LESSON MAKER PRO

Balance Point Moves

Track how one value changes a data set.

GRADE 6 · 6.PS.2

6.PS.2 "The student will represent the mean as a balance point and determine the effect on statistical measures when a data point is added, removed, or changed..."

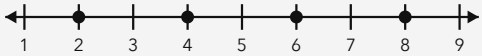
NAME _____ DATE _____

MEANS CAN MOVE

The mean is the value where a data set would balance on a number line. Adding, removing, or changing one value can change the mean, median, mode, or range. A value far from the rest is an outlier and can strongly affect the mean and range.

WORKED EXAMPLE

The four marks on the number line show a data set. Find its mean and show why it is the balance point.



1. Add the marked values: 2 + 4 + 6 + 8 = 20.
2. Divide by 4: 20 / 4 = 5.
3. From 5, the left distances total 3 + 1 = 4 and the right distances total 1 + 3 = 4.

Answer: The mean is 5, the balance point.

PRACTICE 4 problems

1 Data: 1, 3, 5, 7. Change 7 to 11. How does the mean change?

ANSWER _____

2 Data: 1, 3, 3, 5, 9. Remove 9. What is the median now?

ANSWER _____

3 Data: 1, 3, 3, 5, 19. Which value is the outlier? If it is removed, what are the new mean and range?

ANSWER _____

_____

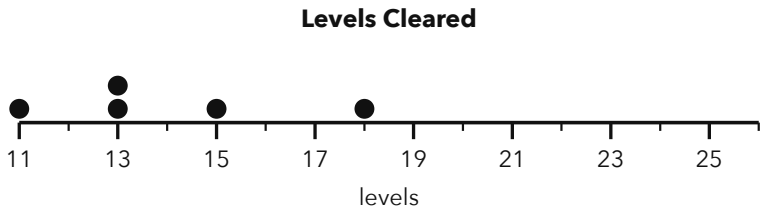
4 Data: 5, 5, 7, 9. Add another 5. State the new median and mode.

ANSWER _____

_____

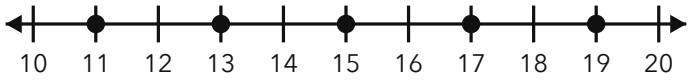
APPLY IT Show your work

1 A player records levels cleared in five game sessions. The dot plot shows the results. After a sixth session with 26 levels, what is the new mean? By how much did the mean change?



ANSWER _____

2 A student times five song clips. The marks on the number line show the clip lengths in seconds. If the 19-second clip is removed, what is the new mean? How does it change?



ANSWER _____

CHALLENGE One step up

Data: 5, 7, 9, 11, 13. Change 13 to x so the mean decreases by 2. Find x. Then state how the median and range change.

WORK SPACE AND ANSWER

ANSWER KEY

Balance Point Moves

GRADE 6 · 6.PS.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Data: 1, 3, 5, 7. Change 7 to 11. How does the mean change?	**The mean increases from 4 to 5, so it increases by 1.**
2	Data: 1, 3, 3, 5, 9. Remove 9. What is the median now?	**3**
3	Data: 1, 3, 3, 5, 19. Which value is the outlier? If it is removed, what are the new mean and range?	**Outlier: 19; mean: 3; range: 4**
4	Data: 5, 5, 7, 9. Add another 5. State the new median and mode.	**Median: 5; mode: 5**

PART 2 · APPLY IT

1. **New mean: 16 levels; the mean increases by 2 levels.** The five plotted values total 70, so their mean is 14. Adding 26 makes the total 96 for 6 sessions, and 96 / 6 = 16.
2. **New mean: 14 seconds; the mean decreases by 1 second.** The original mean is 15 seconds. Removing 19 leaves 56 seconds across 4 clips, and 56 / 4 = 14.

CHALLENGE

x = 3; the median decreases from 9 to 7; the range stays 8.

Accept equivalent statements such as “up 1” or “decreased by 1 second.” For the challenge, accept correct work showing that changing 13 to 3 lowers the total by 10.