10

STATS, MEAN MEDIAN MODE

2010A

1. **Answer (D):** The average of the five values is

$$\frac{6 + 0.5 + 1 + 2.5 + 10}{5} = \frac{20}{5} = 4.$$

2001

1. **(E)** The middle number in the 9-number list is $n+6$, which is given as 10. Thus $n = 4$. Add the terms together to get $9n + 63 = 9 \cdot 4 + 63 = 99$. Thus the mean is $99/9 = 11$.

2011B

2. **Answer (E):** The sum of her first 5 test scores is 385, yielding an average of 77. To raise her average to 80, her 6th test score must be the difference between $6 \cdot 80 = 480$ and 385, which is 95.

2002B

3. **(A)** The number M is equal to

$$\frac{1}{9}(9+99+999+\ldots+999{,}999{,}999) = 1+11+111+\ldots+111{,}111{,}111 = 123{,}456{,}789.$$

The number M does not contain the digit 0.

2011B

3. **Answer (A):** The smallest possible width for the rectangle is $2 - 0.5 = 1.5$ inches. Similarly the smallest possible length is 2.5 inches. Hence the minimum area is $(1.5)(2.5) = 3.75$ square inches.

2013B

3. **Answer (C):** The difference between the high and low temperatures was 16 degrees, so the difference between each of these and the average temperature was 8 degrees. The low temperature was 8 degrees less than the average, so it was $3° - 8° = -5°$.

2011A

5. **Answer (C):** Let N equal the number of fifth graders. Then there are $2N$ fourth graders and $4N$ third graders. The total number of minutes run per day by the students is $4N \cdot 12 + 2N \cdot 15 + N \cdot 10 = 88N$. There are a total of $4N + 2N + N = 7N$ students, so the average number of minutes run by the students per day is $\frac{88N}{7N} = \frac{88}{7}$.

2012A

5. **Answer (B):** The number of female adult cats was 50, and 25 of those were accompanied by an average of 4 kittens each. Thus the total number of kittens was $25 \cdot 4 = 100$, and the total number of cats and kittens was $100 + 100 = 200$.

2014A

5. **Answer (C):** Because over 50% of the students scored 90 or lower, and over 50% of the students scored 90 or higher, the median score is 90. The mean score is

$$\frac{10}{100} \cdot 70 + \frac{35}{100} \cdot 80 + \frac{30}{100} \cdot 90 + \frac{25}{100} \cdot 100 = 87,$$

for a difference of $90 - 87 = 3$.

2015A

5. **Answer (E):** The sum of the 14 test scores was $14 \cdot 80 = 1120$. The sum of all 15 test scores was $15 \cdot 81 = 1215$. Therefore Payton's score was $1215 - 1120 = 95$.

OR

To bring the average up to 81, the total must include 1 more point for each of the 14 students, in addition to 81 points for Payton. Therefore Payton's score was $81 + 14 = 95$.

2016B

5. **Answer (D):** Because the mean is 8, it follows that the sum of the ages of all Amanda's cousins is $8 \cdot 4 = 32$. Because the median age is 5, the sum of the two middle ages is $5 \cdot 2 = 10$. Then the sum of the ages of Amanda's youngest and oldest cousins is $32 - 10 = 22$.