

Math I Unit 7 Study Guide

Student Name: Answer Key

OBJ. 1: Measures of Central Tendency

1. The table below shows the area of several states.

State	Area (thousands of square miles)
Connecticut	6
Georgia	59
Maryland	12
Massachusetts	11
New Hampshire	9
New York	54
North Carolina	54
Pennsylvania	46

Delaware has an area of 2,000 square miles. Which is true if Delaware is included in the data set?

- A The mean increases. $\bar{x} = 30.375$ (original) $\bar{x} = 28.1$ (New)
- B The range decreases. Range = 53 (original) Range = 57 (New)
- C The interquartile range decreases. $IQR = 41$ (original) $IQR = 40.5$ (New)
- D** The standard deviation increases. $S_x = 23.7$ (original) $S_x = 24.24$ (New)

2. Why does the shape of the distribution of test scores on a really easy test tend to be skewed to the left?

3. Andy has grades of 84, 65, and 76 on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

4. The number of points scored by a basketball player in the first eight games of a season are shown below.

15, 35, 18, 30, 25, 21, 32, 16

What would happen to the data distribution if she scored 24, 22, 27, and 28 points in her next four games?

- A The data distribution would become less peaked and more widely spread.
- B The data distribution would become less peaked and less widely spread.
- C** The data distribution would become more peaked and less widely spread.
- D The data distribution would become more peaked and more widely spread.

OBJ. 2: Line of Best Fit

Year	1996	1997	1998	1999	2000	2001
Cost (millions)	482	504	522	560	591	630

5. Letting $x = 0$ for 1996, find the equation of the line of best fit, round to the nearest hundredth.

6. Predict the year in which health care will cost approximately 800 million dollars.

or plug equation into $y =$ and find 800 in y of Table

$$800 = 29.69x + 473.95$$

$$-473.95 \quad -473.95$$

$$326.05 = 29.69x$$

$$10.98 = x$$

Objective	Score
1	A B NY
2	A B NY
3	A B NY
4	A B NY
5	A B NY

ANSWERS:

1. D
2. Most will score really high but a few will still fail the test being a low outlier to the left.
3. 95
4. C
- 4/4 = 100 3/4 = 80 0-2 = NY
5. $y = 29.69x + 473.95$
6. ≈ 11 years
7. $r = 0.99$ strong positive
- C 30%
- 4/4 = 100 3/4 = 80 0-2 = NY
9. $\{-4/3, 1/2\}$
10. 32 years old
11. \$0.75
12. $3x(x-4)(2x+1)$
- 4/4 = 100 3/4 = 80 0-2 = NY
13. $y = 6/5x + 2$
14. 40 grams per week increase
15. Median \$700,000 is an outlier
16. On Paper C Because it is consistently the highest.

7. State the Correlation Coefficient. Describe the correlation for the line of best fit. Use two from the list: Strong, Weak, Positive, Negative, NO Correlation.

$r = .99$ Strong, Positive

8.) The table below shows the heights and weights of 10 friends.

Name	Height (cm)	Weight (kg)
Albert	180	$\cdot \times 87$ 77.517
Beth	176	$\cdot \times 55$ 74.61
Cindy	144	$\cdot \times 52$ 51.402
David	195	$\cdot \times 94$ 88.399
Emily	159	$\cdot \times 87$ 62.283
Frank	185	$\cdot \times 79$ 81.144
Gary	166	$\cdot \times 59$ 67.361
Helen	173	$\cdot \times 64$ 72.439
Ida	149	$\cdot \times 45$ 55.029
Jeremy	168	$\cdot \times 77$ 68.812

If you press 2nd
Window
 change indpt to
Ask
 you can enter
 x-values
 you want
 for table!

Approximately, what percent of the friends is more than 10 kg different from the predicted weight?

- A) 50%
- B) 40%
- C) 30%
- D) 10%

3/10

OBJ. 3: Review

9. Solve: $6x^2 + 5x = 4$

$$6x^2 + 5x - 4 = 0$$

$$\frac{4}{3} = \frac{8}{6} - \frac{3}{5} - \frac{1}{2}$$

$$(x + \frac{4}{3})(x - \frac{1}{2}) = 0$$

$$x = -\frac{4}{3} \quad x = \frac{1}{2}$$

10. Four times Oliver's age plus two times Krissy's age is 96. Krissy is also four times as old as Oliver. How old is Krissy?

$$4L + 2K = 96$$

$$K = 4L$$

$$4L + 2(4L) = 96$$

$$4L + 8L = 96$$

$$12L = 96$$

$$L = 8$$

$$K = 4L$$

$$K = 4(8)$$

$$K = 32$$

11. The math club sells candy bars and drinks during football games.

- 60 candy bars and 110 drinks will sell for \$265 $-120x - 220y = -530$
- 120 candy bars and 90 drinks will sell for \$270 $120x + 90y = 270$

How much does each candy bar sell for?

(Note: Express the answer in dollars.cents.)

$$-130y = -260$$

$$y = 2$$

$$60x + 110(2) = 265$$

$$60x + 220 = 265$$

$$-220 \quad -220$$

$$\frac{60x}{60} = \frac{45}{60}$$

$$x = \frac{3}{4} = .75$$

12. Given the volume of a rectangular prism is: $6x^3 - 21x^2 - 12x$. Find the dimensions.

$$3x(2x^2 - 7x - 4)$$

$$\frac{-8}{27-72}$$

$$(x-4)(x+\frac{1}{2})$$

$$3x(x-4)(2x+1)$$

OBJ. 4: Calculator Inactive : Math I Unit 8 Study Guide

13. Which of the following equations best models the (babysitting time, money earned) data?

$y = x$

No

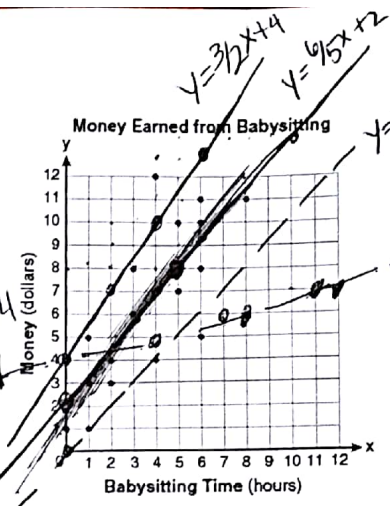
$y = \frac{6}{5}x + 2$
Yes

$y = \frac{3}{2}x + 4$

No

$y = \frac{1}{4}x + 4$

No



14. Data was collected that described the weight of a male white laboratory rat for the first 25 weeks after its birth. A scatterplot of the rat's weight (in grams) and the time since birth (in weeks) shows a fairly strong, positive linear relationship. The linear regression equation $W = 100 + 40t$ (where W = weight in grams and t = number of weeks since birth) models the data fairly well.

What is the slope of the linear regression equation? Explain what it means in context.

the increase of 40 grams per week since birth!

15. State which measure of central tendency, the mean or median best represents the data in the table to the right. Justify your answer using data from the table.

median would be the best because \$700,000 is an outlier

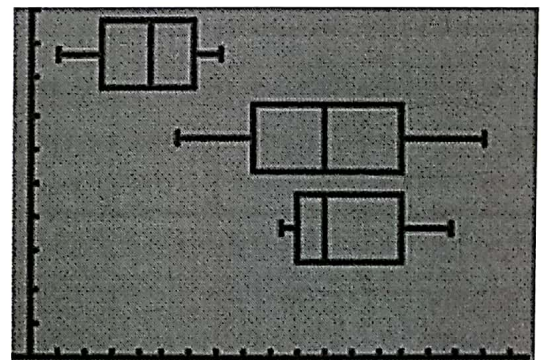
Value per House	Number of Houses
\$100,000	1
\$175,000	5
\$200,000	4
\$700,000	1

16. Delia wanted to find the best type of fertilizer for her tomato plants. She purchased three types of fertilizer and used each on a set of seedlings. After 10 days, she measured the heights (in cm) of each set of seedlings. The data she collected is shown below. Which fertilizer do you recommend that Delia use? Explain your answer.

Fertilizer A		
7.1	6.3	1.0
5.0	4.5	5.2
3.2	4.6	2.4
5.5	3.8	1.5
6.2	6.9	2.6

Fertilizer B		
11.0	9.2	5.6
8.4	7.2	12.1
10.5	14.0	15.3
6.3	8.7	11.3
17.0	13.5	14.2

Fertilizer C		
10.5	11.8	15.5
14.7	11.0	10.8
13.9	12.7	9.9
10.3	10.1	15.8
9.5	13.2	9.7



Top Plot: Fertilizer A
Middle Plot: Fertilizer B
Bottom Plot: Fertilizer C

because it is the one with the most consistency and the box/whisker is the highest fertilizer B could be higher but it is not consistently high.