**Statistics Assignment**

1. The die is thrown 1402 times and the frequency of outcome 6 is 190. The probability of getting 6 as the outcome is the ratio of the frequency of outcome 6 to the total number of throws of the die. Hence, the probability of getting 6 as the outcome is:

P(6) = 190/1402 = 0.135 (option b)

1. The total frequency of unit place digits with odd numbers (1, 3, 5, 7, 9) is:

F = 52 + 44 + 20 + 56 + 40 = 212

The probability of getting a digit with an odd unit place digit is the ratio of this frequency to the total number of telephone numbers, which is 400. Hence, the probability is:

P(odd) = 212/400 = 0.53 (option d)

1. The total number of cases is 1100 and the frequency of cases where the tyre lasts more than 9000 miles is 445. The probability of a tyre lasting more than 9000 miles is the ratio of this frequency to the total number of cases. Hence, the probability is:

P(more than 9000 miles) = 445/1100 = 0.405 (rounded to three decimal places) (option b)

1. The total frequency of cases where the tyre lasts between 4000 and 14000 miles (inclusive) is:

F = 260 + 375 + 445 = 1080

The probability of a tyre lasting between 4000 and 14000 miles is the ratio of this frequency to the total number of cases, which is 1100. Hence, the probability is:

P(4000-14000 miles) = 1080/1100 = 0.98 (rounded to two decimal places) (option b)

1. If the card is greater than 4, then there are six possible outcomes: 5, 6, 7, 8, 9, and 0 (since the cards are numbered from 0 to 9). Out of these, three are odd (5, 7, and 9). Hence, the conditional probability that the card is odd given that it is greater than 4 is:

P(odd | >4) = 3/6 = 0.5 (option a)

1. If the card is less than 4, then there are three possible outcomes: 1, 2, and 3. Out of these, two are even (2 and 4). Hence, the conditional probability that the card is even given that it is less than 4 is:

P(even | <4) = 2/3 = 0.67 (rounded to two decimal places) (option b)

1. There are 6 × 6 = 36 possible outcomes when two dice are thrown, each with equal probability. Out of these, there are six outcomes where the sum is 7 and the number 6 appears at least once: (1, 6), (2, 5), (3, 4), (4, 3), (5, 2), and (6, 1). Hence, the conditional probability that the number 6 has appeared at least once given that the sum is 7 is:

P(6 | sum = 7) = 6/36 = 1/6

The probability that the sum is 7 is the sum of the probabilities of the outcomes (1, 6), (2, 5), (3, 4), (4,3), (5, 2), and (6, 1), which is:

P(sum = 7) = P(1, 6) + P(2, 5) + P(3, 4) + P(4, 3) + P(5, 2) + P(6, 1) = 6/36 = 1/6

Therefore, the probability of the number 6 appearing at least once given that the sum is 7 is the same as the probability of getting a sum of 7, which is 1/6 (option a).