

Algebra 2
Unit 8 Study Guide (Sections 10.4-10.8, 1.7, 2.7)

Name _____

You should be able to do the following...

Part 1: Use the fundamental counting principle. (Section 10.4)

1. A college student chooses 1 out of 3 math classes, 1 out of 11 art classes, and 1 out of 8 science classes. How many possible choices are there for the 3 classes?

2. How many possible security codes can be made using 4 digits followed by 3 letters if.....
 - a) Digits and letters can be repeated

 - b) Digits and letters cannot be repeated

 - c) Only even digits are used and the letters "O", "R" and "T" are not used

3. Find the number of meals possible from 2 soups, 6 entrees, and 5 side dishes if you select one of each course.

Part 2: Find the number of orders possible in a permutation. (Section 10.4)

4. Find the number of orders that 4 members from a team of 10 can run a relay race.

5. In how many ways can the 40 contestants in a spelling bee finish first through third?

6. How many ways can 15 students be chosen as student council President, Vice-President, Treasurer, and Secretary?

7. How many ways can 7 students present a project?

Part 3. Find the number of combinations possible. (Section 10.5)

8. You must read 3 books from a list of 15 books for a summer reading program. How many different choices do you have for the three books?

9. How many different 7-card hands can be dealt from a standard 52-card deck of playing cards.

10. How many groups containing 4 boys and 3 girls can you choose from a class that contains 12 boys and 9 girls?

Part 4. Solve basic probability and odds problems. (Section 10.6)

11. A number is chosen at random from the numbers 1-50. Find the...
 - a) Probability the number is 8 or less.

 - b) Probability the number is a multiple of 5.

 - c) Probability the number is 60.

 - d) Odds that the number is greater than 30.

 - e) Odds that the number ends in a 0.

 - f) Odds that the number is even.

12. From a standard deck of 52 cards, select one card at random. Find the...

- a) Probability that card is a "7".

- b) Probability that the card is a spade.

- c) Probability that the card is red or black.

- d) Odds that the card is a "10" or "A".

- e) Odds that the card is a black "J".

Part 5. Solve probability problems involving "OR" (overlapping events). (Section 10.7)

- "OR" means to **ADD** the probabilities – but check for an overlap – if there is an overlap, subtract that probability!
- You are only choosing one event!

13. If a card is randomly selected from a deck of 52 cards, what is the probability that a "7" or "heart" will be chosen?

14. If a die is rolled, what is the probability of getting an even number or a number less than 5?

15. If a die is rolled, what is the probability of getting a number less than 3 or greater than 5?

16. If a card is randomly selected from a deck of 52 cards, what is the probability that a "face card" or a "2" will be chosen?

Part 6. Solve probability problems involving “AND” (independent and dependent events). (Section 10.8)

- “AND” means to **MULTIPLY** the probabilities.
- **You are choosing more than one event! You should be multiplying as many fractions as you have events.**

17. Find the probability of drawing the given marbles at random from a bag of 3 red marbles, 5 blue marbles, and 2 green marbles.

a) Drawing a blue marble, then a red marble (with replacement)

b) Drawing a green marble, then another green marble (with replacement)

c) Drawing a red marble, then a green marble (without replacement)

d) Drawing a blue marble, then another blue marble (without replacement)

18. A hat contains pieces of paper numbered 1 through 15. You draw 2 numbers at random.

a) What is the probability the first number is odd and the second is even (with replacement)?

b) What is the probability the first number is odd and the second is even (without replacement)?

Part 7. Find the mean, median, mode, range, lower quartile, upper quartile, and IQR when given a set of data. (Section 1.7)

19. The following data set shows the ages of the players on a baseball team.

22 23 25 25 26 27 29 29 30 31 31 31 32 33 35 37 38

Mean: _____ Median: _____ Mode: _____ Max: _____ Min: _____

Range: _____ LQ: _____ UQ: _____ IQR: _____

Create a box-and-whiskers plot:

Create a stem and leaf plot:

20. The following data represents test scores for a Statistics class:

95 65 90 55 80 70 88 100 80 88

Mean: _____ Median: _____ Mode: _____ Max: _____ Min: _____

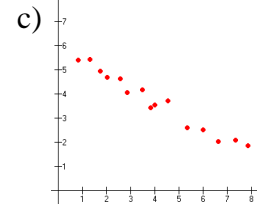
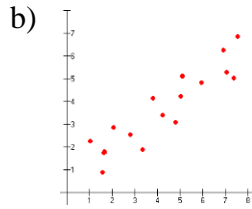
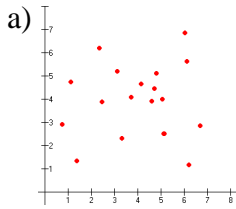
Range: _____ LQ: _____ UQ: _____ IQR: _____

Create a box-and-whiskers plot:

Create a stem and leaf plot:

Part 8. Identify a scatterplot as having a positive, negative, or no correlation. (Section 2.7)

21. What type of correlation – positive, negative, or none – is shown by each scatter plot?

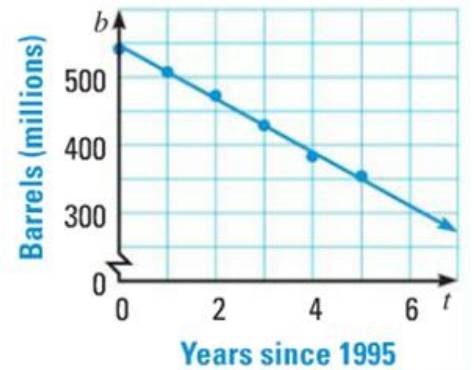


Part 9. Draw a line of best fit on a scatterplot and find the equation of the line. (Section 2.7)

22. The table shows the number of millions of barrels b of crude oil produced in Alaska where t is the number of years since 1995. Use the data table and graph to find the equation of the best fitting line. Show all of your work.

t	0	1	2	3	4	5
b	542	508	473	429	383	354

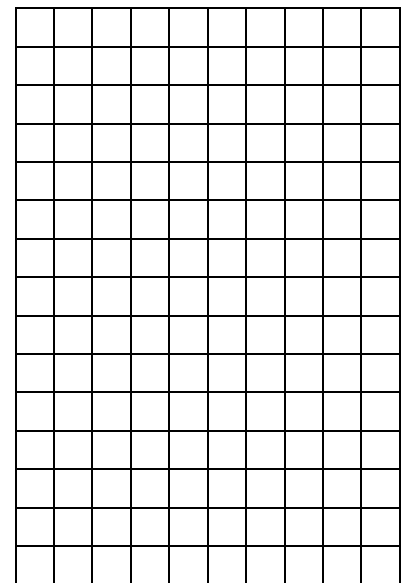
Alaska Crude Oil Production



23. The table below shows the average number of hay bails a llama eats every week.

- Sketch a scatter plot for this data.
- Describe the correlation: _____
- Draw a line of best fit.
- Write an equation in slope-intercept form for the line of best fit.

<i>Number of llamas</i>	<i>Number of Hay Bails</i>
1	1
2	3
3	5
4	6
5	7
6	10
7	10
8	12
9	15
10	15



- How many bails of hay per week do you expect 25 llamas to eat? _____

Part 10. Find the union or intersection of each set.

24. $\{L, E, A, R, N\} \cap \{P, R, A, C, T, I, C, E\}$

25. $\{-3, 3, -5, 6, 0\} \cap \{1, 2, 4, -8\}$

26. $\{L, I, S, T, E, N\} \cup \{S, I, L, E, N, T\}$

27. $\{-8, -4, -3, 0, 1, 5\} \cup \{-4, 0, 1, 5, 7, 8\}$