

# Practice

## Probability Distributions

Identify the random variable in each distribution, and classify it as *discrete* or *continuous*. Explain your reasoning.

1. the number of bytes in the memory of a computer
2. the world population
3. the mass of a banana
4. the speed of a car
5. **COINS** A bank contains 3 pennies, 8 nickels, 4 dimes, and 10 quarters. Two coins are selected at random. Find the probability of each selection.
 

a. $P(2 \text{ pennies})$	b. $P(2 \text{ dimes})$	c. $P(1 \text{ nickel and } 1 \text{ dime})$
d. $P(1 \text{ quarter and } 1 \text{ penny})$	e. $P(1 \text{ quarter and } 1 \text{ nickel})$	f. $P(2 \text{ dimes and } 1 \text{ quarter})$

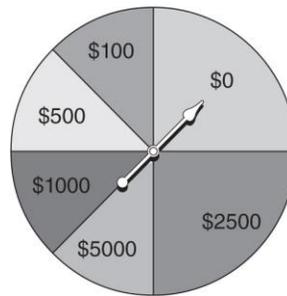
6. **CARDS** Chuck is drawing a card from a special deck that includes the following cards.

<b>Card Value</b>	1	2	3	4	5	6	7
<b>Frequency</b>	6	10	9	4	8	7	6

What is the expected value of the drawn card?

7. **GAMES** A contestant won two spins of the wheel.

- a. Construct a relative-frequency table.



<b>Sum (\$)</b>	0	100	200	500	600	1000	1100	1500	2000	2500
<b>Relative Frequency</b>										
<b>Sum (\$)</b>	2600	3000	3500	5000	5100	5500	6000	7500	10,000	
<b>Relative Frequency</b>										

- b. What is the expected value of two spins?

# Word Problem Practice

## Probability Distributions

**1. DECISION MAKING** Mia is thinking about investing \$10,000 in two different investment funds. The expected rates of return and the corresponding probabilities for each fund are listed below. Compare the two investments using the expected value and standard deviation. Which investment would you advise Mia to choose, and why?

Fund A	Fund B
20% chance of a \$2000 profit	40% chance of a \$1750 profit
20% chance of a \$1200 profit	10% chance of a \$1000 profit
30% chance of a \$200 loss	10% chance of a \$500 loss
30% chance of a \$500 loss	40% chance of an \$800 loss

**4. GAMES** A contestant has won a chance to pick a piece of paper out of a hat. Each piece of paper has a prize value on it. The frequency table at the right shows the number of prize values for the 500 pieces of paper in the hat.

a. Complete the relative-frequency table showing the theoretical probability.

Prize, $X$	Frequency	$P(X)$
\$50	250	
\$100	125	
\$500	60	
\$1000	30	
\$2000	20	
\$5000	12	
\$10,000	2	
\$25,000	1	

b. Graph the theoretical probability distribution.

**2. DICE** Jamal rolls two six-sided dice, one after the other. What is the probability that the second die shows a number larger than the first die?

**3. LANGUAGES** Noah cannot decide whether to study French, German, Italian, Russian, or Chinese. He assigns each language a different number from 0 to 4. He then takes four fair coins and flips them. He decided to take the language corresponding to the number of coins that come up heads. Does Noah's method for choosing a language give each language the same chance of being chosen? Explain.

c. Find the expected value.

d. Find the standard deviation.