Binomial Probability Worksheet II

Given the number of trials and the probability of success, determine the probability indicated:

1. $n = 12,\ p = 0.2,$ find P(2 successes)

2. $n = 10,\ p = 0.4,$ find P(1 success)

3. $n = 20,\ p = 0.5,$ find P(10 successes)

4. $n = 15,\ p = 0.9,$ find P(11 successes)

5. $n = 7,\ p = \frac{1}{3},$ find P(4 successes)

6. $n = 11,\ p = 0.05,$ find P(3 failures)

7. $n = 15,\ p = 0.99,$ find P(1 failure)

8. $n = 6,\ p = 0.35,$ find P(at least 3 successes)

9. $n = 100,\ p = 0.01,$ find P(no more than 3 successes)

10. In a history class, Colin and Diana both write a multiple choice quiz. There are 10 questions. Each question has five possible answers. What is the probability that
    a) Colin will pass the test if he guesses an answer to each question.
    b) Diana will pass the test if she studies so that she has a 75% chance of answering each question correctly.

11. The manufacturing sector contributes 17% of Canada's gross domestic product. A customer orders 50 components from a factory that has a 99% quality production rate (99% of the products are defect-free). Find the probability that:
    a) none of the components in the order are defective
    b) there is at least one defective product in the order.
    c) There are at least two defective products in the order.

12. Approximately 3% of the eggs in a store are cracked. If you buy two dozen eggs, what is the probability that
    a) none of your eggs are cracked
    b) at least one of your eggs is cracked
    c) exactly two of your eggs are cracked

13. A pair of dice is rolled 20 times. What is the probability that a sum of 5 is rolled
    a) exactly 6 times
    b) at least 4 times
    c) at most 5 times

14. The probability the Tim will sink a foul shot is 70%. If Tim attempts 30 foul shots, what is the probability that
    a) he sinks exactly 21 shots
    b) he sinks at least 21 shots
    c) he sinks at most 21 shots
    d) he sinks between 18 and 20 shots, inclusive.

15. A bag contains 4 red marbles and 6 blue marbles. A marble is drawn and then replaced. This is done 50 times. What is the probability that a red marble is drawn:
    a) exactly 15 times
    b) at least 15 times
    c) at most 20 times
    d) between 17 and 25 times, inclusive

ANSWERS:

1. 0.283

2. 0.040

3. 0.176

4. 0.043

5. 0.128

6. 5.526×10^{-9} (Approximately Zero)

7. 0.130

8. 0.353

9. 0.982

10. a) 0.033 b) 0.980

11. a) 0.605 b) 0.395 c) 0.089

12. a) 0.481 b) 0.519 c) 0.127

13. a) 0.014 b) 0.175 c) 0.982

14. a) 0.157 b) 0.589 c) 0.568 d) 0.327

15. a) 0.042 b) 0.946 c) 0.561 d) 0.787