

20th November

Completed Exercises from the lectures on

< One-Variable Data >

L. Hard, Pages 2-6 ;

Can be found below.

Hard

- (1) 457d2f2c MULTIPLE CHOICE One answer only

average

exactly in the middle.

A data set of 27 different numbers has a mean of 33 and a median of 33. A new data set is created by adding 7 to each number in the original data set that is greater than the median and subtracting 7 from each number in the original data set that is less than the median. Which of the following measures does NOT have the same value in both the original and new data sets?

- ~~a. Mean~~
- ~~b. Sum of the numbers~~
- c. Standard deviation
- ~~d. Median~~

$$d_1, d_2, \dots, d_{27}$$

$$\frac{d_1 + d_2 + \dots + d_{27}}{27} = 33$$

$$d_{14} = 33$$

$$d_1 - 7, \dots, d_{13} - 7, d_{14}, d_{15} + 7, d_{16} + 7, \dots, d_{27} + 7$$

(2) 1142af44 MULTIPLE CHOICE One answer only

Value	Frequency
1	a
2	$2a$
3	$3a$
4	$2a$
5	a

$a=1$
 1
 2 2
 3 3 3
 4 4
 5

$a=2$
 1 1
 2 2 2 2
 3 3 3 3 3
 4 4 4 4
 5 5

The frequency distribution above summarizes a set of data, where a is a positive integer. How much greater is the mean of the set of data than the median?

- a. 0
- b. 2
- c. 1
- d. 3

$$\frac{\cancel{a} (1 + 2 + 2 + 3 + 3 + 3 + 4 + 4 + 5)}{a \cdot 9} = 3$$

(3) 651d83bb MULTIPLE CHOICE One answer only

Two different teams consisting of 10 members each ran in a race. Each member's completion time of the race was recorded. The mean of the completion times for each team was calculated and is shown below.

Team A: 3.41 minutes

Team B: 3.79 minutes

Which of the following **MUST** be true?

- I) Every member of team A completed the race in less time than any member of team B.
- II) The median time it took the members of team B to complete the race is greater than the median time it took the members of team A to complete the race.
- III) There is at least one member of team B who took more time to complete the race than some member of team A.

- ~~a. II and III only~~
- ~~b. I and III only~~
- c. III only
- ~~d. II, III, and III~~

$$a_1 + a_2 = 5$$

$$b_1 + b_2 = 6 = 0.001 + 5.999$$

$$3.41 = \frac{t_1 + t_2 + \dots + t_{10}}{10} \Rightarrow t_1 + t_2 + \dots + t_{10} = 34.1 \text{ mins}$$

$$3.79 = \frac{\tilde{t}_1 + \tilde{t}_2 + \dots + \tilde{t}_{10}}{10} \Rightarrow \tilde{t}_1 + \tilde{t}_2 + \dots + \tilde{t}_{10} = 37.9 \text{ mins}$$

$$A: a_1, a_2, a_3 \rightarrow \text{med}_A = a_2 \quad a_1 + a_2 + a_3 = 7$$

$$B: b_1, b_2, b_3 \rightarrow \text{med}_B = b_2 \quad b_1 + b_2 + b_3 = 17$$

$a_2 < b_2?$

↑

$$a_1 = 0, a_2 = 3.5, a_3 = 3.5$$

$$b_1 = 0, b_2 = 0, b_3 = 17$$

(7) 9d935bd8 MULTIPLE CHOICE One answer only

Percent of Residents Who Earned a Bachelor's Degree or Higher

State	Percent of residents
State A	21.9% 2
State B	27.9% 4
State C	25.9% 3
State D	19.5% 1
State E	30.1% 5
State F	36.4% 7
State G	35.5% 6

A survey was given to residents of all 50 states asking if they had earned a bachelor's degree or higher. The results from 7 of the states are given in the table above. The median percent of residents who earned a bachelor's degree or higher for all 50 states was 26.95%. What is the difference between the median percent of residents who earned a bachelor's degree or higher for these 7 states and the median for all 50 states?

- a. 0.95%
- b. 1.22%
- c. 7.45%
- d. 0.05%

$$\text{med}_7 - \text{med}_{50}$$

$$27.9\% - 26.95\%$$

(9) 94237701 SHORT ANSWER Case-Insensitive

For a certain computer game, individuals receive an integer score that ranges from 2 through 10. The table below shows the frequency distribution of the scores of the 9 players in group A and the 11 players in group B.

A: ~~1 1 2 3 0 0 1 0 9~~
B:

Score	Group A	Group B
2	1	0
3	1	0
4	2	0
5	1	4
6	3	2
7	0	0
8	0	2
9	1	1
10	0	2
Total	9	11

1.5

A: 2, 3, 4, 4, 5, 6, 6, 6, 9
B: 5, 5, 5, 5, 6, 6, 8, 8, 9, 10, 10

"middle number"

The median of the scores for group B is how much greater than the median of the scores for group A?

Total of marks: 32