

1. Suppose we have a loaded die that gives the outcomes 1 through 6 according to the following probability distribution.

Pips Showing	1	2	3	4	5	6
Probability	0.1	0.2	0.3	0.2	0.1	0.1

Note that for this die all outcomes are not equally likely, as they would be if this were a fair die. If this die is rolled 6000 times, the number of times we get a 2 or a 3 should be about

- A. 1000.
- B. 2000.
- C. 3000.

2. I select two cards from a deck of fifty-two cards and observe the color of each (twenty-six cards in the deck are red and twenty-six are black). Which of the following is an appropriate sample space S for the possible outcomes?

- A. $S = \{\text{red, black}\}$
- B. $S = \{(\text{red, red}), (\text{red, black}), (\text{black, red}), (\text{black, black})\}$, where, for example, (red, red) stands for the event "the first card is red and the second card is red"
- C. $S = \{0, 1, 2\}$

3. Suppose there are three cards in a deck: one marked with a 1, one marked with a 2, and one marked with a 5. You draw two cards at random and without replacement from the deck of three cards. The sample space $S = \{(1,2), (1,5), (2,5)\}$ consists of these three equally likely outcomes. Let X be the total of the two cards drawn. Which of the following is the correct set of probabilities for X ?

- A.

X	1	2	5
P	1/3	1/3	1/3

- B.

X	3	6	7
P	1/3	1/3	1/3

- C.

X	3	6	7
P	3/16	6/16	7/16

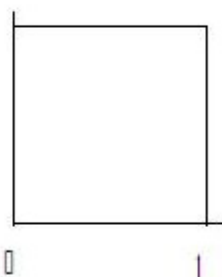
4. Students at University X must be in one of the class ranks—freshman, sophomore, junior, or senior. At University X, 35% of the students are freshman and 30% are sophomores. If a student is selected at random, the probability that he or she is either a junior or a senior is

- A. 35%.
- B. 65%.
- C. 70%.

5. The random variable X denotes the time taken for a computer link to be made between the terminal in an executive's office and the computer at a remote factory site. It is known that X has a normal distribution with mean 15 seconds and standard deviation 3 seconds. $P(X > 20)$ has value (choose the closest option)

- A. 0.048.
- B. 0.952.
- C. 1.67.

6. Let the random variable X be a random number with the uniform density curve given below.



$P(0.7 < X < 1.1)$ has value

- A. 0.30.
- B. 0.40.
- C. 0.70.

7. A psychology instructor asked the 100 females in her class to rate their intelligence on a scale of 1 to 10. Some of the ratings were

Rating	5	6	7	8	9	10
Number	24	8	38	15	4	4

What proportion of the students rated their intelligence less than 5?

- A. 7
- B. 0.07
- C. 0.93

8. Which of the following events are disjoint?

- A. Choose a student at random from a statistics class. Event A is that the student is a junior. Event B is that the student is a senior.
 - B. Choose a student at random from a statistics class. Event A is that the student is a psychology major. Event B is that the student is a statistics major.
 - C. Choose a student at random from a statistics class. Event A is that the student is at least 5'8" tall. Event B is that the student weighs at least 160 pounds.
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9. A refrigerator contains 6 apples, 5 oranges, 10 bananas, 3 pears, 7 peaches, 11 plums, and 2 mangos. Imagine you stick your hand into the refrigerator and pull out a piece of fruit at random. What is the sample space for this process?

- A. $S = \{\text{apple, orange, banana, pear, peach, plum, mango}\}$
 - B. $S = \{6, 5, 10, 3, 7, 11, 2\}$
 - C. $S = \{6 \text{ apples, } 5 \text{ oranges, } 10 \text{ bananas, } 3 \text{ pears, } 7 \text{ peaches, } 11 \text{ plums, } 2 \text{ mangos}\}$
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10. A refrigerator contains 6 apples, 5 oranges, 10 bananas, 3 pears, 7 peaches, 11 plums, and 2 mangos. Imagine you stick your hand into the refrigerator and pull out a piece of fruit at random. What is the chance you don't get an apple?

- A. $38/44$
- B. $6/44$
- C. $10/44$