



MATH WITH MR DJ

GRADE 7 · STATISTICS & PROBABILITY

PROBABILITY FROM EXPERIMENTAL DATA

Today's goal: I can predict the approximate relative frequency given the probability and understand that more trials of a chance experiment will increase the accuracy of the probability estimate.



Tan



Digit



Blaze



Pi



A spinner: 3 red sectors out of 10

1 Spun 20 times. Red comes up 8 times.

TURN & TALK

is the spinner unfair?



Relative frequency = hits ÷ trials

1 $\frac{8}{20} = 0.40$. Theory says 0.30.

2 A gap of 0.10 after 20 spins.



BIG IDEA 2

Now keep spinning

1 100 spins $\rightarrow$ 34 red $\rightarrow$ 0.34. Gap 0.04.

2 500 spins $\rightarrow$ 158 red $\rightarrow$ 0.316. Gap 0.016.

REMEMBER

The gap shrinks. The spinner never changed.



BIG IDEA 3

Predicting a count

- 1 Predicted reds in 200 spins = $\frac{3}{10} \times 200 = 60$.
- 2 Say “about 60”. Exactly 60 is likely, but not expected.



BIG IDEA 4

The spinner has no memory

- 1 99 spins, no red. Is red “due”? No — still $\frac{3}{10}$.
- 2 Results even out by DILUTION over many trials, not by changing odds.

REMEMBER

More trials improve the ESTIMATE. Never the next outcome.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

How many would you predict in 1000 spins?

WHAT A STUDENT DID

Answered 30.

YOUR MISSION

What went wrong? What's the right answer?



How many would you predict in 1000 spins?

1 $\frac{3}{10}$ of 1000 = 300.

Answer: 300 reds



YOUR TURN

Whiteboards up!

Pick your pepper!



🌶️ MILD

20 spins give 6 reds. Find the relative frequency.

#1 on your practice sheet



🌶️🌶️ MEDIUM

How far is that from $\frac{3}{10}$?

#3 on your practice sheet



🌶️🌶️🌶️ SPICY

How does that compare with the theoretical $\frac{3}{10}$?
Does an exact match prove the spinner is fair?

#6 on your practice sheet



How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help



MATH WITH MR DJ

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Step-by-step videos on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

