

Which shape doesn't belong?

Explain why that shape does not belong with the others.

<http://wodb.ca>

-not a regular polygon (all sides are not equal)

-shaded
-mirrors the black frame


-it's on the point and all the other ones are on a flat side

-the pentagon has 5 sides instead of 4
-this figure is not in the center of it's space

Numeracy Routines that Develop Language

for ESOL and ABE Classrooms

January 22, 2024
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What math words and ideas?

What else?

PIAAC "At or Below Level 1"

At Level 1 an adult can:

- Add, subtract, multiply and divide
- Perform basic one-step mathematical operations with given values or common special representations

Example: calculate how many bottles of soda are in a full box with two levels when only the top level can be seen

- Considered at risk for difficulties with numeracy

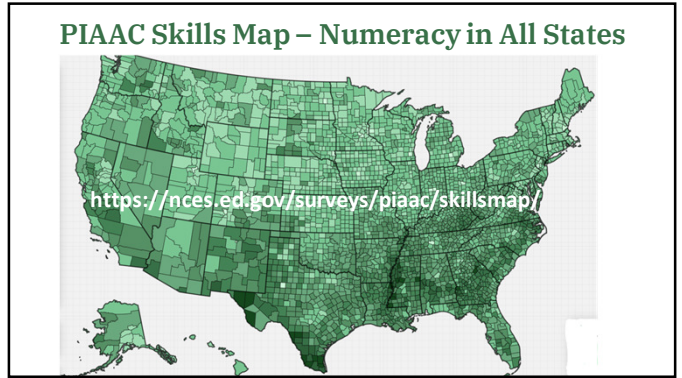
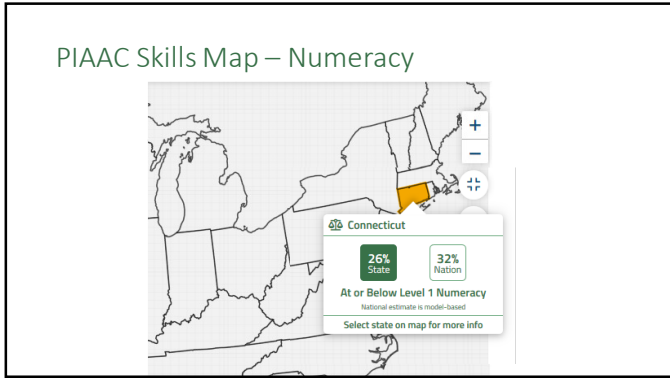
Below Level 1 an adult can:

- Count, sort, and do basic arithmetic operations with simple whole numbers
- May be functionally innumerate

<https://nces.ed.gov/surveys/piaac/skillsmap/>

PIAAC Skills Map – Literacy

Connecticut	17% State	22% Nation
At or Below Level 1 Literacy		
National estimate is model-based		
Select state on map for more info		



Capitalizing on Curiosity

- 1. Asked for predictions.** What percentage of adults in Connecticut do you think will be “At or Below Level 1” in Literacy? ... in Numeracy?
- 2. Asked for analysis.** How does Connecticut compare to the United States as a whole?

When a student asks a question that expresses curiosity:

- Mirror the question (student: “How far is that?” teacher: “How far *is* that?”) -or-
- Ask, “What do you think?”

Never say something a student can say.





What is a Numeracy Routine?

- Regular
- Short
- Oral
- No presumed correct answers

Why Have a Numeracy Routine?

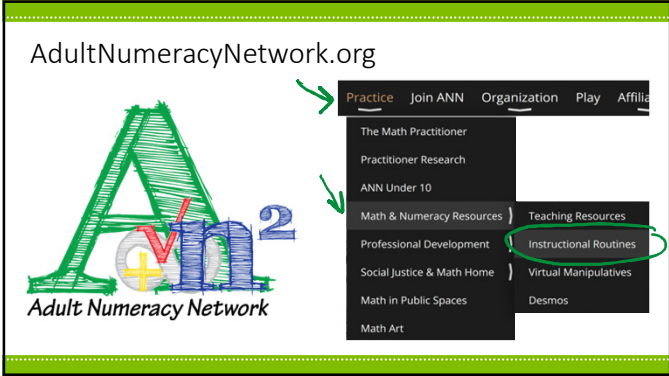
- Predictable learning experience
- Math thinking habits
- Reasoning and explaining
- Sense making
- Build community
- Build number sense
- Lower anxiety about math class

Attend to precision. MP.6

Mathematically proficient students try to **communicate precisely** to others. ... **use clear definitions in discussion with others and in their own reasoning.** ... give carefully formulated explanations to each other.

Construct viable arguments and critique the reasoning of others. MP.3

Mathematically proficient students ... **make conjectures ... justify their conclusions, communicate them to others, and respond to the arguments of others.** ... listen or read the arguments of others, decide whether they make sense, and **ask useful questions to clarify or improve the arguments.**



About how many packets of ketchup will fill the container?



<https://estimation180.com/day-221/>

Visual Element for Making an Estimate



Critical

- Size (height, diameter; length, width, and height) of the two items and how they compare
- Volume of the containers

Not as Critical

- The color of the containers
- The material the containers are made of
- One is open and one is closed (not affecting the volume)
- Shape

About how many packets of ketchup will fill the container?

Give an estimate that's too **low** to be the number of packets.



<https://estimation180.com/day-221/>

Give an estimate that's too **high** to be the number of packets.

About how many packets of ketchup will fill the container?

Give your estimate and how you reached your estimate.



<https://estimation180.com/day-221/>

About how many packets of ketchup will fill the container?

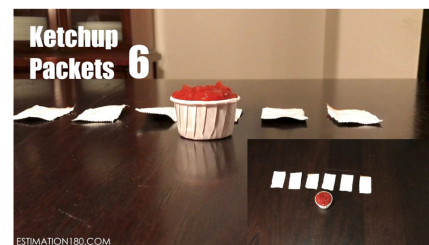


ESTIMATION180.COM



<https://estimation180.com/day-221/>

How many packets of ketchup filled the container?



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Estimation 180

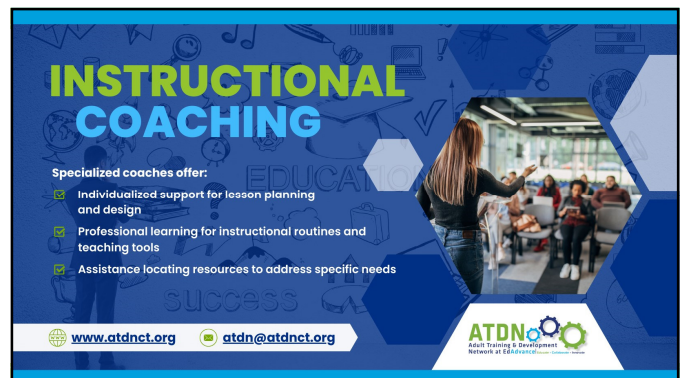
- What do you see?
- What do you know?
- What information do you need to find? How can you find it?
- What is your estimate?
- How did you get there?

What math topics do you choose?

- [Do NOT choose teaching students ways to calculate.]
- Reasoning and logic
- Reasoning with fractions and decimals
- Geometric thinking and spatial awareness
- Proportional reasoning (example: better deal)
- Anything with more than one correct answer

Resources

- <https://illustrativemathematics.blog/2020/07/27/english-learners-and-distance-learning-math-language-routines/>
- WODB.ca
- Estimation180.com
- WouldYouRatherMath.com



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Thanks for being part of this session!



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