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1987 Q16

16. Joyce made 12 of her first 30 shots in the first three games of this basketball season, so her seasonal shooting average was 40%. In her next game, she took 10 shots and raised her seasonal shooting average to 50%. How many of these 10 shots did she make?

A) 2 B) 3 C) 5 D) 6 E) 8

16. E In order to have a seasonal shooting average of 50% when having attempted 30 + 10 = 40 shots, Joyce must have made 20 of them. Thus she made 8 of her 10 shots in the next game.

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1985 Q17

17. If your average score on your first six mathematics tests was 84 and your average score on your first seven mathematics tests was 85, then your score on the seventh test was

A) 86 B) 88 C) 90 D) 91 E) 92

17. (D) To get an average of 85 on 7 tests, you needed a total of $7 \times 85 = 595$ points. After 6 tests, you had a total of $6 \times 84 = 504$ points. Thus you needed $595 - 504 = 91$ points on the seventh test.

OR

If n was your score on the seventh test, then $\frac{6(84) + n}{7} = 85$ so $n = 91$.

OR

To raise your average by one point, you needed seven additional points on the seventh test, so your score was $84 + 7 = 91$.

1989 Q17

17. The number N is between 9 and 17. The average of 6, 10, and N could be

A) 8 B) 10 C) 12 D) 14 E) 16

17. B Since N is between 9 and 17, the average $\frac{6+10+N}{3}$ must lie between $\frac{6+10+9}{3} = 8\frac{1}{3}$ and $\frac{6+10+17}{3} = 11$. Only 10 lies in this range.

OR

The average of $6 = 10 - 4$, 10, and $14 = 10 + 4$ is clearly 10. Since $9 < 14 < 17$, a possible average is 10. Since the question has only one answer, it must be 10.

1988 Q18

18. The average weight of 6 boys is 150 pounds and the average weight of 4 girls is 120 pounds. The average weight of the 10 children is

A) 135 pounds B) 137 pounds C) 138 pounds

D) 140 pounds E) 141 pounds

18. C The total weight of the ten children is $6(150) + 4(120) = 1380$, so the average weight is $\frac{1380}{10}$ or 138 pounds.

OR

The average weight of 4 boys and 4 girls is 135 pounds. The other two boys would raise this average by $\frac{30}{10}$ or 3 pounds.

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1991 Q19

19. The average (arithmetic mean) of 10 different positive whole numbers is 10. The largest possible value of any of these numbers is

(A) 10 **(B)** 50 **(C)** 55 **(D)** 90 **(E)** 91

19. **(C)** Since the mean is 10, it follows that the sum of the numbers is $10 \times 10 = 100$. Taking the smallest possible values for the 9 smaller numbers would give the largest possible value of the tenth number. Thus, the largest possible number is $100 - (1+2+3+4+5+6+7+8+9) = 100 - 45 = 55$.

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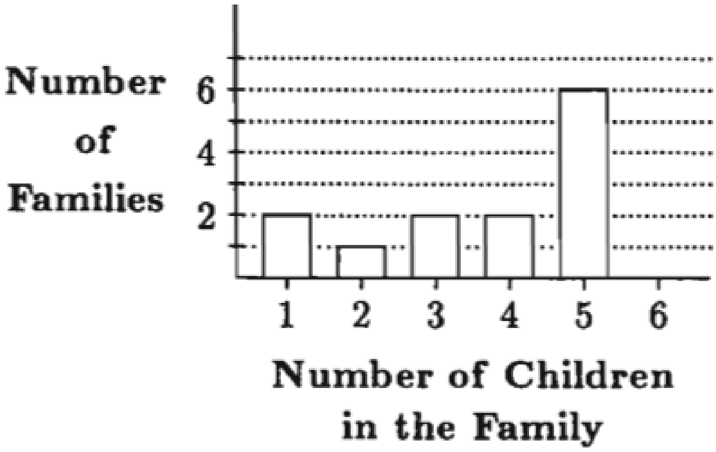
1995 Q19

19. The graph shows the distribution of the number of children in the families of the students in Ms. Jordan's English class. The median number of children in the family for this distribution is



(A) 1 (B) 2 (C) 3
(D) 4 (E) 5

19. **(D)** Putting the number of children in each family in order from least to greatest yields

$$1, 1, 2, 3, 3, 4, \boxed{4}, 5, 5, 5, 5, 5, 5.$$

The median is the middle, or 7^{th} value, which is 4.

OR

The graph shows 2 families with 1 child, 1 with 2, 2 with 3, 2 with 4 and 6 with 5. Since there are $2+1+2+2+6=13$ families under consideration, the middle entry is the 7^{th} entry, which is a family with 4 children.

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1990 Q20

20. The annual incomes of 1,000 families range from \$8200 to \$98,000. In error, the largest income was entered on the computer as \$980,000. The difference between the mean of the incorrect data and the mean of the actual data is

A) \$882 B) \$980 C) \$1078 D) \$482,000 E) \$882,000

20. A The difference between the incorrect sum and the actual sum is \$980,000 – \$98,000 = \$882,000. Since this difference is equally shared by all 1000 families, the difference between the means is $\frac{\$882000}{1000} = \$882$.