International School of Panama

Day 3 (4th-5th)

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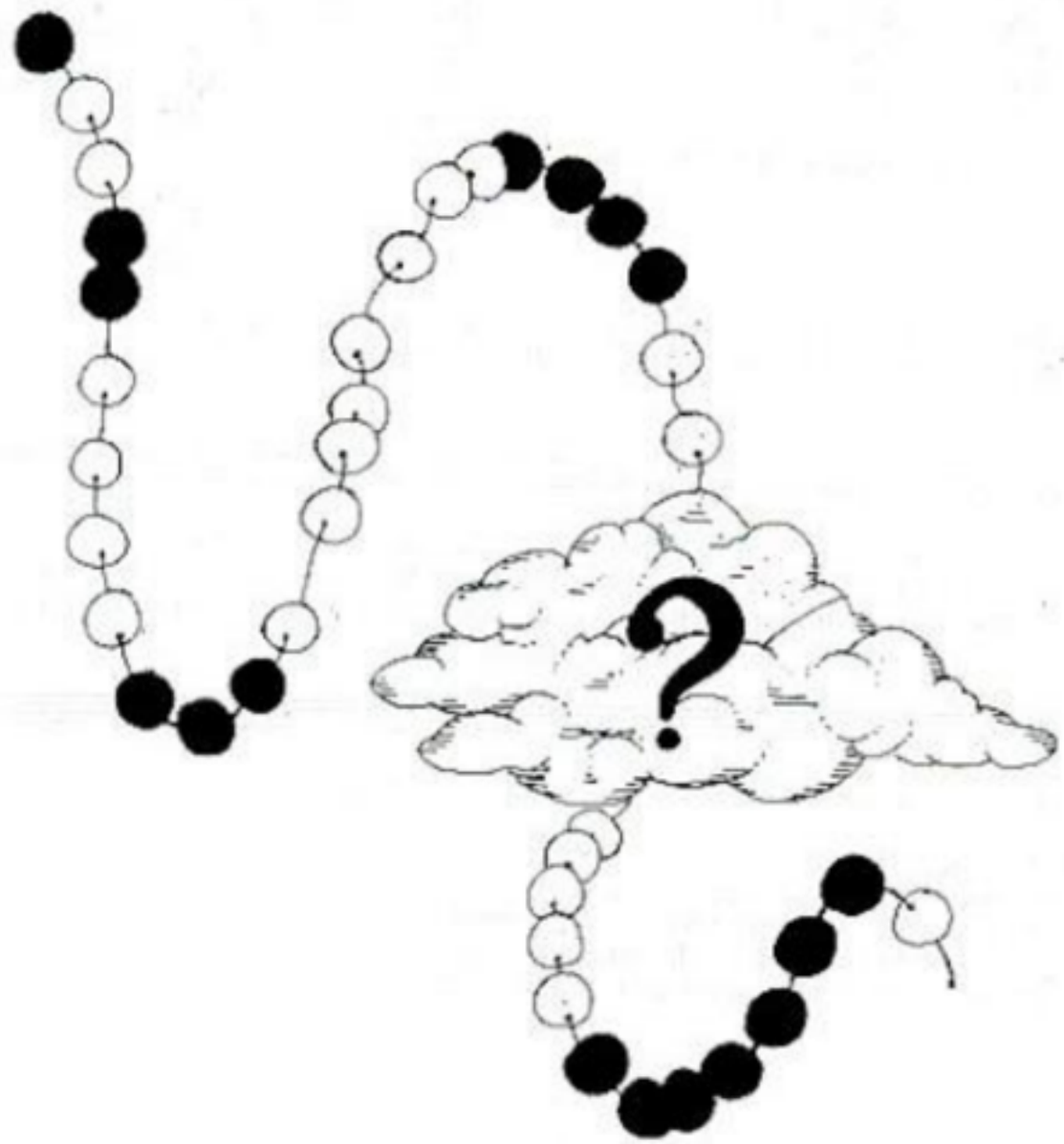
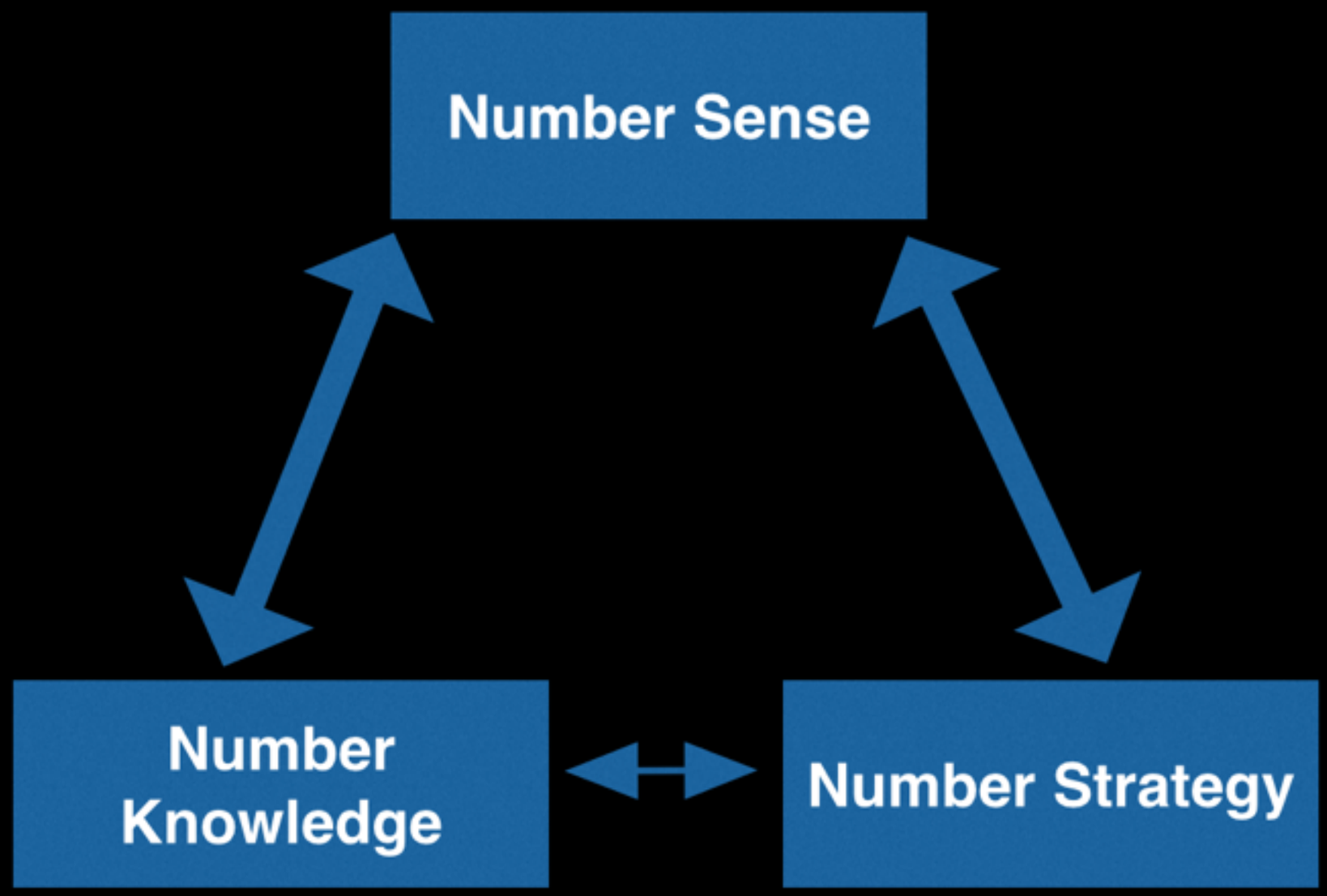
How many beads are hidden under the cloud?



NOTE – the cloud is not drawn to scale, and

HINT – remember planes often fly through clouds....

what is number sense?

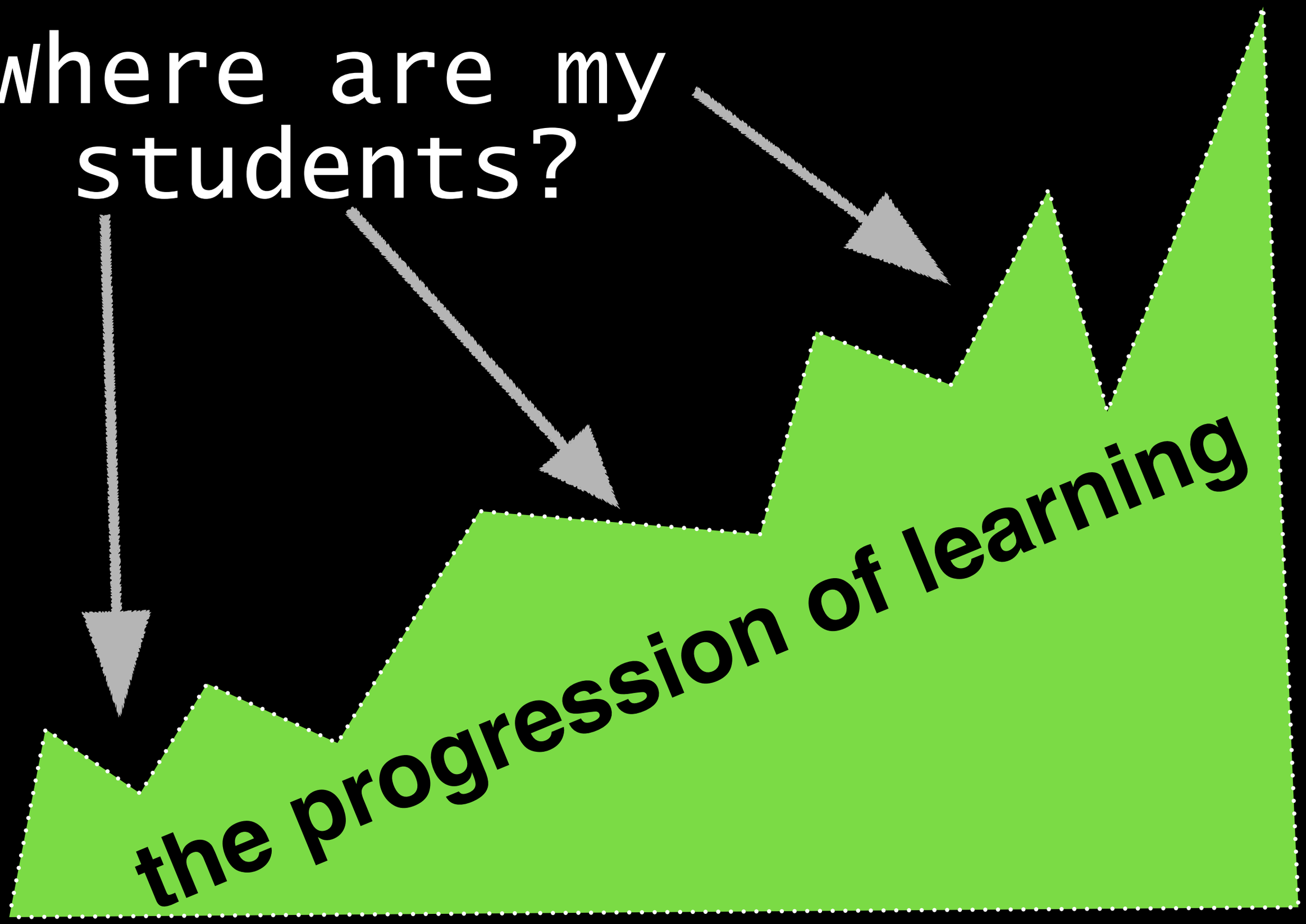


Time
vs.
Best Practice

The one thing we CAN control…
…how we teach

#1 contributing factor (for me) to embrace best practice was understanding learning progressions

where are my students?



Progression of Fraction Reasoning & Understanding

Unit Fractions

Equivalent Fractions

Comparing Fractions

Adding Fractions

Multiplying Fractions

Dividing Fractions

In Grade 4, instructional time should focus on three critical areas:

(1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (afternoon)

(2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (morning)

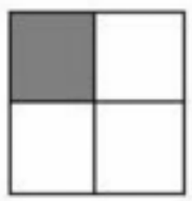
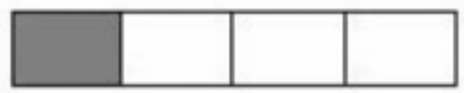
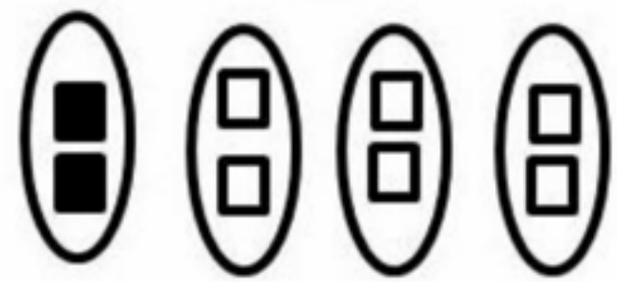
(3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

In Grade 5, instructional time should focus on three critical areas:

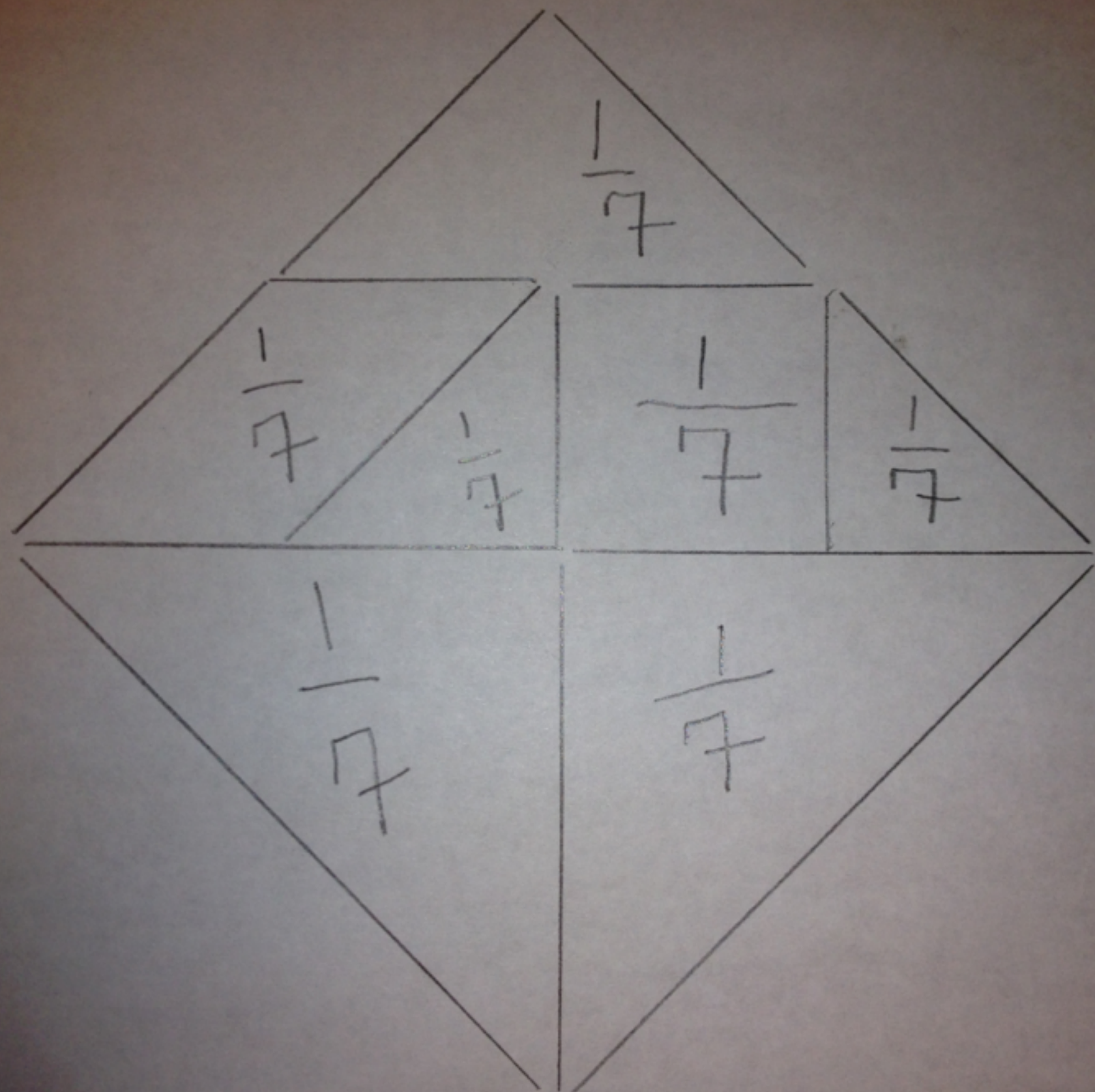
1. developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions);

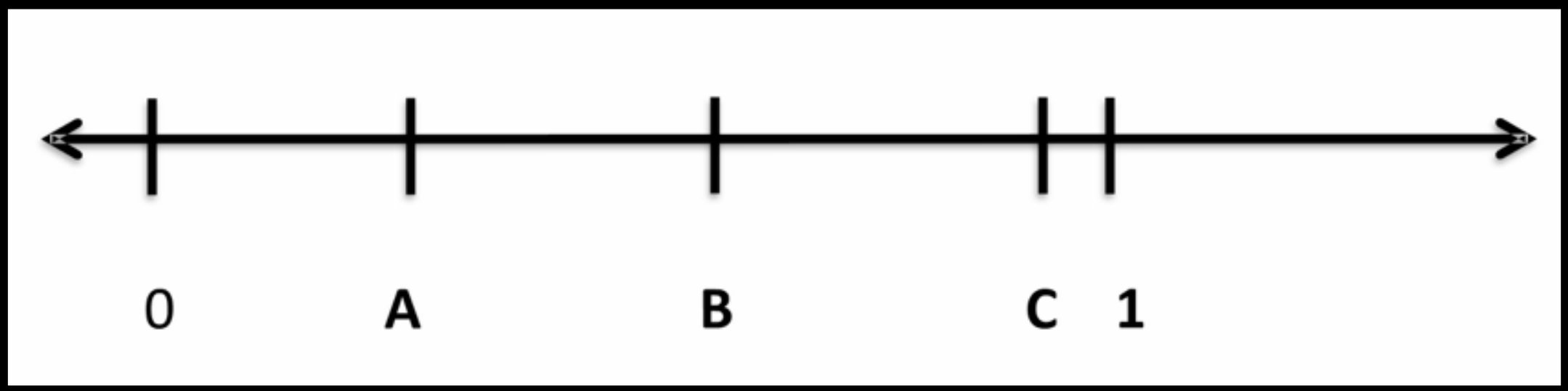
2. extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and

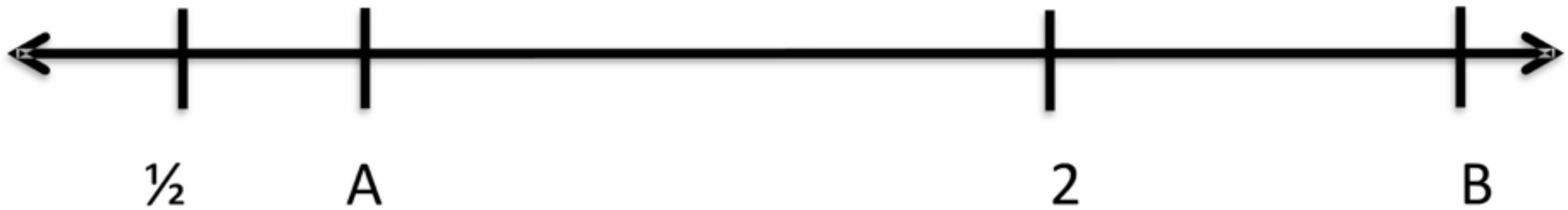
3. developing understanding of volume.

Area Model	Length Model	Set Model
		

Unit Fraction

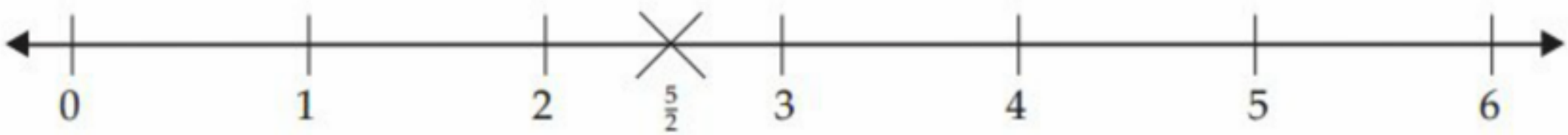

1/7
1/7
1/7
1/7
1/7
1/7
1/7


0
A
B
C
1


½
A
2
B

Dotty Pairs Game

The students play in pairs. One student takes dots, the other takes crosses. Place the cards (cards 1–6, two lots, see Material Master 4-1) face down in a pile. The players take turns turning over two cards. The numbers are used to form a fraction, e.g., 2 and 5 are turned over, so $\frac{5}{2}$ or $\frac{2}{5}$ can be made. One fraction is chosen, made with the fraction pieces, if necessary, and marked on a 0–6 number line with the player's identifying mark (dot or cross).



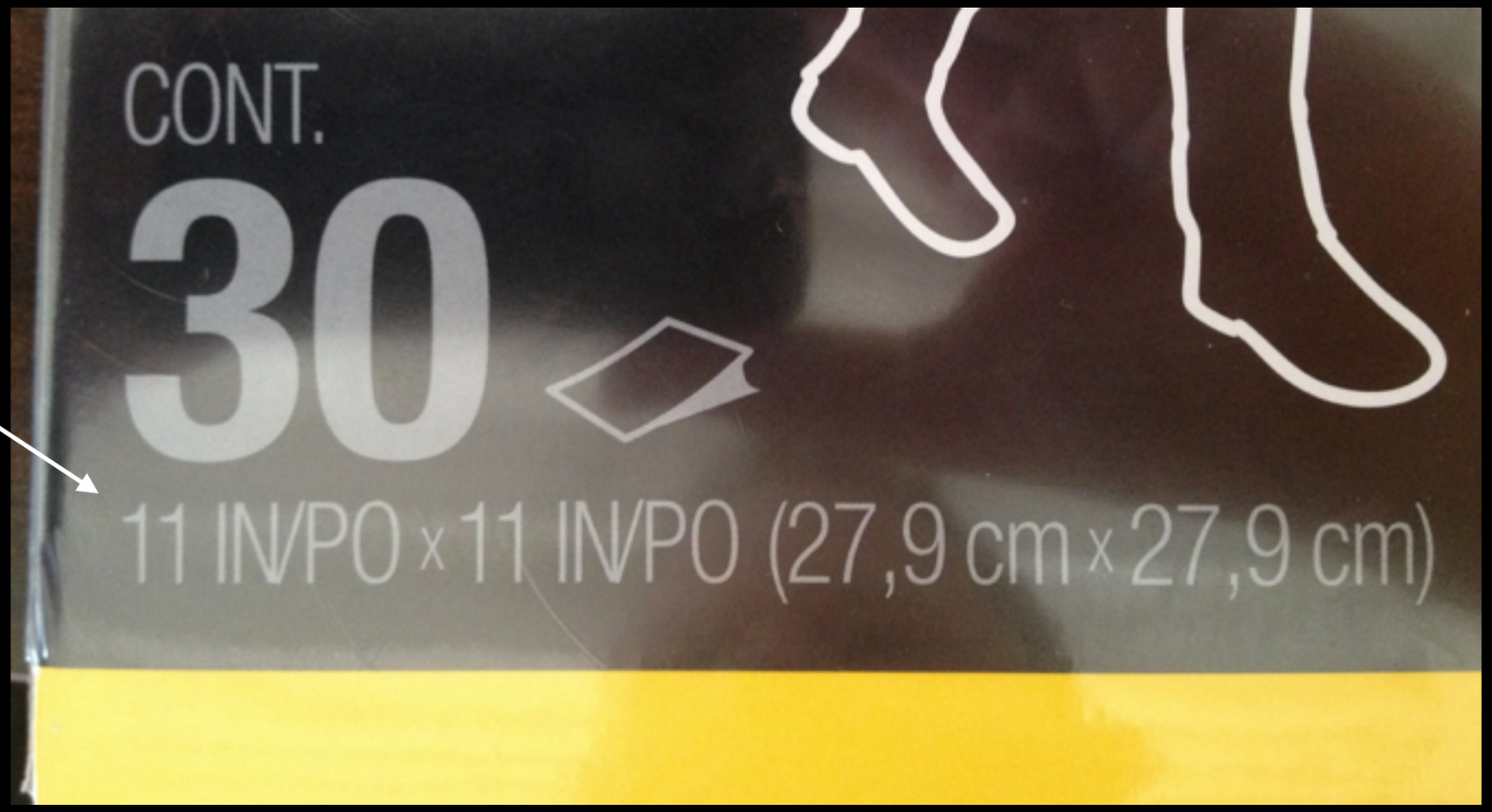
Players take turns. The aim of the game is to get three of their marks uninterrupted by their opponent's marks on the number line. If a player chooses a fraction that is equivalent to a mark that is already there, they miss that turn.

NB: A fraction such as $\frac{4}{1}$ can be made using the cards. Students may not be familiar with fractions in this form and the meaning of the numerator and denominator will need to be explored with the fraction circles.

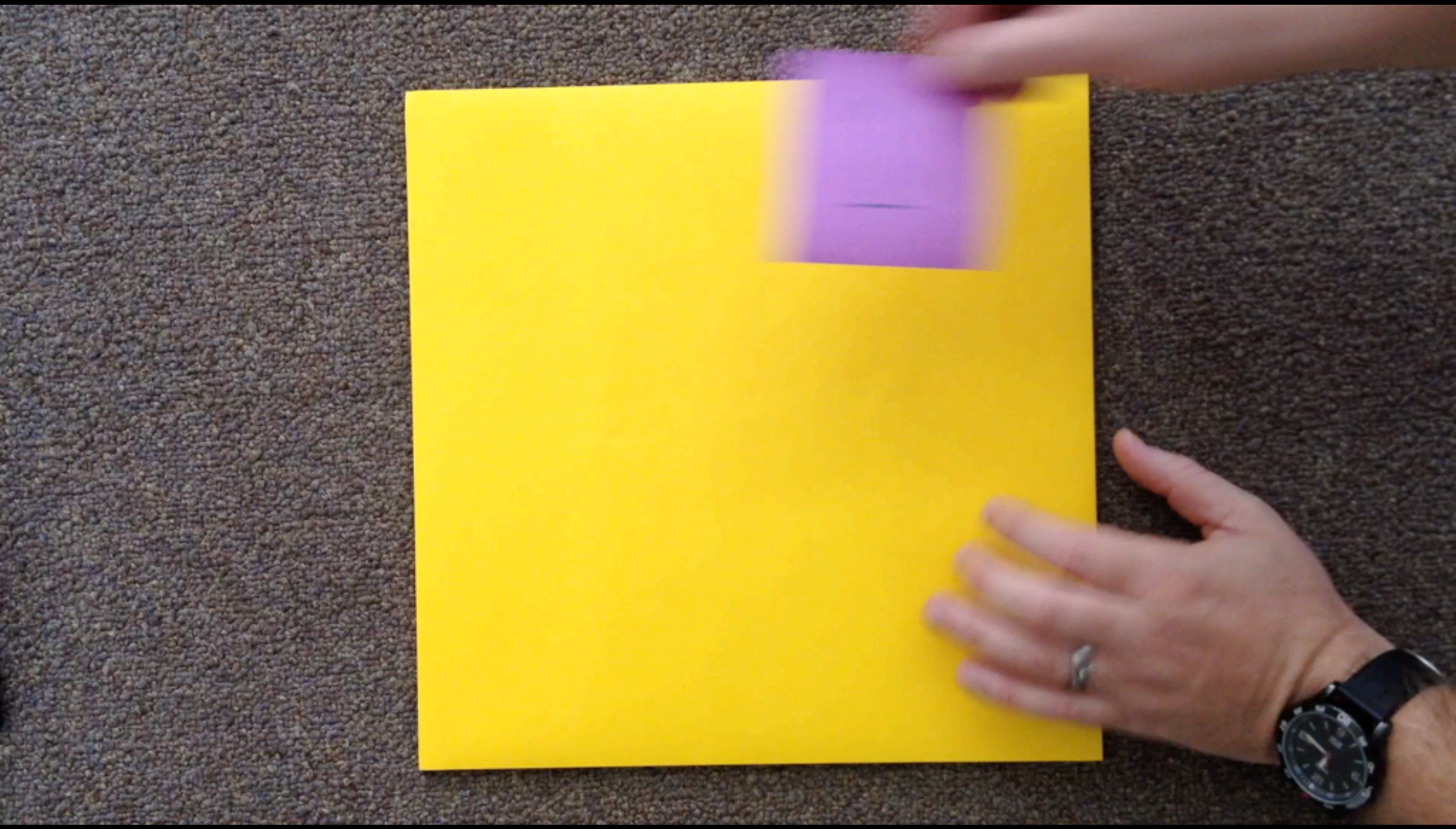
- What do you notice?
- What do you wonder?


Post-it
BIG PAD
Dream your big idea.
NOTAS GIGANTES
Sueña tu gran idea.
GRAND BLOC
Imaginez de grandes idées.
CONT.

the Big Pad



the little Post-it



The Spinning Dancer

clockwise

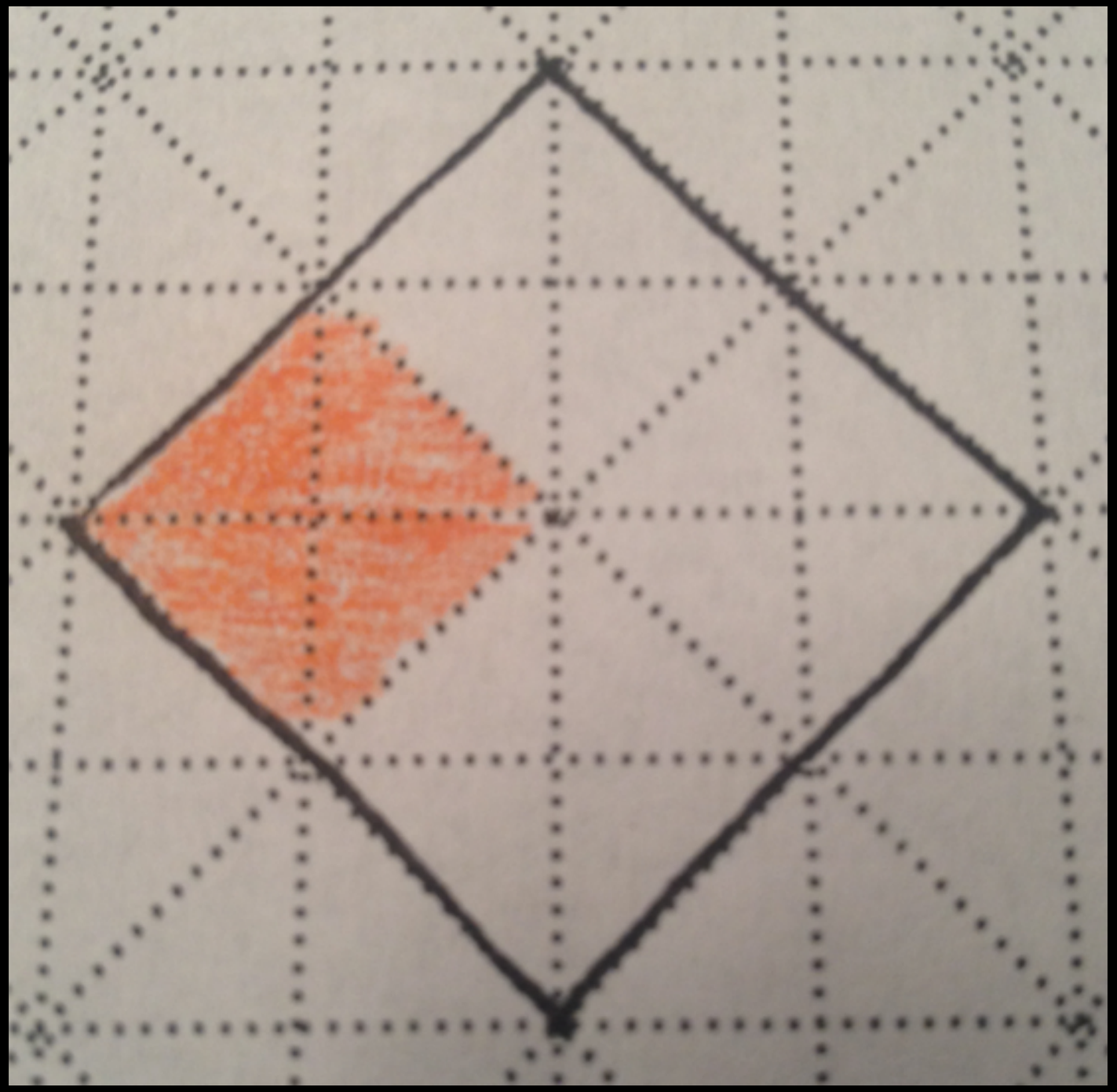
counter-clockwise

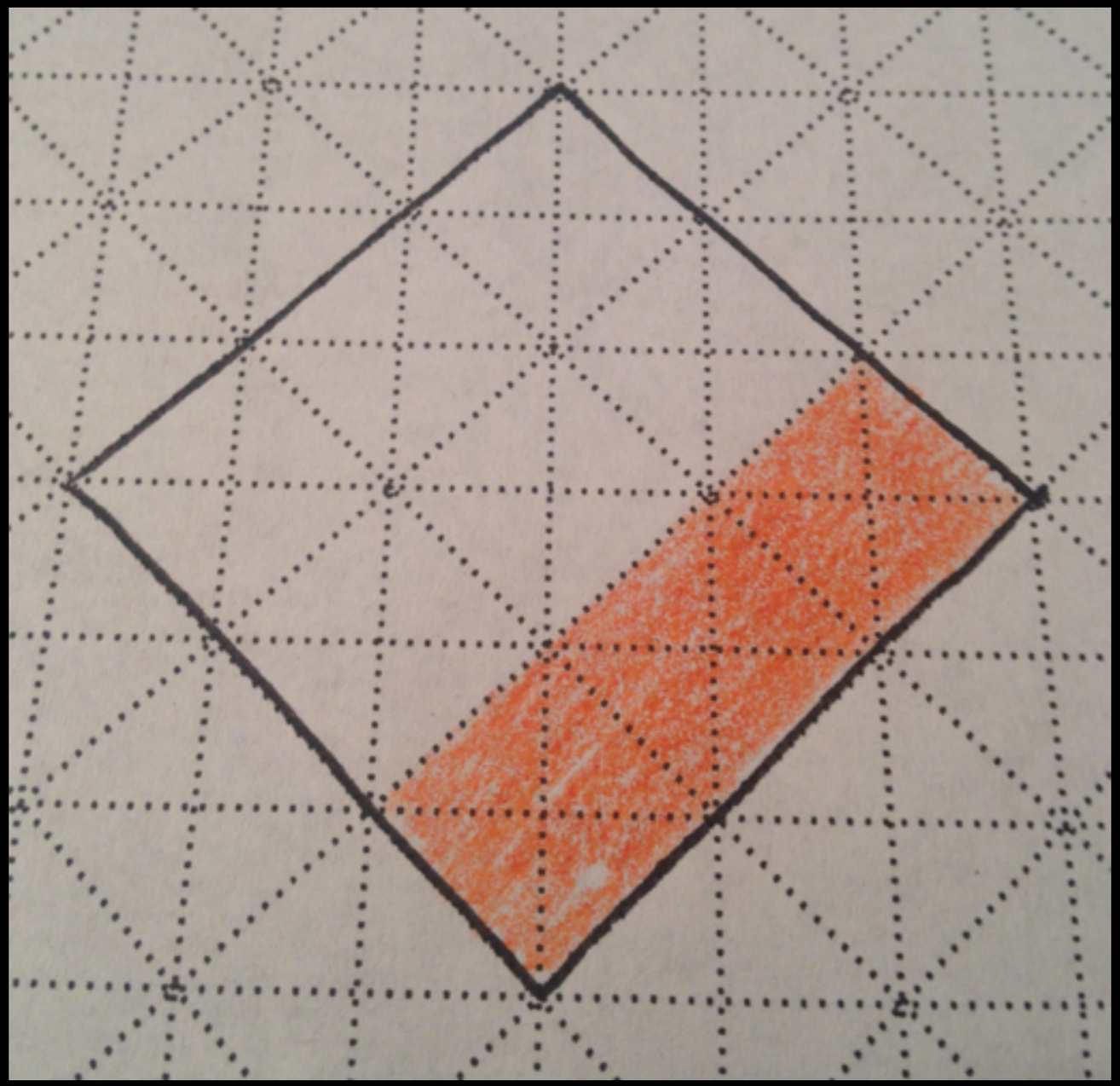
both

Equivalent Fractions

$$\frac{A}{B} = \frac{A \times E}{B \times E}$$

What fraction of the shape is shaded?





Task Instruction

For each part of the problem, start with a square sheet of paper and make folds to construct a new shape. Then, explain how you know the shape you constructed has the specified area.

1. Construct a square with exactly ¼ the area of the original square.

2. Construct a triangle with exactly ¼ the area of the original square.

3. Construct another triangle, also with ¼ the area, that is not congruent to the first one you constructed.

4. Construct a square with exactly ½ the area of the original square.

5. Construct another square, also with ½ the area, that is oriented differently from the one you constructed in 4.

Comparing Fractions

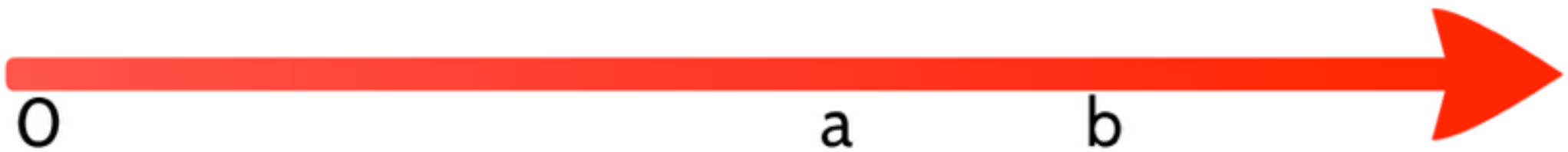
It takes

3

to prove
it to me

Rethinking Operations of Fractions

where are a+b and b-a?



what about (a)x(b) or (a)/(b)

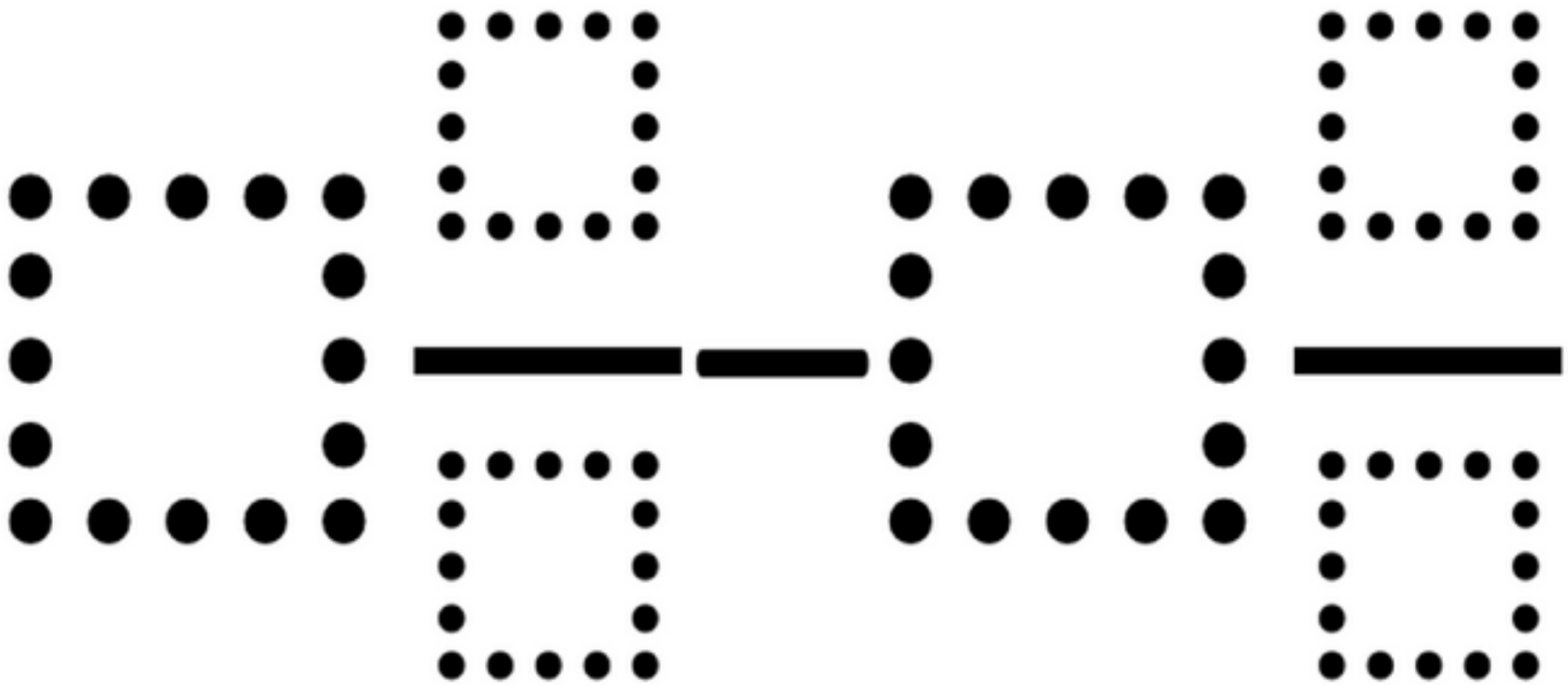
Start with sharing models,,,

Solve by using only models and drawing to start

Open Middle Tasks

SUBTRACTING MIXED NUMBERS

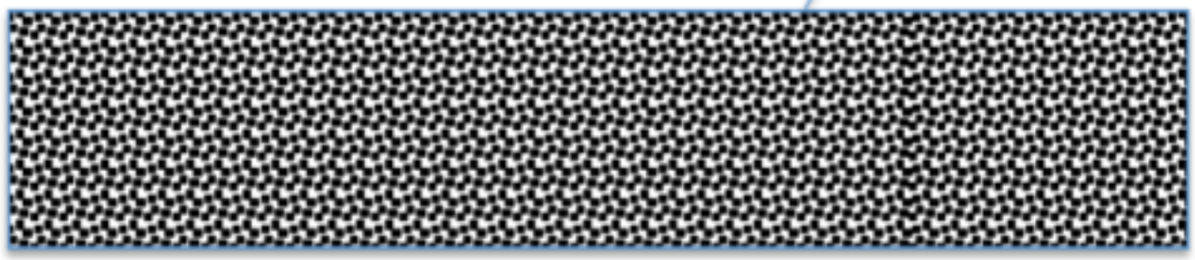
Directions: Make the smallest (or largest) difference by filling in the boxes using the whole numbers 1-9 no more than one time each.



Multiplication of Fractions

A **Whole** Lot of Fun!

This rectangle is three-fourths of a whole.



Draw a rectangle that is:

1. $\frac{1}{2}$ of the whole

2. $\frac{2}{3}$ of the whole

3. $\frac{3}{2}$ of the whole

4. $\frac{5}{4}$ of the whole

The Progression of Multiplication

Strip Model Diagramming

fostering growth in our young mathematicians

1. be less helpful
2. ask for estimations often
3. asking “what do you notice?” “what do you wonder?”
4. slow down and be patient
5. not saying I was never good in math
6. everything we do moving forward goes back to the SMPs