TACTICAL ESCAPE: A GREAT MATH CHALLENGE

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EQUITABLE MATHEMATICS CLASSROOM GOALS ESTABLISHED

- Develop socially, emotionally and academically safe environment for students to engage in with one another and with teachers
- Model high expectations for each student's success in problem solving, reasoning and understanding.
- Make high-level mathematics learning accessible to every student. Prepare students for team challenges.
- Promote the development of a growth mindset among students.

Source: NCTM Access and Equity Principle, *Principles to Actions*

EQUITABLE MATHEMATICS CLASSROOM

- Every student has something unique to contribute.
- Shared space to collect info and ideas promotes team solution.
- Communication and teamwork relies on every student.

- Many methods for solving tasks may be used.
- Discussing differing results together strengthens learning.

- Mistakes are welcomed and are rich learning opportunities.
- Students confirm results though a choice of methods.
- Sometimes we need a source of further info, agreeing on this to move forward toward a common goal.

Adapted from Nancy Emerson Kress – Math is for Everyone Blog

Standards for Mathematical Practice

Make sense of problems and persevere in solving them.

Reason abstractly and quantitatively.

Construct viable arguments and critique the reasoning of others.

Model with mathematics.

Use appropriate tools strategically.

Attend to precision.

Look for and make use of structure.

Look for and express regularity in repeated reasoning.

ESCAPE ROOM CHALLENGE

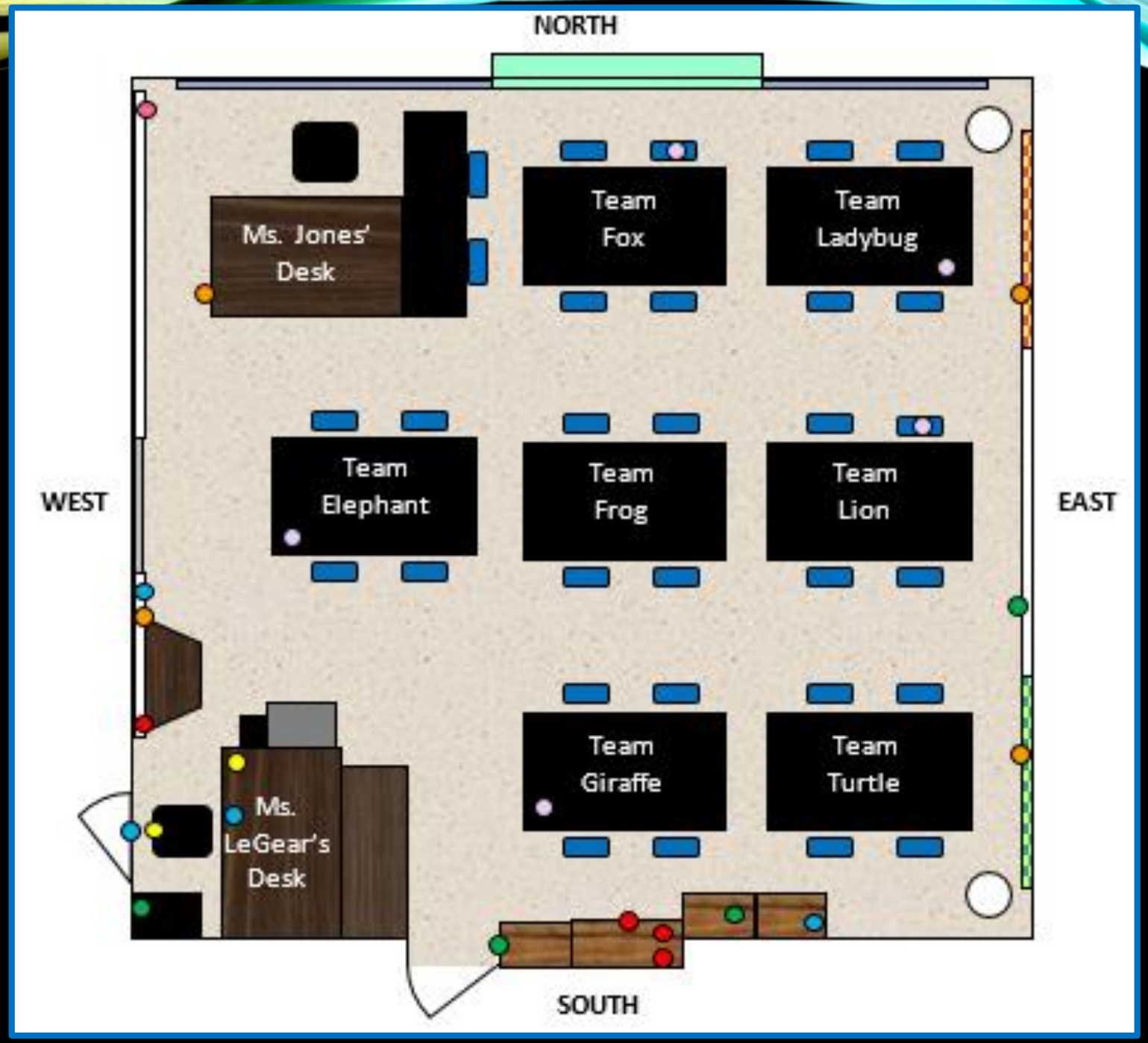
- Escape rooms are a fun new trend quickly gaining popularity.
- This activity is a great opportunity to engage students in reasoning skills and collaboration while applying their knowledge of math.
- Math tasks prepare students for this type of team challenge.
- Students are given an opportunity to work collaboratively to solve algebraic problems using the Standards for Mathematical Practice and make connections between various concepts.

GUIDELINES TO HELP YOU ESCAPE

- You have forty minutes to work as a team to "escape" the room.
- The code word is marked by a hashtag to help you identify it.
- You must solve the clues to find values that you will substitute in for the letters in the code word.
- Do not remove clues from their location, record them on whiteboards.
- Use the whiteboards to solve problems.
- Anything taped off with a red X is off limits.
- You get up to three hints, but must agree unanimously.
- You must dance as a team to earn a hint.
- You have three attempts to solve the puzzle.

CLASSROOM

CLUES FOR #REASON



DIVISION OF POLYNOMIALS

AREA MODELS

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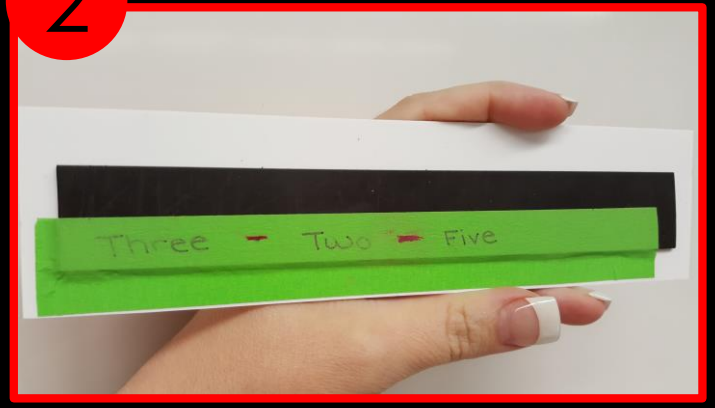

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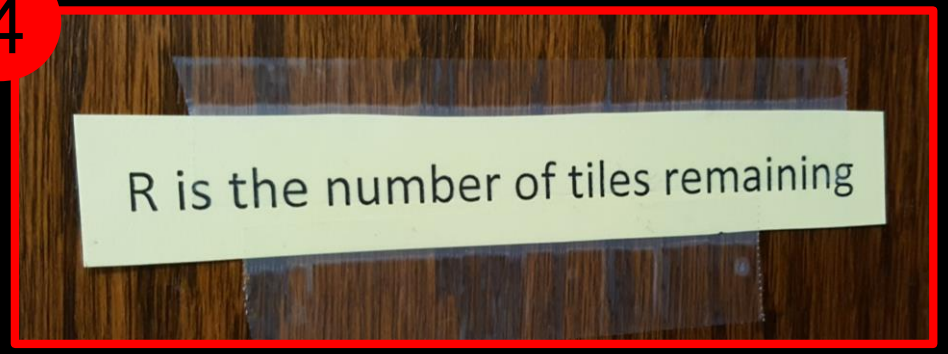

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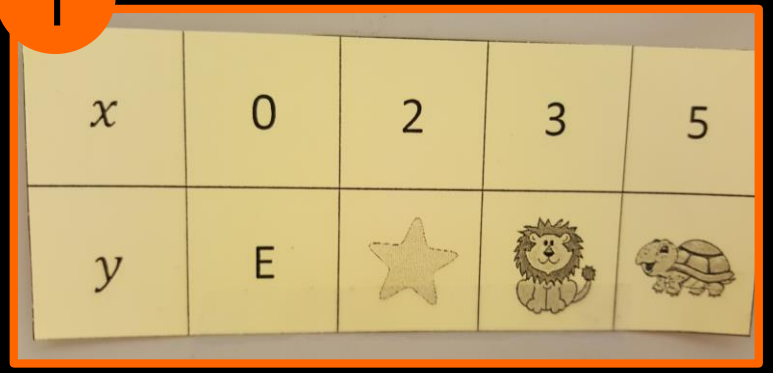
EXPONENTIAL GROWTH

TABLES

1



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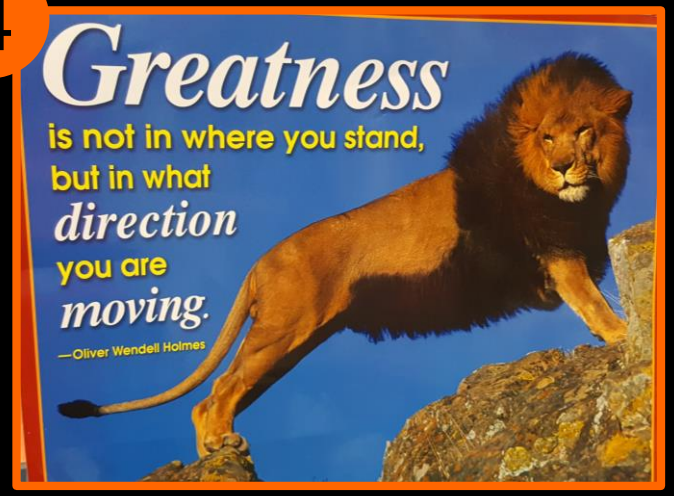

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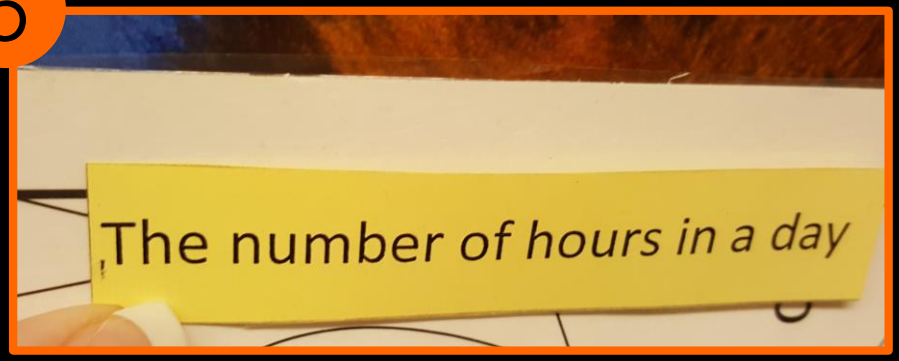

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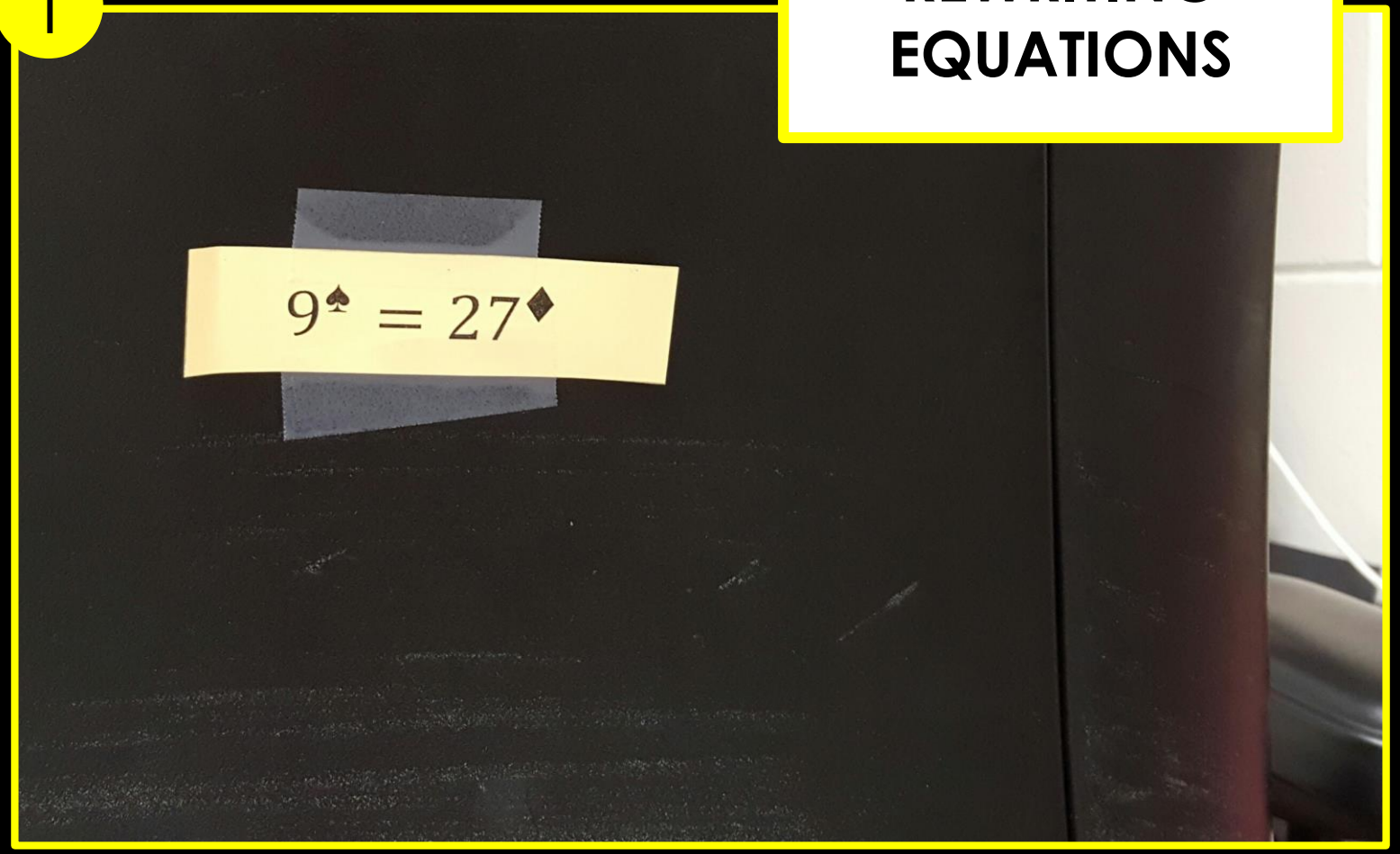
PROPERTIES OF EXPONENTS

REWRITING EQUATIONS

1



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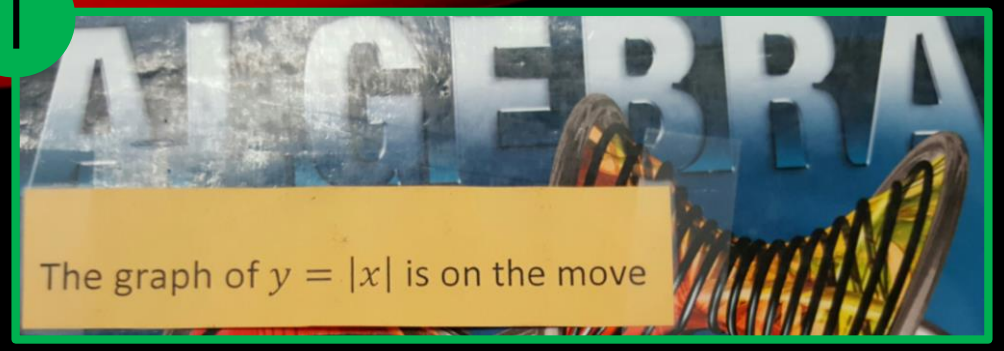
ABSOLUTE VALUE

TRANSFORMATIONS OF GRAPHS

1



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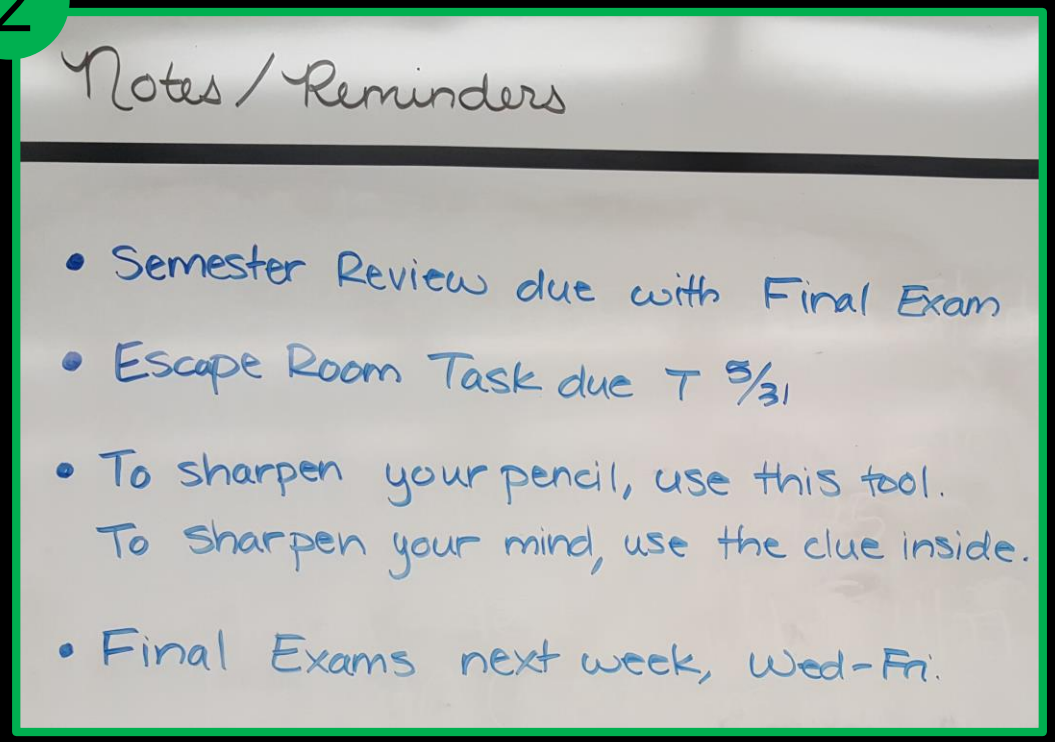

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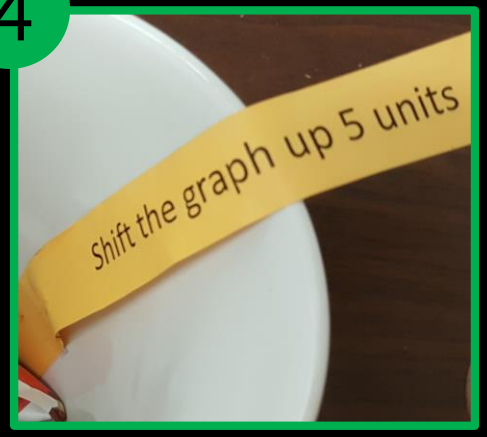

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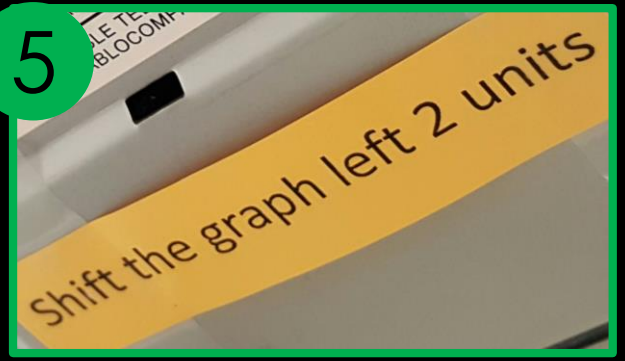

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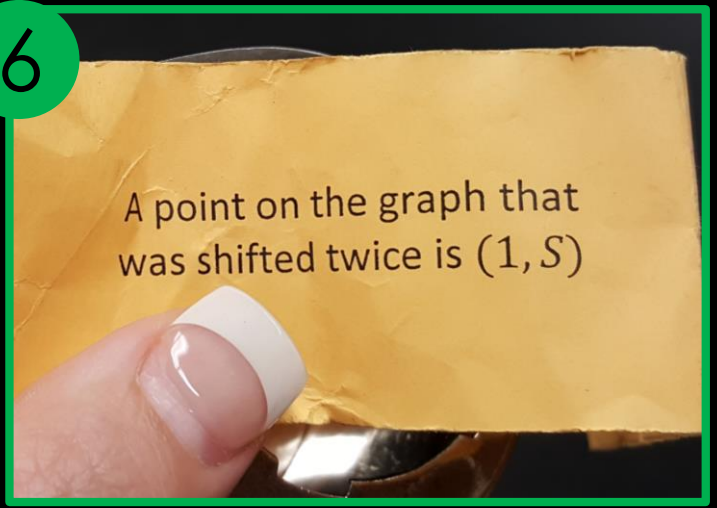

PATTERNS AND REASONING

1

2

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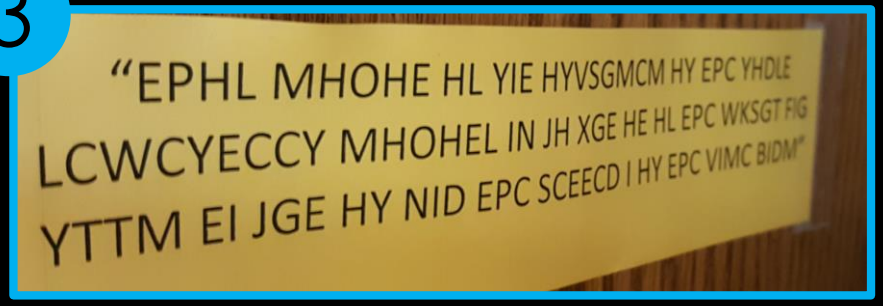

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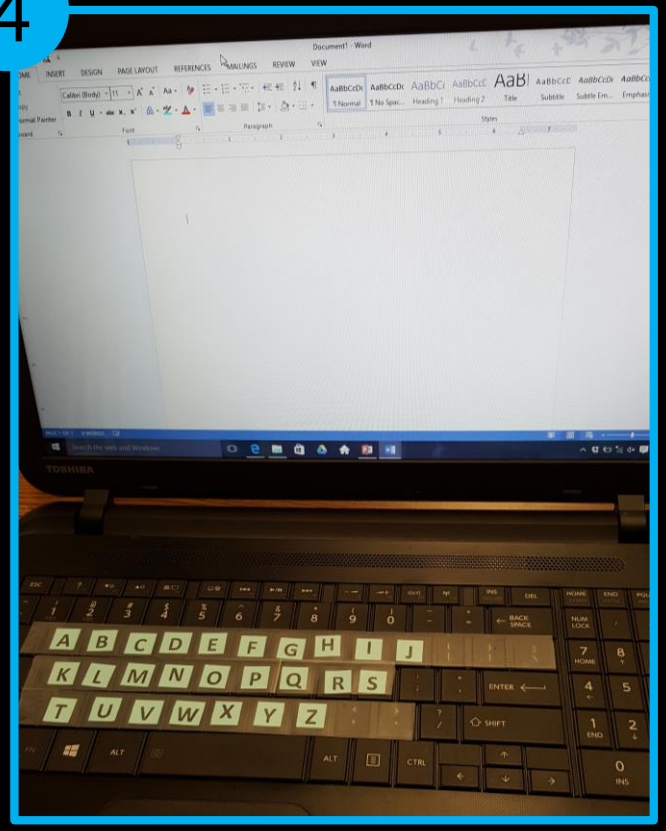

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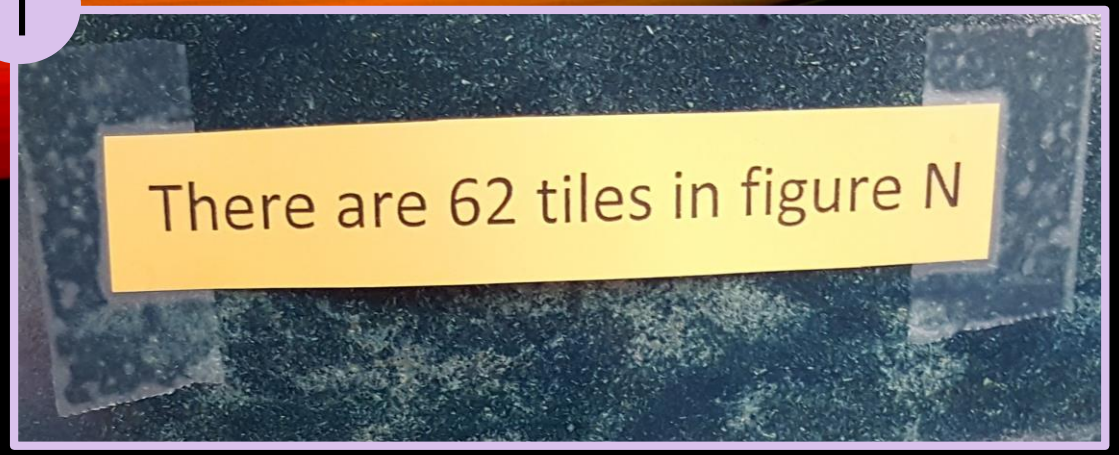
QUADRATICS

TILE PATTERNS

1



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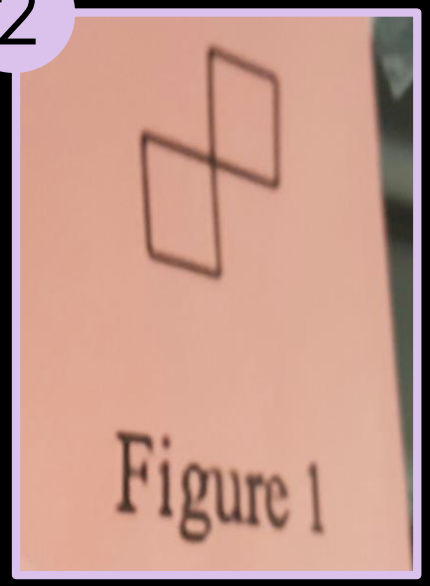

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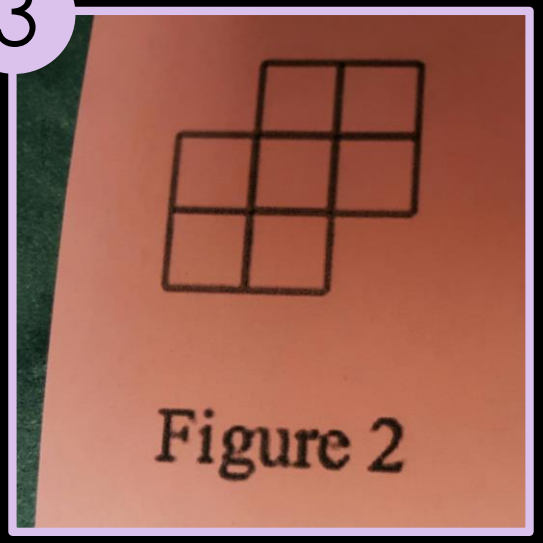

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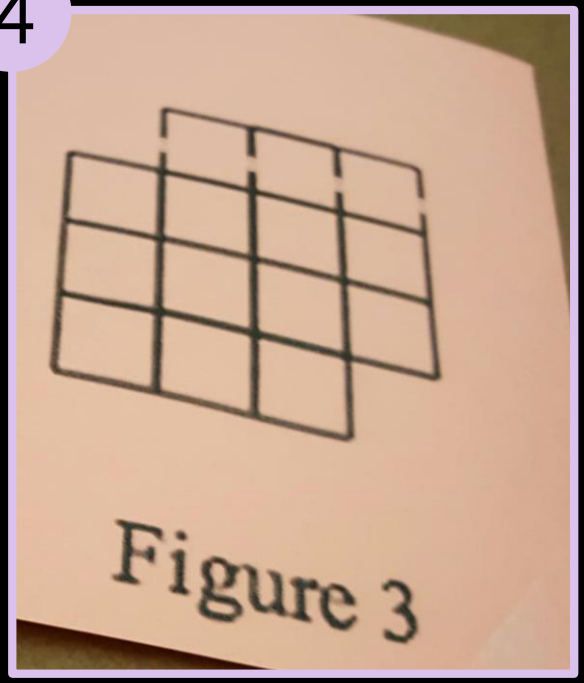

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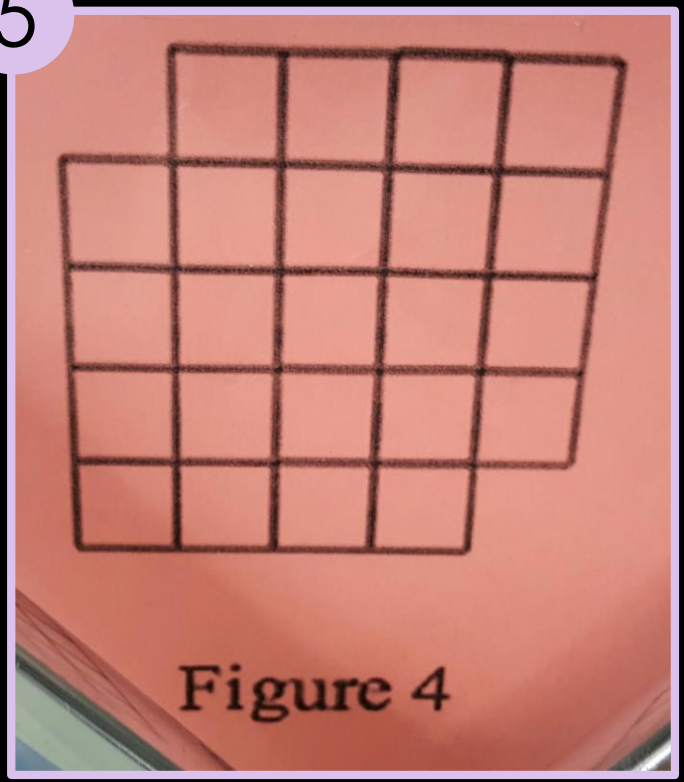

OBSERVATIONS

- Student discourse varied between different classes.
- Escape room heavily emphasized MPs 1, 3, 4, & 6.
- Different tasks reached different DOK Levels.
- Every student has something they can do to contribute to the success of the team.
- Tasks represented a nice progression of mathematics studied throughout the year.
- As a facilitator, it is important to reinforce collaboration and communication.

STUDENT REVIEWS

WHAT DID YOU ENJOY MOST ABOUT THE TACTICAL ESCAPE CHALLENGE?

- "I liked the amount of clues given and the option to ask for help"
- "My favorite part was thinking outside the box for clues"
- "I liked having to use my brain with problems and the problems really got me thinking"
- "My favorite thing was finding clues because I felt helpful"
- "I liked that we all got to do something that requires cooperation, socialization, math and was still a lot of fun"
- "LET'S DO IT AGAIN… please"

STUDENT REVIEWS

WHAT WOULD YOU LIKE TO SEE CHANGE FOR THE NEXT TACTICAL ESCAPE?

- "It would be cool to have a few more riddles maybe"
- "Maybe a full theme. (I really loved this.)"
- "I would like one that takes two days to complete."
- "My least favorite part was feeling like you've hit a dead end."
- "I probably would have changed nothing."
- "Nothing. It was fun."
- "I would like to do it again, maybe a different setting or theme, but it was cool."

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