

Experimental probability, predictions and review

CURRICULUM ALIGNMENT

DAT.CHN.4a

use probability to make informed decisions and predictions.

DAT.CHN.4b

represent and express probability in different forms.

NUM.FRC.4a

explore (model, compare and convert) the relationships between fractions, decimals and percentages.

INTERACTIVES Dice Roller · display, explore

WHAT THIS LESSON TEACHES

The chance we expect from working it out is favourable outcomes over total outcomes (a six on a fair die is $1/6$).

→ Rolling any one number on a normal die: 1 favourable face out of 6, so $1/6$.

→ Rolling a die 60 times and getting 11 sixes gives an experimental probability of $11/60$.

MODEL THIS ON THE BOARD

PREDICT SIXES IN 60 ROLLS

- 1 Theory says 1 six in every 6 rolls.
- 2 For 60 rolls divide 60 by 6 to get **10**.
- 3 Expect about 10 sixes, but not exactly every time.

DISCUSSION STARTER

REFLECT Did your experiment match your prediction? What could explain any difference?

ANSWER KEY

Scaffold: visual check on the page

Q1: 10

Q2: $4/20$

Q3: about 7

a) Never — It can be close but varies with each set of rolls.

b) Always — Because 60 divided by 6 is 10.

c) Sometimes — It happens often but not guaranteed every single trial.

d) Always — Each roll is random even though the long-run pattern is known.

EXTENSION SHEET · STRETCH ANSWERS

S1: 60%

S2: 0.75

S3: unlikely

S4: even