Probability

1. (1 point) What is the probability that a positive integer not exceeding 100 selected at random is divisible by 7?
a. 1/7
b. 7/50
c. 7/100
d. 0.7

2. (1 point) Suppose that 100 people enter a contest and that different winners are selected at random for four prizes. What is the probability that John, Emma, Harry and Adam each win a prize if each has entered the contest?
a. 4 / C(100, 4)
b. 1 / C(100, 4)
c. 1 / C(4, 100)
d. 4 / 100

3. (1 point) You have a dozen eggs in your refrigerator, and three of them are rotten. If you reach in and pull out one at random, what is the probability that you have a rotten egg?
*a. 0.25
b. 1/3
c. 0.5
d. 0.12

4. (1 point) A sequence of 8 bits is randomly generated. What is the probability that at least one of these bits is 0?
a. 1/8
b. 1023/1024
*c. 255/256
d. 8/256

5. (1 point) What is the probability of selecting 4 black cards from a deck of 52 cards if each card is replaced before the next one is selected?
a. 1/13
b. 1/52
c. 1/26
*d. 1/16

6. (1 point) A coin is tossed 6 times. What's the probability of getting 6 tails?
*a. 1/64
b. 1/6
c. 1/8
d. 1/16

7. (1 point) Which of the following is NOT true regarding complements?
a. The complement of an event is all the *other* outcomes.
b. Probability of an event's complement + probability of the event is always equal to 1.
*c. One can never solve a problem by working out the complement first.
d. The event and its complement together make all the possible outcomes.

8. (1 point) In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?
a. 1/10
b. 2/5
*c. 2/7
d. 5/7

9. (1 point) A number X is chosen at random from the numbers -3, -2, -1, 0, 1, 2, 3. What is the probability that $|X| < 2$
a. 5/7
*b. 3/7
c. 1/7
d. 2/7

10. (1 point) Alice has 2 kids and one of them is a girl. What is the probability that the other child is also a girl?
You can assume that there are an equal number of males and females in the world.

a. 0.5

b. 0.25

*c. 0.333

d. 0.75

11. (1 point) A fair six-sided die is rolled twice. What is the probability of getting 2 on the first roll and not getting 4 on the second roll?
a. 1/36
b. 1/18
*c. 5/36
d. 1/6
e. 1/3

12. (1 point) Consider a tetrahedral die and roll it twice. What is the probability that the number on the first roll is greater than the number on the second roll? Note: A tetrahedral die has only four sides (1, 2, 3 and 4)
a. 1/2
*b. 3/8
c. 7/16
d. 9/16

13. (1 point) Why is the probability of winning if one switches doors in the Monty Hall problem 2/3, and not 1/2?
a. Because 1/2 the time Monty actually reveals the grand prize when he opens a door.
b. Because there are three doors left, not two.
*c. Because Monty Hall did not choose a door at random.
d. All of the above.

14. (1 point) Are the odds greater of rolling 4 on two rolls of a six-sided die, or on three rolls?
*a. 2
b. 3
c. They are the same.

15. All 100 students at a school take four courses. If all grades A, B, C, D, and F are equally likely for all students in all classes, how many students will have at least one F on their report card.
a. 66
b. 25
c. 33
*d. 59

16. A round of golf consists of 18 holes. If a golfer takes 89 strokes to complete a round, on how many holes did they take at least 5 strokes?

*a. 1
b. 2
c. 17
d. 18