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| <p>1. The students' scores on a standardized test with a normal distribution have a mean of 500 and a standard deviation of 40. What percent of the students scored between 420 and 580?</p> <p>(1) 47.5% (3) 95%</p> <p>(2) 68% (4) 99.5%</p> | <p>2. On a math test, the distribution of scores is normal, the mean of the scores is 80, and the standard deviation is 3.2. If a student earned an 88, the student's score ranks</p> <p>(1) below the 84th percentile</p> <p>(2) between the 84th percentile and the 97th percentile</p> <p>(3) between the 97th percentile and the 99th percentile</p> <p>(4) above the 99th percentile</p> | <p>1. _____</p> <p>2. _____</p> |
| <p>3. Mrs. Ramírez is a real estate broker. Last month, the sale prices of homes in her area approximated a normal distribution with a mean of \$150,000 and a standard deviation of \$25,000.</p> <p>A house had a sale price of \$175,000. What is the percentile rank of its sale price, to the nearest whole number. Explain what that percentile means.</p> <p>Mrs. Ramírez told a customer that most of the houses sold last month had selling prices between \$125,000 and \$175,000. Explain why she is correct.</p> | | <p>3. _____</p> |
| <p>4. If the mean of a test score is 30 and the standard deviation is 3.7, which score could be expected to occur <i>less than</i> 5% of the time?</p> <p>(1) 35 (3) 25</p> <p>(2) 33.8 (4) 22</p> | <p>5. The weight of 500 elementary school students is normally distributed. The mean weight is 75 pounds. The standard deviation is 4.5. What percentage of the elementary school students weight between 72.75 and 81.75?</p> <p>(1) 38.2% (3) 62.4%</p> <p>(2) 53.2% (4) 68.2%</p> | <p>4. _____</p> <p>5. _____</p> |
| <p>6. The heights of 400 elementary school children are normally distributed. The mean height is 48 inches with a standard deviation of 2.5 inches. What is the best approximation of the number of students who are between 46.75 and 51.75 inches?</p> <p>(1) 250 students (3) 191 students</p> <p>(2) 213 students (4) 153 students</p> | <p>7. The Brite Lites R Us Company manufactures lightbulbs. They advertise that the "average lightbulb" can burn for 1,000 hours. Tests have shown that this is the mean length of time. The times that the lights can burn are normally distributed with a standard deviation of 200 hours. What percent of the bulbs could be expected to last 600 or fewer hours?</p> <p>(1) 0.6 (3) 6.7</p> <p>(2) 2.3 (4) 30.9</p> | <p>6. _____</p> <p>7. _____</p> |

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| 8. Evaluate: $\sum_{n=1}^4 n^{n-1}$ | 9. Evaluate: $\sum_{n=0}^3 {}_5P_n$ |
| 10. What is the third term in the expansion of $(\sin x - \cos y)^5$? | 11. Find, in <i>simplest form</i> , the middle term in the expansion of $(x^2 + \frac{1}{x})^6$. |
| 12. In a family of five children, what is the probability that <i>at most</i> two of the children are boys? (Assume that it is equally likely for a boy or a girl to be born.) | |
| 13. The junior class is planning a two-day fair in April. The weather forecast indicates a 60% chance of rain for each of the two days. (a) Find the probability that it will rain <i>at least</i> one of the two days. (b) Find the probability that it will rain <i>on both</i> days. | |

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