**Mean – Problem Solving**

1. 4 people have the following number of counters: 4, 6, 3, 7. If we were to ​share the counters equally between them, how many would they get ​each? ​

4 + 6 + 3 + 7 = 20

20/4 = 5

1. The temperature for UK on a holiday website is found by taking the mean average from 8 different parts of the country. What should they ​put up if the temperature in the 8 locations are: ​12⁰C 18⁰C 9⁰C 12⁰C 15⁰C 20⁰C 21⁰C 13⁰C ​

12 + 18 + 9 + 12 + 15 + 20 + 21 + 13 = 120

120/8 = 15⁰C

1. 6 friends are going on holiday and it works out to be £120 each. 1 of them is the birthday boy so his friends decide to cover his cost. How much do all 5 friends need to pay each now?

Total cost: £120 x 6 = £720

Each need to pay £720/5 = £144

1. ​Tickets to the cinema cost £6 each. 5 Friends go and they have the ​following amounts of money each; ​£3 £8 £6 £4 £3 ​ Do they have enough money between them to go to the cinema? ​ ​(Show your working)

3 + 8 + 6 + 4 + 3 = £24

£24/5 = £4.80

Therefore, they do not have enough money

1. The arithmetic mean of a list of 6 numbers is 20. If we remove one of the numbers, the average of the remaining numbers is 15. What is the number that was removed?

6x = 120

5x = 75

120 – 75 = 45 so 45 was the number that was removed

1. The mean weight of a group of seven boys is 56 kg. The individual weights (in kg) of six of them are 52, 57, 55, 60, 59 and 55. Find the weight of the seventh boy.

Mean weight of 7 boys = 56 kg.

Total weight of 7 boys = (56 × 7) kg = 392 kg.

Total weight of 6 boys = (52 + 57 + 55 + 60 + 59 + 55) kg

= 338 kg.

Weight of the 7th boy = (total weight of 7 boys) - (total weight of 6 boys)

= (392 - 338) kg= 54 kg. Hence, the weight of the seventh boy is 54 kg.

1. A cricketer has a mean score of 58 runs in nine innings. Find out how many runs are to be scored by him in the tenth innings to raise the mean score to 61.

Mean score of 9 innings = 58 runs.

Total score of 9 innings = (58 x 9) runs = 522 runs.

Required mean score of 10 innings = 61 runs.

Required total score of 10 innings = (61 x 10) runs = 610 runs.

Number of runs to be scored in the 10th innings

= (total score of 10 innings) - (total score of 9 innings)

= (610 -522) = 88.

Hence, the number of runs to be scored in the 10th innings = 88

1. The mean of five numbers is 28. If one of the numbers is excluded, the mean gets reduced by 2. Find the excluded number.

Mean of 5 numbers = 28.

Sum of these 5 numbers = (28 x 5) = 140.

Mean of the remaining 4 numbers = (28 - 2) =26.

Sum of these remaining 4 numbers = (26 × 4) = 104.

Excluded number

= (sum of the given 5 numbers) - (sum of the remaining 4 numbers)

= (140 - 104)

= 36.   
Hence, the excluded number is 36

1. The mean weight of a class of 35 students is 45 kg. If the weight of the teacher be included, the mean weight increases by 500 g. Find the weight of the teacher.

Mean weight of 35 students = 45 kg.

Total weight of 35 students = (45 × 35) kg = 1575 kg.

Mean weight of 35 students and the teacher (45 + 0.5) kg = 45.5 kg.

Total weight of 35 students and the teacher = (45.5 × 36) kg = 1638 kg.

Weight of the teacher = (1638 - 1575) kg = 63 kg.

Hence, the weight of the teacher is 63 kg.

1. The average height of 30 boys was calculated to be 150 cm. It was detected later that one value of 165 cm was wrongly copied as 135 cm for the computation of the mean. Find the correct mean.

Calculated average height of 30 boys = 150 cm.

Incorrect sum of the heights of 30 boys

= (150 × 30)cm

= 4500 cm.

Correct sum of the heights of 30 boys

= (incorrect sum) - (wrongly copied item) + (actual item)

= (4500 - 135 + 165) cm

= 4530 cm.

Correct mean = correct sum/number of boys

= (4530/30) cm

= 151 cm.

Hence, the correct mean height is 151 cm.

1. The mean of 16 items was found to be 30. On rechecking, it was found that two items were wrongly taken as 22 and 18 instead of 32 and 28 respectively. Find the correct mean.

Calculated mean of 16 items = 30.

Incorrect sum of these 16 items = (30 × 16) = 480.

Correct sum of these 16 items

= (incorrect sum) - (sum of incorrect items) + (sum of actual items)

= [480 - (22 + 18) + (32 + 28)]

= 500.

Therefore, correct mean = 500/16 = 31.25.

Hence, the correct mean is 31.25.

1. Timothy's average score on the first 4 tests was 76. On the next 5 tests his average score was 85. What was his average score on all 9 tests?

4x = 304

5x = 435

304 + 425 = 729

729/9 = 81

The average score over all 9 tests was 81.

1. Tracy mowed lawns for 2 hours and earned $7.40 per hour. Then she washed windows for 3 hours and earned $6.50 per hour. What were Tracy's average earnings per hour for all 5 hours?

2x7.40 = 14.80

3x6.50 = 19.50

14.80+19.50 = 34.30

34.30/5 = $6.86

1. After taking 3 quizzes, your average is 72 out of 100. What must your average be on the next two quizzes to increase your overall average to 77?

3x72 = 216

5x77 = 385

385 – 216 = 169

169/2 = 84.5

Hence, average score on the next two quizzes must be 84.5 to increase your overall average to 77.

1. If the arithmetic mean of 8,11,25,and p is 15, find 8 + 11 + 25 + p and then find p.

P + 44 = 15x 5

P + 44 = 75

P = 31

1. A class of 25 students took a science test. 10 students had mean score of 80. The other students had an average score of 60. What is the average score of the whole class?

10x80 = 800

15x60 = 900

800+900 = 1700

1700/25 = 68

The mean score of the whole class was 68.

1. Fifteen accounting majors have an average grade of 90. Seven marketing majors averaged 85, and ten finance majors averaged 93. What is the weighted mean for the 32 students?

(15x90)+(7x85)+(10x93) = 1350 + 595 + 930 = 2875

2875/32 = 89.84375

**Major Extension**

1. Mr. Myones drives 3 hours at an average speed of 40 miles per hour. Then he drives 2 hours at a speed of 35 miles per hour. What is his average speed for the whole trip?

2. Miss Holton drives 4 hours at an average speed of 30 miles per hour. Then she drives 2 hours at a speed of 45 miles per hour. What is her average speed for the whole trip?

3. A family took 2 hours to drive from City A to City B at a speed of 55 miles per hour. On the way home they took 3 hours at a speed of 40 miles per hour. What was their average speed for the whole trip?

4. John drove for 3 hours at a rate of 50 miles per hour and for 2 hours at 60 miles per hour. What was his average speed for the whole journey?

(3x50) + (2x60) = 150 + 120 = 270

270/5 = 54