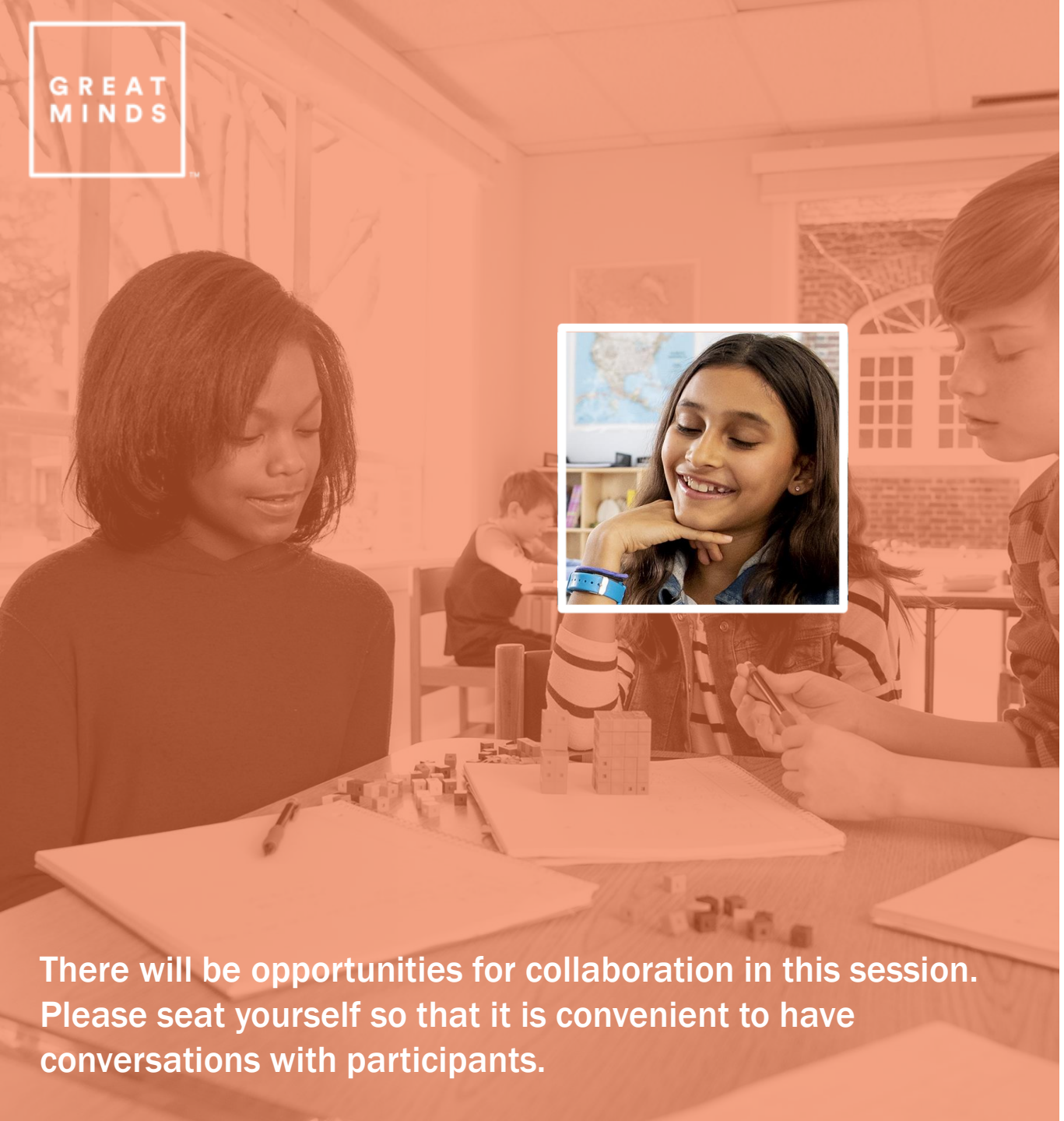


There will be opportunities for collaboration in this session. Please seat yourself so that it is convenient to have conversations with participants.

Invigorate, Engage, Inspire: Low-Floor, High-Ceiling Activities

Janae Pritchett
Connie Laughlin

October 27, 2023

The Coupon Task

Which coupon would you rather have and why?

Coupon A

Coupon B

Low-Floor, High-Ceiling Activities

- Are accessible
- Offer multiple entry points
- Value process over outcome
- Encourage extension
- Promote discourse
- Provide visuals

Facilitating Low-Floor, High-Ceiling Activities

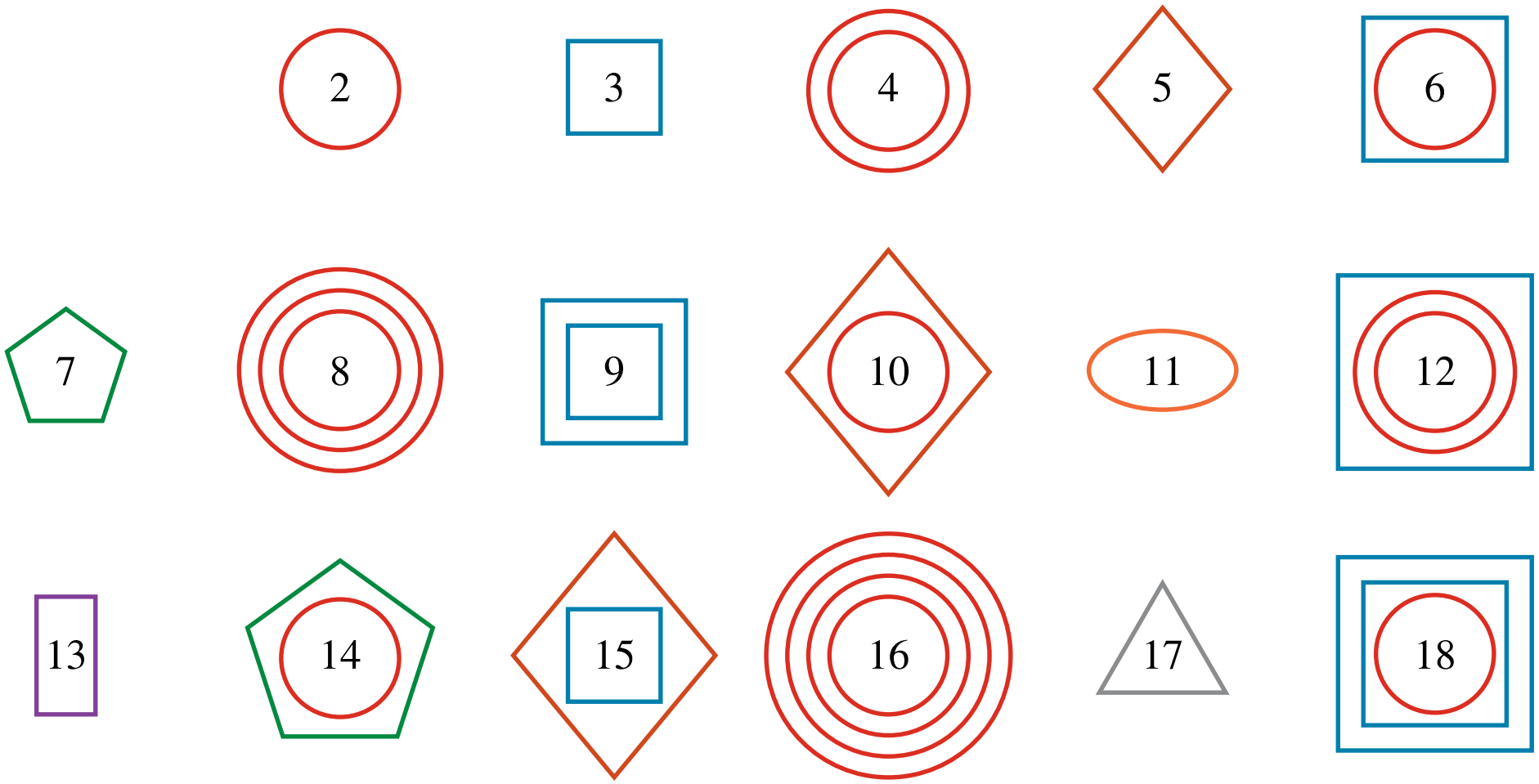
Who?

When?

How?

The Shapes and Numbers Task

What do you notice? What do you wonder?



Value of Low-Floor, High-Ceiling Activities

Low-floor, high-ceiling activities promote:

- collaboration,
- creativity,
- a community of mathematicians,
- inherent differentiation,
- student ownership, and
- rigor.

Rigor

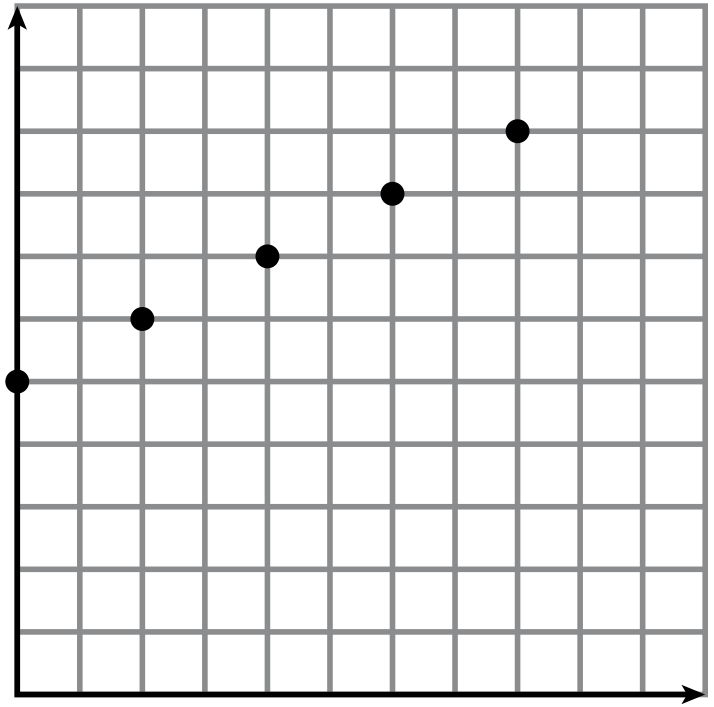
Rigor is a “deep, authentic command of mathematical concepts.”[1]

1. NGA Center and CCSSO, “Key Shifts in Mathematics”.

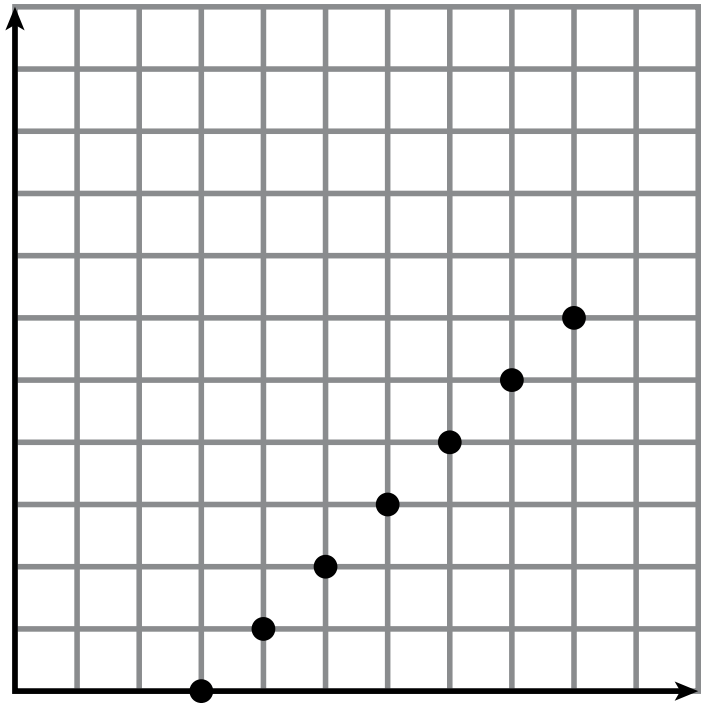
The Graphs Task

Create two real-world situations that could be represented by the graphs.

Graph A

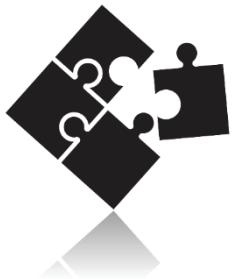


Graph B



Creating Low-Floor, High-Ceiling Activities

Lower the floor: make it accessible



Raise the ceiling: provide opportunity for extension

Lower the floor and raise the ceiling

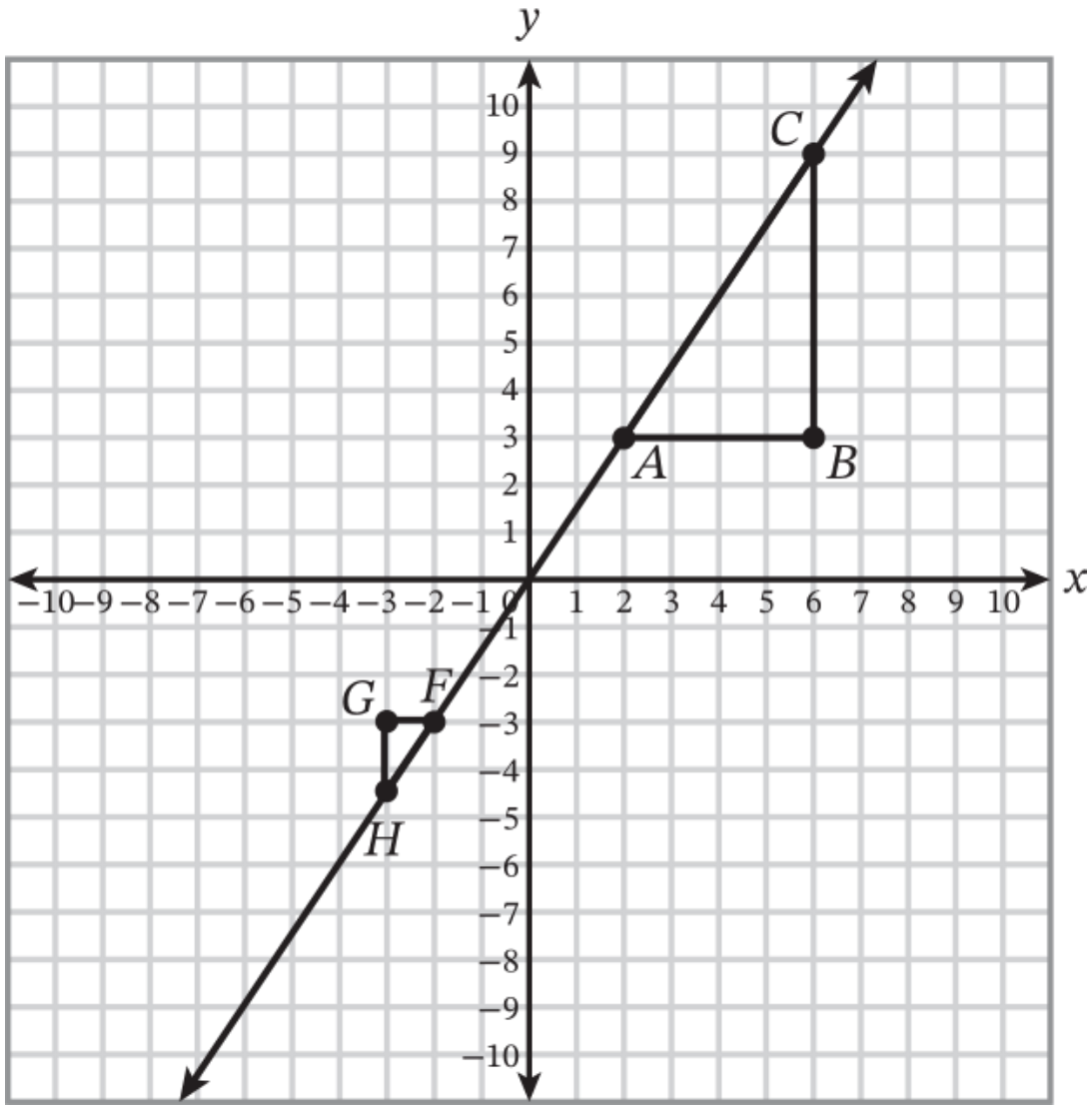
Design a Task: Lower the Floor

What number could be inserted in each set of parentheses to make the equation true?

$$(\quad)(\quad)(\quad) = -3\frac{1}{4}$$

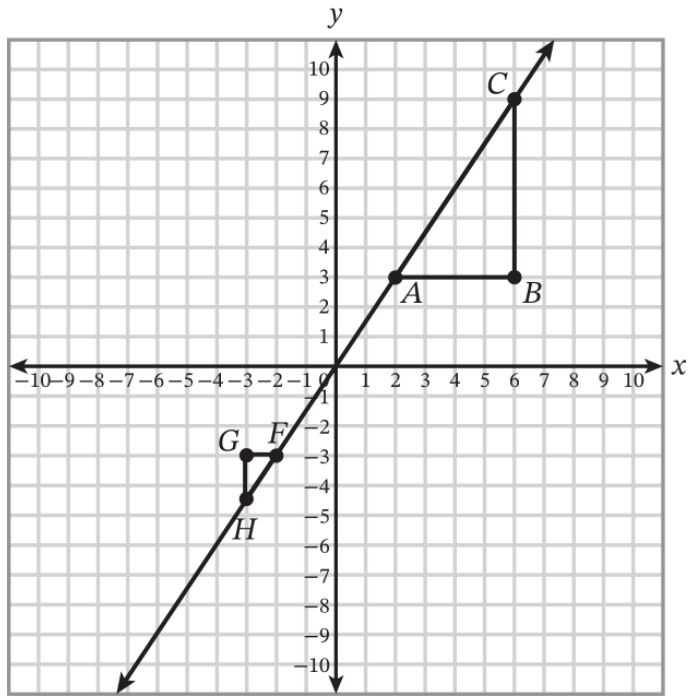
Design a Task: Raise the Ceiling

In the diagram, the right triangles have horizontal and vertical legs, and the hypotenuses lie on the same line. What is the value of $\frac{GH}{FG}$?

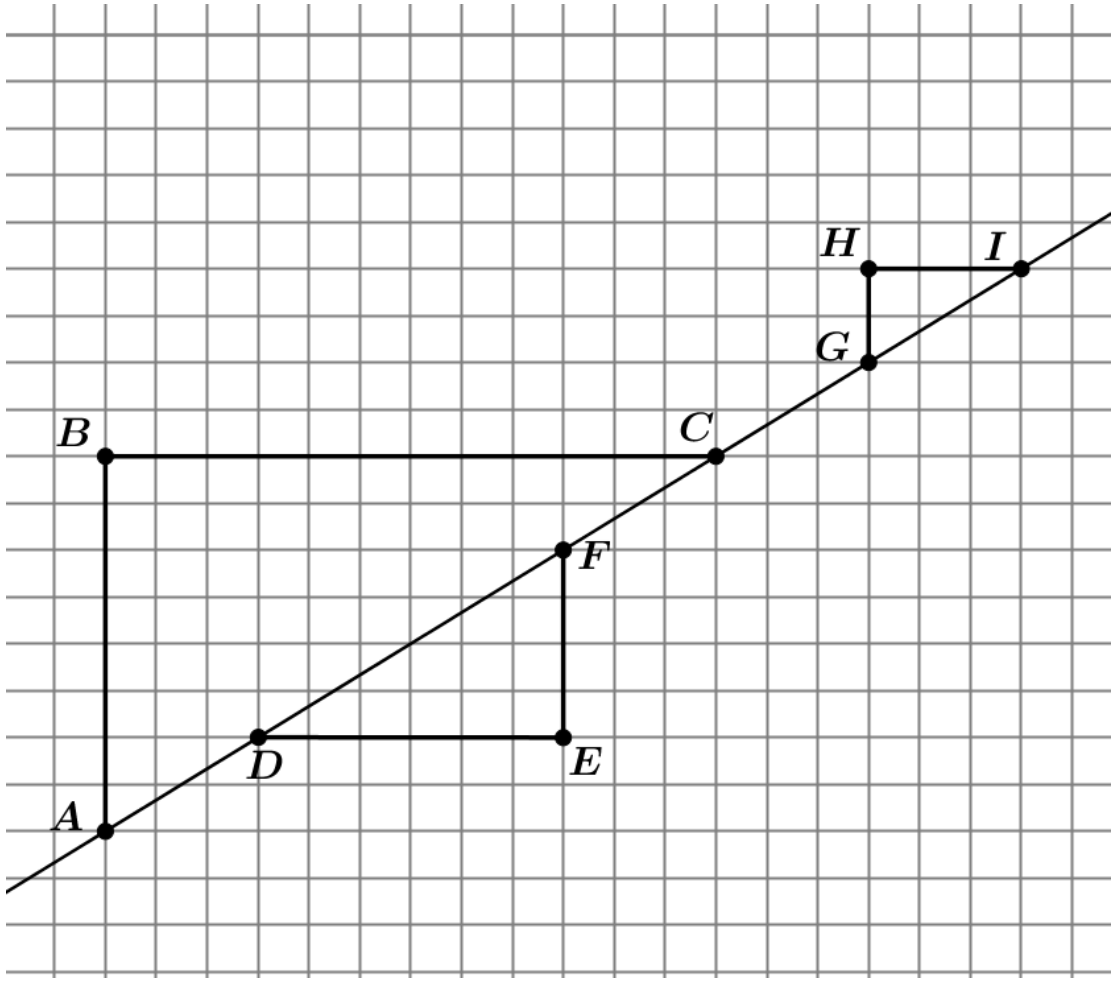


Design a Task: Raise the Ceiling, Option #1

Original Task

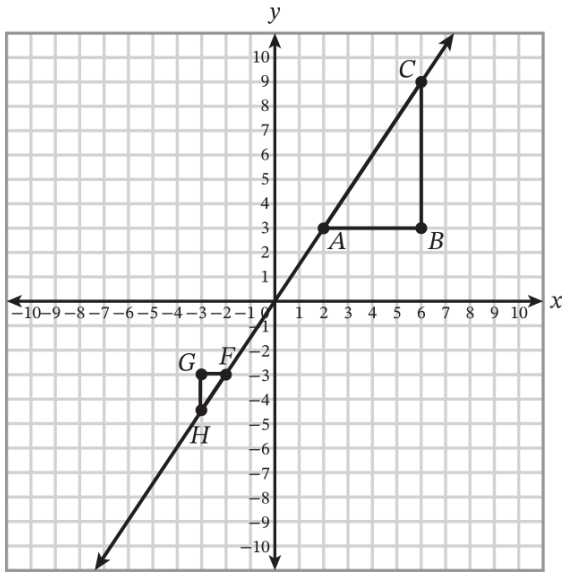


New Task

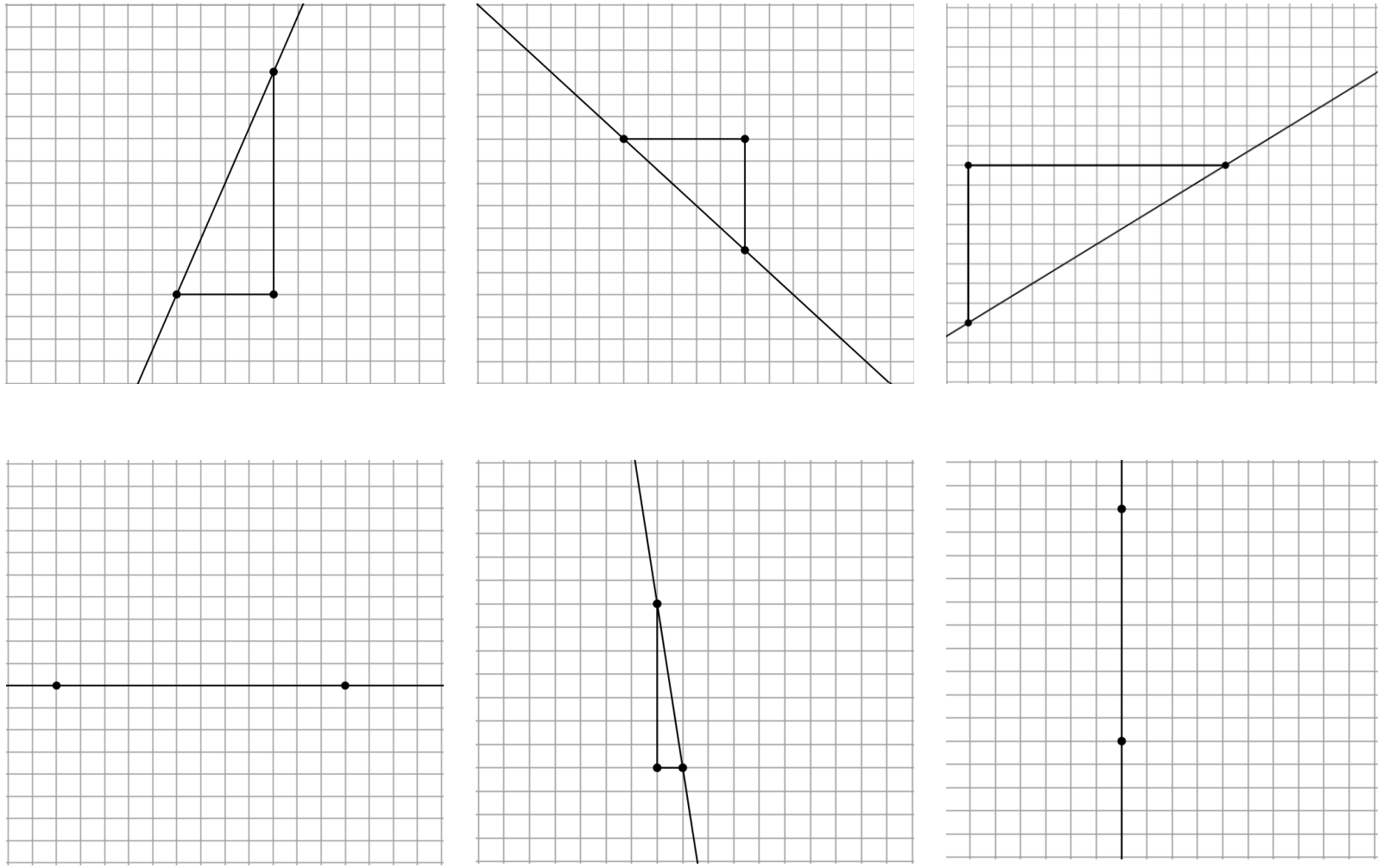


Design a Task: Raise the Ceiling, Option #2

Original Task

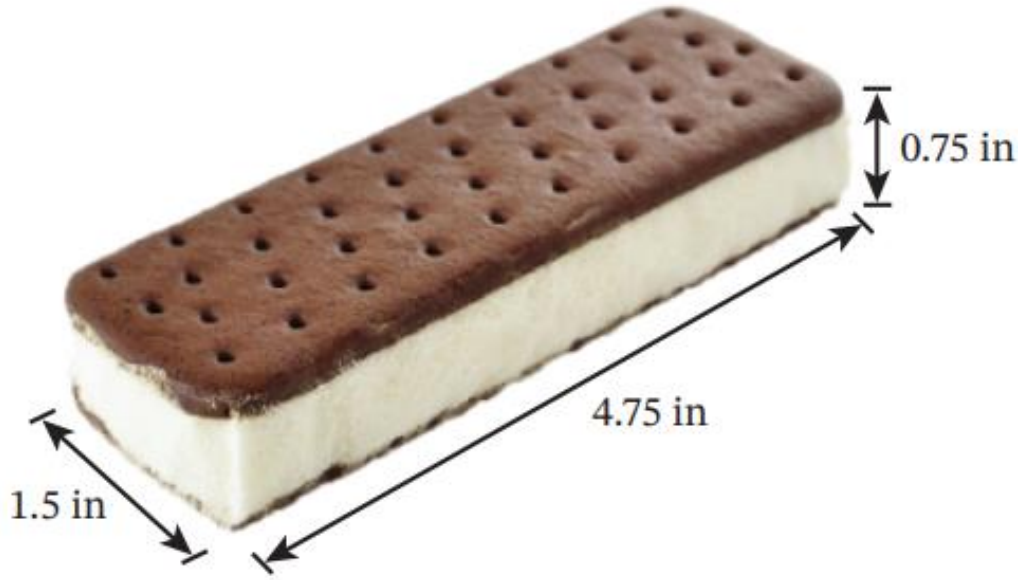


New Task



Design a Task: Lower the Floor and Raise the Ceiling

Design two different boxes in the shape of a right rectangular prism to hold 24 identical ice cream sandwiches. Determine the volume and surface area of each box. Which box is best? Why?



Closure

“If we value learners' multiple approaches and different ways of thinking about a task, their sense of themselves as mathematicians will grow. It is important to focus on developing the mathematician as well as developing the mathematics. Facilitating discussion to share these differences (and commonalities) also helps to demonstrate the value of collaboration and to deepen learners' appreciation of the mathematical community as a whole.”[2]

2. NRICH, “Creating a Low Threshold High Ceiling Classroom”.

Reflection and Questions

- Thank you for joining us today.
- Your call-to-action: Name at least one way you plan to implement low-floor, high-ceiling activities in your classroom/school.
- What questions do you have?

greatminds.org/math

facebook.com/eurekamathofficial

pinterest.com/eurekamathcurriculum

twitter.com/eureka_math

Thank you

Works Cited

National Governors Association (NGA Center) and the Council of Chief State School Officers (CCSSO). “Key Shifts in Mathematics.” Common Core State Standards Initiative, 2021. https://www.thecorestandards.org/other-resources/key-shifts-in-mathematics/.

NRICH. “Creating a Low Threshold High Ceiling Classroom.” NRICH, 2019. https://nrich.maths.org/7701.