Advanced Algebra **Chapter 15 Practice** **Mrs. Dunphy**

Name: Key Date: _____ Period: _____

Concept Check: Fill in the blanks.

1. The median is the number in the middle of a set of data.
2. The number in the middle of the lower half of a set of data is the lower quartile
3. In a data set, 75% of the data are below the upper quartile

Application

1. The plot below shows the test scores of a math class at SPA.

5	9
6	3 3 7
7	1 6 6 6
8	0 0 4 4 8
9	2 5 5

Find each of the following values: (1 point each)

$\frac{76+80}{2}$ Median: 78 $\frac{67+71}{2}$ First (lower) quartile: 69

Mode: 76 $\frac{84+88}{2}$ Third (upper) quartile: 86

95 − 59 Range: 36 Interquartile Range: 17

86 − 69 = 17

2-7: Use these data:

63	87	79	70	67	86	62	70	69	62	61	81	76

13 points

2. Create a ***stem-and-leaf plot***.

6	1 2 2 3 7 9
7	0 0 6 9
8	1 6 7

6|1 = 61

3. Find the mean, median and mode.

933 ÷ 13 ≈ 71.8

mean 72

median 70

mode 62, 70

4. Find the ***first and third quartiles***, the ***range***, and the ***interquartile range***.

61 62 62 63 67 69

70 76 79 81 86 87

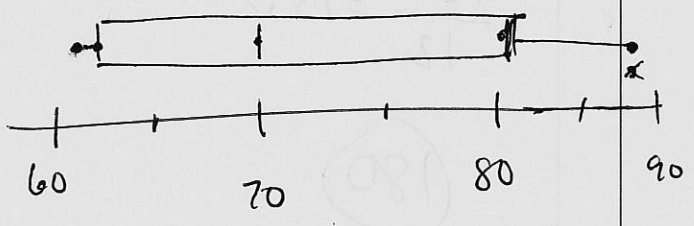
first quartile 62.5 or 63

third quartile 80

range 26 87 − 61

interquartile range 17.5 OR 17 80 − 62.5 OR 80 − 63

5. Make a ***box-and-whiskers plot***.



Here's the data again:

63	87	79	70	67	86	62	70	69	62	61	81	76

6. Calculate the ***variance*** and ***standard deviation*** (round to nearest tenth). Record your work in the table below and show your calculations in the spaces provided.

mean → 72

Data	Difference from Mean	Difference Squared
61	61 − 72 = −11	121
62	−10	100
62	−10	100
63	−9	81
67	−5	25
69	−3	9
70	−2	4
76	4	16
79	7	49
81	9	81
86	14	196
87	15	225
70	−2	4
	TOTAL	~~1007~~
		1011

Variance calculations

$\frac{\text{sum}}{n-1}$

$\frac{1011}{12} = 84.25 \approx 84$

Standard Deviation calculations

$\sqrt{84} \approx 9.2$

OR

$\sqrt{84.25} \approx 9.2$

6. The mean of 12 numbers is 15. What is the sum of the numbers?

$\frac{x}{12} = 15$

$\frac{180}{12} = 15$ ✓

180

7. Suppose your first three test scores were 79, 83, and 92. What must you score on the fourth test to have an average of 87 for the four tests? ***Show your work.***

$\frac{79+83+92+x}{4} = 87$

$254 + x = 348$

$-254 \quad -254$

$x = 94$

94%

Advanced Algebra **Practice: 15-8 to 15-9** **Mrs. Dunphy**

Name: Key Date: _____

Instructions: Show all steps in the solution to each problem. Write all probabilities as fractions in simplified form. Circle or box all answers.

1. One letter is drawn at random from the word PROBABILITY. Find the probability of each event specified below. 11 letters

A: The letter is a vowel.

vowels → O A I I $\frac{4}{11}$

B: The letter is a consonant.

$\frac{7}{11}$

C: The letter is used in the spelling of the word ALGEBRA.

$\frac{5}{11}$

2. One marble is drawn from a bag containing 1 blue, 2 white, 3 red, and 6 yellow marbles. Find the probability of each event. 12

A: The marble is blue. $\frac{1}{12}$

B: The marble is not white. $\frac{10}{12} = \frac{5}{6}$

C: The marble is not green.

→ all $\frac{12}{12} = 1$

D: The marble is blue or yellow. $\frac{7}{12}$

3. An experiment consists of rolling two dice at the same time.
Write the set* and *find the probability for each event specified below.

A: The sum of the numbers is 10.

(6,4) (4,6) (5,5) $\frac{3}{36} = \frac{1}{12}$

B: The sum of the numbers is at least 10.

~~(1,1) (1,2) (1,3) (1,4) (1,5) (1,6) (2,1) (2,2) (2,3) (2,4) (2,5) (2,6) (3,1) (3,2) (3,3) (3,4) (3,5) (3,6) (4,1) (4,2) (4,3) (4,4) (4,5) (4,6) (5,1) (5,2) (5,3) (5,4) (5,5) (5,6) (6,1) (6,2) (6,3) (6,4) (6,5) (6,6)~~ FAIL

10 (5,5) (6,4) (4,6)
11 (5,6) (6,5)
12 (6,6)

$\frac{6}{36} = \frac{1}{6}$

C: Exactly one die shows 5.

(5,1) (5,2) (5,3) (5,4) (5,6)
(1,5) (2,5) (3,5) (4,5) (6,5)

$\frac{10}{36} = \frac{5}{18}$

D: At least one die shows 5.

same from C

AND (5,5)

$\frac{11}{36}$

4. An experiment consists of drawing two cards at the same time from a standard 52-card deck. Find the probability of each event below.

a. Both are diamonds $13\diamondsuit$

$$\frac{{}_{13}C_2}{{}_{52}C_2} = \frac{78}{1326} = \frac{1}{17}$$

b. Both are aces. 4 aces

$$\frac{{}_{4}C_2}{{}_{52}C_2} = \frac{6}{1326} = \frac{1}{221}$$

c. Neither is black. 26 Reds

$$\frac{{}_{26}C_2}{{}_{52}C_2} = \frac{325}{1326} = \frac{25}{102}$$

5. An experiment consists of flipping two coins at the same time. Find the probability of each event.

HH TT HT TH

a. At least one is tails.

$$\frac{3}{4}$$

b. The coins do not match.

$$\frac{2}{4} = \frac{1}{2}$$

c. Neither is heads.

$$\frac{1}{4}$$