

INVESTIGATION #5:

THE MEAN

The mean (commonly known as the average) is found by adding together a set of scores and dividing by the number of scores.

For example:

The mean of 8, 9, 7, 8, 5, 0, 4, 2, 6, 8 is

$$\frac{8+9+7+8+5+0+4+2+6+8}{10} = \frac{57}{10} = 5.7$$

1. Find the mean of this set of numbers:
SET A: 7, 8, 4, 3, 9, 0, 2, 5
2. The numbers in SET A are changed into a new set which is given here;
SET B: 70, 80, 40, 30, 90, 0, 20, 50
What was done to the numbers in SET A to get the numbers in SET B?
3. Find the mean of SET B.
4. What difference was there between the mean of SET A and the mean of SET B?
5. SET A is changed once again into a new set of numbers;
SET C: 14, 16, 8, 6, 18, 0, 4, 10
What was done to the numbers in SET A to get the numbers in SET C?
6. Find the mean of SET C.
7. What difference was there between the mean of SET A and the mean of SET C?
8. What would happen to the mean of SET A when the numbers are multiplied by 5?

9. Does this work for any set of numbers?
10. A new set of numbers SET D is made up from SET A ;
SET D: 8, 9, 5, 4, 10, 1, 3, 6
What was done to the numbers in SET A to get the numbers in SET D?
11. Find the mean of SET D.
12. What difference was there between the mean of SET A and the mean of SET D?
13. SET A is changed once again into a new set of numbers;
SET E: 27, 28, 24, 23, 29, 20, 22, 25
What was done to the numbers in SET A to get the numbers in SET E?
14. Find the mean of SET E.
15. What difference was there between the mean of SET A and the mean of SET E?
16. What would happen to the mean of SET A when five is added to each score?
17. Does this work for any set of numbers?
18. Follow a similar method to find what happens to the mean when all the scores are divided by a number.
19. Follow a similar method to find what happens to the mean when a number is subtracted from all the scores.
20. Test to see if the rules you found in questions 8, 16, 18 and 19 always work.

ASSESSMENT TASK

1. Find the mean of this set of numbers:
SET A: 4, 8, 5, 4, 0, 0, 9, 8, 7, 2

2. If each of the scores in SET A was multiplied by 5 what would the mean of the new numbers be?

3. If 7 was added to each of the scores in SET A what would the mean of the new numbers be?

4. Explain the rule you used to do question 3.

5. Find the mean of this set of numbers:
SET B: 34, 67, 45, 89, 45, 0, 67, 23

6. If each of the scores in SET B were halved what would the mean of the new numbers be?

7. If each of the scores in SET B had 15 subtracted from them what would the mean of the new numbers be?

8. SET C has a mean of 12.0. If each score in SET C was divided by 3 what would be the mean of the new numbers?

9. The mean of SET D is equal to m . If the scores in SET D are all multiplied by 4 what would be the mean of the new numbers?

10. Find the mean of SET E given here:
SET E: 4, 7, 9, 2, 3, 1, 2

11. If each score in SET E is **squared** to get a new set of numbers, SET F, what will the mean of SET F be?

SOLUTIONS TO ASSESSMENT TASK

1. Find the mean of this set of numbers:
SET A: 4, 8, 5, 4, 0, 0, 9, 8, 7, 2
Mean = 4.7 (2 marks)
2. If each of the scores in SET A was multiplied by 5 what would the mean of the new numbers be?
Mean = 23.5 (2 marks)
3. If 7 was added to each of the scores in SET A what would the mean of the new numbers be?
Mean = 11.7 (2 marks)
4. Explain the rule you used to do question 3.
Added the constant, 7, to the mean of SET A (2 marks)
5. Find the mean of this set of numbers:
SET B: 34, 67, 45, 89, 45, 0, 67, 23
Mean = 46.25 (2 marks)
6. If each of the scores in SET B were halved what would the mean of the new numbers be?
Mean = 23.125 (2 marks)
7. If each of the scores in SET B had 15 subtracted from them what would the mean of the new numbers be?
Mean = 31.25 (2 marks)
8. SET C has a mean of 12.0. If each score in SET C was divided by 3 what would be the mean of the new numbers?
Mean = 4.0 (3 marks)
9. The mean of SET D is equal to m . If the scores in SET D are all multiplied by 4 what would be the mean of the new numbers?
Mean = $4m$ (3 marks)
10. Find the mean of SET E given here:
SET E: 4, 7, 9, 2, 3, 1, 2
Mean = 4.0 (2 marks)
11. If each score in SET E is **squared** to get a new set of numbers, SET F, what will the mean of SET F be?
Mean = 23.43 (3 marks)

TOTAL MARKS = 25.