Mathematical Modeling Through Rich Tasks

Session 51
Time: 9:45-11:00 a.m.

Jake and Leah

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@kingteach5

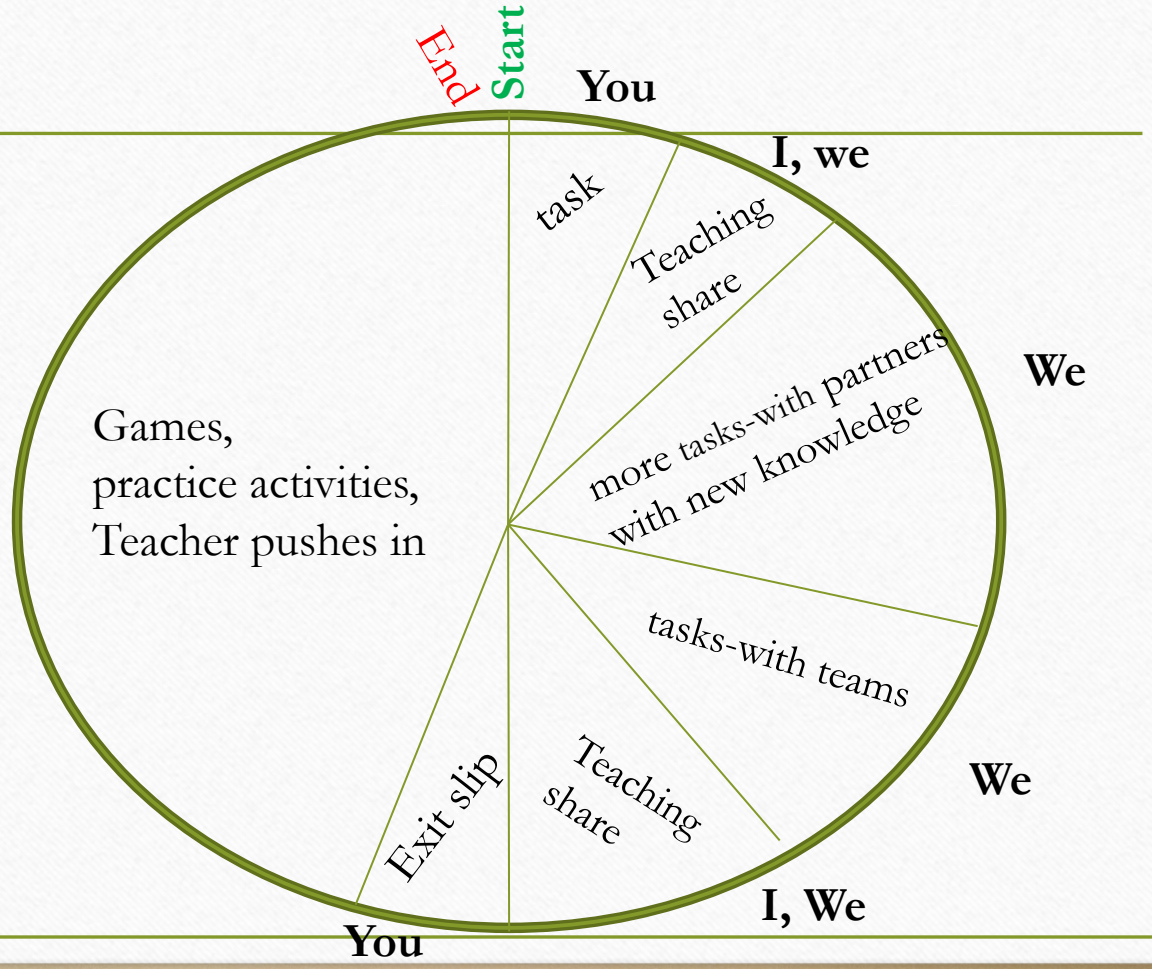
NORTH
KANSAS CITY SCHOOLS

Today:

- Experience open-ended tasks that incorporate mathematical modeling and promote differentiation for all students.
  - Mathematical Discourse
  - Risk Taking
  - Values Mistakes
  - Student Ownership
- Create a task specific to your grade level standards, curriculum, and students.
  - Task Development
  - Intentional Planning
- Learn how to facilitate a math lesson that pushes students thinking.
  - Intentional, Nonleading questions
  - You, We, I
  - Discourse Drives Our Next Steps

NKCSD Workshop Structure

You do (student),
We do (students),
I do(teachers).



Teacher as a Facilitator

These tasks do not work if students rely on you... If you are the keeper of what is right and what is wrong.

The teacher as the facilitator is the architect of students' active learning.

9 x 12 = (9 x __) + (__ x 7) = ___ + 63 = ___

How would **you** draw/build a model for this problem?

How would a *student* in your classroom draw/build a model for this problem?

Is a model necessary?

9 x 12 = (9 x __) + (__ x 7) = ___ + 63 = ___

CCSS.MATH.CONTENT.3.MD.C.7.D

Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

CCSS.MATH.CONTENT.3.MD.C.7.A

Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

Given the Steps

Why only a rectangle?

Draw a 9 x 12 rectangle How could you decompose it into two separate rectangles?

So what?

No struggle or thinking

No Real World Application

"…teachers don't need to find new curriculum materials, as they can make adaptations to the tasks in the curriculum they use, **opening them to create new and better opportunities for students**."

(Jo Boaler-Mathematical Mindsets, p.77)

1st Look-Task Development

Using the CCSS, or your online curriculum resource to:

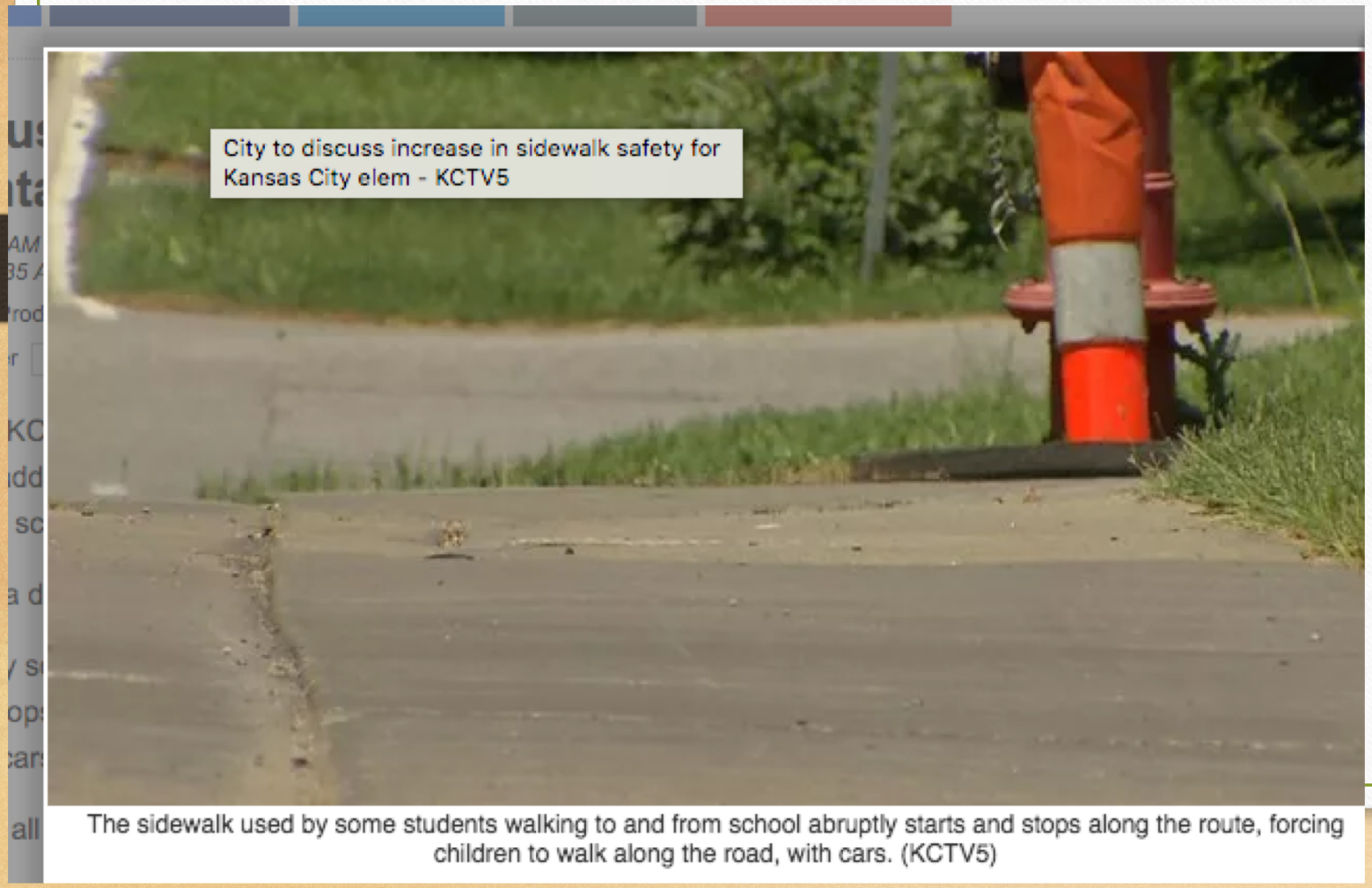
- Find a standard that is coming up, for your students, that you would like to develop a rich task.
- Consider a question that you have used, or seen previously, that would meet that standard.

Today, you will see:

- A 3rd grade multiplication task
- A 5th grade decimal multiplication task

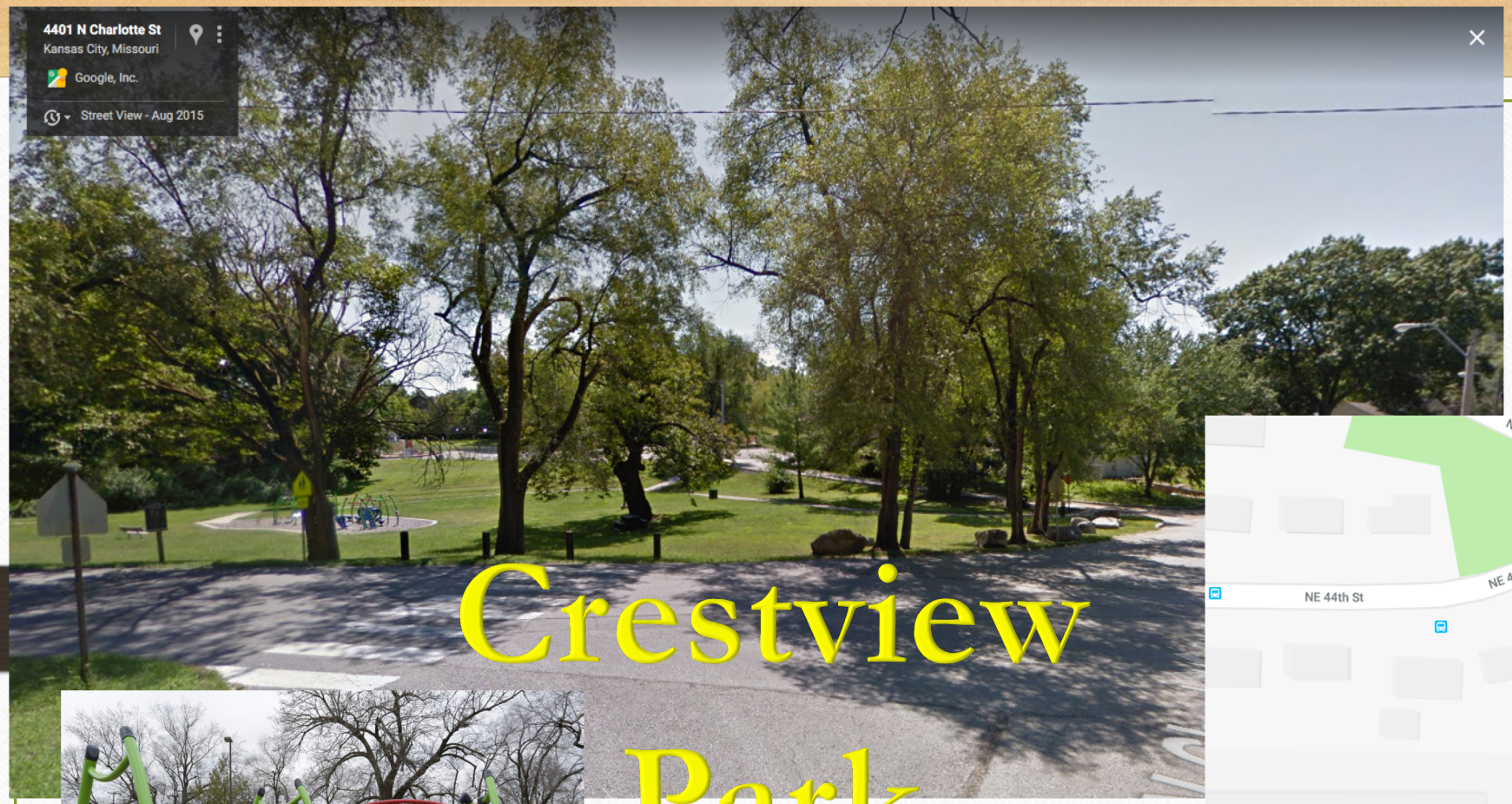
Crestview Elementary School

City to discuss increase in sidewalk safety for Kansas City elementary school students

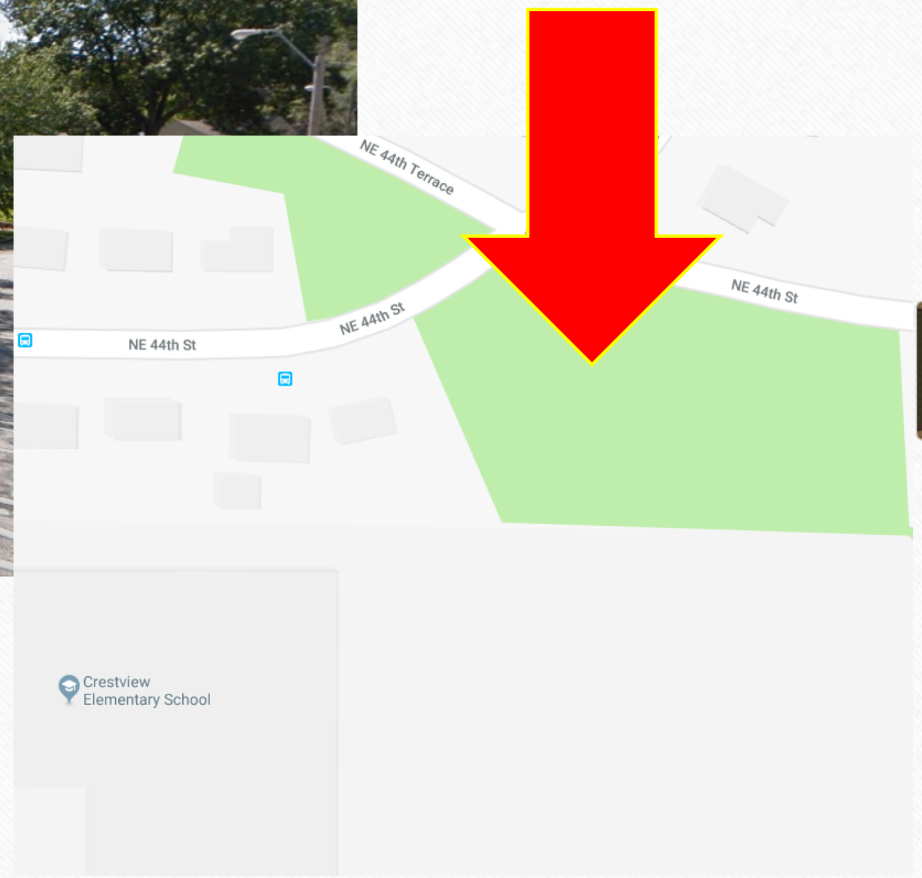


The sidewalk used by some students walking to and from school abruptly starts and stops along the route, forcing children to walk along the road, with cars. (KCTV5)

Crestview Elementary to see safer route

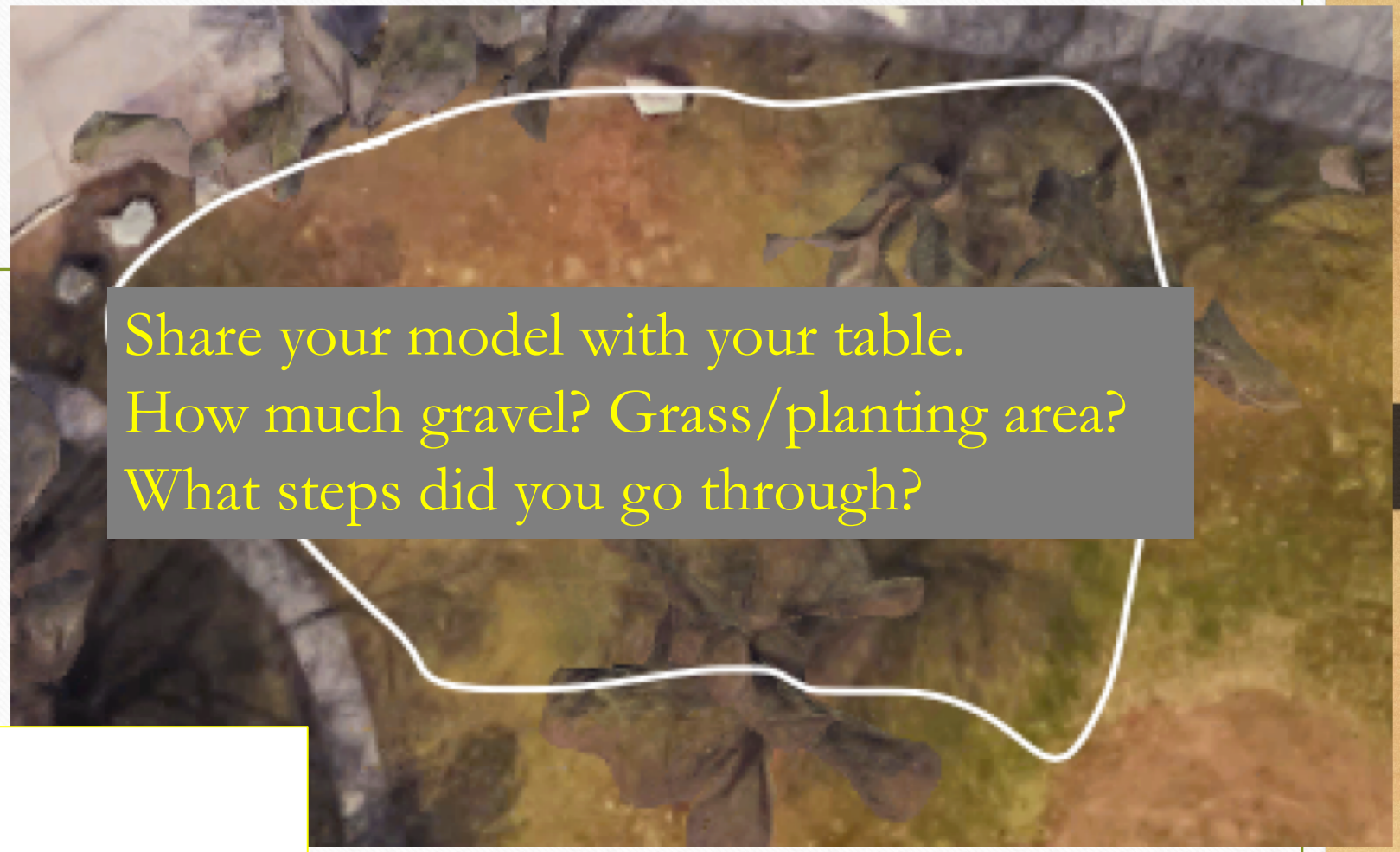


Crestview Park



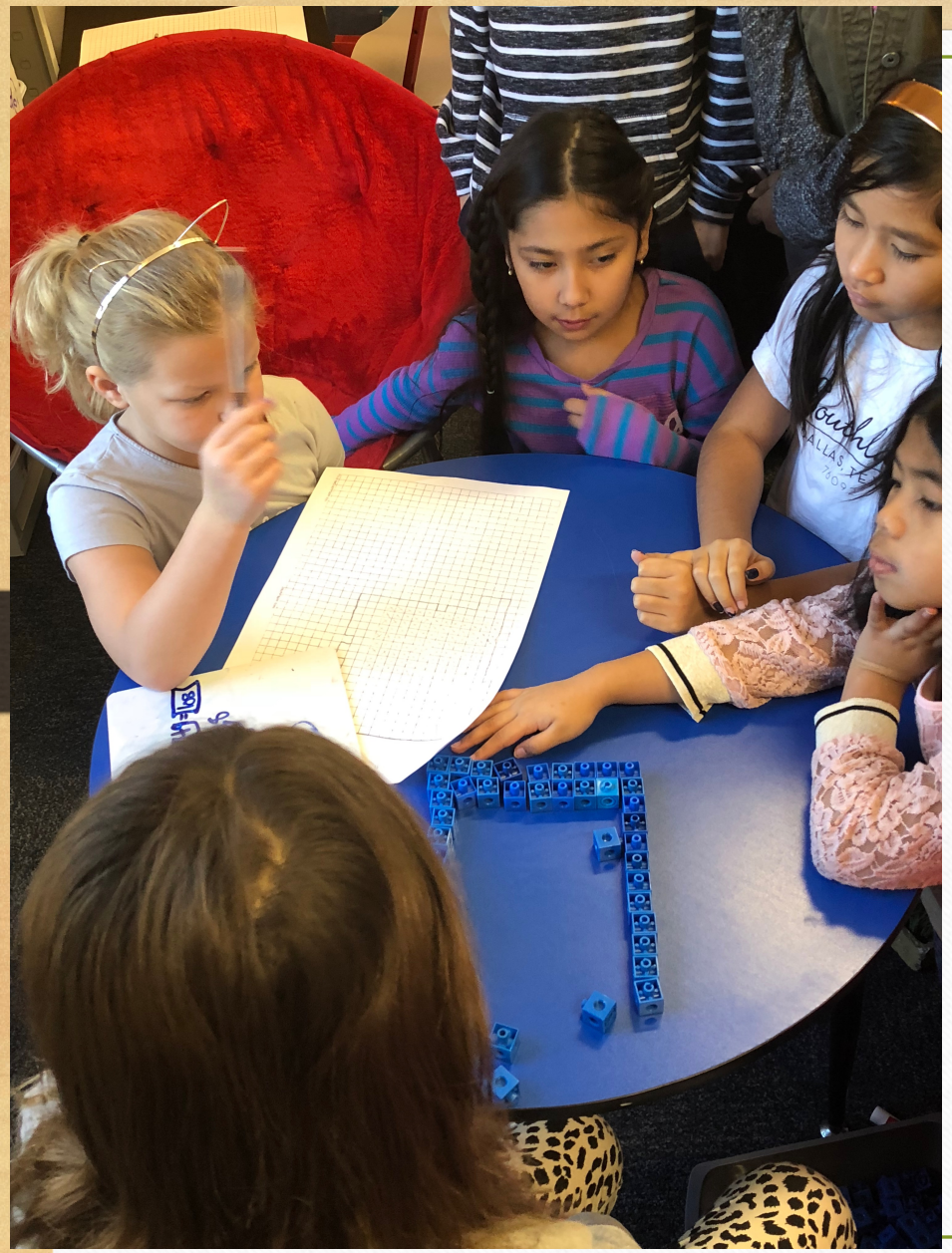
NE 44th Terrace
N Charlotte St
NE 44th St
NE 44th St
NE 44th St
N Campbell St
N Campbell St
Proposed Area
3D

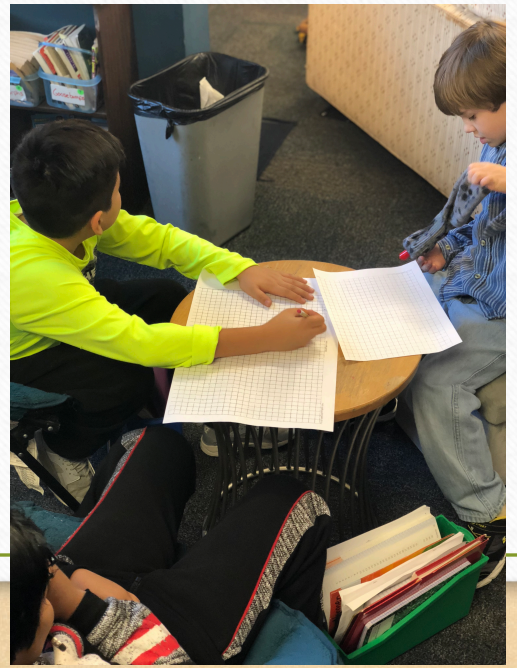
How could we design the space for the community garden?

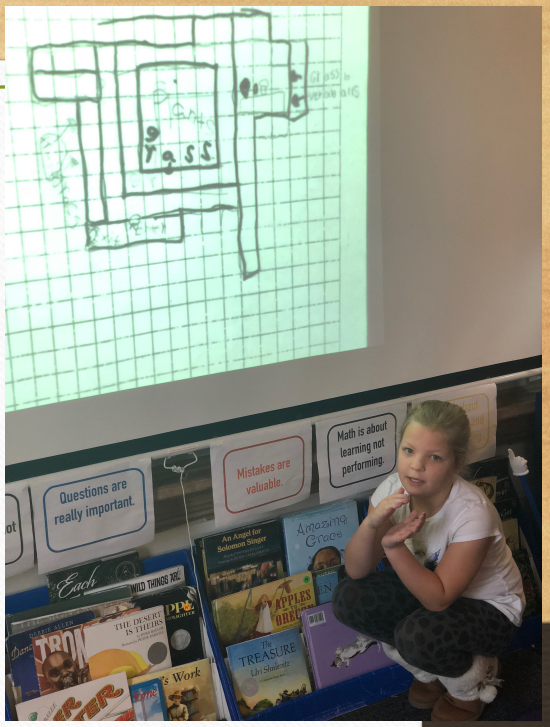


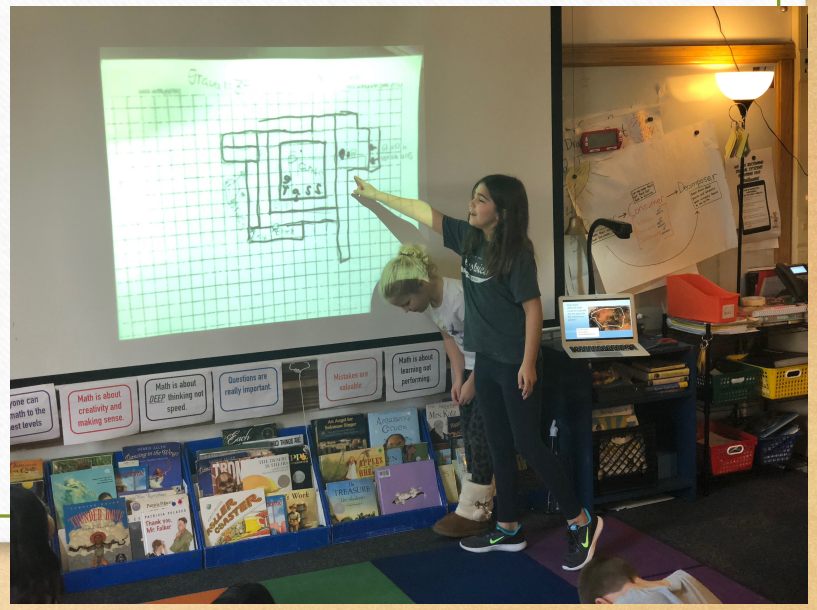
Requirements:

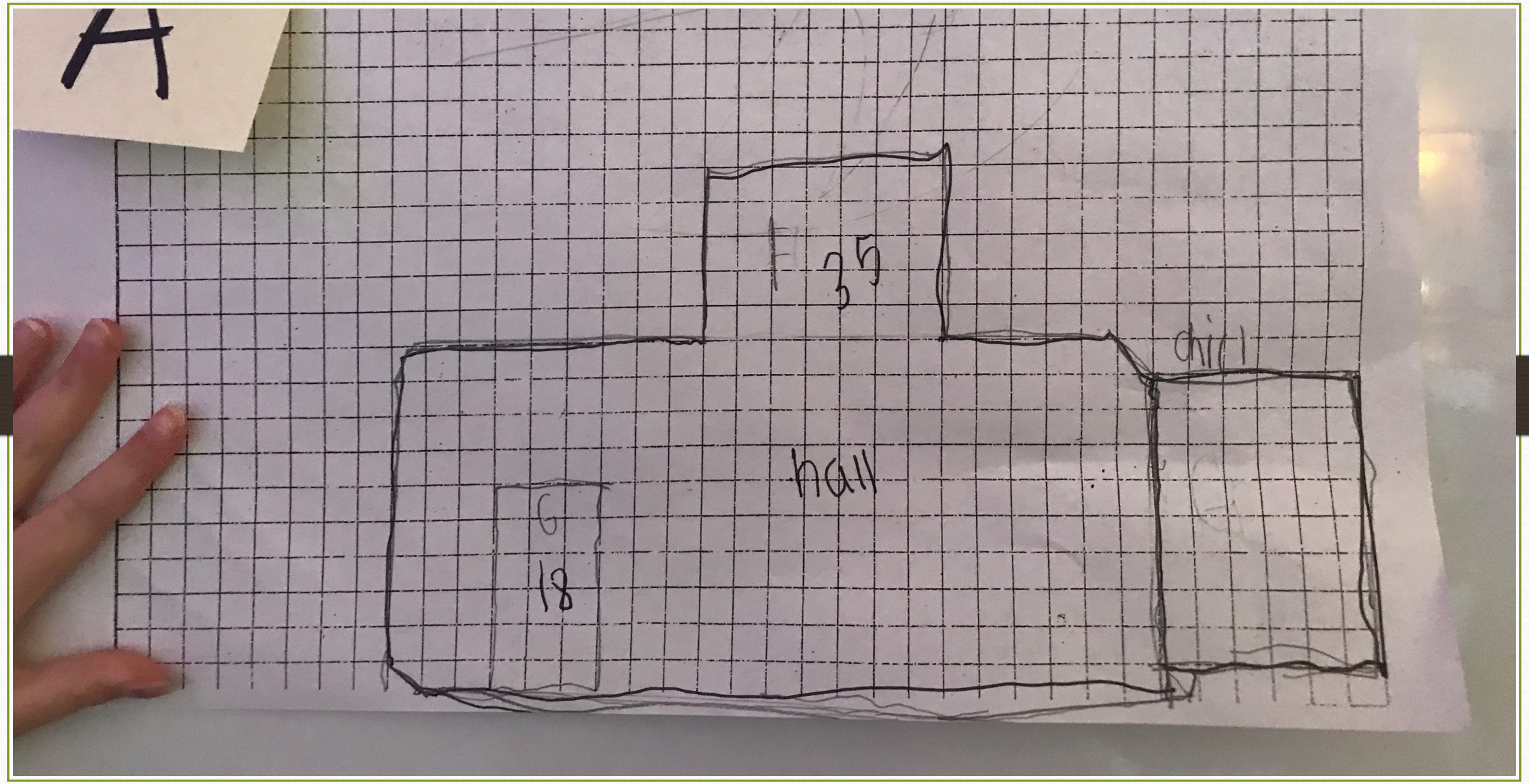
- **Gravel Area**
- **Grass/Planting Area**

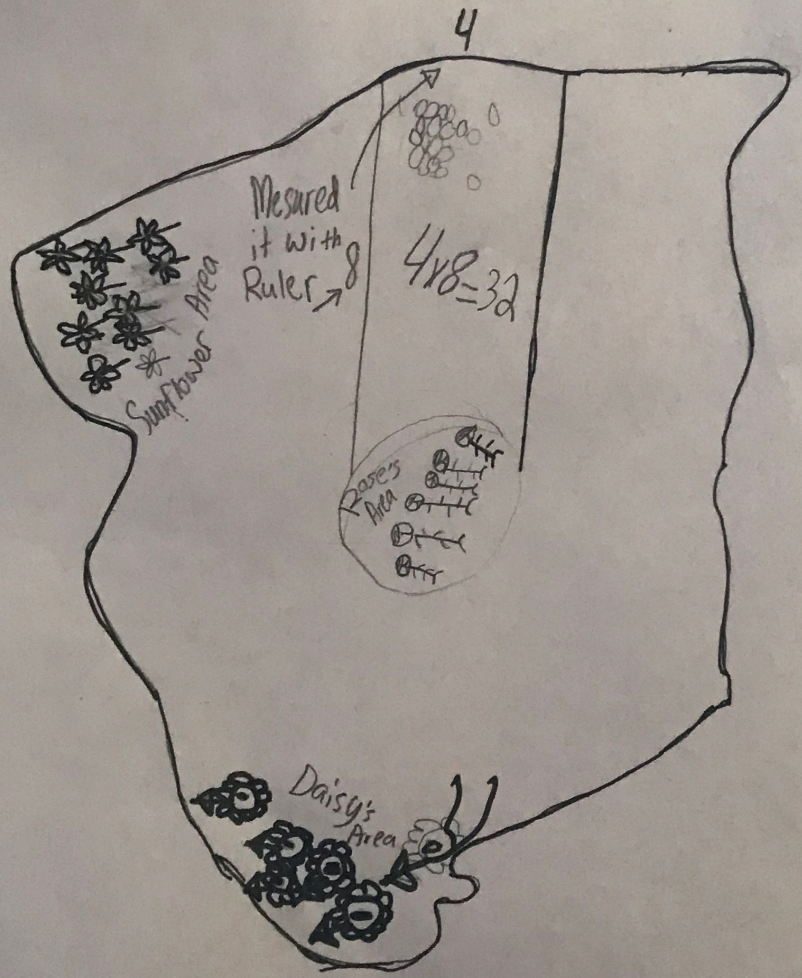


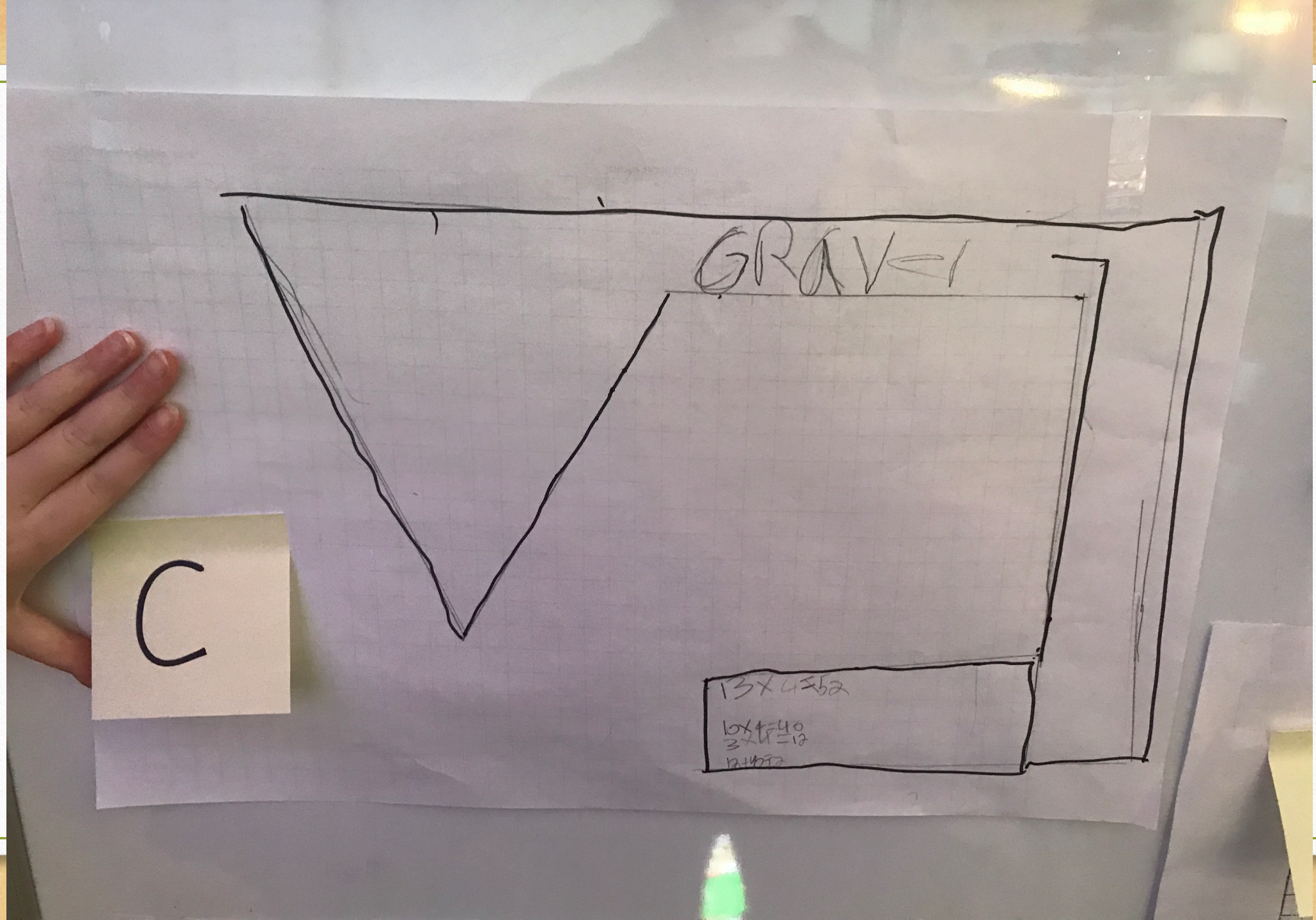


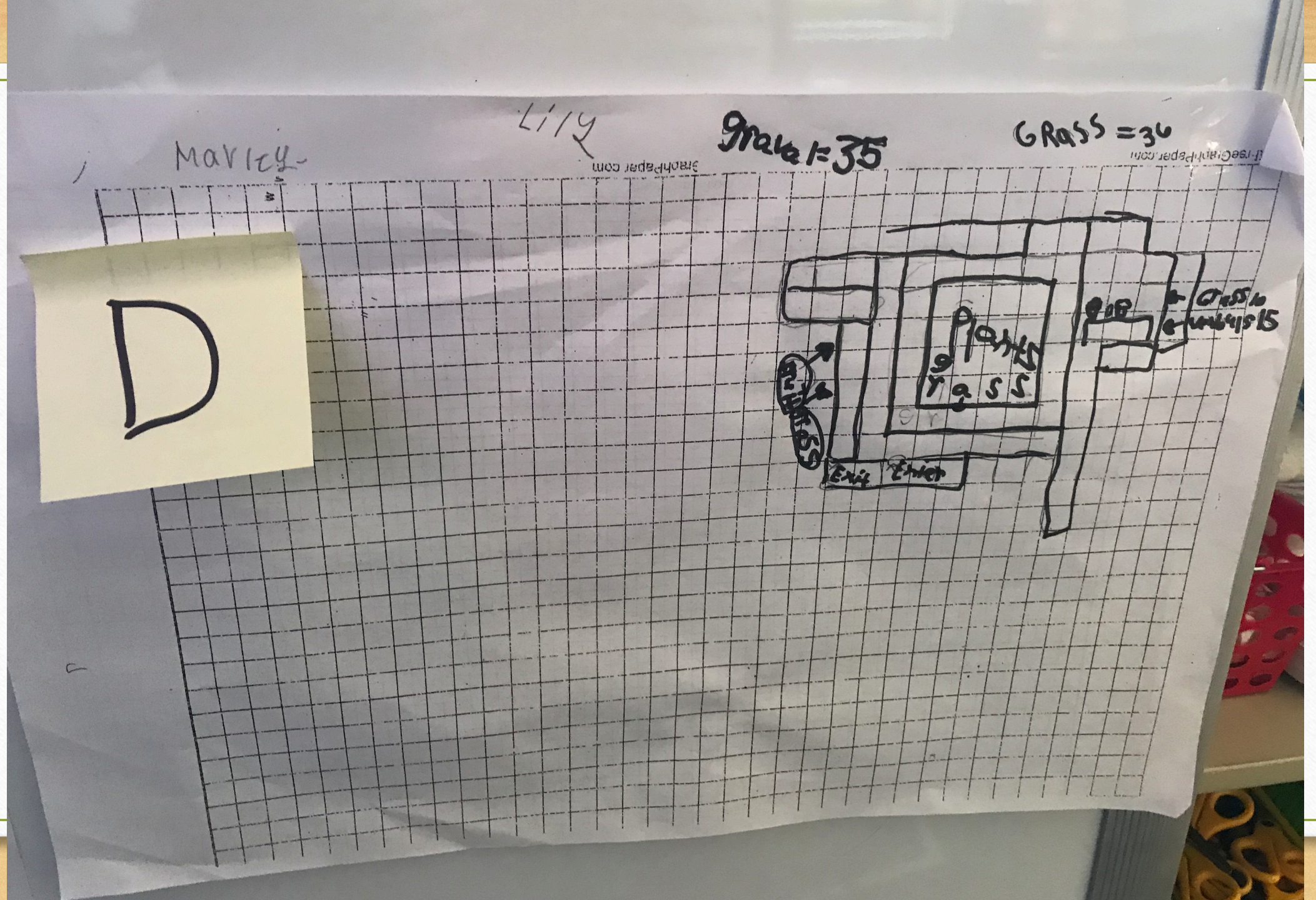

Questions are really important.
Mistakes are valuable.
Math is about learning not performing.

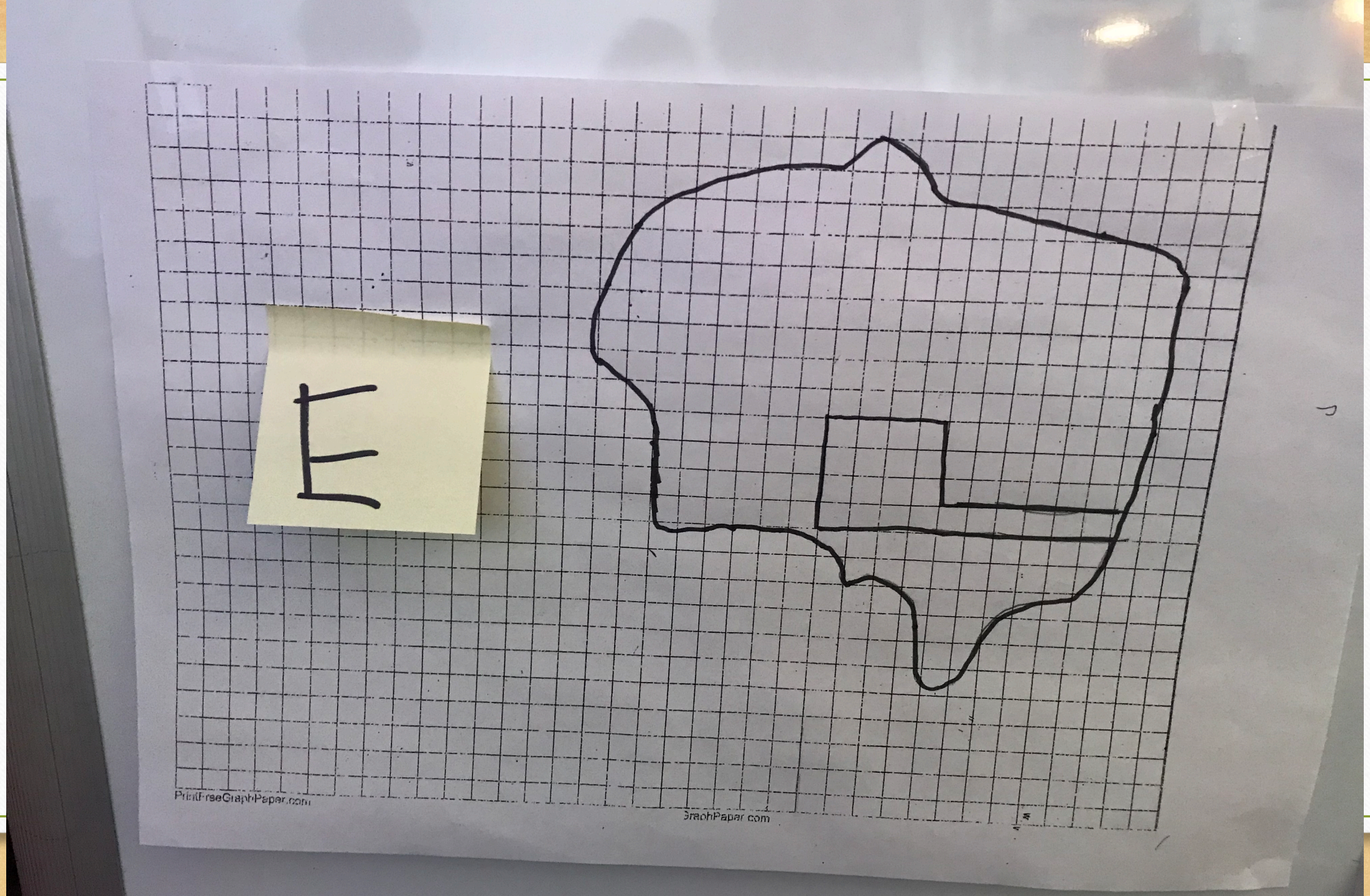

Math is about creativity and making sense.
Math is about DEEP thinking not speed.
Questions are really important.
Mistakes are valuable.
Math is about learning not performing.

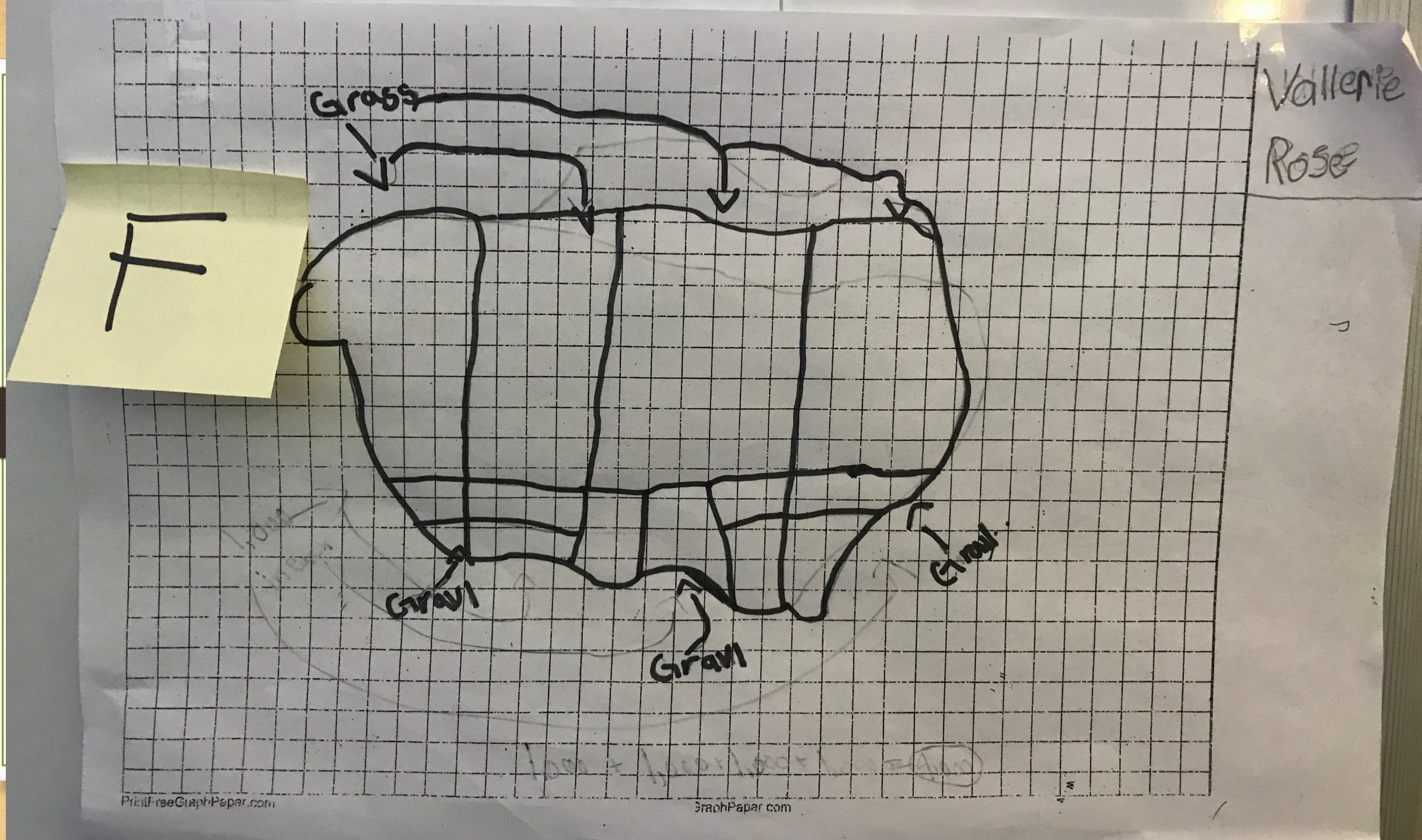

A
F 35
chill
hall
G
18

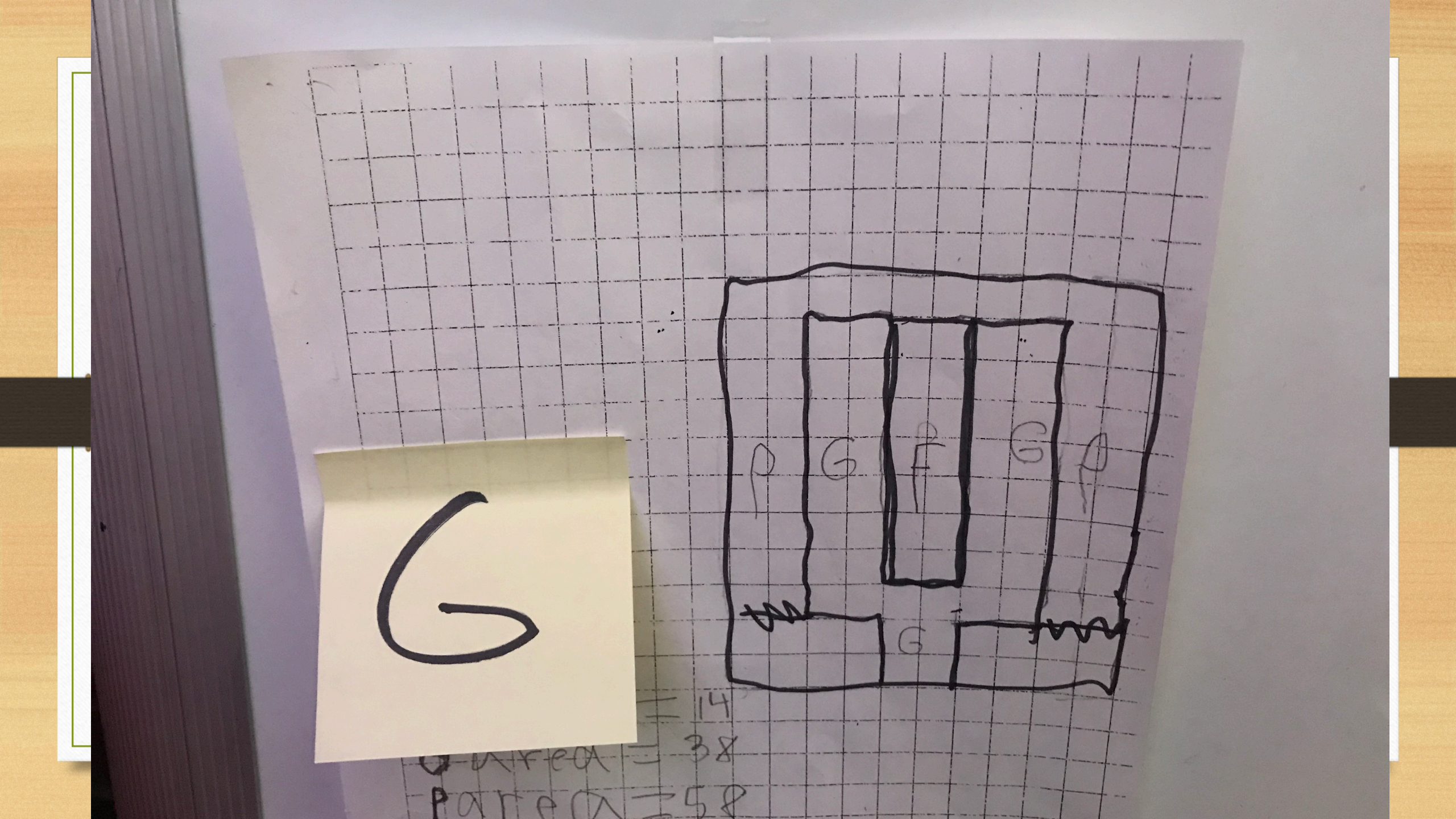

4
Mesured it with Ruler
8
4x8=32
Sunflower Area
Rose's Area
Daisy's Area


C
GRAV-1
13×4=52
10×4=40
3×4=12

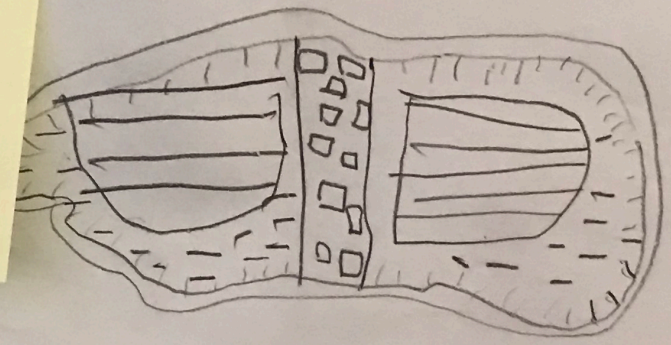

Marley
Lily
Male=35
GRASS=36
D


E


F
Grass
Gravl
Gravl
Gravl
Vallerie
Rose
PrintFreeGraphPaper.com
GraphPaper.com


G
P G F G P
G

H



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