

Evergreen Public Schools

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IVE

FOX
NEWS

Junction



PGR
PROCURADURÍA
GENERAL DE
LA REPÚBLICA

**SUBPROCURADURIA
DE INVESTIGACIÓN ESPECIALIZADA
EN DELINCUENCIA ORGANIZADA**

PGR
PROCURADURÍA
GENERAL DE
LA REPÚBLICA

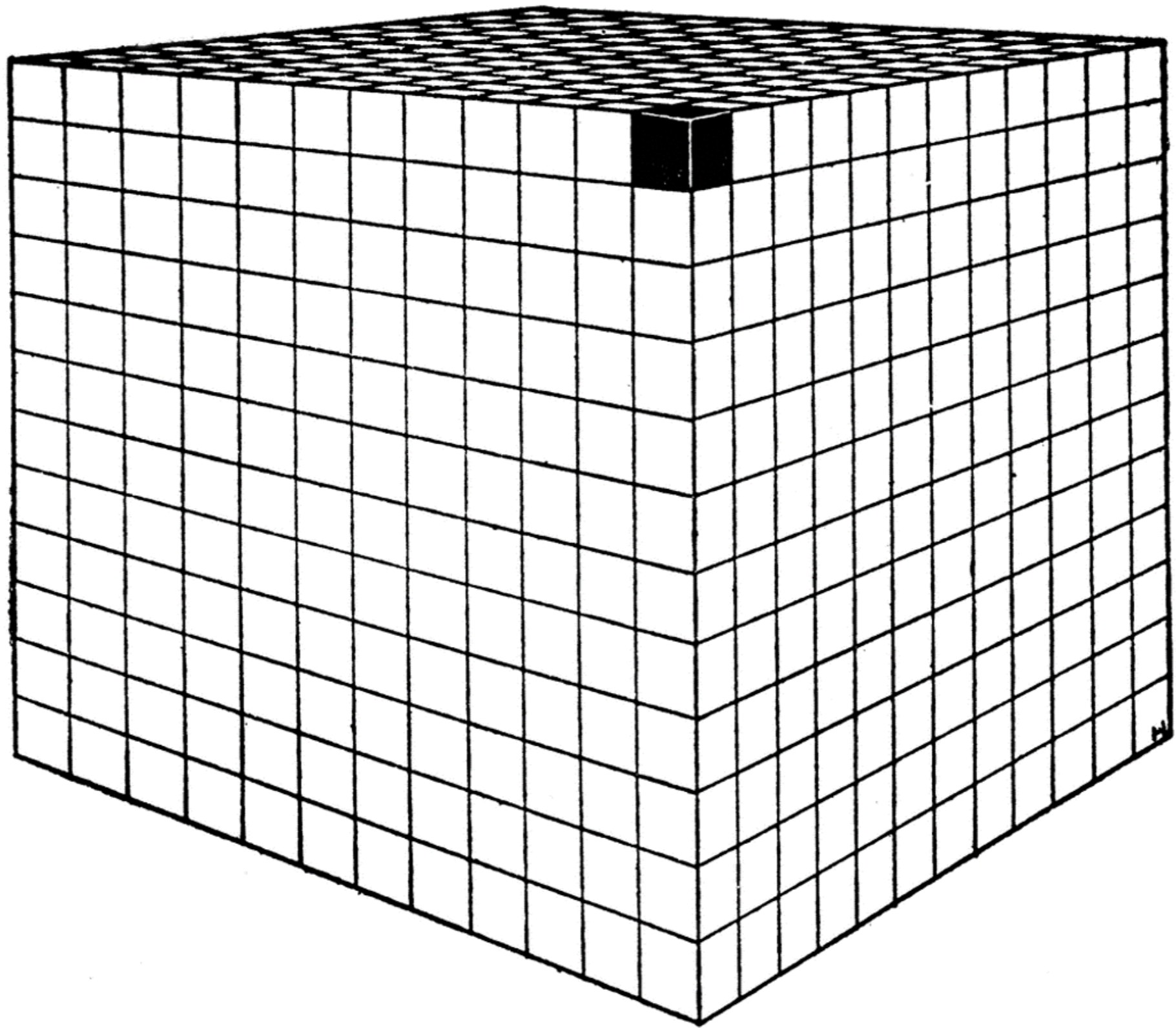




FOX



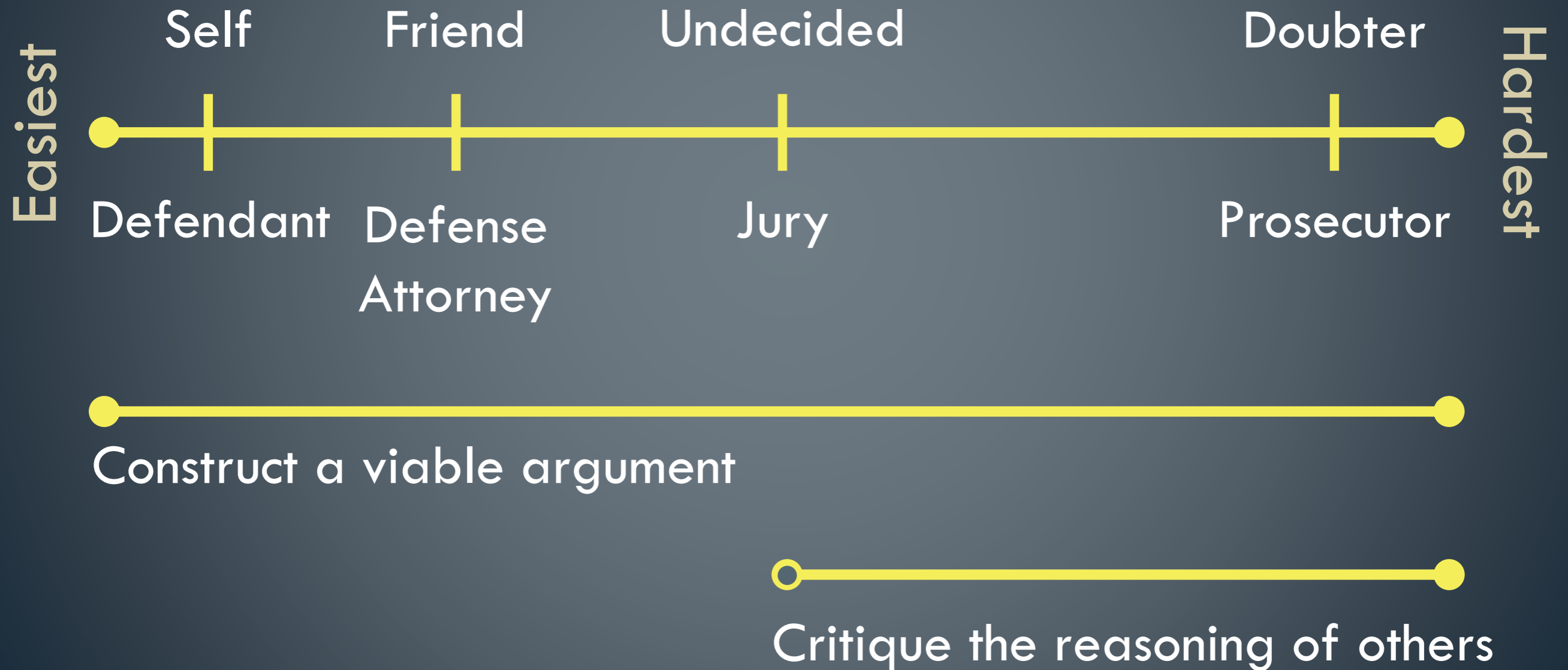
...oyol



Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.

Levels of Convincing



Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The Reality

- Students were uneasy about not having accurate information about the money pile.
- Many students failed to use units.
- Some students' answers were in the low single millions.
- When combined, those two issues made it unclear if their answers represented the quantity of hundred dollar bills or the value of the hundred dollar bills.
- The most challenging part for students was estimating the quantity of bills in a column.

STUDENT WORK

What problem are you trying to figure out?	What guesses do you have?
<p>How much money is this?</p>	<p>1 billion</p>
What do you already know from the problem?	What do you need to know to solve the problem?
<ul style="list-style-type: none">• The money is between \$1.6 million through \$420 billion.• It is illegal money.• Happened at different country.	<ul style="list-style-type: none">• What kind of bills are they?• How much money is in one stack?
What is your conclusion? How did you reach that conclusion?	
<p>My conclusion is \$2,805,000. I got my conclusion because I counted 34 rows of money going sideways and 11 going across. Then I multiplied those 2 and got 374. I then multiplied 374 x 100 and got 37,400. I then took a guess on how much money there was in one money stack (75) and multiplied that by 37,400 and that's how I got \$2,805,000.</p>	

What is your conclusion? How did you reach that conclusion?

My conclusion is \$2,805,000. I got my conclusion because I counted 34 rows of money going sideways and 11 going across. Then I multiplied those 2 and got 374. I then multiplied 374×100 and got 37,400. I then took a guess on how much money there was in one money stack (75) and multiplied that by 37,400 and that is how I got \$2,805,000.

What is your conclusion? How did you reach that conclusion?

My conclusion is that there is about 204 million dollars in currency for the drug bust. I figured it out by figuring out how much is in each stack. There was fifty thousand in each stack. It is 34 stacks wide by 12 stacks length and by 10 stacks high. I multiplied them all and got 204 million.

What is your conclusion? How did you reach that conclusion?

My answer was 34 going from across the room, and 12 going up. So what you do is 34 times 12 and you get 408. Then you multiply 408 by 10 because there was 10 stacks going down and you get 4080.

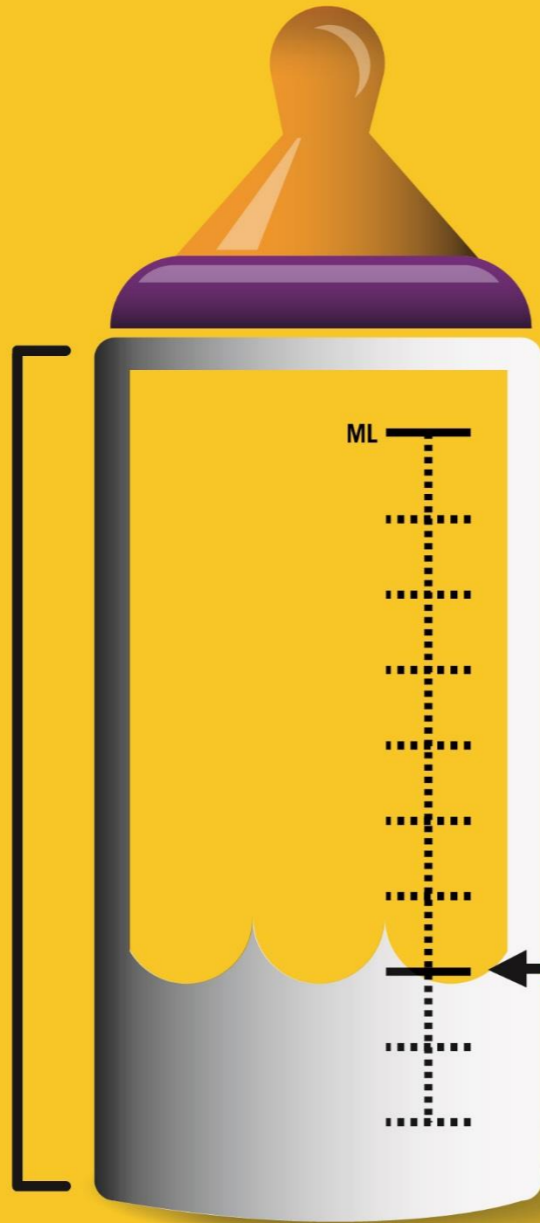
CHOOSE CAR SEAT:
BY AGE & SIZE



THE NUMBER
OF PEOPLE

**WHO
THINK**

THEY HAVE
THEIR CHILD IN
THE RIGHT
SEAT.



THE ONES
**WHO
ACTUALLY
DO.**

KNOW FOR SURE
IF YOUR CHILD IS IN THE RIGHT CAR SEAT.



VISIT SAFERCAR.GOV/THERIGHTSEAT



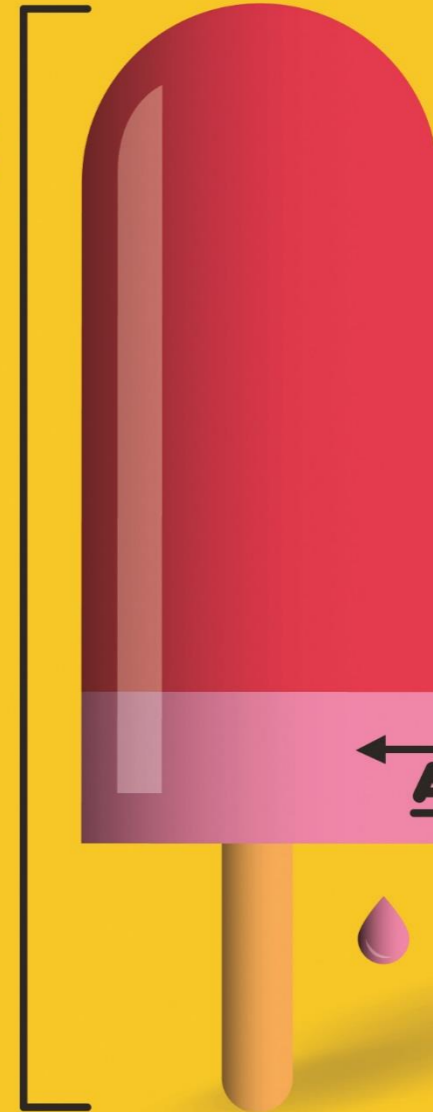
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There are 125
sheep and 5 dogs
in a flock. How old
is the shepherd?

Of the 32 students I interviewed...

- 75% of them gave me numerical responses
- 2 students calculated the answer to be 130 ($125 + 5$)
- 2 students calculated the answer to be 120 ($125 - 5$)
- 12 students calculated the answer to be 25 ($125 \div 5$)
- 0 students calculated the answer to be 625 (125×5)
- 4 students stated that they guessed their answer (90, 5, 42, and 50)
- 4 students tried to divide 125 by 5 but could not correctly implement the procedure

Takeaways

- Making sense of mathematics
- Intellectual autonomy
 - Intellectual autonomy is about being able to think for yourself and not being dependent on others for the direction and control of one's thinking.

What Does the NHTSA Say?

Key Statistics and Consumer Insights:

- Motor vehicle crashes are the leading cause of death for children age 1 through 12 years old.¹

According to a NHTSA study, 3 out of 4 kids are not as secure in the car as they should be because their car seats are not being used correctly.

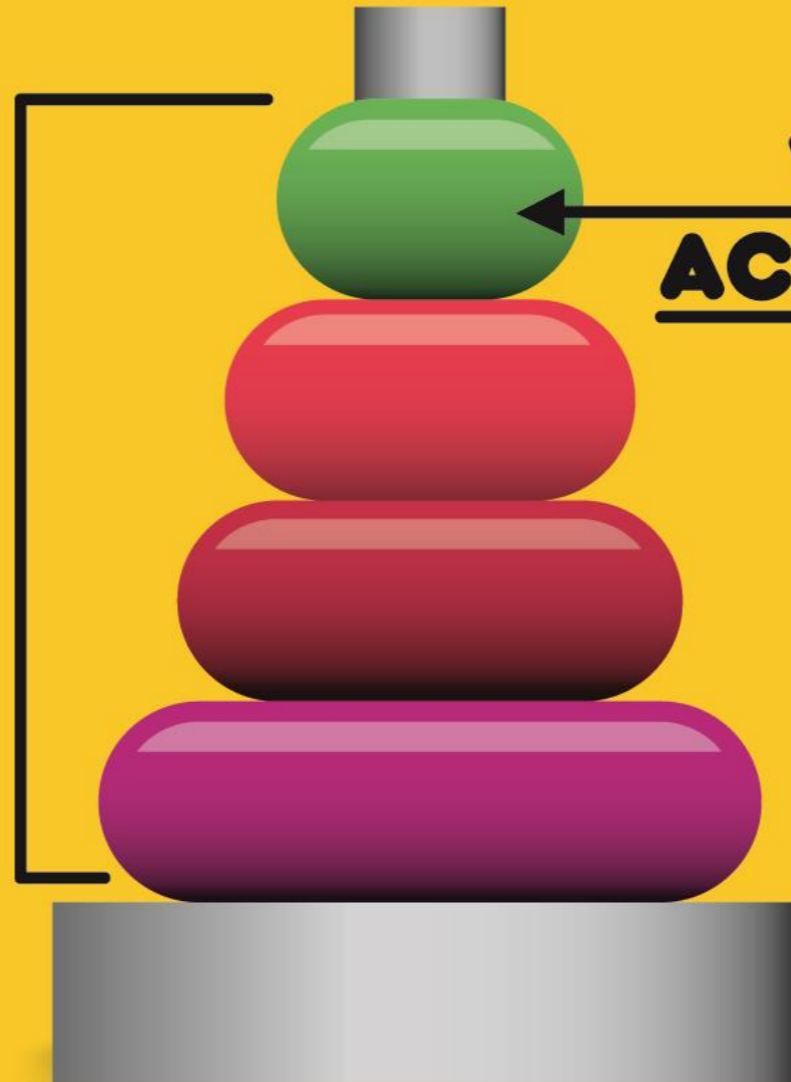
be reduced by about half if the correct child safety seats were always used.

¹ Source: Based on the latest mortality data currently available from the CDC's National Center for Health Statistics.



CHOOSE CAR SEAT:
BY AGE & SIZE

THE NUMBER
OF PEOPLE
**WHO
THINK**
THEY HAVE
THEIR CHILD
IN THE RIGHT
SEAT.



THE ONES
**WHO
ACTUALLY
DO.**

- “because they have their child in the right seat”
- “because their car seats are not being used correctly”

IF YOUR CHILD IS IN THE RIGHT CAR SEAT.



VISIT SAFERCAR.GOV/THERIGHTSEAT



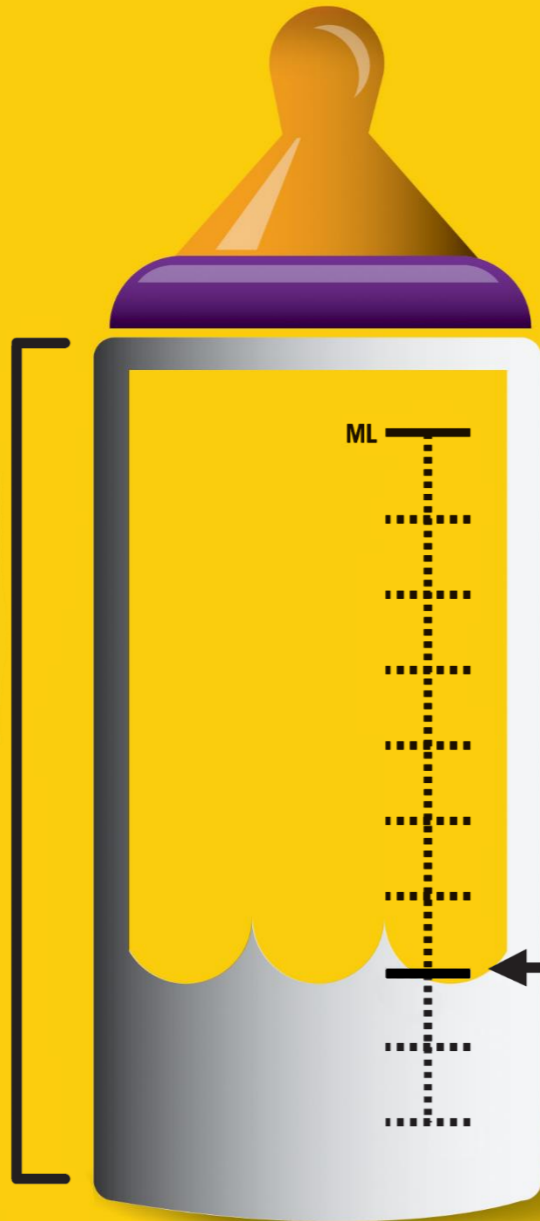
CHOOSE CAR SEAT:
BY AGE & SIZE



THE NUMBER
OF PEOPLE

**WHO
THINK**

THEIR CAR
SEATS ARE
BEING USED
CORRECTLY.



THE ONES
**WHO
ACTUALLY
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KNOW FOR SURE
IF YOUR CHILD IS IN THE RIGHT CAR SEAT.



VISIT SAFERCAR.GOV/THERIGHTSEAT



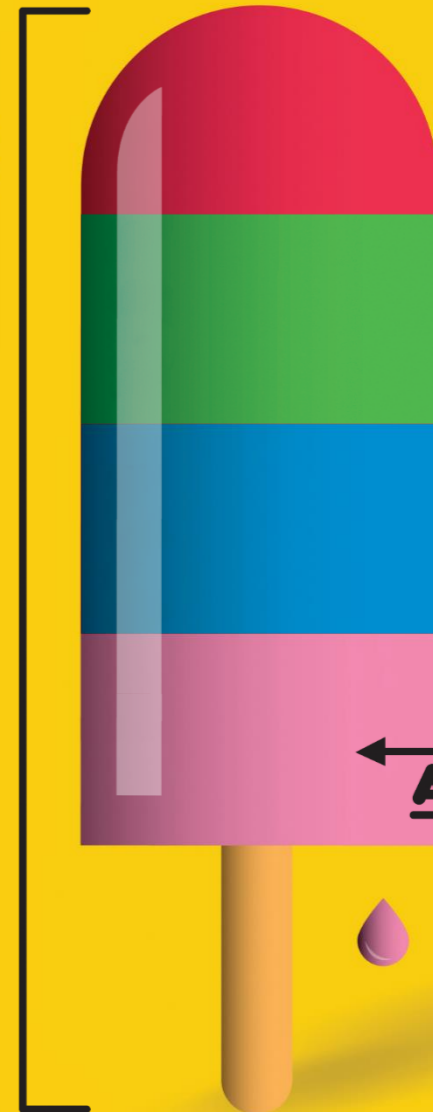
CHOOSE CAR SEAT:
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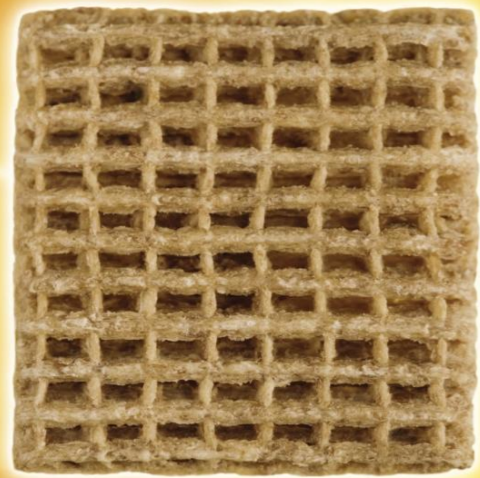
THE ONES
**WHO
ACTUALLY
DO.**

KNOW FOR SURE
IF YOUR CHILD IS IN THE RIGHT CAR SEAT.

VISIT SAFERCAR.GOV/THERIGHTSEAT







OLD
(Boring)

NEW
Diamond
Shreddies

Cereal



NEW
(Exciting!)





SQUARE OR DIAMOND?
Vote for your Favourite at DiamondShreddies.com

Post

Diamond

Shreddies
Combo Pack



Square Diamond

ENLARGED TO SHOW TEXTURE

Made with 100% Whole Grain Wheat

620 g Cereal
SERVING SUGGESTION

COR 114

Limited Edition

Sensible Solution
• Very High Source of Fibre
• Good Source of 8 Essential Nutrients
• Low in Fat

“Kraft Foods saw an immediate 18% increase in baseline sales of Shreddies within the first month alone, and for months thereafter.”



discover something new

Coca-Cola

Coca-Cola

PUSH

- FUZE Tea
- Grape
- Vanilla
- Sprite ZERO
- POWERADE Strawberry
- Minute Maid LEMONADE
- Cherry Vanilla
- Raspberry
- Vanilla
- Raspberry Lime
- Orange
- Vanilla
- Cherry Vanilla
- Raspberry





no caffeine



no caffeine



no caffeine



no caffeine



no caffeine



no caffeine



low/no calories



no caffeine



no caffeine



no caffeine



no caffeine



no caffeine



no caffeine



no caffeine



no caffeine



no caffeine

The main attraction for a busload of Dover fifth-graders was supposed to be the Museum of Fine Arts, but that all changed when they stopped by Kelly's Roast Beef and got a glimpse of their soda-drinking future.

At the entrance of Kelly's sat a sleek **Coca-Cola** Freestyle fountain crafted to resemble an old-fashioned vending machine, but with a twist: a touchscreen computer embedded in the machine gives customers the option of **125 flavors**. You can quench your thirst with a Coke or a Sprite, or try something more exotic — Sprite with Grape or a Hi-C Orange Vanilla.



Complicated
or Complex?



Cookie Monster Cupcakes



Nailed it

method

1. Using an electric mixer, whip the butter until it is pale. This will take at least 5 minutes on high.
2. Gradually add in the icing mixture and vanilla until well combined.
3. With the mixer running, add in food colouring until you get to the Cookie Monster colour. This may be a lot if you are using liquid food colouring or a little if using gel food colouring.
4. Add in the milk and mix until the frosting puffs up.
5. Fill a piping bag with a fluted nozzle and pipe on icing.
6. With the writing icing, place black spots on the marshmallows for pupils.
7. Place on each cupcake.
8. Cut cookies in half and place in 'mouth'.

CUBES

A problem solving strategy

C - Circle the #s

U - underline the ques.

B - box the words

Content and Language Objectives using

Content Objective Example:

SWBAT apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. (MP4)

Language Objective Example:

SWBAT understand and use stated assumptions, definitions, and previously established results in constructing arguments. (MP3)

example:

- In early grades, this might be as simple as writing an addition equation to describe a situation. (MP4)
- In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. (MP4)
- By high school, a student might use geometry to solve a design problem or use a function to describe how one

Contact

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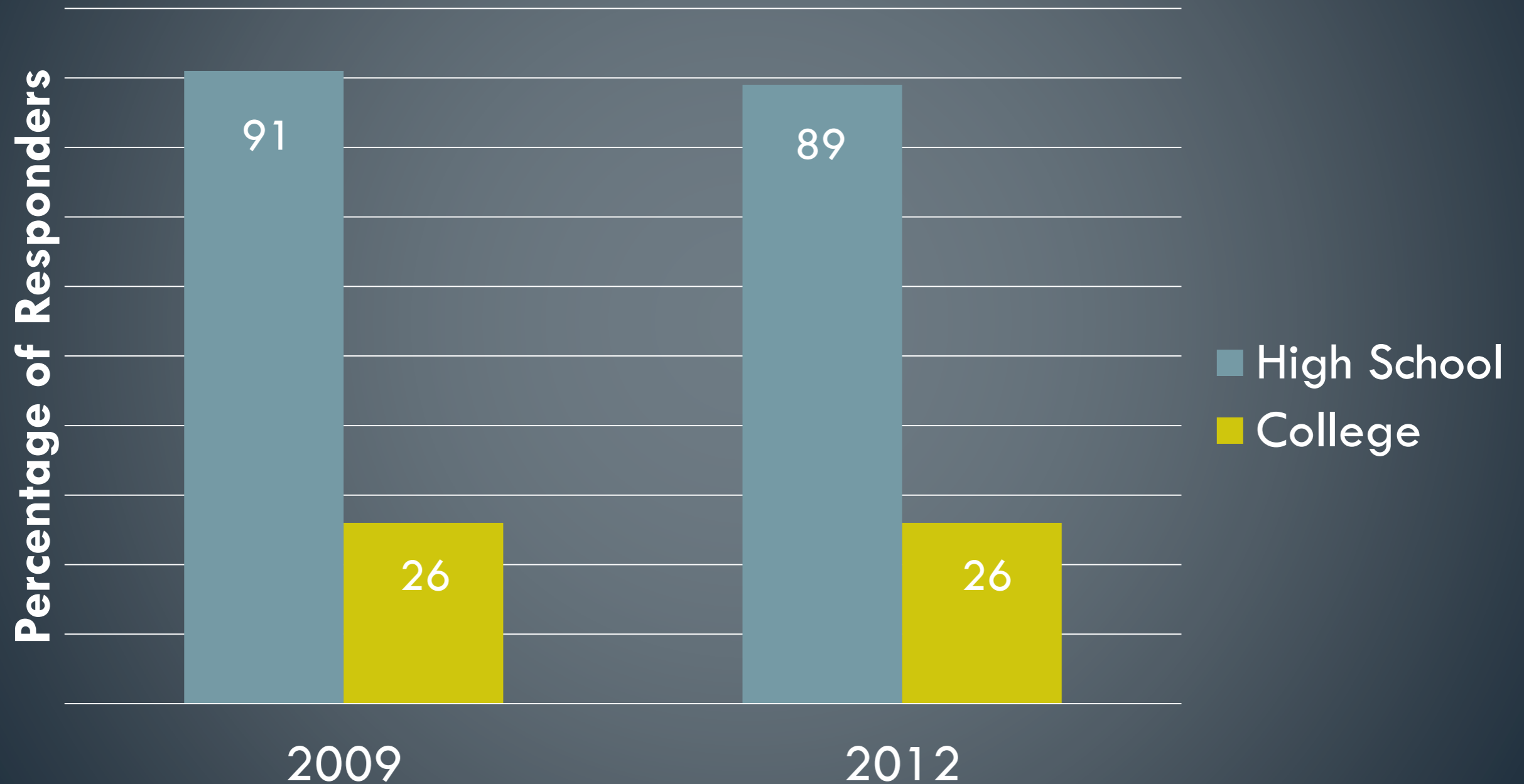
[@robertkaplinsky](https://www.facebook.com/robertkaplinsky)



WHAT IS THE PURPOSE OF A K-12 EDUCATION?

- *College readiness*
 - *ACT National Curriculum Survey*
 - *Surveyed 9,937 educators*

“Well” or “Very Well” Prepared for College



WHAT IS THE PURPOSE OF A K-12 EDUCATION?

- *College readiness*
- *Career readiness*
 - *Association of American Colleges and Universities survey*
 - *Surveyed over 300 employers with at least 25 employees and many new hires*

■ More ■ Less ■ Same

Critical thinking and analytical reasoning skills

Analyzing and solving complex problems

Communicating effectively orally and in writing

Applying knowledge and skills to real-world setting

Working w/ numbers and understanding statistics

WHAT DOES IT LOOK LIKE...

- when students have procedural skill but not conceptual understanding or the ability to apply mathematics?
- when students can work with numbers but cannot:
 - critically think
 - applying knowledge and skills to real-world settings
 - analyze and solve complex problems

How far apart are the exits on this freeway: Jct 90 and Jefferson Blvd?





$$1 - \frac{1}{2} - \left(1 - \frac{1}{4}\right)$$

$$1\frac{1}{2} - 1\frac{1}{4}$$

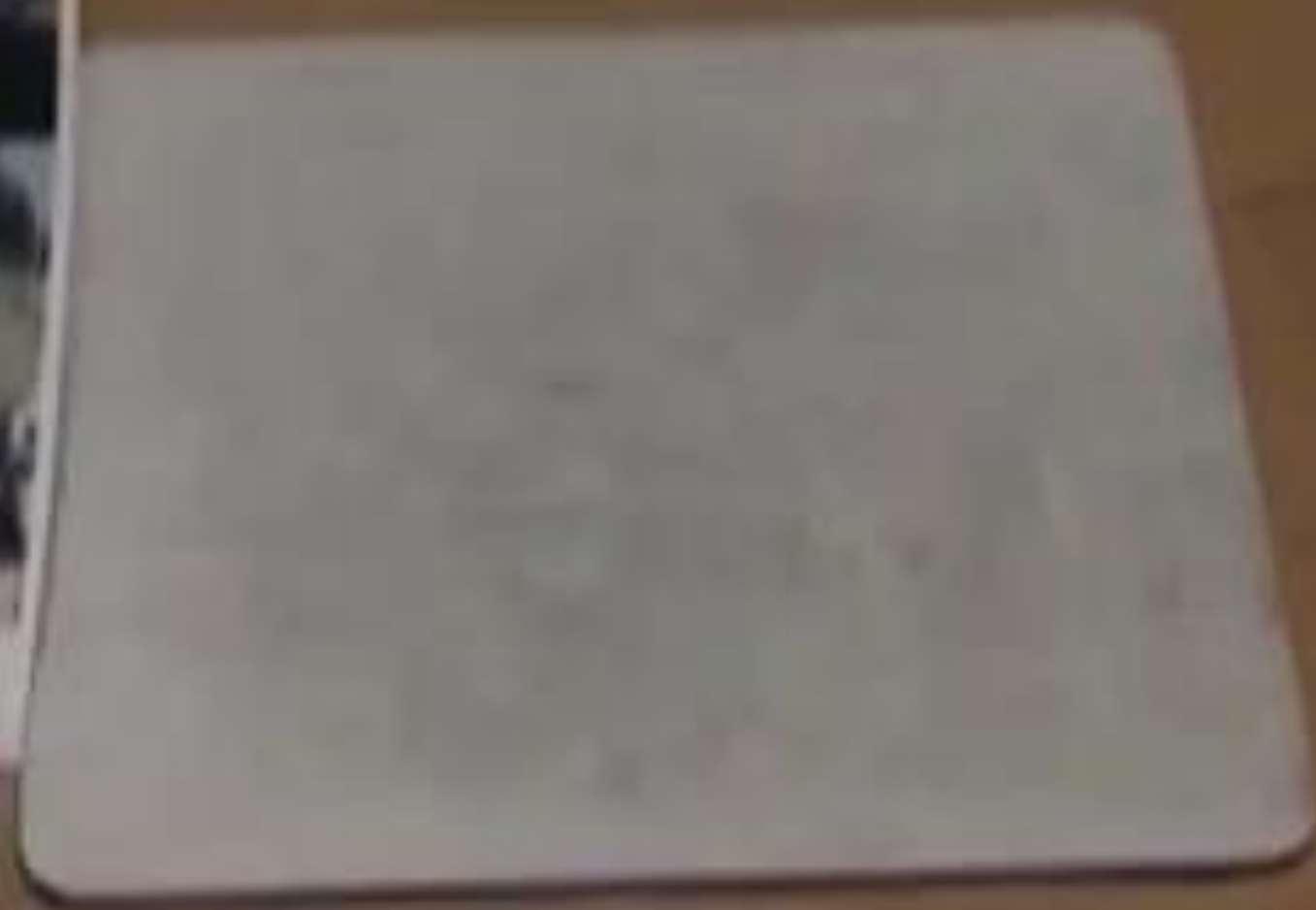
$1\frac{1}{2} - 1\frac{1}{4}$

$1\frac{2}{4} - 1\frac{1}{4}$

$\frac{2}{4} - \frac{1}{4}$

$\frac{1}{4}$





Questioning Scenarios

- The activity begins with teachers in groups of three taking the roles of teacher, student, or observer.
- The individuals playing the role of teacher and student each receive a slip of paper describing their scenario.
- The individual playing the role of observer waits to record all of the teacher's questions to the student.
- Once the activity begins, the teacher will talk to the student in the context of the scenario they read about on the slips of paper.

What did you get for the area of the circle with a radius of 2 units?

4 pi

Great. Do you have any questions?

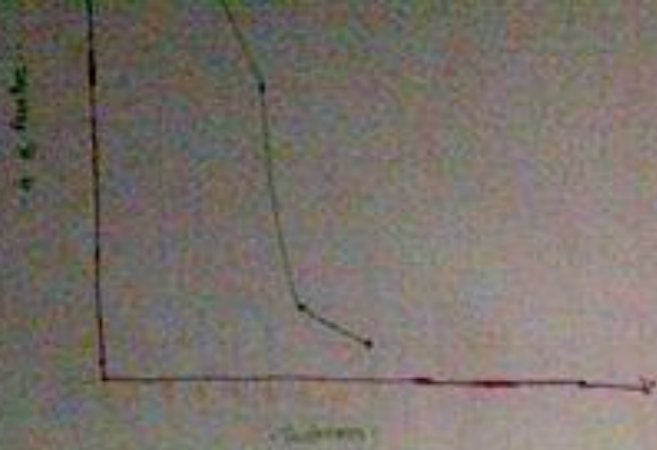
No

What did you get for the area of the circle with a radius of 2 units?

4 pi

Great. How did you get your answer?

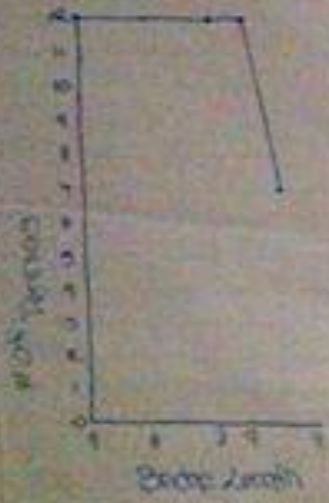
The radius is 2 so I plugged it into $2\pi r$ and got 4 pi.



Table

Length	4	6	8	9	11
# of bases	12	16	12	16	17

Graph



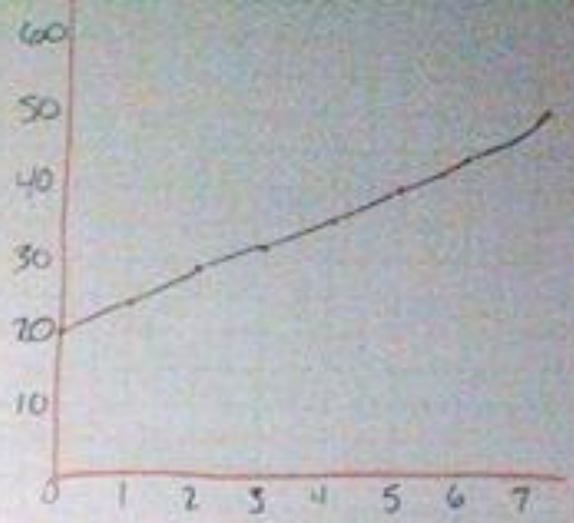
Concave
Up
Jada
Down
Concave
Down

WHY?

1	24
2	28
3	32
4	36
5	40

How do you know?

$$y = 20 + 4x$$

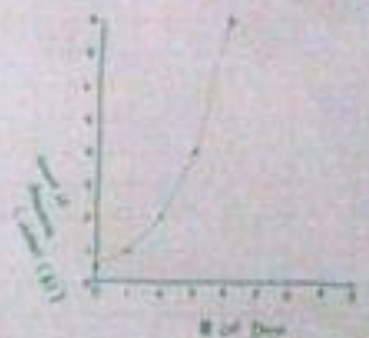


Johnnie King

Convince me.

Exponential

Explain that please.



$B = \frac{1}{2}(2)^x$

Draw a picture.

By: Ashli, Anel

Day	0	1	2	3	4
Amount	1	2	4	8	16



COMMON CORE

STATE STANDARDS INITIATIVE

CCSS.MATH.CONTENT.4.MD.A.3

Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

meet the...
equal intensity, the...
of each grade: conceptual...
skills and fluency, and application.

What is the perimeter
of a rectangle that
measures 8 units by 4
units?

Components of Rigor

Procedural Skill and Fluency

Conceptual Understanding

List the dimensions of
a rectangle with a
perimeter of 24 units.



Components of Rigor

Procedural Skill and Fluency

Conceptual Understanding

WHY?



Components of Rigor

Procedural Skill and Fluency

Conceptual Understanding

List the
of a rectangle with a
perimeter of 24
units.



Components of Rigor

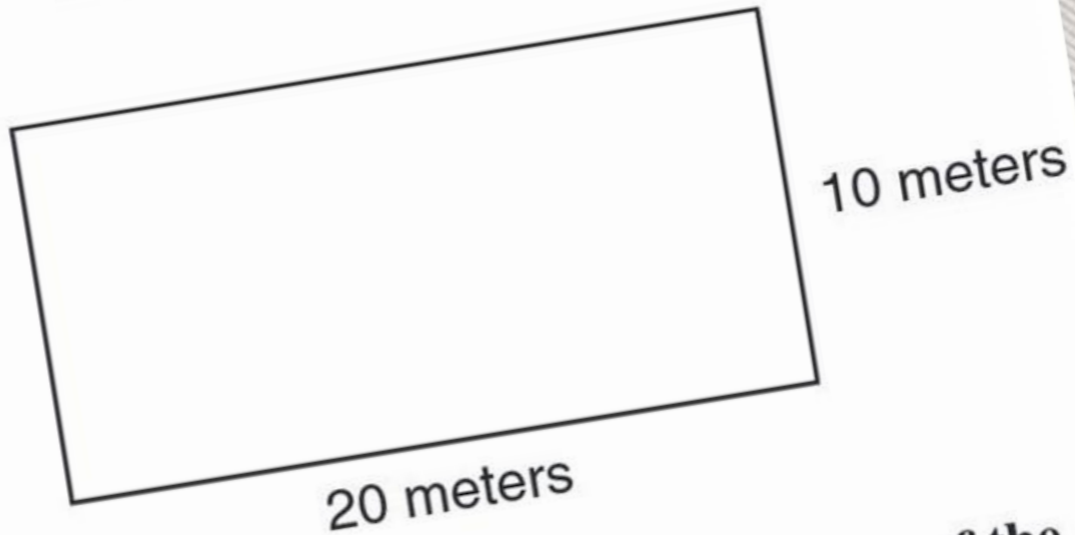
Procedural Skill and Fluency

Conceptual Understanding



71

A basketball court is shaped like a rectangle 20 meters long and 10 meters wide.



What is the perimeter in meters of the court?

- A 30 meters
- B 50 meters
- C 60 meters
- D 200 meters

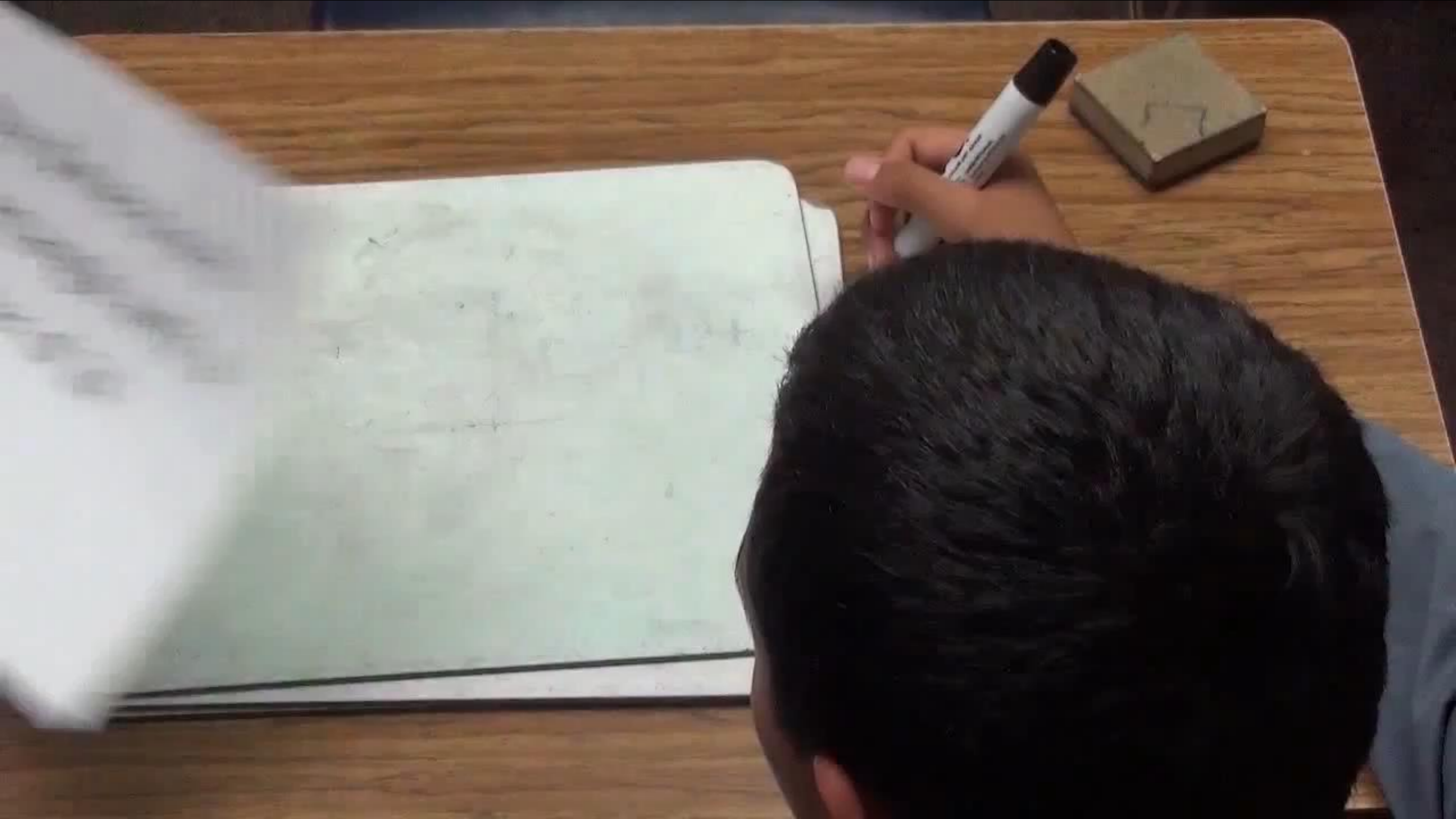
What is the perimeter
of a rectangle ~~with~~
that measures 8 units
by 4 units?



Components of Rigor

Procedural Skill and Fluency

Conceptual Understanding



Components of Rigor

Procedural Skill and Fluency

Conceptual Understanding

Of all the rectangles with a perimeter of 24 units, which one has the most area?

Of all the rectangles
with a perimeter of
24 units, which one
has the most area?

00:00:00:00

Components of Rigor

Procedural Skill and Fluency


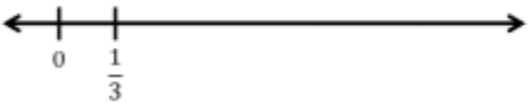
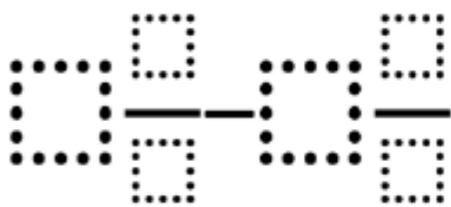
Conceptual Understanding

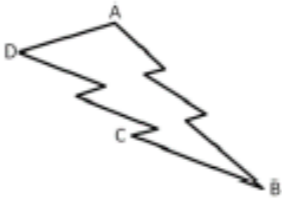
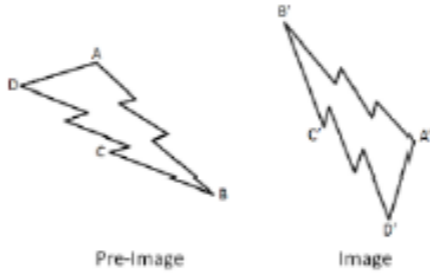
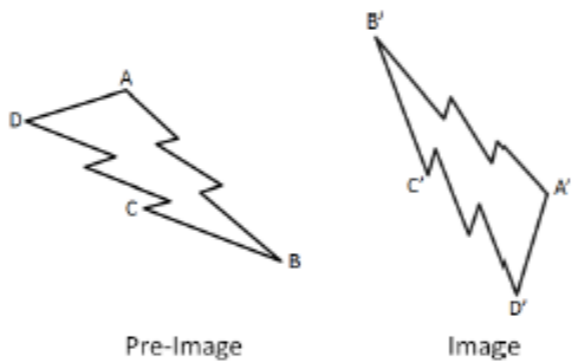
Defining the Problem

- ▶ Students appear to demonstrate “deep, authentic command of mathematical concepts” when given commonly used problems.
- ▶ However with more challenging problems, the same students seem to no longer demonstrate that command.

Addressing the Problem

- ▶ First, we must have a clear understanding about why these problems are different from one another.
- ▶ Next, we need to practice using these problems so that we understand how students may react to them.
- ▶ Last, we need a source that can provide us with a variety of free problems.

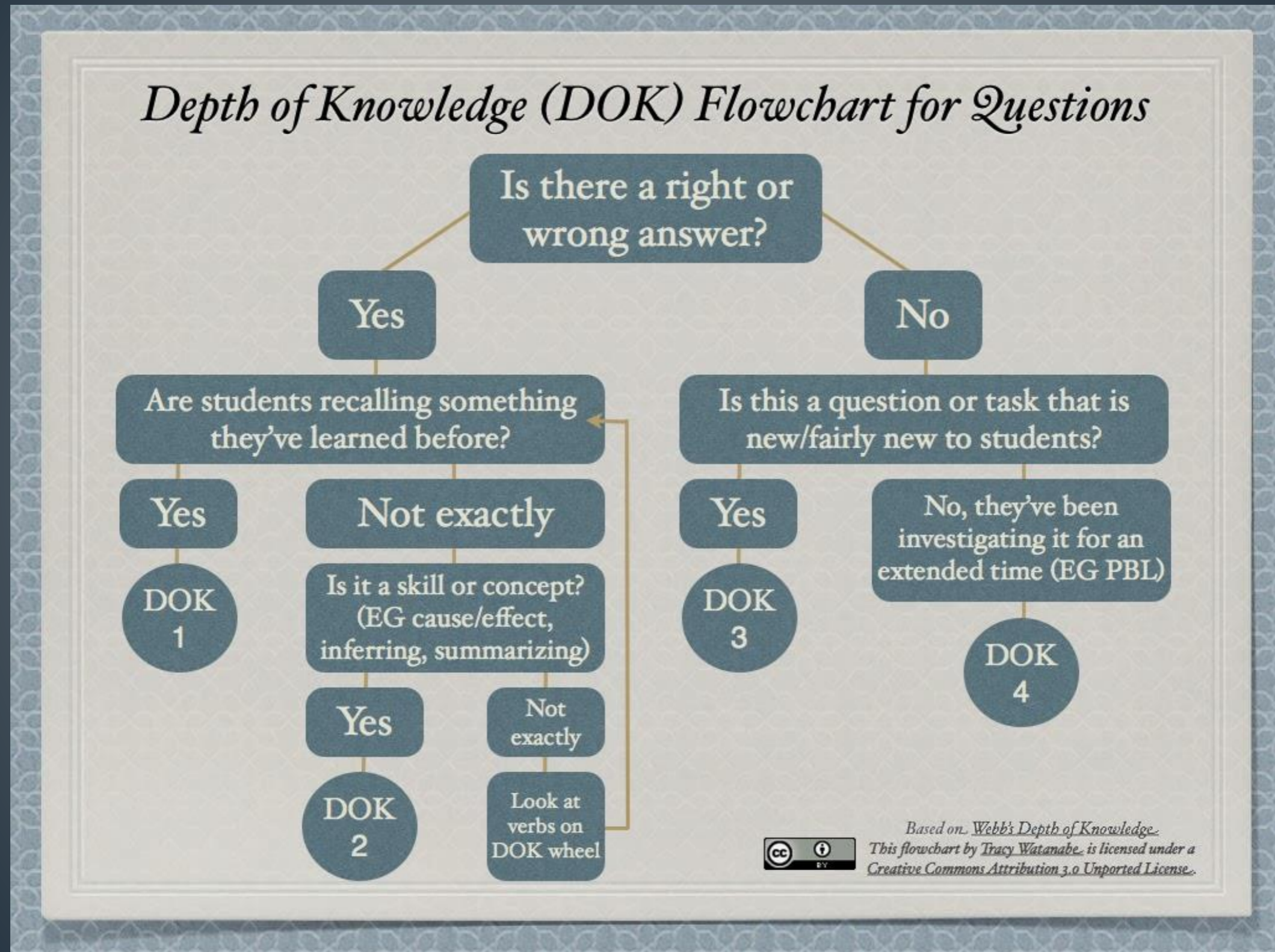
Topic	Adding Whole Numbers	Money	Fractions on a Number Line	Area and Perimeter	Subtracting Mixed Numbers
CCSS Standard(s)	<ul style="list-style-type: none"> 1.NBT.4 2.NBT.5 	<ul style="list-style-type: none"> 2.MD.8 	<ul style="list-style-type: none"> 3.NF.2 	<ul style="list-style-type: none"> 3.MD.8 4.MD.3 	<ul style="list-style-type: none"> 5.NF.1
DOK 1 Example	<p>Find the sum.</p> $44 + 27 =$	<p>If you have 2 dimes and 3 pennies, how many cents do you have</p>	<p>Which point is located at $\frac{7}{12}$ below?</p> 	<p>Find the perimeter of a rectangle that measures 4 units by 8 units.</p>	<p>Find the difference.</p> $5\frac{1}{2} - 4\frac{2}{3} =$
DOK 2 Example	<p>Fill in the boxes below using the whole numbers 1 through 9, no more than one time each, so that you make a true equation.</p> $\square\square + 53 = \square\square$	<p>Make 47¢ in three different ways with either quarters, dimes, nickels, or pennies.</p>	<p>Label the point where $\frac{3}{4}$ belongs on the number line below. Be as precise as possible.</p> 	<p>List the measurements of three different rectangles that each has a perimeter of 20 units.</p>	<p>Create three different mixed numbers that will make the equation true by using the whole numbers 1 through 9, no more than one time each. You may reuse the same whole numbers for each of the three mixed numbers.</p> $5\frac{4}{5} - \square\square = 3\frac{1}{20}$
DOK 3 Example	<p>Make the largest sum by filling in the boxes below using the whole numbers 1 through 9, no more than one time each.</p> $\square\square + \square\square =$	<p>Make 47¢ using exactly 6 coins with either quarters, dimes, nickels, or pennies.</p>	<p>Create 5 fractions using the whole numbers 0 through 9, exactly one time each as numerators and denominators, and place them all on a number line.</p>	<p>What is the greatest area you can make with a rectangle that has a perimeter of 24 units?</p>	<p>Make the smallest difference by filling in the boxes below using the whole numbers 1 through 9, no more than one time each.</p> 

Topic	Surface Area and Volume	Probability	Transformations	Factoring Quadratics	Quadratics in Vertex Form
CCSS Standard(s)	<ul style="list-style-type: none"> 6.G.4 7.G.6 	<ul style="list-style-type: none"> 7.SP.5 7.SP.7 	<ul style="list-style-type: none"> 8.G.1 G-CO.5 	<ul style="list-style-type: none"> A-SSE.3a 	<ul style="list-style-type: none"> F-IF.7a
DOK 1 Example	Find the surface area of a rectangular prism that measures 3 units by 4 units by 5 units.	What is the probability of rolling a sum of 5 using two 6-sided dice?	Rotate the image below 90° counterclockwise about point D and reflect it across a horizontal line. 	Find the factors: $2x^2 + 7x + 3$	Find the roots and maximum of the quadratic equation below. $y = -3(x - 4)^2 - 3$
DOK 2 Example	List the measurements of three different rectangular prisms that each have a surface area of 20 square units.	What value(s) have a 1/12 probability of being rolled as the sum of two 6-sided dice?	List three sequences of transformations that take pre-image ABCD to image A'B'C'D'. 	Fill in the blank with integers so that the quadratic expression is factorable. $x^2 + __x + 4$	Create three equations for quadratics in vertex form that have roots at 3 and 5 but have different maximum and/or minimum values.
DOK 3 Example	What is the greatest volume you can make with a rectangular prism that has a surface area of 20 square units?	Fill in the blanks to complete this sentence using the whole numbers 1 through 9, no more than one time each. Rolling a sum of $__$ on two $__$ -sided dice is the same probability as rolling a sum of $__$ on two $__$ -sided dice.	What is the fewest number of transformations needed to take pre-image ABCD to image A'B'C'D'? 	Fill the blank by finding the largest and smallest integers that will make the quadratic expression factorable. $2x^2 + 3x + __$	Create a quadratic equation with the largest maximum value using the whole numbers 1 through 9, no more than one time each. $y = -\square(x - \square)^2 + \square$



Complicated
or Complex?

DOK Flowchart for Questions



DOK Posters

DOK 1

Routine Thinking

- Can you recall ___?
- Can you identify ___?
- How would you describe ___?
- What might you include on a list about ___?
- Can you select ___?
- How can you find the meaning of ___?

arrange calculate memorize
measure name recognize
recall repeat identify
illustrate match label
state list state

DOK 2

Conceptual Thinking

- Can you explain how ___ affected ___?
- How would you apply what you learned to develop ___?
- How would you summarize ___?
- What do you notice about ___?
- How would you estimate ___?
- How could you organize ___?

compare classify categorize
measure graph distinguish
predict modify construct
organize infer summarize
interpret make observations

DOK 3

Strategic Reasoning

- How is ___ related to ___?
- What conclusions can be drawn?
- Can you elaborate on ___?
- How would you test ___?
- What evidence supports ___?
- What would happen if ___?
- Why is that the best answer?

assess compare construct
appraise revise hypothesize
critique investigate
draw conclusions
develop a logical argument

DOK 4

Extended Reasoning

- Write a research paper.
- What information can you gather to support your idea about ___?
- Write a thesis, drawing conclusions from multiple sources.
- Apply information from one text to another to develop an persuasive argument.

design connect prove
analyze critique synthesize
create apply concepts

DOK Level Differences



▶ **Level 1: Recall & Reproduction**

- ▶ Often a trivial application of facts.
- ▶ Generally requires little to no cognitive effort beyond remembering the right formula.
- ▶ Usually only one answer.

▶ **Level 2: Skills & Concepts**

- ▶ Usually requires more than one step to solve.
- ▶ Often multiple answers.

▶ **Level 3: Strategic Thinking**

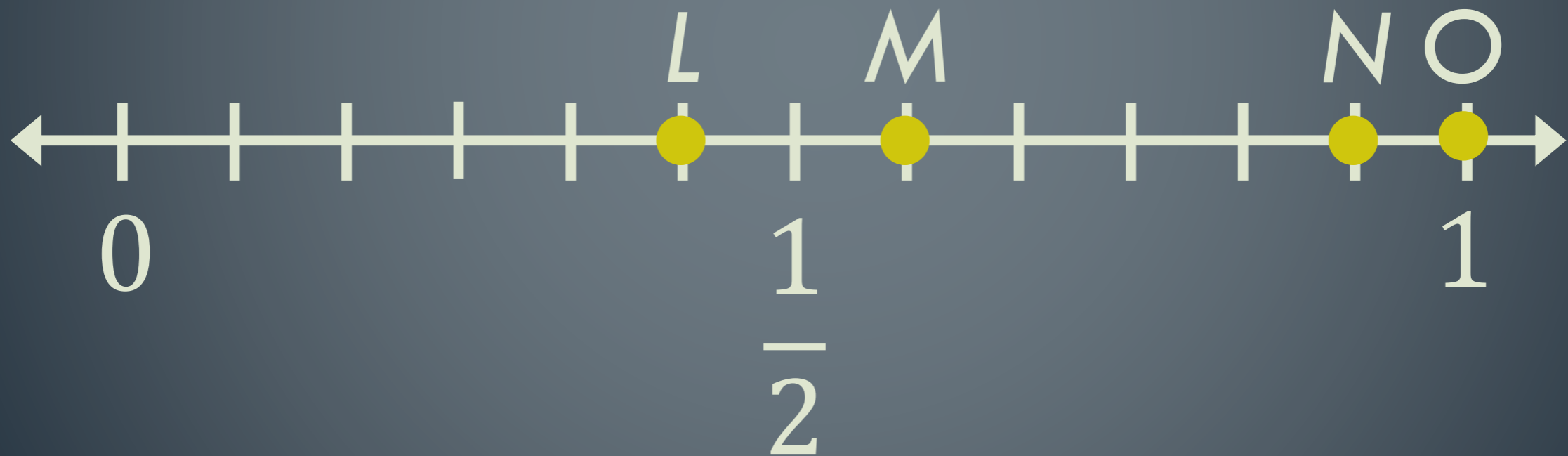
- ▶ Usually requires critical thinking about the best way to approach a problem.
- ▶ May be multiple answers or a single optimal answer.
- ▶ Often challenging enough to make your head hurt.

▶ **Level 4: Extended Thinking**

- ▶ In mathematics these are generally represented by performance tasks or problem-based lessons.

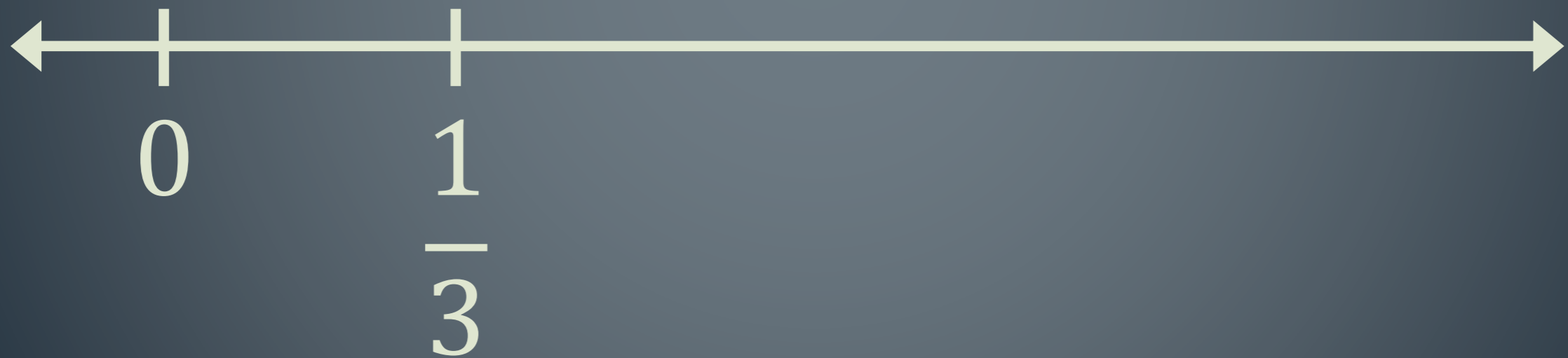
Fractions on a Number Line

Which point is located at $\frac{7}{12}$ below?



Fractions on a Number Line

Label the point where $\frac{3}{4}$ belongs on the number line below. Be as precise as possible.



Fractions on a Number Line

Create 5 fractions using the whole numbers 0 through 9, no more than one time each, as numerators and denominators and correctly place them all on a number line.

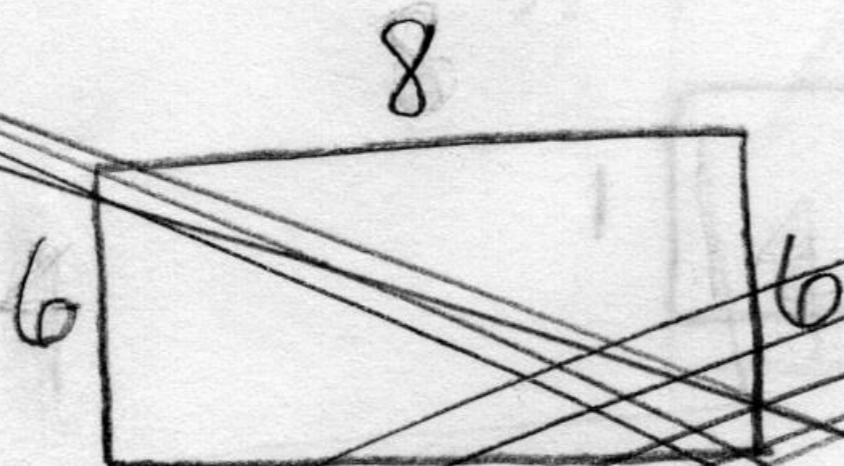
Adding Decimals

Use the numbers 1 through 9, exactly one time each, to fill in the boxes and make three decimals whose sum is as close to 1 as possible.

$$\begin{array}{r} 0.\square\square\square \\ 0.\square\square\square \\ + 0.\square\square\square \\ \hline \end{array}$$

First attempt:

Points: ___/2 attempt ___/2 explanation



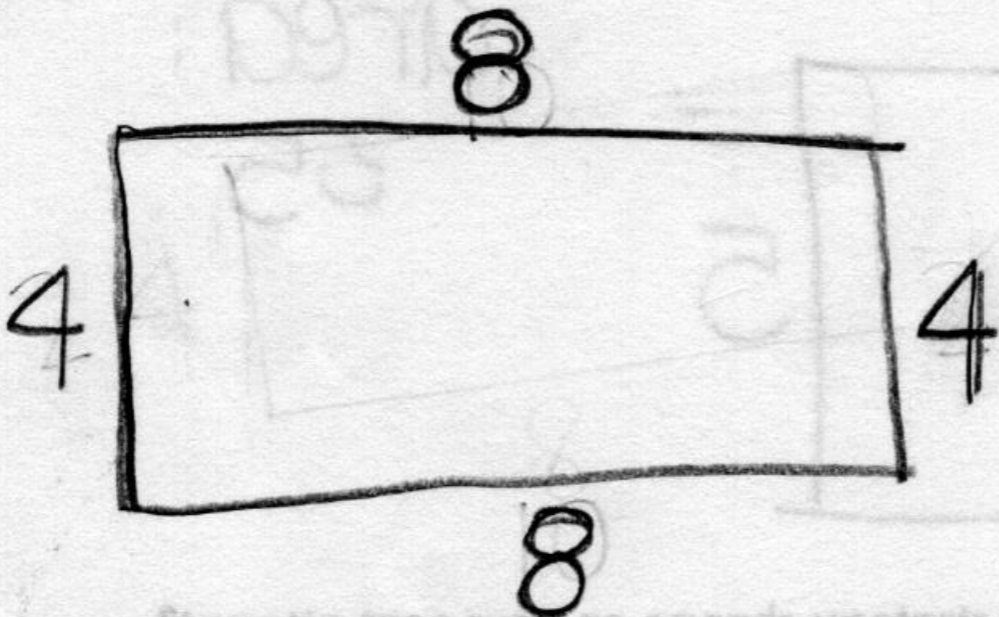
area:
48

What did you learn from this attempt? How will your strategy change on your next attempt?

~~This attempt doesn't equal 24.~~

Second attempt:

Points: ___/2 attempt ___/2 explanation



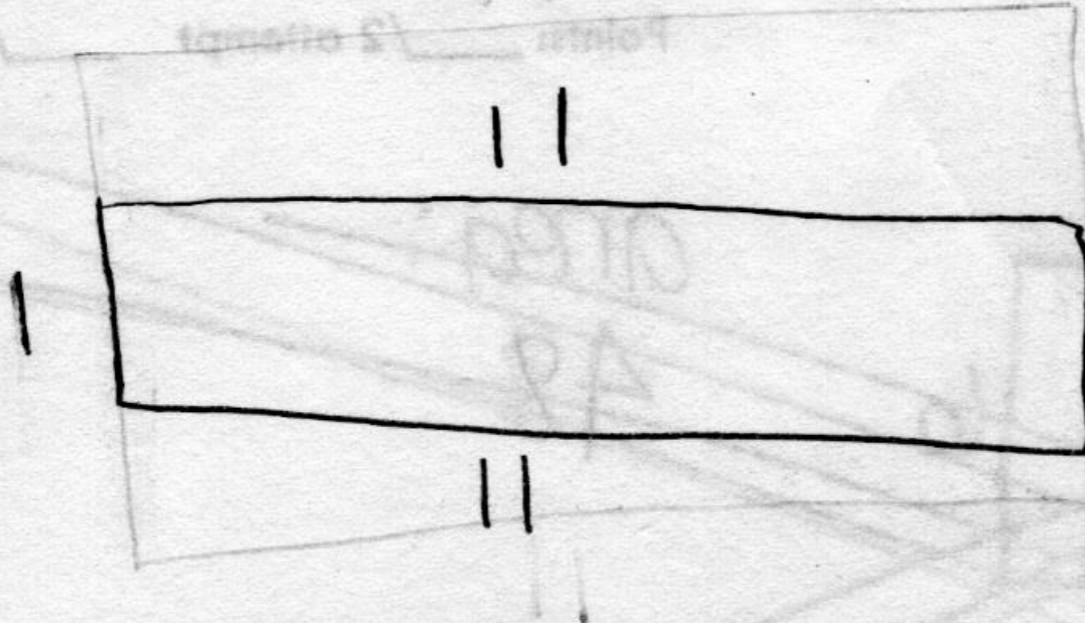
area:
32

What did you learn from this attempt? How will your strategy change on your next attempt?

The perimeter was 24, and the area was 32
but I think there's a blaster #

Fourth attempt:

Points: ___/2 attempt ___/2 explanation

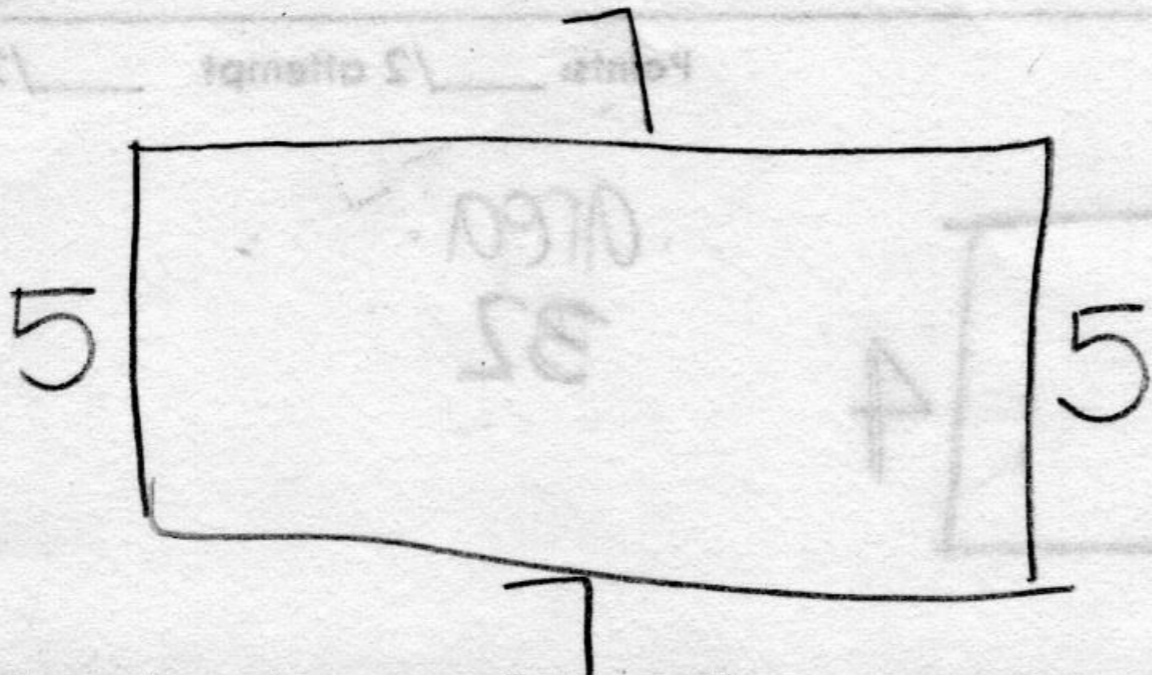


What did you learn from this attempt? How will your strategy change on your next attempt?

The perimeter is 24, but the area is 11 and attempt #2 the area is 32
Strategy: Use #'s with more than one row.

Fifth attempt:

Points: ___/2 attempt ___/2 explanation



area:
35

What did you learn from this attempt? How will your strategy change on your next attempt?

DOK FAQ

- *When will students ever use this?*
- *What DOK level should I start students off with?*
- *How do teachers fit these problems into their pacing?*
- *How do I help prevent students from giving up after trying the problem once or twice?*
- *Where can I find other DOK 2 and DOK 3 problems or submit ones I've made?*



NEW OPEN MIDDLE



Exponents and Order of Operations

February 10, 2015 Leave a comment

Directions: Find 3 positive integers that add up to 10. Place each number into one of the blanks to find the largest possible result. Source: Zack Miller (@zmill415) [Read More »](#)

Create Squares

February 10, 2015 2 Comments

Directions: Create a square with one of the vertices at (2,3). Fill in the blanks with whole numbers 0 through 9, using each number at most once, to show the rest of the vertices of the square. Bonus: Find more than one set of vertices. Source: John Mahlstedt (@jdmahlstedt) [Read More »](#)

Solution of Two Linear Equations

February 10, 2015 Leave a comment

Directions: Using the Integers 0-9 (without duplication), provide four sets of points that represent two distinct lines. These lines can be written as two linear equations. Then provide a fifth point that represents the intersection (or solution) of those equations. Line 1: (,) and (,) Line 2: (,) and (,) Solution (,) Source: Bryan Anderson [Read More »](#)

Bingo card

February 5, 2015 1 Comment

Directions: In a standard game of BINGO, the cards are labeled with numbers 1 through 75. If it was possible, which card would you choose: a card with all of the same number or a standard bingo card? Source: Nanette

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OPEN MIDDLE WORKSHEET

Download the Open Middle Worksheet:
Version 1.1

SUBSCRIBE

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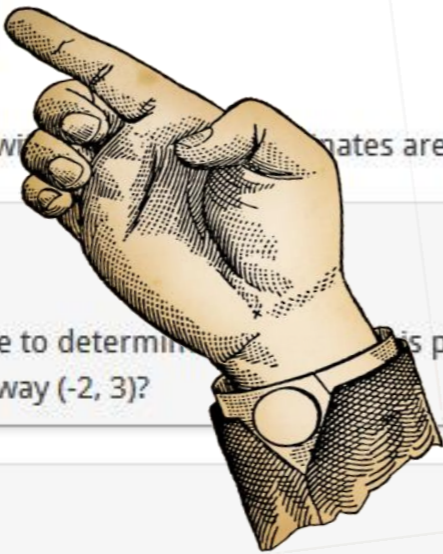
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COMMON CORE STATE STANDARDS

- Grade 1 (6)
 - Number & Operations in Base Ten (3)
 - Operations & Algebraic Thinking (3)
- Grade 2 (6)
 - Measurement & Data (2)
 - Number & Operations in Base Ten (4)
- Grade 3 (11)
 - Measurement & Data (6)
 - Number & Operations in Base Ten (3)
 - Number & Operations—Fractions (2)

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EQUIDISTANT POINTS



Directions: How many points with integer coordinates are 5 units away from $(-2, 3)$?

Hint

Which methods are available to determine the answer to this problem? What shape is defined by *all* of the points that are 5 units away $(-2, 3)$?

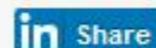
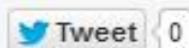
Answer

12 points: $(-5, 7)$, $(-7, 3)$, $(-5, -1)$, $(-2, -2)$, $(3, 3)$, $(1, -1)$, $(-2, 8)$, $(1, 7)$, $(2, 6)$, $(-6, -6)$, $(-6, 0)$, and $(2, 0)$

Source: [Dylan Kane](#)



SHARE !



Tagged with: [8.G.8](#) [DOK 2: SKILL / CONCEPT](#) [DYLAN KANE](#) [G-GPE.1](#)

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- Grade 1 (6)
 - Number & Operations in Base Ten (3)
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 - Measurement & Data (2)
 - Number & Operations in Base Ten (4)
- Grade 3 (11)
 - Measurement & Data (6)
 - Number & Operations in Base Ten (3)
 - Number & Operations—Fractions (2)

Problem-Based Lesson Resources

- Problem-based lesson search engine: <http://robertkaplinsky.com/prbl-search-engine/>
- My lessons: <http://www.robertkaplinsky.com/lessons>
- Dan Meyer: <http://threeacts.mrmeyer.com>
- Andrew Stadel: <http://tinyurl.com/mrstadel>
- Graham Fletcher: <http://gfletchy.com/3-act-lessons/>
- Geoff Krall: <http://tinyurl.com/PrBLmaps>
- Dan Meyer's TED talk: <http://tinyurl.com/meyer-TED>

Contact

Robert Kaplinsky



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robertkaplinsky.com/eps16



[@robertkaplinsky](https://twitter.com/robertkaplinsky)



Evergreen Public Schools

ROBERT KAPLINSKY



@robertkaplinsky







THIS UNIT NOT LABELED FOR INDIVIDUAL RETAIL SALE

Ralphs

grade AA

butter

NET WT. 4 OZ. (113g)

NET WT. 4 OZ. (113g)

10110

- ▣ 1/3 cup butter
- ▣ 1/3 cup white sugar
- ▣ 3 tablespoons and 1-3/4
teaspoons packed brown sugar
- ▣ 1/3 cup peanut butter
- ▣ 1/4 teaspoon vanilla extract

How can we tell where
to cut the butter so you
have $\frac{1}{3}$ of a cup?

THIS UNIT NOT LABELED FOR INDIVIDUAL RETAIL SALE.

Ingredients: Pasteurized Cream, Salt.

DISTRIBUTED BY: RALPHS GROCERY CO. LOS ANGELES, CALIF. 90054

1 Tbsp.	2 Tbsp.	3 Tbsp.	4 Tbsp.	5 Tbsp.	6 Tbsp.	7 Tbsp.	8 Tbsp.
← 1/4 cup →							

1 FIRST QUALITY 1

Ralphs

grade AA
butter

NET WT. 4 OZ. (113g)

- ▣ 1/2 cup butter
- ▣ 1/2 cup white sugar
- ▣ 1/3 cup packed brown sugar
- ▣ 1/2 cup peanut butter
- ▣ 1/2 teaspoon vanilla extract

How can we tell where
to cut the butter so you
have $1/2$ of a cup?

THIS UNIT NOT LABELED FOR INDIVIDUAL RETAIL SALE.

Ingredients: Pasteurized Cream, Salt.

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1 Tbsp.	2 Tbsp.	3 Tbsp.	4 Tbsp.	5 Tbsp.	6 Tbsp.	7 Tbsp.	8 Tbsp.	
←				1/4 cup →	1/2 cup →			

1 FIRST QUALITY 1

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1 Tbsp.	2 Tbsp.	3 Tbsp.	4 Tbsp.	5 Tbsp.	6 Tbsp.	7 Tbsp.	8 Tbsp.
←				1/4 cup →	1/3 cup →	1/2 cup →	

1 FIRST QUALITY 1

Ralphs

grade AA
butter

NET WT. 4 OZ. (113g)

Why Are You Using That Problem?

- Use the problem to introduce a new concept
 - Best Case:
 - Great context for beginning a unit
 - Worst Case:
 - What was the purpose of this problem?
 - Why didn't you finish it?
 - Why didn't you let students struggle through it?
 - Did the teacher end the problem because he or she was confused and gave up?

Why Are You Using That Problem?

- Productive struggle
 - Best Case:
 - Students worked hard and made connections.
 - Worst Case:
 - Why did the teacher let the students sit there confused instead of telling them what to do?
 - Did the students even learn anything because they never figured out the answer?
 - Why didn't the teacher finish the problem? Did she lose track of time?

Why Are You Using That Problem?

- Problem completion
 - Best Case:
 - Everyone experienced a complete problem.
 - Worst Case:
 - Who really did the work today: the students or the teacher?
 - Why did the teacher not see all those great opportunities for students to make their own connections and take advantage of them?
 - Why did the teacher give such obvious hints and tell them what to do?

FIVE PRACTICES



Discussion Questions

- “Giving students too much or too little support, or too much direction, can result in a decline in the cognitive demands of the task.” (p. 550) Why?
- “By making purposeful choices about the order in which students’ work is shared, teachers can maximize the chances that their mathematical goals for the discussion will be achieved.” (p. 554) What ways do teachers currently select students? How would you suggest they change their selection process after reading this?
- What challenges might teachers have when trying to “connect” student solutions? (p. 554)

Implementing the Five Practices

1. Pick a selection strategy you anticipate using before looking at the student work.
2. Next, review the student work to simulate the reality that you won't know what students will actually do.
3. Figure out which students you would have share their mathematical work.
4. Determine the order you would have those students present their work.
5. Decide on which connections you would emphasize between the students' work and mathematical ideas.

Posters

- At the top of the poster, list the selection strategy used by your group. For example:
 - Starting with the most commonly used strategy and moving to one that few students used.
 - Starting with a strategy that is more concrete and moving to strategies that are more abstract.
 - Incorporating wrong answers to address common misconceptions.
- Attach those students' work to the poster in the order that you would present it.
- Next to the student work list the questions you would ask the student(s) or ideas that you would want to come out as a result of showing that student's work.

Contact

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- Change
- Transition
 - Ending

- Change
- Transition
 - Ending
 - Neutral Zone

- Change
- Transition
 - Ending
 - Neutral Zone
 - New Beginning



What does this
mean for math
education?

- Change
- Transition
 - Ending

- People may not stop doing anything. They may try to do all the old things and the new things. Soon they burn out with the overload.
- People make their own decisions about what to discard and what to keep, and the result is inconsistency and chaos.
- People toss out everything that was done in the past.

- Change
- Transition
 - Ending
 - Neutral Zone

- Change
- Transition
 - Ending
 - Neutral Zone
 - New Beginning

Pre-Mortem

- The lesson flopped. What went wrong?
- You have sixty seconds to write down all the reasons the lesson did not go well.
- Create a combined list with your neighbors.
- Then discuss “less helpful” and “more helpful” was you could address them if they do happen.



Setting Up The Problem

- What do you do when students ask for data/information you don't have, hadn't considered, or forgot to get?
- What do you do when students ask for information that is probably not important or that they don't actually need?

TICKET BOOTHS

1 TICKET = \$.50

12 TICKETS = \$5.00

25 TICKETS = \$10.00

50 TICKETS = \$25.00

120 TICKETS = \$50.00

HAVE FUN!



TICKET BOOTH
 1 TICKET = \$ 50
 12 TICKETS = \$ 500
 25 TICKETS = \$ 1250
 50 TICKETS = \$ 2500
 20 TICKETS = \$ 1000
 HAVE FUN!

PLACE VALUE SYSTEM

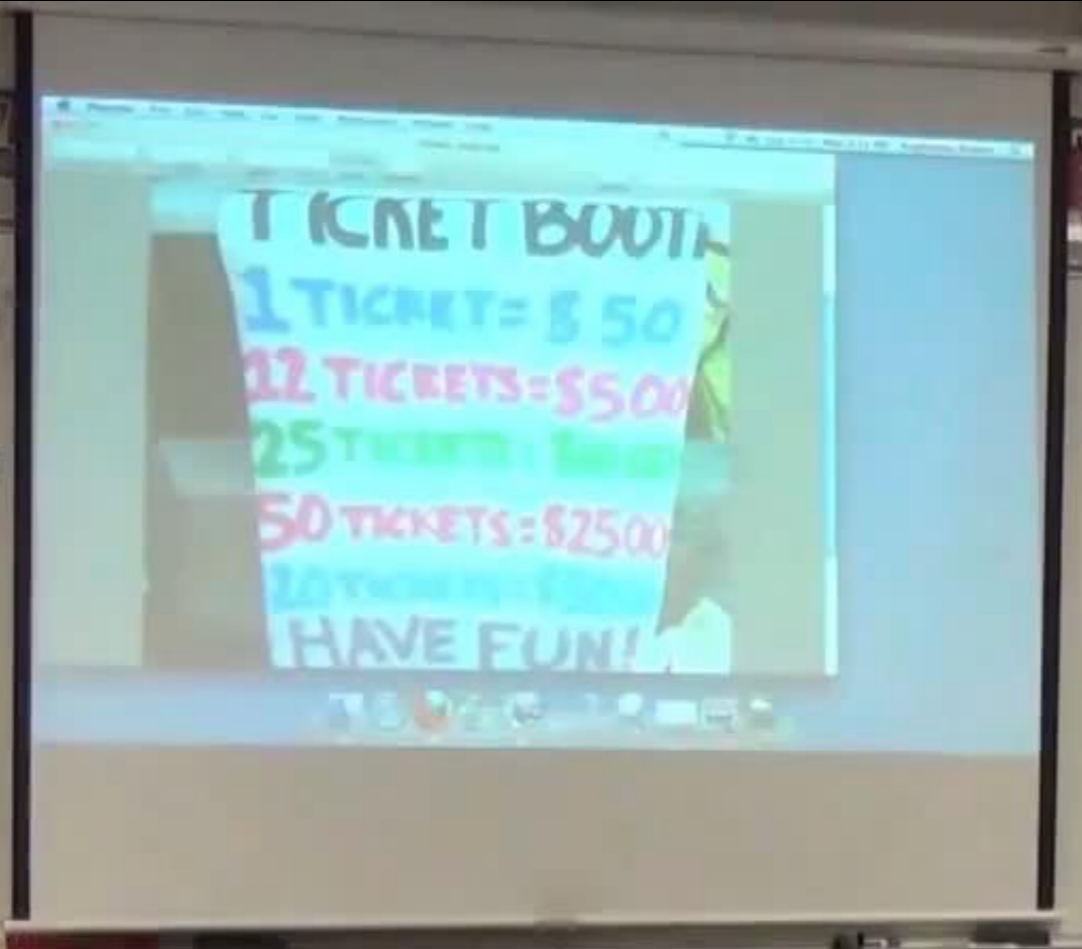
ns	Billions	Millions	Thousands	Units	Thousandths	Millionths	Billionths	Tenth
10 ⁰	10 ⁹	10 ⁶	10 ³	10 ⁰	10 ⁻³	10 ⁻⁶	10 ⁻⁹	10 ⁻¹

3/11/14 agenda

7 th Grade	8 th Grade
Video Lesson	Video Lesson
Homework	Homework

Mr. [Name] 40 objectives





PLACE VALUE SYSTEM																	
ns	Billions			Millions			Thousands			Units		Tenths		Hundredths		Thousandths	
	10^9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}	

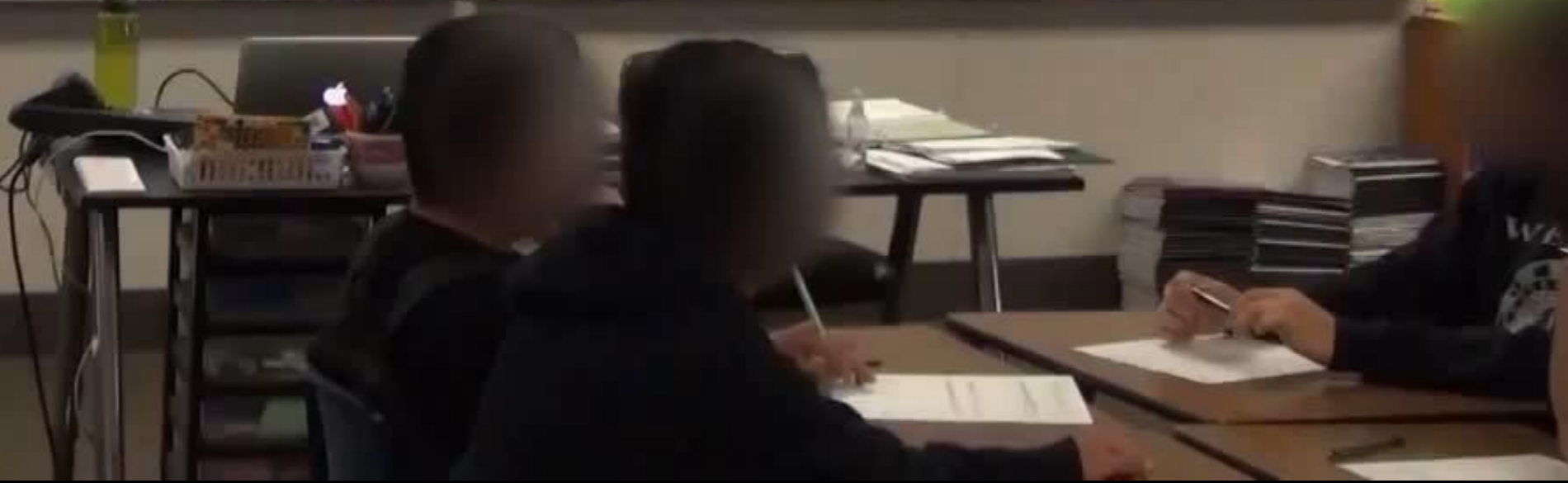
3/17/14 Agenda

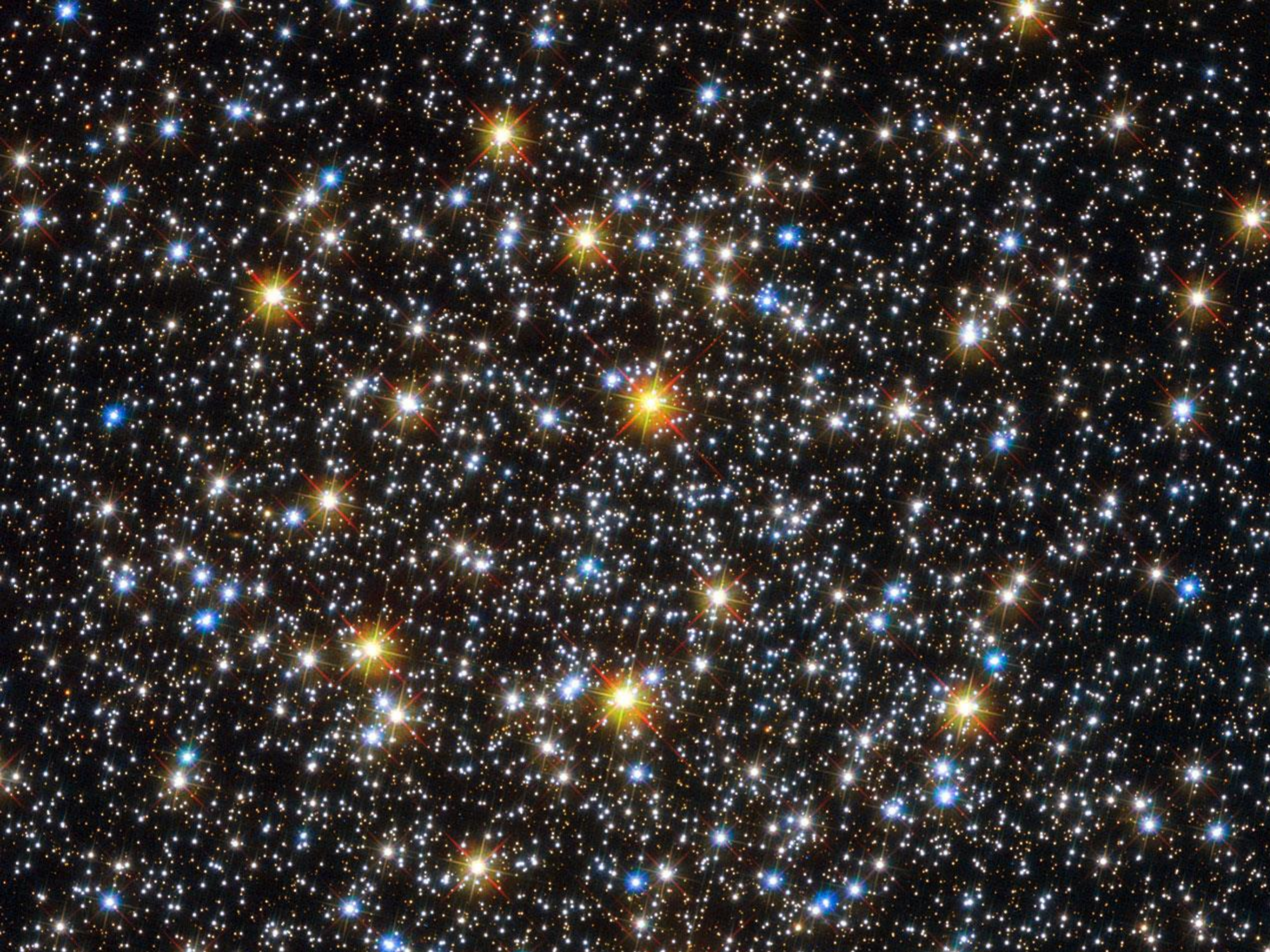
7th Grade	8th Grade
Video Lesson	Video Lesson
Homework	Homework

Mr. Kaplinsky

4/6 objectives due by 4/30

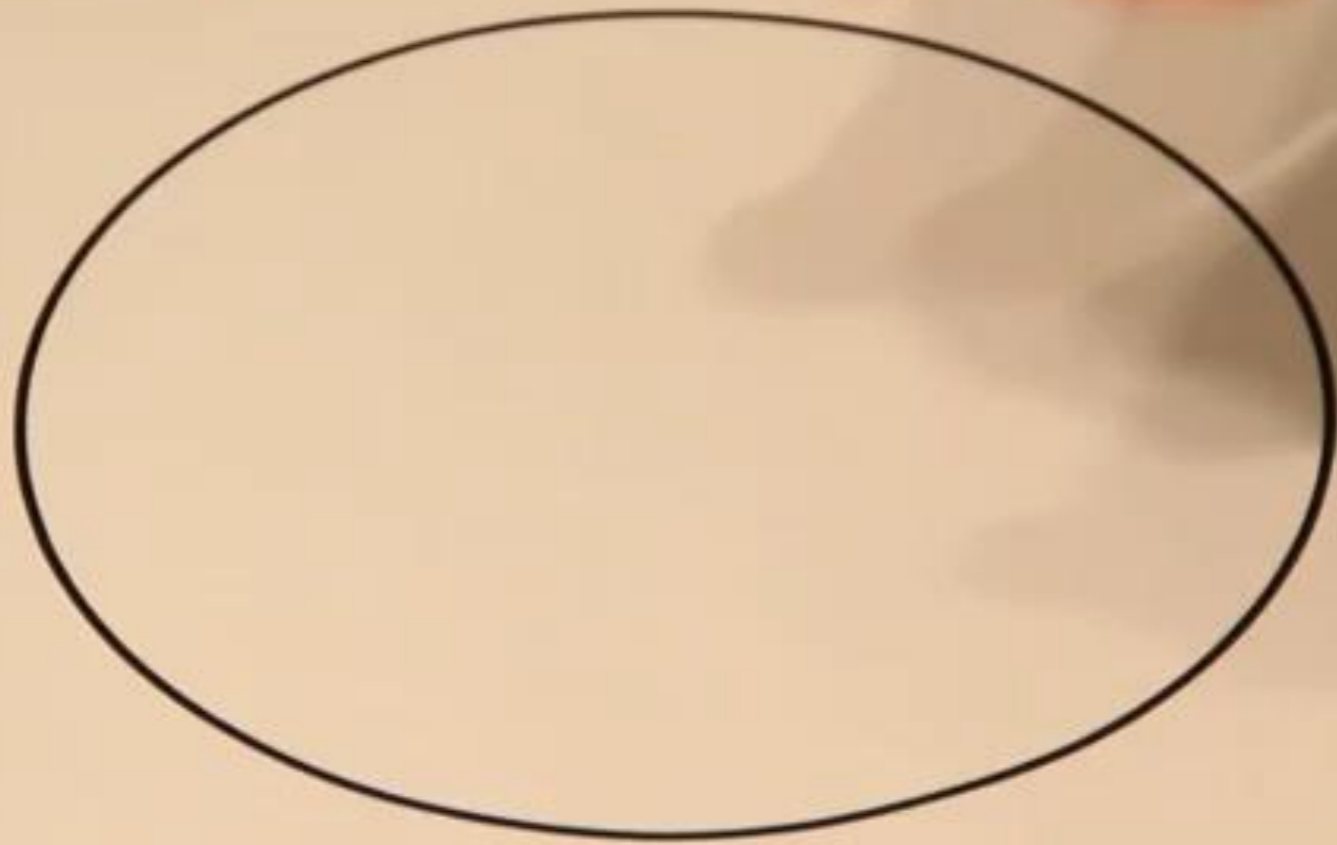
- # of tickets for a ride
- How many rides can you go on
- How much money you need
- # of people in group
- How long you will stay





Setting Up The Problem

- What do you do when students ask for data/information you don't have, hadn't considered, or forgot to get?
- What do you do when students ask for information that is probably not important or that they don't actually need?
- What do you do when students don't know what to write for what they know and don't know?
- What do you do when you ask for a guess and they don't know?
- What do you do when they don't ask you for information that they need to solve the problem?





struggle: none
feedback: none
reward: none



struggle: low
feedback: low
reward: high



struggle: medium
feedback: high
reward: medium



struggle: high
feedback: high
reward: high



Problem Solving Process

- What do you do when students don't use the strategy you anticipated they would use?

TICKET BOOTHS

1 TICKET = \$.50

12 TICKETS = \$5.00

25 TICKETS = \$10.00

50 TICKETS = \$25.00

120 TICKETS = \$50.00

HAVE FUN!





Dual Flush

Descarga Doble

1.0 gallon flush for liquids
1.6 gallon flush for solids

Dual Flush
 1.0 gallon flush for liquids
 1.6 gallon flush for solids
 American Standard
 Style That Works Better



American Standard

Item | Artículo: 84065
 Model | Modelo: 3381.216.020

Clean™ Cadet® 3

Overall dimensions: 15 in W x 31 in H x 29-3/4 in D
 Rough-in dimensions: 12 in
 Trapway size: 2 in

Dimensiones generales: 38,10 cm de ancho x 78,74 cm de alto x 75,57 cm de profundidad
 Dimensiones aproximadas: 30,48 cm
 Tamaño de canal de sifón: 5,08 cm

- High-efficiency, dual flush toilet—1.6 gal. or 1.0 gal. flush
- Stays cleaner longer with EverClean® surface & PowerWash™ flush
- Features No Tools™ installation
- ADA approved chair height

- Inodoro de descarga doble de alta eficiencia con descarga de 6,06 litros o 3,79 litros
- Permanece limpio por más tiempo con la superficie EverClean® y la descarga PowerWash™
- Cuenta con instalación No Tools™
- Altura de silla aprobada por ADA

\$199 Everyday Low Price

CLEAN CADET 3 DUAL FLUSH CH EL H
 40 W 1

WaterSense
 Made in USA
 Certified by IAPMO RWT
 Recorder # P117364

10 Year Limited Warranty
 Garantía limitada

Elongated
 Alergada
18.5 in
 46,99 cm

Chair Height
 Altura de silla
16.5 in
 41,91 cm



American Standard

Item | Artículo: 88575
 Model | Modelo: 2514.101.020

Clean™ Cadet® 3

Overall dimensions: 15-3/4 in W x 30-3/4 in H x 30-1/4 in D
 Rough-in dimensions: 12 in
 Trapway size: 2-1/16 in

Dimensiones generales: 40,01 cm de ancho x 78,11 cm de alto x 76,84 cm de profundidad
 Dimensiones aproximadas: 30,48 cm
 Tamaño de canal de sifón: 5,24 cm

- Smooth-sided toilet design
- Stays cleaner longer with EverClean® surface & PowerWash™ flush
- Features No Tools™ installation
- ADA approved chair height

- Diseño de inodoro de lados lisos
- Permanece limpio por más tiempo con la superficie EverClean® y la descarga PowerWash™
- Cuenta con instalación No Tools™
- Altura de silla aprobada por ADA

\$239 Everyday Low Price

ASD CLEAN CADET3 EL CH 1.28GPF
 40 W 5

WaterSense
 Made in USA
 Certified by IAPMO RWT
 Recorder # P117363

10 Year Limited Warranty
 Garantía limitada

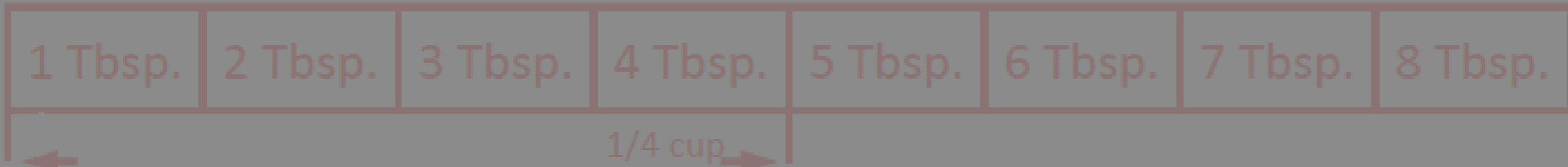
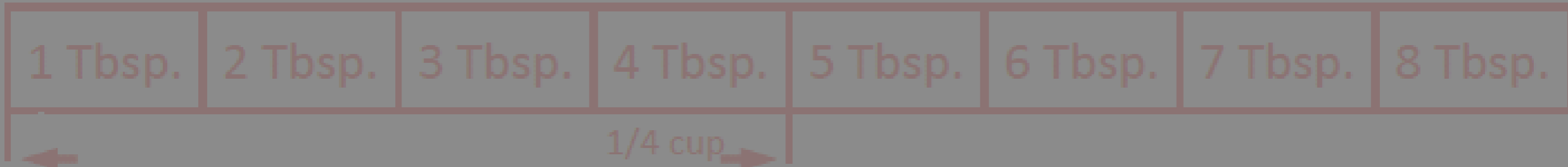
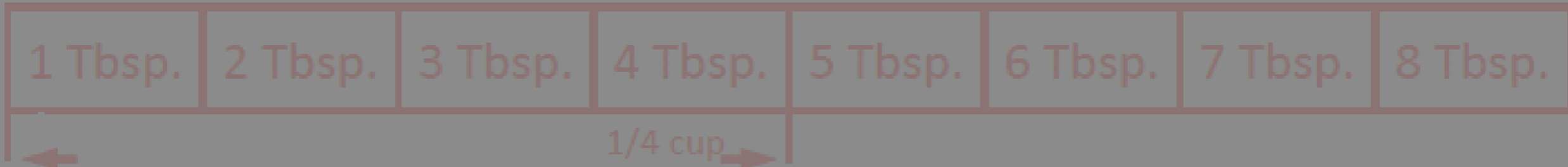
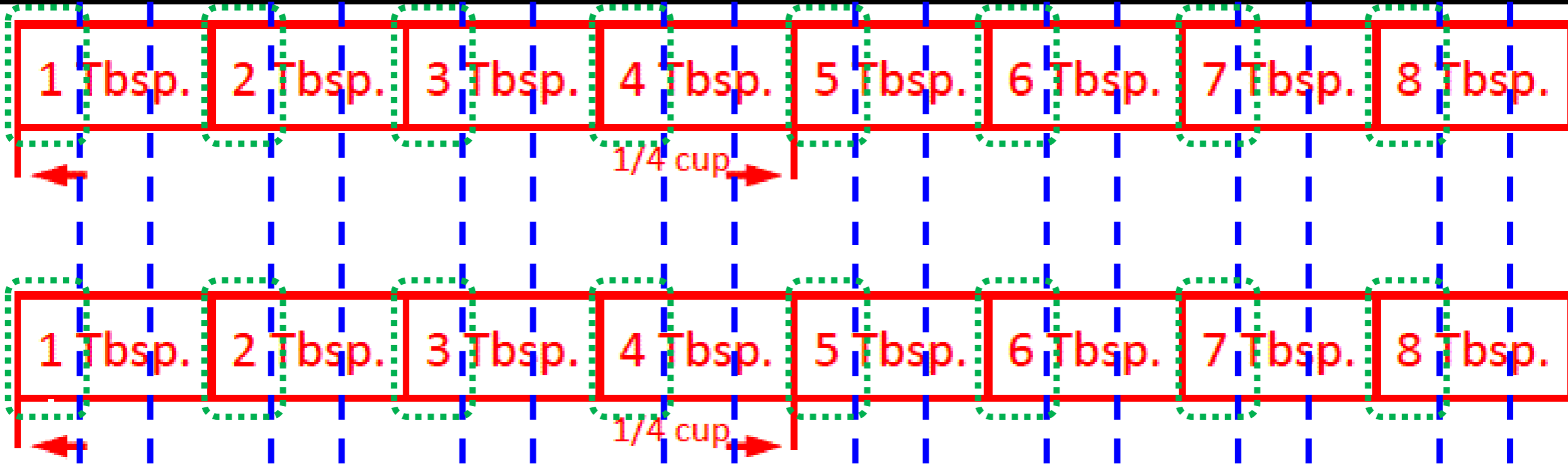
Elongated
 Alergada
18.5 in
 46,99 cm

Chair Height
 Altura de silla
16.5 in
 41,91 cm



Problem Solving Process

- What do you do when students don't use the strategy you anticipated they would use?
- What do you do when a student comes up with a strategy for solving the problem that you do not understand?





Problem Solving Process

- What do you do when students don't use the strategy you anticipated they would use?
- What do you do when a student comes up with a strategy for solving the problem that you do not understand?
- What do you do when the answer we calculate does not match with the actual answer?
- What do you do when students get stuck during the problem solving process and are not sure what to do?

Problem Solving Process

- What do you do when students don't use the strategy you anticipated they would use?
- What do you do when a student comes up with a strategy for solving the problem that you do not understand?
- What do you do when the answer we calculate does not match with the actual answer?
- What do you do when students get stuck during the problem solving process and are not sure what to do?
- What do you do when you ask students questions and few to no people are ready to respond?

Problem Solving Process

- What do you do when students don't use the strategy you anticipated they would use?
- What do you do when a student comes up with a strategy for solving the problem that you do not understand?
- What do you do when the answer we calculate does not match with the actual answer?
- What do you do when students get stuck during the problem solving process and are not sure what to do?
- What do you do when you ask students questions and few to no people are ready to respond?
- What do you do when the student conclusions are low quality and/or effort?

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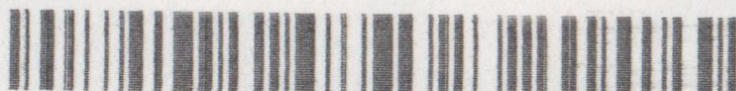
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What is your conclusion? How did you reach that conclusion?

IA conclusion each
for different items

CONCLUSION Each Item is good

in store purchase, exclusions

What is your conclusion? How did you reach that conclusion?

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$$15 - 5 = 10 \text{ and } 15 - 20\% = 12$$

If the item is \$47 it is better to use the 20% off coupon because

$$47 - 5 = 42 \quad 47 - 20\% = 37.60$$

\$5 off 20% off
42 vs 37.60

$$\begin{array}{ll} \$5 \text{ off} & 20\% \text{ off} \\ 18 \text{ vs } & 18.40 \end{array}$$

$$23 - 5 = 18$$

$$23 - 20\% = 18.40$$

Orange Chicken	5.25	🔪 Eggplant with Garlic Sauce	5.25
Chicken Lo Mein	5.25	🔪 Ma Po Tofu	5.25
Cashew Nut Chicken	5.25	🔪 Broccoli with Garlic Sauce	5.25
🔪 Pungent Chicken	5.25	🔪 String Bean with Garlic Sauce	5.25
Sweet & Sour Chicken	5.25	Vegetable Delight	5.25
Curry Chicken	5.25	Bamboo Fungus Tofu	5.25
Lemon Chicken	5.25	Shrimp with Asparagus	6.25
Vegetable Chicken	5.25	Shrimp with Lobster Sauce	6.25
Mongolian Beef	5.25	🔪 Fish Fillet with Szuchuan Sauce	6.25
Broccoli Beef	5.25	🔪 Fish Fillet with Black Bean Sauce	6.25
🔪 Pungent Beef	5.25	Crab meat with Asparagus	6.25
Sweet & Sour Pork	5.25	Sweet & Sour Shrimp	6.25

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CHICKEN
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\$25+tax/up

Not redeemable on lunch &
special dinners & party items or
with any other coupon
exp. 3/31/07

FREE

Cheese Wonton

WITH COUPON

with purchase from
\$25+tax/up

Not redeemable on lunch &
special dinners & party items or
with any other coupon
exp. 3/31/07

10% OFF **10% OFF**

WITH COUPON

WITH COUPON

with purchase from
\$20+tax/up

Not redeemable on lunch &
special dinners & party items or
with any other coupon
exp. 3/31/07

with purchase from
\$20+tax/up

Not redeemable on lunch &
special dinners & party items or
with any other coupon
exp. 3/31/07

Free ~~to~~ chicken lomein
if spend \$25 and not redeemable
on lunch, special dinners and
party items

and chicken 10 main.

What is your conclusion? How did you reach that conclusion?

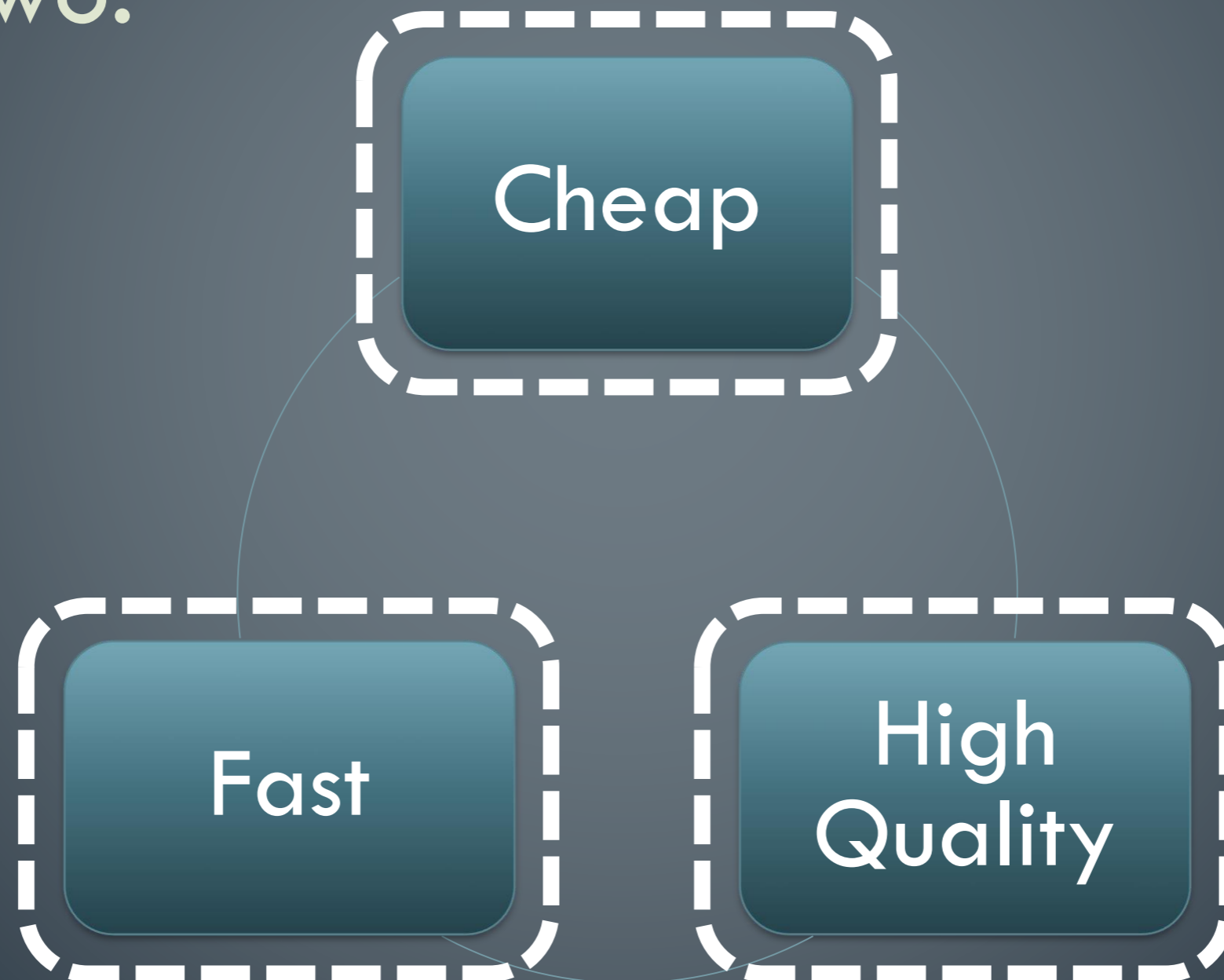
The 10% carbon is best with high
prices and small orders is best
with the free chicken lomein or chesse warden

What is your conclusion? How did you reach that conclusion?

You can use the 10% off when you pay 20-24.99 or more
the Free chicken Lorraine when you pay 25-49.99 or more
and the Free orange Chicken when you pay 50 or more.

Construction

- Pick two:



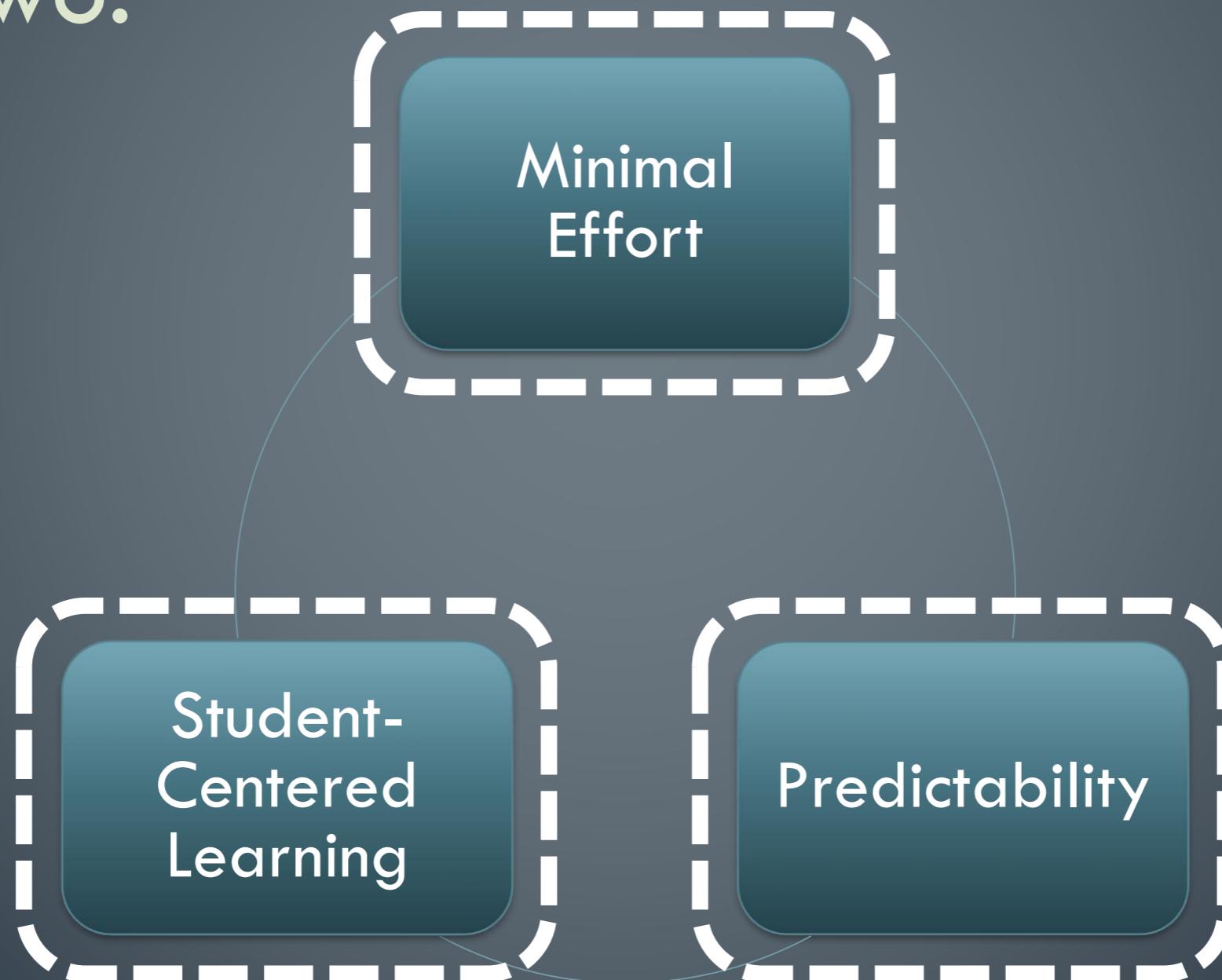
Family

- Pick two:



Problem-Based Learning

- Pick two:



Contact

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