Use words, symbols, or both in your explanation.
- If you wanted to convince your employees that their salaries are too high, which measure, mean, or median, would you use? Use mathematics to justify your answer.

17. The box plots below represent runs scored during an 8-game summer league for 2 softball teams.



- Which team had the higher median for runs scored?
- Which team had the greater variation of runs scored?
- Based on the data shown in the box-and-whiskers plots above, the newspapers wrote an article stating that the Sluggers were a higher scoring team than the Carps. Is this a valid conclusion? Justify your answer using mathematics.