2004 Washington State Math Championship

Unless a particular problem directs otherwise, give an exact answer or one rounded to the nearest thousandth.

Probability and Statistics - Grade 5

1. If you were to draw a single card from a deck of 52 cards, what is the probability of getting a card with a prime number on it? (Answer as a reduced fraction.)

2. What is the probability that a randomly selected two-digit number is divisible by 7?

3. How many different ways can 5 people arrange themselves on a merry-go-round with 6 seats?

4. As Charlie was driving, he hit a bump and his purple fuzzy dice fell off the rearview mirror and landed in the floorboard. What is the probability that the product of the number on the top faces is prime?

5. What is the probability that the die will have rolled a sum of 5 or 6?

6. The Ratio of boys to girls at this math contest is 4:3. If each student has an equal chance of winning, what are the odds that the winner will be a girl?

7. Joe scored the following points in his basketball games: 10, 8, 16, 12, 20, 12, 14, and 30. What is the mean of his mean, median, mode, and range?

8. According to the great Martin Luther King Jr., "The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy." If you randomly select a letter from this quote, what's the probability that the letter is a vowel? (Y is not considered a vowel.) Answer in a reduced fraction.

9. John has 5 brothers and 4 sisters, what is the probability that a member selected from his family is a female? (Remember to include his parents.)

10. The probability of it raining in Whatcom County tomorrow is 3/5. The probability of you having homework tomorrow is 2/3. What is the probability of it raining and you having no homework tomorrow?
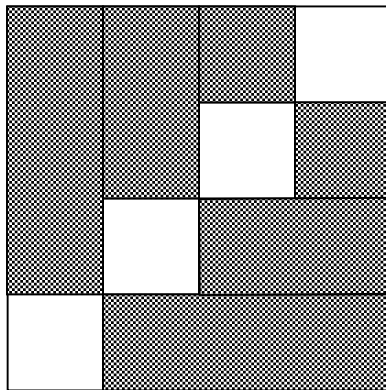
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Probability and Statistics - Grade 6

1. As Charlie was driving, he hit a bump and his purple fuzzy dice fell off the rearview mirror and landed in the floorboard. What is the probability that the product of the number on the top faces is prime?

2. What is the probability that the die will have rolled a sum of 5 or 6?

3. The Ratio of boys to girls at this math contest is 4:3. If each student has an equal chance of winning, what are the odds that the winner will be a girl?

4. Joe scored the following points in his basketball games: 10, 8, 16, 12, 20, 12, 14, and 30. What is the mean of his mean, median, mode, and range?

5. According to the great Martin Luther King Jr., "The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy." If you randomly select a letter from this quote, what's the probability that the letter is a vowel? (Y is not considered a vowel.) Answer in a reduced fraction.

6. John has 5 brothers and 4 sisters, what is the probability that a member selected from his family is a female? (Remember to include his parents.)

7. The probability of it raining in Whatcom County tomorrow is 3/5. The probability of you having homework tomorrow is 2/3. What is the probability of it raining and you having no homework tomorrow?

8. A bag contains 12 jelly beans (some red and the rest black). If two jelly beans are randomly drawn from the bag, the probability that both are red is 1/11, how many black jelly beans are in the bag?

9. Adam has won a radio contest that includes a chance to win money. A box is filled with $50, $20, $10, and $5 bills. Adam will be blindfolded and allowed to draw bills, one at a time, until he has drawn five bills of the same denomination. What is the largest possible amount that Adam can win?

10. N. Stitches was making a quilt with the below block. Each block is 4 inches by 4 inches in size and is connected so that the quilt is 6 feet by 8 feet. If she drops her needle on the quilt, what is the probability of the needle landing in the shaded region? Assume that the needle lands point down, sticking straight up. Answer as a reduced fraction.

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Probability and Statistics - Grade 7

1. Joe scored the following points in his basketball games: 10, 8, 16, 12, 20, 12, 14, and 30. What is the mean of his mean, median, mode, and range?

2. According to the great Martin Luther King Jr., "The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at times of challenge and controversy." If you randomly select a letter from this quote, what's the probability that the letter is a vowel? (Y is not considered a vowel.) Answer in a reduced fraction.

3. John has 5 brothers and 4 sisters, what is the probability that a member selected from his family is a female? (Remember to include his parents.)

4. The probability of it raining in Whatcom County tomorrow is 3/5. The probability of you having homework tomorrow is 2/3. What is the probability of it raining and you having no homework tomorrow?

5. A bag contains 12 jelly beans (some red and the rest black). If two jelly beans are randomly drawn from the bag, the probability that both are red is 1/11, how many black jelly beans are in the bag?

6. Adam has won a radio contest that includes a chance to win money. A box is filled with $50, $20, $10, and $5 bills. Adam will be blindfolded and allowed to draw bills, one at a time, until he has drawn five bills of the same denomination. What is the largest possible amount that Adam can win?

7. N. Stitches was making a quilt with the below block. Each block is 4 inches by 4 inches in size and is connected so that the quilt is 6 feet by 8 feet. If she drops her needle on the quilt, what is the probability of the needle landing in the shaded region? Assume that the needle lands point down, sticking straight up. Answer as a reduced fraction.
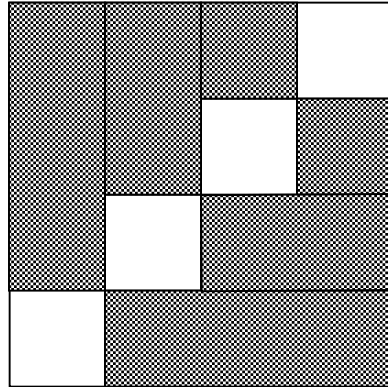
8. "Can you tell me what the temperature has been at noon for the past 5 days?" John asked the meteorologist. "I don't exactly recall," replied the meteorologist, "but I do remember that the temperature was different each day, and the product of the temperatures is 12." Assuming that the temperatures are expressed to the nearest degree, what were the 5 temperatures?

9. On the semester examination in her history class, Sally missed 5 questions on part A. Part B had the same number of questions as part A, but Sally did not do quite as well. She missed 1/3 of the questions on part B. Sally's overall score was 75%. How many questions were there on the test?

10. The operators "+," "-," and "x" are each used once to fill in the blanks randomly. Express as a common fraction the probability that the value of the expression formed is positive.

$$7 \_\_\_\_ 8 \_\_\_\_ 9 \_\_\_\_ 5$$

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Probability and Statistics - Grade 8

1. The probability of it raining in Whatcom County tomorrow is 3/5. The probability of you having homework tomorrow is 2/3. What is the probability of it raining and you having no homework tomorrow?

2. A bag contains 12 jelly beans (some red and the rest black). If two jelly beans are randomly drawn from the bag, the probability that both are red is 1/11, how many black jelly beans are in the bag?

3. Adam has won a radio contest that includes a chance to win money. A box is filled with $50, $20, $10, and $5 bills. Adam will be blindfolded and allowed to draw bills, one at a time, until he has drawn five bills of the same denomination. What is the largest possible amount that Adam can win?

4. N. Stitches was making a quilt with the below block. Each block is 4 inches by 4 inches in size and is connected so that the quilt is 6 feet by 8 feet. If she drops her needle on the quilt, what is the probability of the needle landing in the shaded region? Assume that the needle lands point down, sticking straight up. Answer as a reduced fraction.
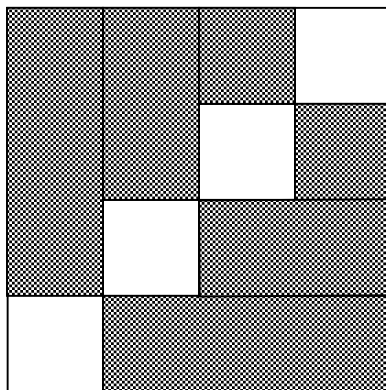
5. "Can you tell me what the temperature has been at noon for the past 5 days?" John asked the meteorologist. "I don't exactly recall," replied the meteorologist, "but I do remember that the temperature was different each day, and the product of the temperatures is 12." Assuming that the temperatures are expressed to the nearest degree, what were the 5 temperatures?

6. On the semester examination in her history class, Sally missed 5 questions on part A. Part B had the same number of questions as part A, but Sally did not do quite as well. She missed 1/3 of the questions on part B. Sally's overall score was 75%. How many questions were there on the test?

7. The operators "+," "-," and "×" are each used once to fill in the blanks randomly. Express as a common fraction the probability that the value of the expression formed is positive.

$$7 \underline{\hspace{1cm}} 8 \underline{\hspace{1cm}} 9 \underline{\hspace{1cm}} 5$$

8. Jeff takes a history test consisting only of true and false questions. If there are 14 questions in the test and he guesses on every question, what is the probability Jeff gets a perfect test? (Answer as a fraction with a numerator of one.)

9. On a typical telephone, the letters a, b, and c appear on the number 2, d, e,and f are on 3, g, h, and i are on 4, and j, k, and l are on 5. If you were pressing the numbers to indicate letters, how many possible combinations of letters could the digits 2,3,4, and 5 represent if you pressed them in that order?

10. James places a card with the letter A in a jar. He then places two cards with the letter B, then three cards with the letter C and so on until he places 26 cards with the letter Z. What is the probability or randomly selecting a card and having it not be a vowel? (Y is not a vowel.) Answer as a reduced fraction.