

Using a Simulation to Make a Prediction

You can use a simulation or model of an experiment to find the experimental probability of compound events.



Math On the Spot

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EXAMPLE 2



TEKS 7.6.B

At a street intersection, a vehicle is classified either as a *car* or a *truck*, and it can turn *left*, *right*, or go *straight*. About an equal number of cars and trucks go through the intersection and turn in each direction. Use a simulation to find the experimental probability that the next vehicle will be a car that turns right.

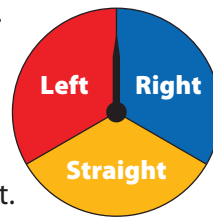
STEP 1

Choose a model.

Use a coin toss to model the two vehicle types.

Let Heads = **C**ar and Tails = **T**ruck

Use a spinner divided into 3 equal sectors to represent the *three* directions as shown.



STEP 2

Find the sample space for the compound event.

There are 6 possible outcomes: **CL**, **CR**, **CS**, **TL**, **TR**, **TS**

STEP 3

Perform the simulation.

A coin was tossed and a spinner spun 50 times.

The results are shown in the table.

	Car	Truck
Left	8	9
Right	6	11
Straight	9	7

STEP 4

Find the experimental probability that a car turns right.

$$P(\text{Car turns right}) = \frac{\text{frequency of compound event}}{\text{total number of trials}}$$

$$= \frac{6}{50} \quad \text{Substitute the values.}$$

$$= \frac{3}{25} \quad \text{Simplify.}$$

Based on the simulation, the experimental probability is $\frac{3}{25}$ that the next vehicle will be a car that turns right.

Reflect

- Make a Prediction** Predict the number of cars that turn right out of 100 vehicles that enter the intersection. Explain your reasoning.

My Notes