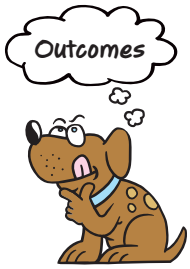
REVIEW: Sample Space

Name _____

Key Concept and Vocabulary

The set of all outcomes of an experiment is called the **sample space**.

The sum of the probabilities of all outcomes in a sample space is 1.



Visual Model

A hat contains 3 tiles with the letters P, R, and O.

Experiment: Draw a tile.

Sample Space: P, R, O

Probabilities: $\frac{1}{3}$, $\frac{1}{3}$, $\frac{1}{3}$

Sum of Probabilities: $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$

Skill Examples

1. You flip a coin. The sample space of the experiment is Heads (H), Tails (T).
2. You roll a number cube. The sample space of the experiment is 1, 2, 3, 4, 5, 6.
3. You flip a coin and roll a number cube. The sample space of the experiment is H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6.

Application Example

4. A referee flips a coin twice. Find the sample space. Show that the sum of the probabilities of all outcomes is 1.

   ∴ The sample space is HH, HT, TH, TT.

   The probability of each outcome is $\frac{1}{4}$.

   $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = 1$

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Find the sample space of the experiment.

5. Drawing a marble

green, yellow, purple, blue, red

6. Rolling a cube with letters of the word *sample*

s, a, m, p, l, e

7. Rolling a number cube twice

1,1; 1,2; 1,3; 1,4; 1,5; 1,6; 2,1; 2,2; 2,3; 2,4; 2,5; 2,6; 3,1; 3,2; 3,3; 3,4; 3,5; 3,6; 4,1; 4,2; 4,3; 4,4; 4,5; 4,6; 5,1; 5,2; 5,3; 5,4; 5,5; 5,6; 6,1; 6,2; 6,3; 6,4; 6,5; 6,6

8. Flipping a coin and rolling the cube in Exercise 6

Hs, Ha, Hm, Hp, Hl, He, Ts, Ta, Tm, Tp, Tl, Te

9. **BILLIARDS** The three balls shown are left on a billiards table. You choose a ball at random, set it aside, and then choose another ball. Find the sample space. Show that the sum of the probabilities of all outcomes is 1.

6,8; 6,10; 8,6; 8,10; 10,6; 10,8;

$\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = 1$