



MATH WITH MR DJ

GRADE 7 · STATISTICS & PROBABILITY

DRAWING INFERENCES FROM RANDOM SAMPLES

Today's goal: I can use data from a random sample to draw inferences about a population with an unknown characteristic, generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates, generate multiple samples of categorical data of the same size to gauge the variation in estimates, generate multiple samples (or simulated samples) of the same size of numerical data to gauge the variation in estimates and understand that sample statistics are estimates of population statistics but are not the same.



Time



Digit



Blaze



Pi



20 students sampled. 12 own a pet.

- 1 The school has 500 students. How many own pets?

TURN & TALK

how sure are you of your answer?



Scale up the proportion

1 12 out of 20 = 60%.

2 60% of 500 = 300 students.



BIG IDEA 2

Now take four more samples

1 9, 11, 14, 10 — all samples of 20, all taken the same way.

2 Estimates: 225, 275, 350, 250.

REMEMBER

Same method. Estimates 125 students apart.



BIG IDEA 3

That spread is INFORMATION

- 1 It tells you how much a single sample of 20 can wander.
- 2 Without repeating, you'd have a number and no idea how shaky it is.



BIG IDEA 4

Say it honestly

- 1 Not: “280 students own pets.”
- 2 But: “From a sample of 100, we estimate about 280.”

REMEMBER

More data narrows the uncertainty. It never removes it.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

How many percentage points apart are those two samples?

WHAT A STUDENT DID

Answered 5, the difference in counts rather than percentages.

YOUR MISSION

What went wrong? What's the right answer?



How many percentage points apart are those two samples?

1 $70 - 45 = 25.$

Answer: 25 percentage points



Pick your pepper!

**← MILD**

A sample of 20 finds 9 pet owners. What percentage is that?

#1 on your practice sheet

**← ← MEDIUM**

Use the sample of 9 to estimate the number of pet owners in a school of 500.

#3 on your practice sheet

**← ← ← SPICY**

How far apart are those two estimates? What does that tell you about trusting a single sample of 20?

#7 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

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

