

HW Answers : (check)

① A

⑥ C

② D

⑦ D

③ C

⑧ A

④ D

⑨ D

⑤ B

⑩ A

Practice:

Check your HW with mine.

Read each problem. Circle the letter of the best answer.

1. A marine biologist weighed sea otters. The results are shown below.

SEA OTTER WEIGHTS

Sea Otter	Weight (pounds)
1	70.1
2	99.0
3	85.9
4	79.4
5	73.8
6	62.7

What is the median sea otter weight?

A 76.6 pounds

B 78.5 pounds

C 79.4 pounds

D 82.7 pounds

2. The scores Terrence got in the last ten video games he played are listed below.

400 900 -250 -150 500
650 1,200 -100 1,350 950

What is the range of these scores?

A 1,100

B 1,200

C 1,500

D 1,600

$$1350 - (-250) = 1600$$

3

62.7 70.1 73.8 79.4 85.9 99.0
76.6

3. The table below shows the area, in square miles, of 11 U.S. territories.

U.S. TERRITORIES	
Territory	Area (sq mi)
Puerto Rico	3,515
Guam	212
U.S. Virgin Islands	138
American Samoa	77
Northern Mariana Islands	184
Midway Islands	2
Wake Island	3
Johnston Atoll	1
Boyer, Howland, and Jarvis Islands	1
Kingman Reef	1
Navassa Island	2

What is the third quartile of the data shown?

- A 136 square miles
- B 145 square miles
- C 184 square miles
- D 212 square miles

6. 1. 1 2 2 3 77. 136 184 212 3515
 1st quartile med. 3rd quartile

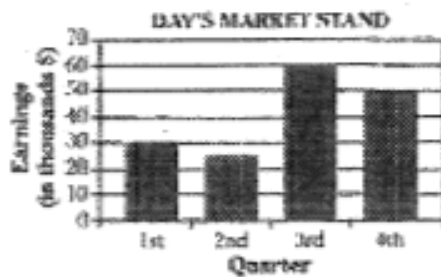
4. Eight judges rated a movie on a scale of 1 to 10. Their ratings are given below.

6, 8, 9, 10, 6, 9, 9, 8

What was the mode of the ratings?

- A 4
- B 6
- C 8
- D 9

5. This bar graph shows how much Day's Market Stand earned in 2012.



What is the mean amount Day's Market Stand earned per quarter in 2012?

- A \$38,000
 B \$41,250
 C \$44,500
 D \$49,000

$$\frac{30 + 25 + 60 + 50}{4}$$

$$\frac{165}{4} = 41.25$$

6. The prices of the five most popular big screen television sets at an electronics store are listed below.

\$2,499 \$1,359 \$2,299
 \$2,999 \$1,789

If the price of the next most popular television set is included with this data, the range in prices increases by \$800. What could be the price of the next most popular television set?

- A \$2,159
 B \$2,199
 C \$3,799
 D \$3,859

$$\begin{array}{r} 2,999 \\ - 1,359 \\ \hline 1,640 \text{ - 1st range} \\ + 800 \\ \hline 2,440 \text{ - 2nd range} \end{array}$$

$$\begin{array}{r} x - 1,359 = 2,440 \\ + 1,359 \quad + 1,359 \\ \hline x = 3,799 \end{array}$$

7. Javier's scores in 7 basketball games are shown below.

18, 15, 20, 14, 12, 17, 18

Javier has one more game, and he wants to average 17 points for all 8 games. How many points does he need to score in his last game?

A 14

B 17

C 20

D 22

$$\frac{114 + X}{8} = 17$$

$$114 + X = 136$$
$$X = 22$$

8. The hourly pay rates of employees at a bookstore are listed below.

\$7.15	\$7.50	\$7.50	\$7.75
\$7.90	\$8.00	\$8.00	\$8.00
\$8.25	\$8.60	\$8.80	\$9.00
\$9.00	\$10.20	\$11.00	\$11.15
\$11.75	\$16.00	\$16.75	\$19.25

Which statement is **best** supported by this data?

- ☒ A One-fourth of the employees have an hourly pay rate less than \$7.95.
- ☐ B Half of the employees have an hourly pay rate between \$8.00 and \$9.00.
- ☐ C One-fourth of the employees have an hourly pay rate greater than \$11.15.
- ☐ D Half of the employees have an hourly pay rate between \$8.85 and \$19.25.

1st quartile is \$7.95

median is \$8.70

3rd quartile is \$11.075

interquartile range = $11.075 - 7.95 = 3.125$

10. Omer counted the number of characters in 60 text messages and recorded the data. He found that the lower quartile of the data was 31, the median was 55, and the upper quartile was 96. Which is the best estimate of the number of text messages that had between 31 and 55 characters?

☒ A 15

☐ B 24

☐ C 30

☐ D 45

$$.25 (60) = 15$$

Read the problem. Write your answer for each part.

2. Isaac's bowling scores for April are shown below. His mean score after all five games was 221.

ISAAC'S BOWLING SCORES					
Game	1	2	3	4	5
Score	225	245	222	230	?

A What was Isaac's score in game 5?

$$\frac{225 + 245 + 222 + 230 + x}{5} = 221$$

Answer: 183

B What was Isaac's median score for the five games?

Answer: 225

$$\frac{922 + x}{5} = 221$$

$$922 + x = 1105$$

$$x = 183$$

C Isaac bowls a sixth game and his median score changes to 227. What is Isaac's score on the sixth game?

183 222 225 ? 230 245

med = 227

Answer: 229

D Explain how you know your answer to part C is correct.

183 222 225 230 245

med

Read the problem. Write your answer for each part.

2. Isaac's bowling scores for April are shown below. His mean score after all five games was 221.

ISAAC'S BOWLING SCORES					
Game	1	2	3	4	5
Score	225	245	222	230	?

- A. What was Isaac's score in game 5?

$$221 = \frac{225 + 245 + 222 + 230 + x}{5}$$

Answer: 183 $1105 = 922 + x$
 $x = 183$

- B. What was Isaac's median score for the five games?

183, 222, 225, 230, 245

Answer: 225

- C. Isaac bowls a sixth game and his median score changes to 227. What is Isaac's score on the sixth game?

183, 222, 225, 229, 230, 245
 227

Answer: 229

- D. Explain how you know your answer to part C is correct.

Because the median was affected⁵ with the 6th game, I knew that the game had to be either the 3rd or 4th highest score so that the mean is 227. Otherwise, the mean would not be 227. I then worked backwards knowing the mean is 227 and 1 of the other numbers is 225.

Unit 7 Data Analysis

201

II. Predictions from Data

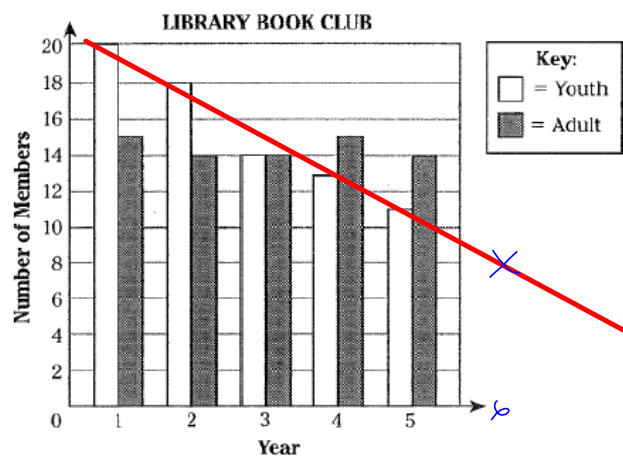
Predictions Based on Trends

Data samples and trends found from data are often used to predict outcomes of larger populations or of future events. For example, this graph shows the amount of sales a company earned each year they were in business. This data can be used to predict the amount of sales they might expect to earn one year, two years, or five years into the future. From the trend in this data, a reasonable prediction might be that this company can expect to earn about \$1,000,000 in sales by year 7.



Example 1:

The library formed a youth book club and an adult book club 5 years ago. The number of members in each book club is shown in the bar graph below.



Assuming the trend in number of members in each book club continues, about how many total members would be expected in both book clubs by year 6?

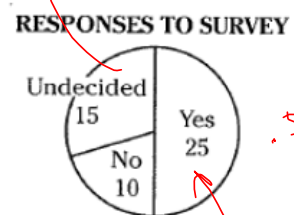
- A 8 B 14 C 22 D 28

$8 + 14 = 22$

Predictions Based on Probability

Predictions can be made on populations of data by finding probabilities of events occurring in samples. For example, the circle graph at right shows the responses of 50 people to a survey question.

The numbers tell you how many people chose *yes*, *no*, or *undecided*. There are 50 total responses and 15 out of 50, or 0.3, are *undecided*. This is the relative frequency. Therefore, if the survey is conducted with 600 people you can predict that the number of people who are undecided would be $0.3 \times 600 = 180$ people.



6

$$.5 (600) = 300$$

The line plot below shows the ages of a sample of people at a movie theater.



If there are 280 people in the theater, which prediction about the audience would you expect to be true?

~~A~~ 50% will be younger than 16. $\rightarrow \frac{5}{20} = .25$ or 25%

~~B~~ 50% will be older than 18. $\rightarrow \frac{3}{20}$

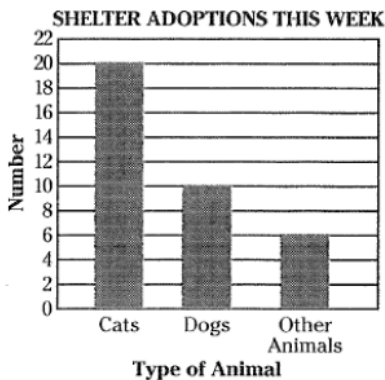
~~C~~ About 70 people will be from 13 to 16 years old. $\rightarrow \frac{8}{20} = .4$

D About 210 people will be from 16 to 19 years old.

$$\frac{15}{20} = .75 \rightarrow .75(280) = 210$$

$$.4(280) = 112$$

1. The bar graph below shows the numbers of different kinds of animals adopted from a shelter one week.



If 50 animals are adopted next week, which is the **best** estimate of the number of dogs that will be adopted?

- A 10
- B 14
- C 20
- D 28

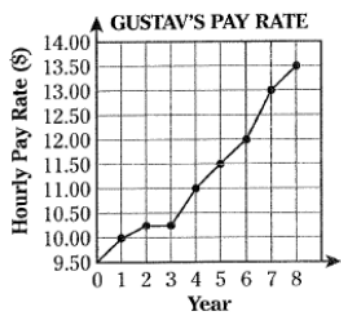
2. The circle graph below shows the number of students at each grade level in one high school marching band.



Hoshi is in the marching band. What is the likelihood that she is a senior?

- A 32%
- B 40%
- C 52%
- D 68%

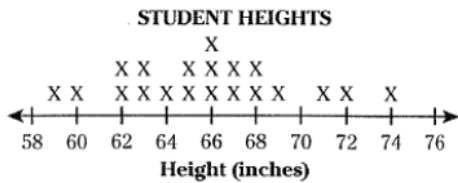
3. The line graph below shows how Gustav's hourly rate of pay changed during the past eight years.



If Gustav stays in this job 10 years, what can he expect his hourly rate to be?

- A \$13.50
- B \$14.00
- C \$14.50
- D \$15.00

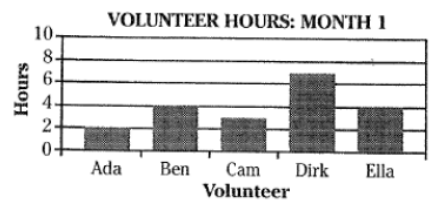
4. The line plot shows the heights of 20 randomly selected students at a high school.



There are a total of 1,200 students at the high school. Which statement is the most reasonable conclusion from the data?

- A Approximately 300 students at the school are 63 inches tall.
- B Approximately 600 students at the school are 66 inches tall.
- C Approximately 300 students at the school are more than 66 inches tall.
- D Approximately 900 students at the school are more than 63 inches tall.

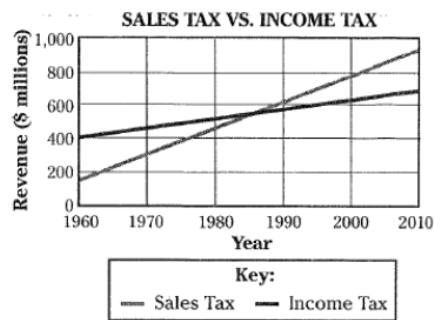
5. Five students volunteer for a service project. The bar graph below shows the hours each student put in during the first month.



The project will continue for a total of 5 months. If the data in the graph is representative, how many more hours will Dirk have volunteered during the project than Ada?

- A 10
- B 15
- C 25
- D 35

6. The line graph shows the revenue from sales tax and income tax in one state over time.



Which is the **best** estimate of the expected difference between revenue from sales tax and income tax in 2020?

- A \$90 million
- B \$200 million
- C \$300 million
- D \$400 million

