Probability

Theoretical probability: what we expect

Name: _____ Class: _____

Write fractions in simplest form: numerator above the line, denominator below.

Theoretical probability is calculated using the possible outcomes, before doing an experiment. When all outcomes are equally likely:

P(event) = number of favourable outcomes / total number of possible outcomes

For a fair six-sided die, P(rolling a 6) = 1/6. Probability ranges from **0** (impossible) to **1** (certain). A probability of **0.5** means an even chance.

1 Complete the probability statements

a. The probability of an impossible event is _____

b. The probability of a certain event is _____

c. An even chance written as a decimal is _____

d. A fair die has how many possible outcomes? _____

2 A raffle: 50 tickets are sold; Marley buys 20

One winning ticket is drawn at random. Complete each answer.

a. P(Marley wins), as a simplified fraction = $\frac{____}{____}$

b. P(Marley wins), as a decimal = _____

3 Chocolates: 8 hard centres and 10 soft centres

Each chocolate is equally likely to be chosen at random.

a. Total number of chocolates = _____

b. P(choosing a hard centre) = $\frac{____}{____}$

c. P(choosing a soft centre) = $\frac{____}{____}$

d. After 1 hard and 1 soft are removed, P(hard) = $\frac{____}{____}$

LIVEWORKSHEETS

Probability

Experimental probability and relative frequency: what we observe

Name: _____ Class: _____

Write fractions in simplest form: numerator above the line, denominator below.

Experimental probability estimates how likely an event is using results from actual trials or observations. It is calculated using **relative frequency**.

Relative frequency = number of times the event occurs / total number of trials

Example: 12 heads in 20 coin tosses gives a relative frequency of 12/20 = **3/5**. This may differ from the theoretical probability of 1/2. With many trials, results tend to get closer to the theoretical probability.

4 Identify the method

Write theoretical or experimental in each box.

a. Based on possible outcomes: _____

b. Based on observed results: _____

5 Spinner results: 20 spins

red, blue, red, red, green, red, green, blue, blue, green
red, red, blue, green, green, blue, red, blue, red, red

Colour	Red	Blue	Green
Frequency			

d. Relative frequency of landing on blue = _____ / _____

e. Based on these results, the most likely colour is _____

6 Favourite meals: 100 people were surveyed

Breakfast: 17 Lunch: 32 Dinner: 40 Snacks: ?

a. Number of people who chose snacks = _____

b. Relative frequency of choosing breakfast = _____ / _____

LIVEWORKSHEETS