B. Michelle Rinehart
@HowWeTeach
howweteach.com
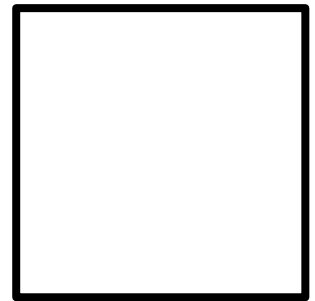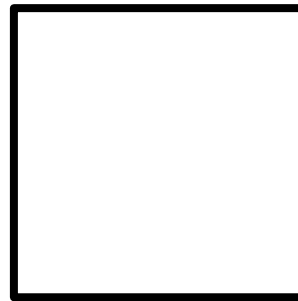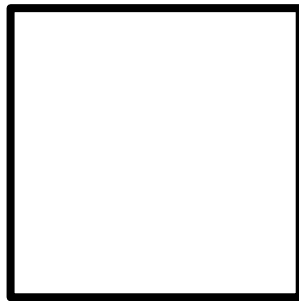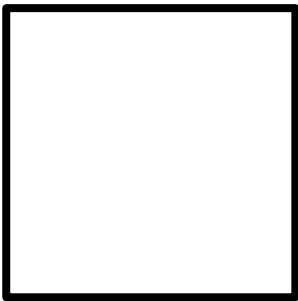
Math Talks:
Adapting the Number Talks Structure for Secondary Mathematics Classrooms

Amy Hoelscher
@ARHoelscher

More resources available at:
howweteach.com/mathtalks

Math Talks:
Adapting the Number Talks Structure
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An elephant is as strong as how many horses?
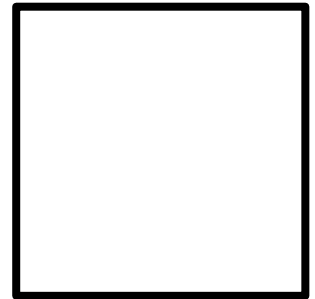
Math Talk Problem Types

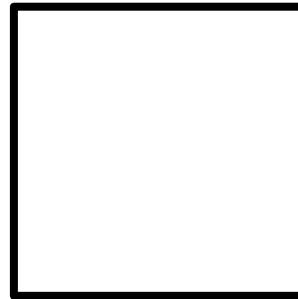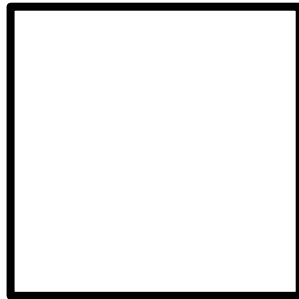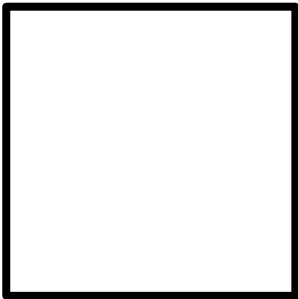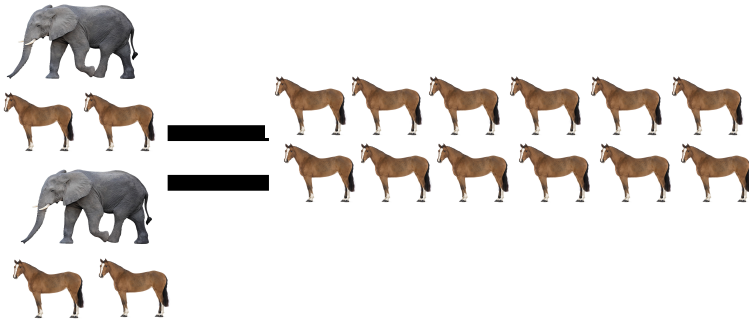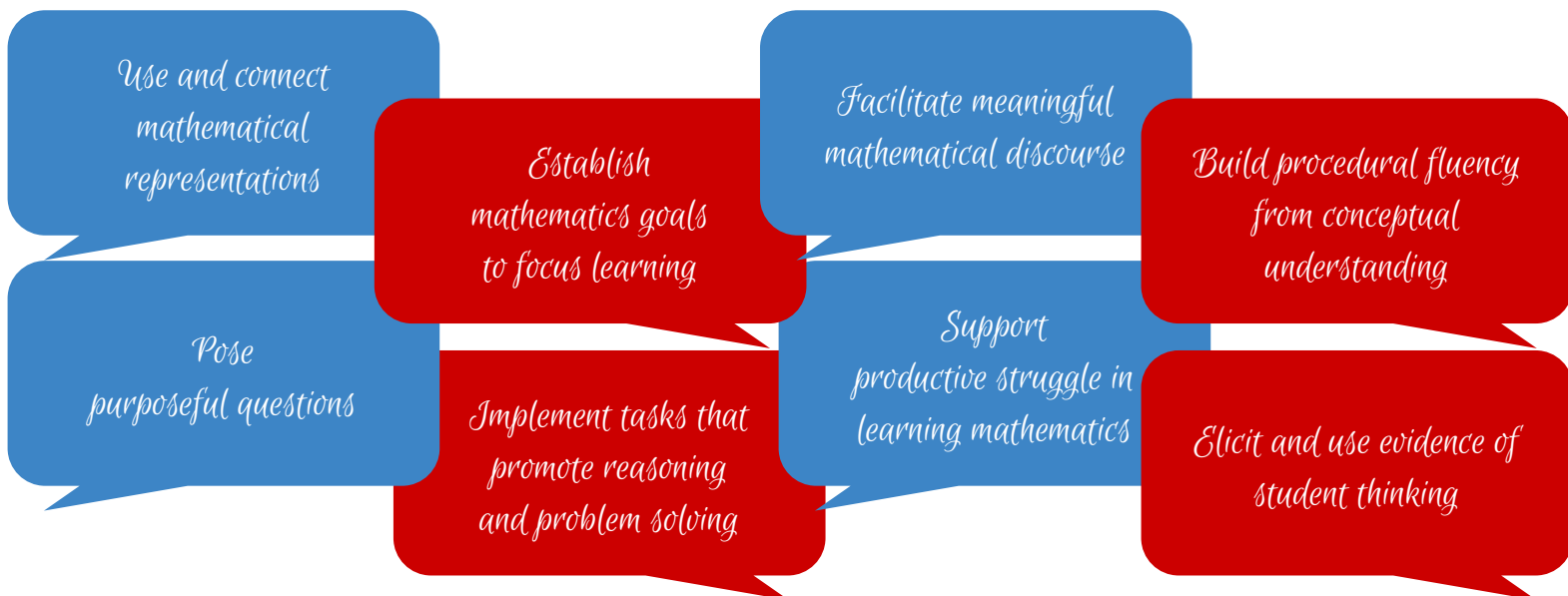## Math Talk Routines

Discussion Structures
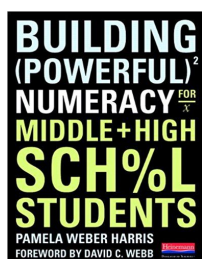
Open Strategy Sharing

Compare and Connect

Why? Let's Justify

Troubleshoot and Revise

What's Best and Why?

Define and Clarify

Source: Kazemi, E., & Hintz, A. (2014). *Intentional talk: How to structure and lead productive mathematics discussions.* Portland, ME: Stenhouse.
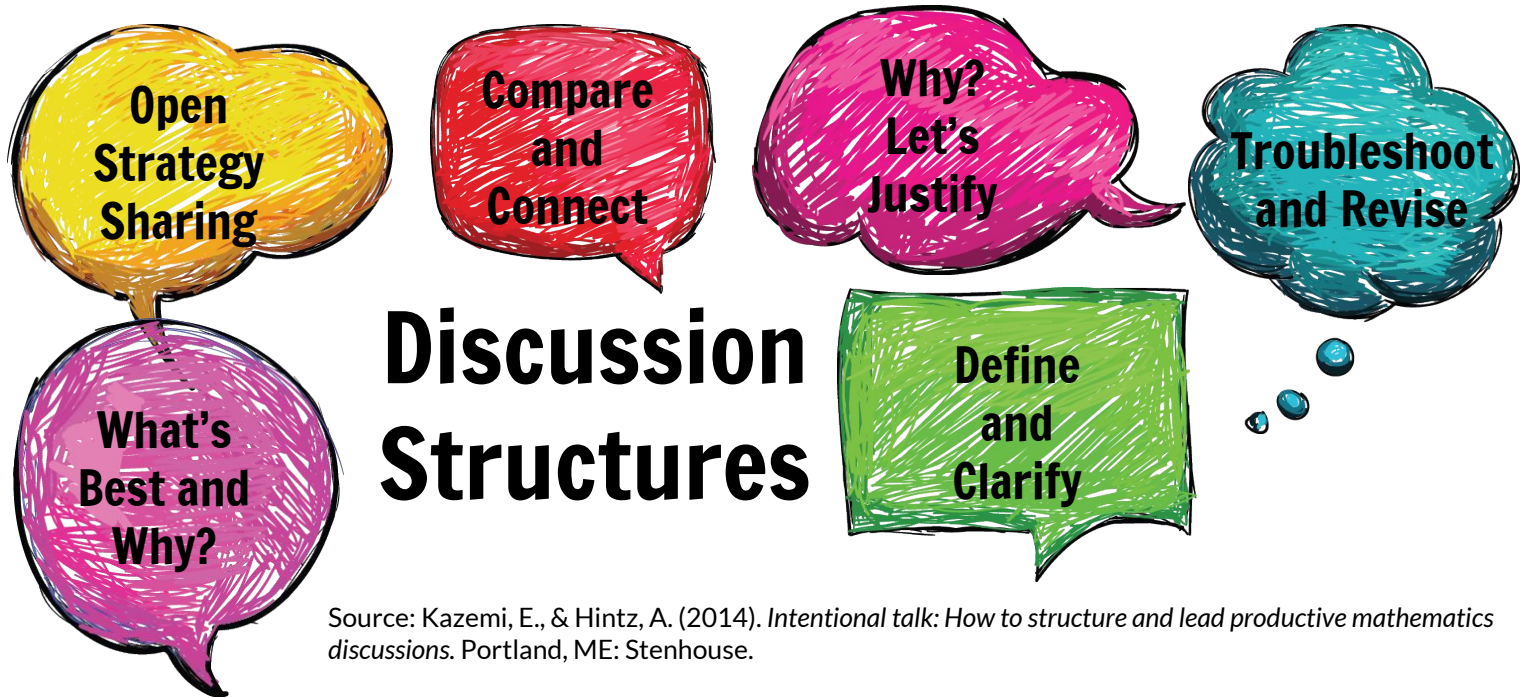
Effective Mathematics Teaching Practices

Use and connect mathematical representations

Establish mathematics goals to focus learning

Facilitate meaningful mathematical discourse

Build procedural fluency from conceptual understanding

Pose purposeful questions

Implement tasks that promote reasoning and problem solving

Support productive struggle in learning mathematics

Elicit and use evidence of student thinking

Source: National Council of Teachers of Mathematics. (2014). *Principles to actions: Ensuring mathematical success for all.* Reston, VA: NCTM, Inc. (p. 10)
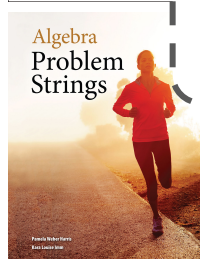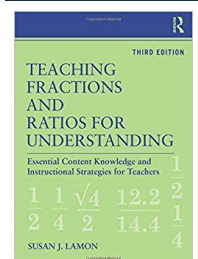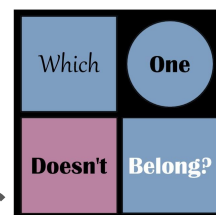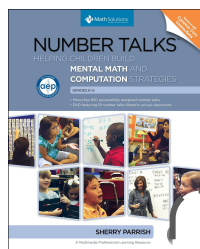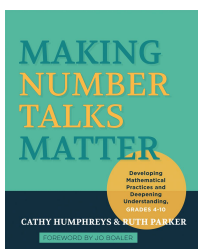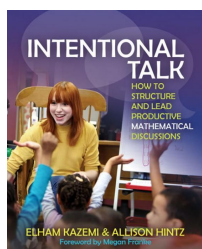
Resources for Math Talks

INTENTIONAL TALK — HOW TO STRUCTURE AND LEAD PRODUCTIVE MATHEMATICAL DISCUSSIONS — ELHAM KAZEMI & ALLISON HINTZ — Foreword by Megan Franke

MAKING NUMBER TALKS MATTER — Developing Mathematical Practices and Deepening Understanding, GRADES 4–10 — CATHY HUMPHREYS & RUTH PARKER — FOREWORD BY JO BOALER

NUMBER TALKS — HELPING CHILDREN BUILD MENTAL MATH AND COMPUTATION STRATEGIES — SHERRY PARRISH

Building Concepts

Which One Doesn't Belong?

ESTIMATION 180

BUILDING (POWERFUL)² NUMERACY FOR 7X MIDDLE+HIGH SCH%L STUDENTS — PAMELA WEBER HARRIS — FOREWORD BY DAVID C. WEBB

THIRD EDITION — TEACHING FRACTIONS AND RATIOS FOR UNDERSTANDING — Essential Content Knowledge and Instructional Strategies for Teachers — SUSAN J. LAMON
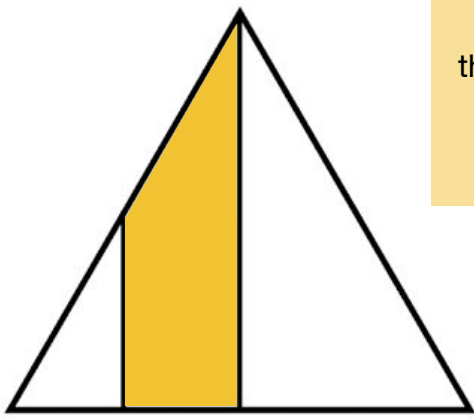
Algebra Problem Strings — Pamela Weber Harris
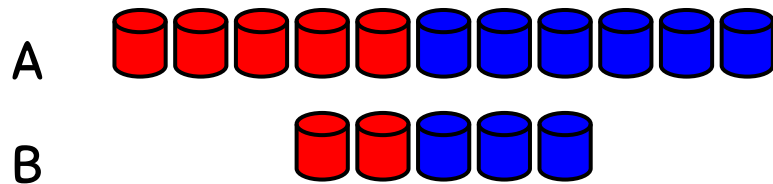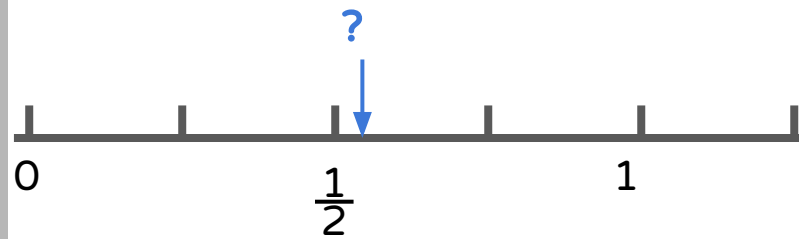
HOW WE teach

Open Middle

Visual Patterns

FRACTION TALKS

What fraction of the shape appears to be shaded? Show how you know.

Represent the rational number ⅜ in as many ways as possible.

Use a fraction and a decimal to identify what point might be indicated on the number line. Explain your reasoning.

?

0      $\frac{1}{2}$ 1

A

B

Solve this problem visually:

A company mixes cans of red dye with cans of water to create different shades of red. If you would like your fabric to be a darker shade of red, which mixture should you choose? Why?
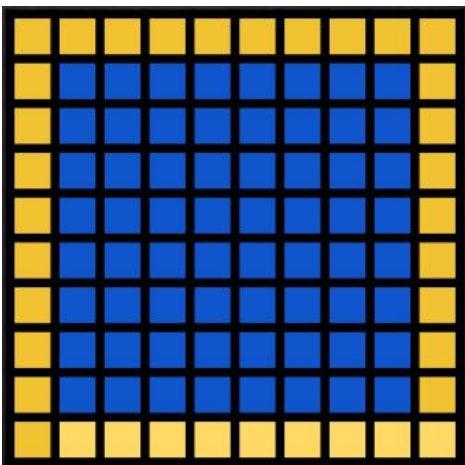
Which bracelet is "pinker"? Why?

A   B

OUTLINE A RECTANGLE THAT IS...

... HALF BLUE.

...JUST AS BROWN AS IT IS BLUE.

How could you determine the border tiles of an 8 x 8 pool without counting them one at a time? How else? How else?

Find an equivalent expression and use that expression to write an equation.

4 x 26

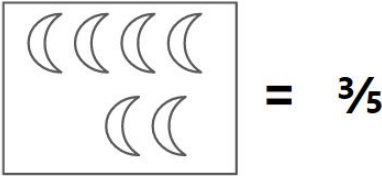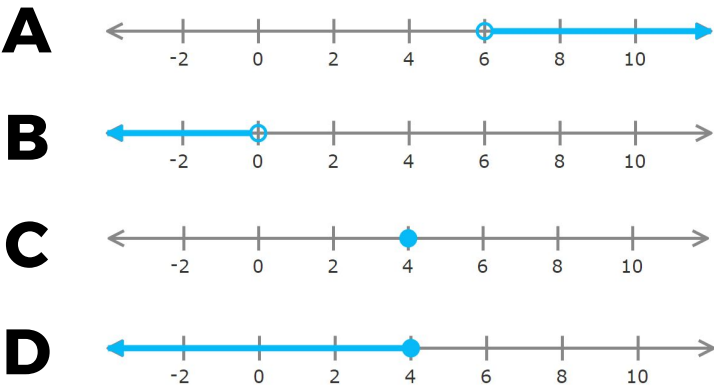# The mean of a set of numbers is 8. What might the numbers be?

Write as many expressions as you can that are equivalent to:
10x + 24

Four score and seven years ago our fathers brought forth on this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this. But, in a larger sense, we can not dedicate -- we can not consecrate -- we can not hallow -- this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add or detract. The world will little note, nor long remember what we say here, but it can never forget what they did here. It is for us the living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us -- that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion -- that we here highly resolve that these dead shall not have died in vain -- that this nation, under God, shall have a new birth of freedom -- and that government of the people, by the people, for the people, shall not perish from the earth.

What is the word count of Abraham Lincoln's *Gettysburg Address*?

Which one doesn't belong? Why?
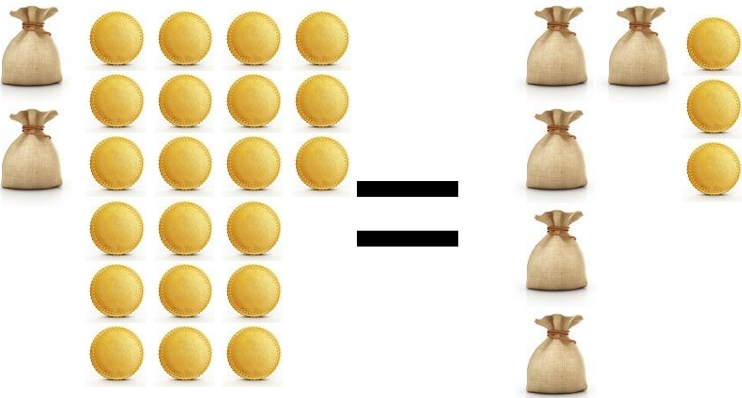
A

B

C

D

$$\text{(five moons)} = \frac{3}{5}$$

½ is how many moons?

How do you see this pattern growing? What would the 100th stage look like?
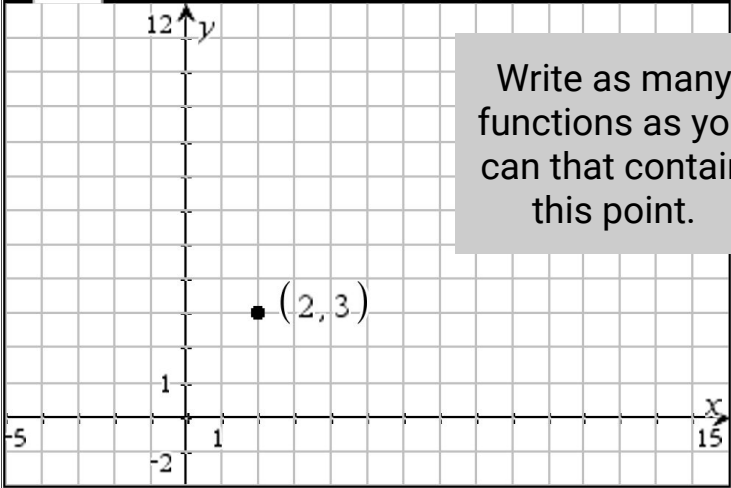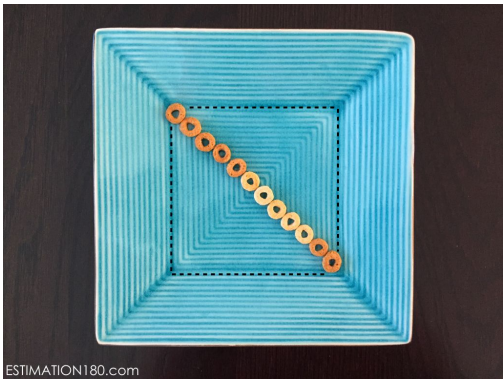
Fig. 2   Fig. 3   Fig. 4
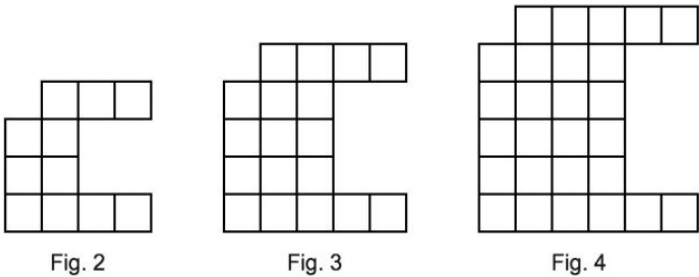
How many coins are in one pouch?

Which one doesn't belong? Why?
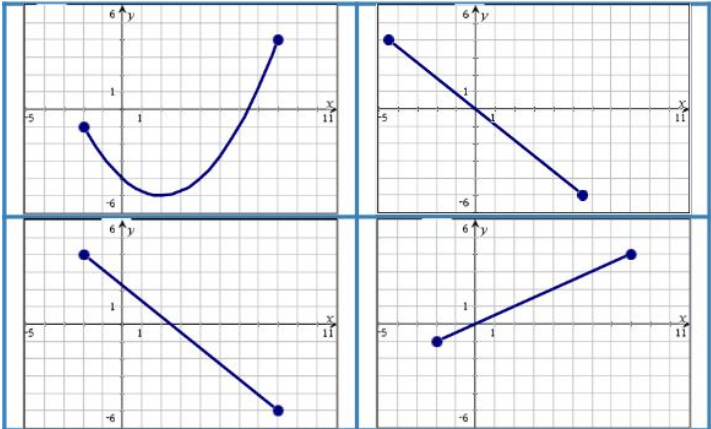
How many cereal circles will it take to cover the area of the dashed square?

ESTIMATION180.com

Write as many functions as you can that contain this point.

$(2, 3)$

$80.00

$76.00

Which one doesn't belong? Why?

A

B

C

D