MATC9 Ch4.4 Key Concepts 5 Effect of an Outlier Worked Example

Example: Flavio took a survey to find the hourly rates paid to his classmates at their part-time jobs. The results are shown. Suppose that the 20 is an error, and should be 10. What effect will the change have on the mean, the median, and the mode?

Rate($/h)		
8	9	8
12	11	20
10	8	9
8	9	8

Solution: Since a value is being reduced, the mean will decrease to $9.17/h. The value is not being decreased below the median, resulting in no effect on the median. The change does not make $10/h the most common, resulting in no effect on the mode.

Practice:

1. Indira made several practice cross-country flights while working towards a pilot's licence, and noted the price of aviation fuel at each airport that she visited. The results are shown. She later found that $2.25 was an error, and should have been $1.89. What effect will this have on the mean, the median, and the mode?

Cost($/L)		
1.87	1.86	1.86
1.89	1.88	2.25
1.85	1.87	1.88
1.87	1.86	1.86

2. Lars took a survey to find how far each of his classmates lived from the school, rounded to the nearest kilometre. The results are shown. Later, Lars found that the 12 was an error, and should have been a 2. What effect will this have on the mean, median, and mode of these data?

Distance(km)		
2	3	3
2	3	6
6	5	2
3	1	12

Answers:

1. Mean: decreased to $1.87/L, Median: no effect, Mode: no effect.

2. Mean: decreased to 3.17 km, Median: no effect, Mode: change to 2 km.