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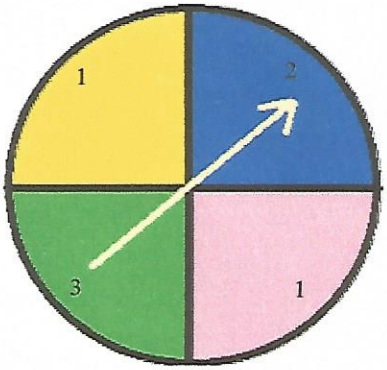
|---|---|
| **Student:** [redacted]<br>**Date:** 4/15/17 | **Instructor:** Audrie Cruz-Sealey<br>**Course:** SPRING 2017: Contemporary Math (T/Th 12-1:20) (TM010-29663) **Assignment:** 11.8 |

1. The pointer shown to the right can land on every number, and the respective probability that the pointer can land on is shown in the table below. Compute the expected value for the number on which the pointer lands.




| Outcome | Probability |
|---|---|
| 1 | $\frac{1}{2}$ |
| 2 | $\frac{1}{4}$ |
| 3 | $\frac{1}{4}$ |

The expected value for the number on which the pointer lands is _____.
(Type an integer or a decimal.)

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2. The table shows claims and their probabilities for an insurance company. Use the table to answer parts a through c.

| Amount of claim (to the nearest $50,000) | Probability |
|---|---|
| $0 | 0.65 |
| $50,000 | 0.26 |
| $100,000 | 0.05 |
| $150,000 | 0.02 |
| $200,000 | 0.01 |
| $250,000 | 0.01 |

**a.** Calculate the expected value.

$_____

**b.** How much should the company charge as an average premium so that it breaks even on its claim costs?

$_____

**c.** How much should the company charge to make a profit of $50 per policy?

$_____

3. An architect is considering bidding for the design of a new museum. The cost of drawing plans and submitting a model is $16,000. The probability of being awarded the bid is 0.2, and anticipated profits are $80,000, resulting in a possible gain of this amount minus the $16,000 cost for plans and a model.

**a.** What is the expected value in this situation?

$_____ (Round to the nearest dollar.)

**b.** Choose the statement below that best describes what this value means.

- ○ **A.** In the long run, the architect would expect to earn this amount.
- ○ **B.** In the long run, the architect would expect to lose this amount.
- ○ **C.** In the long run, the architect would expect to break even.
- ○ **D.** None of the above.

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4. A store specializing in mountain bikes is to open in one of two malls. If the first mall is selected, the store anticipates a yearly profit of $1,200,000 if successful and a yearly loss of $400,000 otherwise. The probability of success is $\frac{1}{2}$. If the second mall is selected, it is estimated that the yearly profit will be $800,000 if successful; otherwise, the annual loss will be $240,000. The probabilty of success at the second mall is $\frac{3}{4}$.

**a.** What is the expected profit for the first mall?

$_____

**b.** What is the expected profit for the second mall?

$_____

**c.** Which mall should be chosen in order to maximize the expected profit?

- ○ The first mall should be chosen in order to maximize profit.
- ○ The second mall should be chosen in order to maximize profit.
- ○ Either of the two malls may be chosen; the profit will be the same.

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5. A game is played using one die. If the die is rolled and shows 3, the player wins $45. If the die shows any number other than 3, the player wins nothing.

**a.** If there is a charge of $9 to play the game, what is the game's expected value?

$_____ (Round to the nearest cent.)

**b.** What does this expected value mean? Choose the correct statement below.

- ○ **A.** This value represents the expected loss over the long run for each game played.
- ○ **B.** This value represents the expected win over the long run for each game played.
- ○ **C.** The player can expect to break even over the long run.

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6. The spinner on a wheel of fortune can land with an equal chance on any one of ten regions. Three regions are red, four are blue, two are yellow, and one is green. A player wins $5 if the spinner stops on red and $5 if it stops on green. The player loses $4 if it stops on blue and $2 if it stops on yellow.

a. What is the expected value?

$_____ (Round to the nearest cent.)

b. What does this value mean if the game is played ten times?

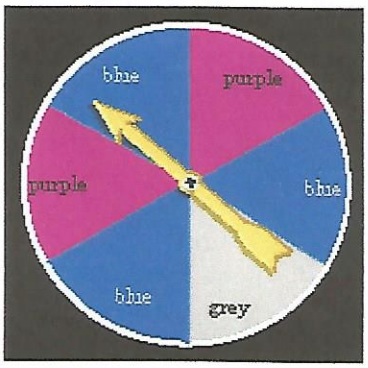
- ○ **A.** Over 10 games, the player can expect to win money.
- ○ **B.** Over 10 games, the player can expect to lose money.
- ○ **C.** Over 10 games, the player can expect to break even.
- ○ **D.** More than 10 games need to be played for the expected value to be a reasonable estimate of expected winnings.

**Student:** [redacted]
**Date:** 4/13/17

**Instructor:** Audrie Cruz-Sealey
**Course:** SPRING 2017: Contemporary Math (T/Th 12-1:20) (TM010-29663)
**Assignment:** 11.7 (Updated)

1. Use the spinner shown. It is equally probable that the pointer will land on any one of the six regions. If the pointer lands on a borderline, spin again. If the pointer is spun twice, find the probability that it will land on

   purple and then grey




Find the probability that the spinner will land on purple and then grey.

_____ (Type an integer or a simplified fraction.)

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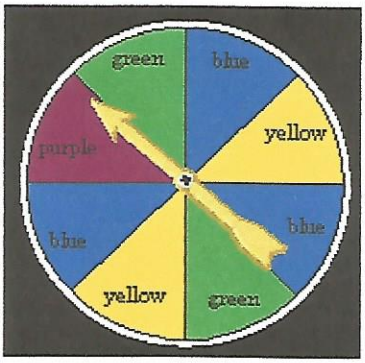
2. Use the spinner shown. It is equally probable that the pointer will land on any one of the eight regions. If the pointer lands on a borderline, spin again. If the pointer is spun three times, find the probability that it will land on

   purple every time




Find the probability that the spinner will land on purple every time.

_____ (Type an integer or a simplified fraction.)

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3. You draw one card from a 52-card deck. Then the card is replaced in the deck and the deck is shuffled, and you draw again. Find the probability of drawing a two the first time and a spade the second time.

The probability of drawing a two the first time and a spade the second time is _____.
(Type an integer or a simplified fraction.)

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4. What is the probability of obtaining seven tails in a row when flipping a coin?

The probability of obtaining seven tails in a row when flipping a coin is _____.
(Type an integer or a simplified fraction.)

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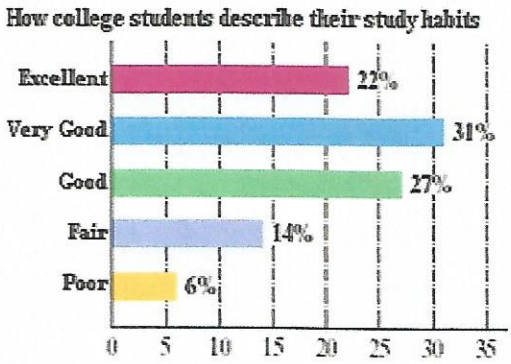
5. The graph shows how students at a local college rate their study skills. Assume that the selections are independent events.




If five students are selected at random, find the probability that all five rate their study habits as good.

_____ (Round to five decimal places as needed.)

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6. Elizabeth brought a box of donuts to share. There are two-dozen (24) donuts in the box, all identical in size, shape, and color. Six are jelly-filled, 7 are lemon-filled, and 11 are custard-filled. You randomly select one donut, eat it, and select another donut. Find the probability of selecting a jelly-filled donut followed by a custard-filled donut.

_____ (Type an integer or a simplified fraction.)

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7. Consider a political discussion group consisting of 10 Democrats, 4 Republicans, and 5 Independents. Suppose that two group members are randomly selected, in succession, to attend a political convention. Find the probability of selecting no Republicans.

_____ (Type an integer or a simplified fraction.)

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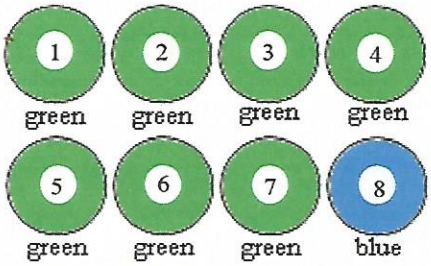
8. The numbered disks shown are placed in a box and one disk is selected at random. Find the probability of selecting a 5, given that a green disk is selected.




Find the probability of selecting a 5, given that a green disk is selected.

_____ (Type an integer or a simplified fraction.)

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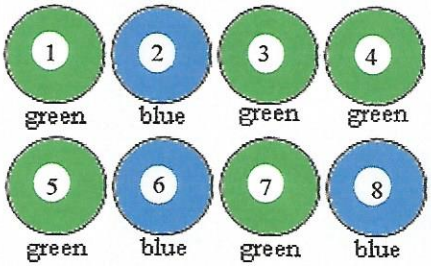
9. The numbered disks shown are placed in a box and one disk is selected at random. Find the probability of selecting a green disk, given that the number selected is at least 5.




What is the probability of selecting a green disk, given that the number selected is at least 5?

_____ (Type an integer or a simplified fraction.)

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10. If one person is selected from the population described in the table, find the probability that the person is not divorced.

**Marital Status of the U.S. Population, Ages 18 or Older, in Millions**

| | Never Married | Married | Widowed | Divorced | Total |
|---|---|---|---|---|---|
| **Male** | 29.7 | 60.2 | 2.7 | 9.0 | 101.6 |
| **Female** | 22.5 | 62.8 | 10.7 | 13.0 | 109.0 |
| **Total** | 52.2 | 123.0 | 13.4 | 22.0 | 210.6 |

P(not divorced) ≈ _____

(Round to three decimal places as needed.)

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11. If one person is selected from the population described in the table, find the probability that the person is widowed, given that this person is a man.

**Marital Status of the U.S. Population, Ages 18 or Older, in Millions**

| | Never Married | Married | Widowed | Divorced | Total |
|---|---|---|---|---|---|
| **Male** | 28.6 | 62.1 | 2.7 | 9.0 | 102.4 |
| **Female** | 22.5 | 62.8 | 13.0 | 13.0 | 111.3 |
| **Total** | 51.1 | 124.9 | 15.7 | 22.0 | 213.7 |

The probability is approximately _____.

(Round to three decimal places as needed.)