LESSON 11-4

Practice A

Theoretical Probability

Tina has 3 quarters, 1 dime, and 6 nickels in her pocket. Find the probability of randomly drawing each of the following coins. Write your answer as a fraction, as a decimal, and as a percent.

		Fraction	Decimal	Percent
1.	quarter	$\frac{3}{10}$	0.3	30%
2.	dime	$\frac{1}{10}$	0.1	10%
3.	nickel	$\frac{6}{10} = \frac{3}{5}$	0.6	60%

Find the probability of each event. Write your answer as a fraction, as a decimal, and as a percent. Round to the nearest tenth of a percent.

4. randomly choosing a red card in a game that has 10 red, 10 blue, 10 green, 10 yellow cards, and 10 orange cards

   $\frac{1}{5}$; 0.2; 20%

5. tossing two fair coins and having both land tails up

   $\frac{1}{4}$; 0.25; 25%

6. randomly drawing 1 of the 4 S's from a bag of 100 Scrabble tiles

   $\frac{1}{25}$; 0.04; 4%

7. rolling a number greater than 4 on a fair number cube

   $\frac{1}{3}$; 0.333; 33.3%

A game has 12 blue disks, 10 red disks, and 8 black disks. Find the probability of each event when a disk is chosen at random.

8. red $\frac{1}{3}$
9. black $\frac{4}{15}$
10. blue $\frac{2}{5}$
11. not red or blue $\frac{4}{15}$

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Practice B

Theoretical Probability

Find the probability of each event. Write your answer as a fraction, as a decimal, and as a percent. Round to the nearest tenth of a percent.

1. randomly choosing a white counter from a bag of 12 red counters, 12 white counters, 12 green counters, and 12 blue counters

   $\frac{1}{4}$; 0.25; 25%

2. tossing two fair coins and having one land on tails and one land on heads

   $\frac{1}{2}$; 0.5; 50%

3. rolling a number greater than 1 on a fair number cube

   $\frac{5}{6}$; 0.833; 83.3%

4. randomly drawing an orange disk from a bag of 14 black disks, 4 blue disks and 12 orange disks

   $\frac{2}{5}$; 0.4; 40%

5. randomly drawing 1 of the 6 R's from a bag of 100 Scrabble tiles

   $\frac{3}{50}$; 0.06; 6%

6. spinning a number less than 7 on a fair spinner with 8 equal sections labeled 1-8

   $\frac{3}{4}$; 0.75; 75%

A set of cards has 20 cards with stars, 10 cards with squares, and 15 cards with circles. Find the probability of each event when a card is chosen at random.

7. square $\frac{2}{9}$
8. circle $\frac{1}{3}$
9. star or circle $\frac{7}{9}$
10. not circle or square $\frac{4}{9}$

There are 14 girls and 18 boys in Ms. Wiley's class. Ms. Wiley randomly selects one student to solve a problem. Find the probability of each event.

11. selecting a boy $\frac{9}{16}$
12. selecting a girl $\frac{7}{16}$

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LESSON 11-4

Practice C

Theoretical Probability

Find the probability of each event. Write your answer as a fraction, as a decimal, and as a percent. Round to the nearest tenth of a percent.

1. tossing three fair quarters and having all three of them land on heads

   $\frac{1}{8}$; 0.125; 12.5%

2. randomly choosing a classical CD from a collection of CDs consisting of 35 jazz CDs, 20 classical CDs, 25 rock CDs, and 5 country music CDs

   $\frac{4}{17}$; 0.235; 23.5%

3. randomly choosing a card with an even number from a shuffled deck of 52 cards with four 13-card suits (diamonds, hearts, clubs and spades), each of which has 9 number cards labeled 2-10 and 4 other cards

   $\frac{5}{13}$; 0.385; 38.5%

4. randomly drawing a vowel from a bag of 100 Scrabble® tiles that has 12 E's, 9 I's, 8 O's, 4 U's and 2 Y's.

   $\frac{7}{20}$; 0.35; 35%

There are 15 girls and 9 boys in Anne's yoga class. One of them is randomly selected to demonstrate a yoga position. Find the probability of each event.

5. selecting a boy $\frac{3}{8}$
6. selecting a girl $\frac{5}{8}$

Find the probability of each event when two 1-6 number cubes are rolled.

7. P(total of 5) $\frac{1}{9}$
8. P(total of 10) $\frac{1}{12}$
9. P(total ≥7) $\frac{7}{12}$
10. P(total < 2) 0

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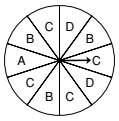
Reteach

Theoretical Probability

The **theoretical probability** of an event is found by comparing the number of ways an event can occur to the total number of equally likely outcomes.

theoretical probability = $\frac{\text{number of ways the event can occur}}{\text{total number of equally likely outcomes}}$

One of the games at a carnival is the Wheel of Letters. Find the probability that the wheel will stop on each letter. Write your answer as a fraction, as a decimal, and as a percent.



1. The spinner has 10 equal sections. Each section is an equally likely outcome.
2. There is 1 section marked A.
3. There are 3 sections marked B.
4. There are 4 sections marked C.
5. There are 2 sections marked D.
6. P(B) = $\frac{3}{10}$ = 0.3 = 30%
7. P(A) = $\frac{1}{10}$ = 0.1 = 10%
8. P(C) = $\frac{4}{10} = \frac{2}{5}$ = 0.4 = 40%
9. P(D) = $\frac{2}{10} = \frac{1}{5}$ = 0.2 = 20%

There are 11 pennies and 9 dimes in a bag. Find the probability of each event. Write your answer as a fraction, as a decimal, and as a percent.

10. Find the probability that a dime will be drawn from the bag.

    P(dime) = $\frac{9}{20}$ = 0.45 = 45%

11. P(penny) = $\frac{11}{20}$ = 0.55 = 55%

There are 6 yellow cards, 4 blue cards, and 10 green cards in a bag. A card is chosen at random. Find the probability of each event.

12. yellow $\frac{3}{10}$
13. blue $\frac{1}{5}$
14. green $\frac{1}{2}$
15. blue or green $\frac{7}{10}$

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