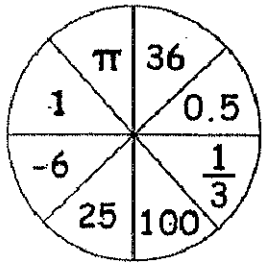


Section I: Theoretical vs. Experimental

Find the theoretical probability using the spinner below.



1. P(integer)

$$\frac{5}{8}$$

2. P(perfect square)

$$\frac{4}{8} = \frac{1}{2}$$

3. P(irrational number)

$$\frac{1}{8}$$

4. P(composite number)

$$\frac{3}{8}$$

5. P(not a whole number)

$$\frac{3}{8}$$

6. P(even, rational)



A survey asked 500 teens what formats of music they listen to in the past two months. The results are: Pandora - 180 and iTunes - 320

7. What is the experimental probability that a teen listened to Pandora in the past two months?

$$\frac{180}{500} = \frac{18}{50} = \frac{9}{25}$$

8. What is the experimental probability that a teen listen to their iTunes library in the past two months?

$$\frac{320}{500} = \frac{32}{50} = \frac{16}{25}$$

9. Two hundred twenty-five 6th graders were asked to name their favorite cafeteria lunch. One hundred thirty-five students named pizza as their favorite. If an additional 80 6th graders were asked, how many would be expected to choose pizza?

$$\frac{135}{225} = \frac{x}{80} \quad (48)$$

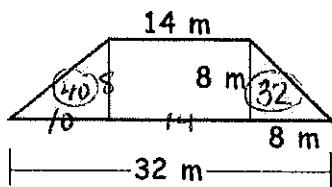
10. In her last 30 serves, Megan served the ball over the net 18 times. Based on this, how many of the next 50 serves should she expect to go over the net?

$$\frac{18}{30} = \frac{x}{50} \quad (30)$$

Section II: Geometric Probability

Find the geometric probability that..

11. A dart thrown will land in the shaded region.

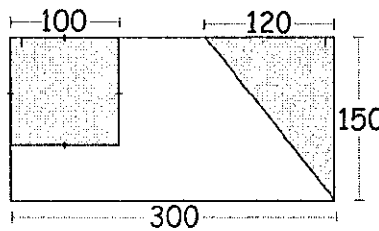


$$\frac{(14+32) \cdot 8}{2} = 184$$

$$40 + 32 = 72 \quad \frac{72}{184}$$

$$(39.1\%)$$

12. An object will land in the white region.



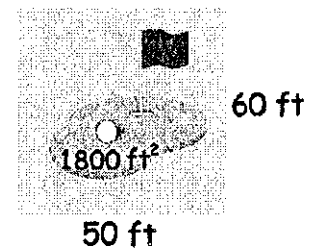
$$150 \times 300 = 45,000$$

$$100 \times 100 = 10,000$$

$$\frac{120 \times 150}{2} = 9,000 \quad \frac{26,000}{45,000}$$

$$(57.7\%)$$

13. A golf ball will land on the green.



$$50 \times 60 = 3,000$$

$$\frac{1,800}{3,000} = 60\%$$

Section III: Modeling Outcomes

<p>14. Make an organized list to determine the number of one-bread and one-beverage outcomes using the breakfast choices listed.</p> <p>*Toast, muffin, bagel *Coffee, milk, juice</p> <p style="text-align: center;">3 × 3</p>	<p>TC mC BC Tm mm Bm TJ mJ BJ</p> <p style="text-align: center;">(9)</p>																												
<p>15. A family of three plays bingo at home every night. Each night, the chance that Denise, Kemp or Ashley will win is 1/3. Draw a tree diagram that shows the possible outcomes for two consecutive nights of play.</p> <p>Is the probability that "Kemp wins both nights" $\frac{1}{9}$ the same as the probability that "Denise wins the first night & Ashley wins the second night"? $\frac{1}{9}$</p> <p style="text-align: center;">yes!</p>	<p style="text-align: center;"> D — D — DD D — K — DK D — A — DA (9) K — D — KD K — K — KK K — A — KA A — D — AD A — K — AK A — A — AA </p>																												
<p>16. Draw an area model to find the sample space:</p> <p>^ spinner with equal sections labeled A, B, and C is spun and a number cube is rolled.</p> <p>a) Find the probability of spinning a B and rolling a 3. $\frac{1}{18}$</p> <p>b) Find the probability of spinning a vowel and rolling an even number. $\frac{3}{18} = \frac{1}{6}$</p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>A</td> <td>A1</td> <td>A2</td> <td>A3</td> <td>A4</td> <td>A5</td> <td>A6</td> </tr> <tr> <td>B</td> <td>B1</td> <td>B2</td> <td>B3</td> <td>B4</td> <td>B5</td> <td>B6</td> </tr> <tr> <td>C</td> <td>C1</td> <td>C2</td> <td>C3</td> <td>C4</td> <td>C5</td> <td>C6</td> </tr> </table> <p style="text-align: right;">(18)</p>		1	2	3	4	5	6	A	A1	A2	A3	A4	A5	A6	B	B1	B2	B3	B4	B5	B6	C	C1	C2	C3	C4	C5	C6
	1	2	3	4	5	6																							
A	A1	A2	A3	A4	A5	A6																							
B	B1	B2	B3	B4	B5	B6																							
C	C1	C2	C3	C4	C5	C6																							

Section IV: Fundamental Counting Principle "FCP"

<p>17. Regina has three necklaces, three pairs of earrings, and two bracelets. How many combinations of the three types of jewelry are possible? $3 \times 3 \times 2 = (18)$</p>	<p>18. Julie is getting ready for school. She can choose from three pairs of jeans and five blouses. How many outfits can Julie create if all of the combinations coordinate? $3 \times 5 = (15)$</p>
<p>19. Bryan has homework in math, science, reading, and art. If he plans on doing math homework first, list the number of ways in which he can complete the four homework assignments.</p> <p style="text-align: center;">(6)</p> <p>$1 \times 3 \times 2 \times 1$</p> <p style="text-align: center;"> m s r a m s a r m r s a m r a s m a r s </p>	<p>20. Five band members play the flute. In how many ways can these members be chosen for the first, second, and third chairs of the flute section? $5 \times 4 \times 3 = (60)$</p>

Section V: Independent vs. Dependent Events

21. If you have a standard deck of cards, what is the probability of picking a diamond, replacing the card & then picking a 2, 5, 9?

$$\frac{13}{52} \times \frac{12}{52} = \frac{156}{2704} = \frac{39}{676}$$

Ind.

$$\frac{3}{52}$$

22. When using a 6-sided number cube, what is the probability of rolling a 3, then not rolling a 3, and then rolling an even number?

$$\frac{1}{6} \times \frac{5}{6} \times \frac{3}{6} = \frac{15}{216} = \frac{5}{72}$$

Ind.

23. Channing has ten cards numbered 1 to 10. What is the probability of picking two even-numbered cards one after another, if the first card picked is replaced?

$$\frac{5}{10} \times \frac{5}{10} = \frac{25}{100} = \frac{1}{4}$$

Ind.

24. A bag contains 4 red, 20 blue, and 6 green candies. Omar picks one at random and keeps it. Then Jade picks a candy. What is the probability that they each select a red candy?

$$\frac{4}{30} \times \frac{3}{29} = \frac{12}{870} = \frac{2}{145}$$

Dep.

25. A basket of candy contains 2 grape, 3 orange, and 5 cherry candies. The candy is not replaced once selected. Find each probability.

a) P(two orange) $\frac{3}{10} \times \frac{2}{9} = \frac{6}{90} = \frac{1}{15}$

b) P(grape then cherry) $\frac{2}{10} \times \frac{5}{9} = \frac{10}{90} = \frac{1}{9}$

c) P(orange then grape) $\frac{3}{10} \times \frac{2}{9} = \frac{6}{90} = \frac{1}{15}$

Dep.

26. Ms. Louis cut up the letters in the word Missouri and placed them in a bag. Suppose you do not replace the first letter before drawing the second. What is the probability of drawing an M and then drawing an I?

$$\frac{1}{8} \times \frac{2}{7} = \frac{2}{56} = \frac{1}{28}$$

Dep.

Section VI: Probability

27. Andi 20 tangram pieces in a bag. Dep.

- 1/5 of the tiles are rectangles, 40% of the tiles are trapezoids, the rest are triangles.

Andi chooses one triangle tile from the bag and then gives the bag to her friend Amy. If Amy takes one tile from the bag without looking, what is the probability that the tile she chooses will be a quadrilateral?



$$\frac{12}{19}$$



28. Marcus placed 8 blue tiles and 12 red tiles in a container. He plans to draw a tile, record its color and replace it in the container before drawing another. If he does this 50 times, how many times should he expect to draw a red tile?

$$\frac{12}{20} = \frac{x}{50} \quad (30)$$

29. Claire tosses a coin and rolls a number cube 100 times. How many times should she expect to have the coin show heads and roll a 1 or a 2?

$$\frac{1}{2} \times \frac{2}{6} = \frac{2}{12}$$

$$\frac{2}{12} = \frac{x}{100}$$

$$(16.6)$$