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;

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