MATH M118 Practice Test Chapter 4

Give at least 3 decimal places when rounding your answers.

1. If the probability that an event will occur is $\frac{5}{13}$, what are the odds in favor of this event?

2. There are 12 students in a class, 7 girls and 5 boys. Three students are randomly chosen to be on a class committee. What is the probability that the committee will have 1 boy and 2 girls on it?

3. On a single roll of a fair die, what is the probability that the number that appears is less than 4?

(a) 1/6
(b) 2/6
(c) 3/6
(d) 4/6
(e) 5/6

4. There are 9 balls in a bag, 4 red and 5 blue. You reach in and randomly select 3 balls (without replacement). Find the probability of selecting exactly one blue ball.

5. Three different prize winners will be selected from a group of 4 men and 4 women. If the prizes are all the same, what is the probability that all 3 winners will be women?

6. In a swimming event, 2 of the 7 entrants are Australian. If the entrants are randomly assigned to lanes 1 through 7, what is the probability that the two Australians are assigned to the first two lanes?

(a) 1/21
(b) 2/21
(c) 3/21
(d) 4/21
(e) None of these

7. Four marbles are chosen from an urn that contains 11 marbles, 7 yellow and 4 black. Find the probability that at least one marble is black.

8. A quiz consists of 5 multiple choice questions. Each question has 3 choices. A student randomly guesses on all 5 questions. Find the probability that the student gets exactly 2 questions correct.

9. There are 6 Republicans and 4 Democrats. We choose a committee of 2. Find the probability that both committee members will be Republican, given that at least one is Republican.

10. A pair of dice is rolled and the sum is noted. Find the probability that the sum is 10 given that at least one die showed a 4.

(a) 3/36 = 1/12
(b) 2/36 = 1/18
(c) 2/11
(d) 2/3
(e) None of these

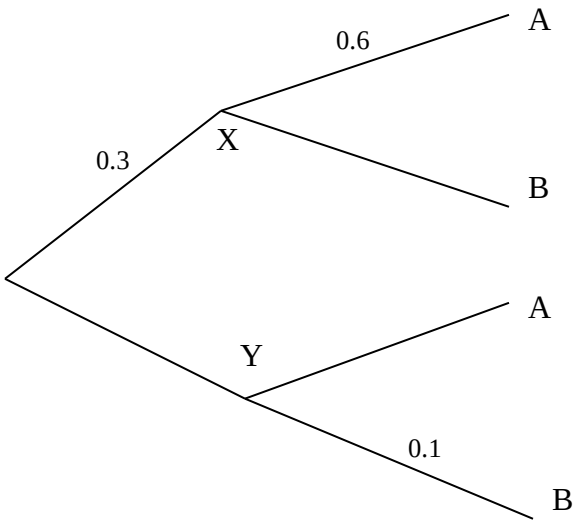
11. A sales person plans to visit Annapolis, Bloomington, Carmel, Detroit and Elksville on a business trip. Since Annapolis is not in the Midwest, he wants to visit that city last. If his boss randomly selects the order of the 5 cities to be visited, what is the probability that Annapolis will be last?

(a) 0.00833
(b) 0.2
(c) 0.25
(d) 0.4
(e) None of these

12. You flip a coin that is not fair; the probability of heads on each flip is 0.7. If the coin shows heads, you draw a marble from Urn H with 1 blue and 4 red marbles. If the coin shows tails, you draw a marble from Urn T with 3 blue and 1 red marble. Find the following probabilities:

(a) The probability of choosing a red marble.
(b) The probability of choosing a blue marble, given that the coin showed heads.
(c) The probability that the coin showed tails, given that the marble was red.

13. Given the tree diagram below, answer the following probability questions.



(a) Find Pr [B | X]

(b) Find Pr [A]

(c) Find Pr [Y | B]

14. Bart and Lisa and 5 other kids are to randomly line up in a row for a picture. Find the probability that Bart and Lisa will be standing next to each other.

15. Let C and D be events with Pr[C]=0.4 and Pr[D]=0.5 and Pr[C U D]=0.6. Find Pr[C|D].

(a) 3/10
(b) 5/6
(c) 4/6
(d) 6/5
(e) 3/5
(f) None of these

16. If Pr [A] =0.4 and Pr [B] =0.5

(a) If A and B are disjoint, find Pr [A ∪ B]
(b) If A and B are independent, find Pr [A ∪ B]

17. If the odds in favor of an event are 7 to 5, what is the probability that the event will **not** occur?

(a) 5/10
(b) 7/10
(c) 5/12
(d) 7/12
(e) None of these

18. Of Americans, 26% are under 18. What are the odds that a person selected at random is under 18?

(a) 26 to 100
(b) 74 to 100
(c) 26 to 74
(d) 74 to 26
(e) None of these

19. An unfair coin with Pr [H] =0.4 is flipped. If "heads", a student is randomly selected from a class of 2 boys and 8 girls. If "tails", a student is selected from a different class of 3 boys and 7 girls.

(a) Find the probability that a boy is selected, given that the coin showed "tails."
(b) Find the probability that the coin showed "tails" given that a girl was selected.

20. A test for diabetes results in a positive test in 95% of the cases where the disease is present and a negative test in 97% of the cases where the disease is absent. If 10% of the population has diabetes, what is the probability that a randomly selected person has diabetes, given that his test is positive?

21. An unfair coin with Pr [heads]=0.7 is flipped five times.

(a) What is the probability of getting exactly three heads in the five flips?
(b) What is the probability of getting four or more heads in five flips?
(c) What is the probability of getting at least one tail?

22. In a local high school, 65% of the students are female. Female students are twice as likely to enroll in the school's choral program as male students. 30% of the female students are enrolled in the school's choral program. If a randomly selected student is enrolled in the choral program, what is the probability that this student is female?

23. Five cards are drawn from a deck of 52. What is the probability that all five cards are from the same suit?

(a) 1/4

(b) $\frac{C(4,1)C(13,5)}{C(52,5)}$

(c) $\frac{P(13,5)}{P(52,5)}$

(d) $\frac{C(13,5)}{C(52,5)}$

(e) None of these

24. A committee of 5 will be chosen from a group of 4 men and 6 women. What is the probability that at least 3 men are chosen?

(a) $\frac{C(4,3)C(6,2)}{C(10,5)}$

(b) $\frac{C(4,3)+C(4,4)}{C(10,5)}$

(c) $\frac{C(4,3)C(7,2)}{C(10,5)}$

(d) $\frac{C(4,3)C(6,2)+C(4,4)C(6,1)}{C(10,5)}$

(e) None of these