Engaging Learners with 3 Act Math Tasks

Lisa Marino
@MsMarino_SMSD
lisamarino@smsd.org
BECOMING TRAUMA INFORMED
OBJECTIVES

- Describe the “why” behind a 3 Act Math task
- Identify the parts of a 3 Act Math task
- Identify resources and ideas to implement 
  &/or create a 3 Act Math task
“The formulation of the problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill.”

Albert Einstein
Implement tasks that promote reasoning and problem solving

Effective teaching of mathematics engages students in solving & discussing tasks that promote mathematical reasoning & problem solving and allow multiple entry points and varied solution strategies

Link to teaching practices
TRAUMA IN THE CLASSROOM

What might trauma “look” like in the classroom?

- Disruptive
- Distracted
- Difficulty learning &/or remembering
- Disengaged
- Struggle with executive function
- Poor language or communication skills

Photo credit
ENTER THE 3 ACT MATH TASK

- Authentic, real world problems
- Engaging
- Builds communication & collaboration skills

- Low floor, high ceiling - AND no judgment
- Students are in the “driver’s” seat while teacher coaches & supports
- Naturally leads into PBL
MATH CLASS NEEDS A MAKEOVER

Dan Meyer
TED Talk
WHERE WE STARTED...

Problem 2
Mathilde has 20 pints of green paint. She uses \( \frac{2}{5} \) of it to paint a landscape and \( \frac{3}{10} \) of it while painting a clover. She decides that, for her next painting, she will need 14 pints of green paint. How much more paint will she need to buy?

Problem 3
Jack, Jill, and Bill each carried a 48-ounce bucket full of water down the hill. By the time they reached the bottom, Jack’s bucket was only \( \frac{3}{4} \) full, Jill’s was \( \frac{2}{3} \) full, and Bill’s was \( \frac{1}{6} \) full. How much water did they spill altogether on their way down the hill?
CREATING THE 3 ACT MATH TASK

ACT 1

Set the table

- Notice & Wonder, estimate, determine a problem
PANTHER EXAMPLES

I noticed:
- They are doing 1 whole
- Then they subtract
I wonder how much he drank of the Mountain Dew. I wonder how much of the Mountain Dew he didn't drink.

I wonder how much mountain dew is in the can. I wonder how much mountain dew is in the glass cups.

I wonder if there was still some Mountain Dew still in the can.
CREATING THE 3 ACT MATH TASK

ACT 2

Enjoy the meal

- Determine what you need to know to solve the problem.
  Solve using varied strategies!

Mountain Dew was equally divided between the 2 glasses
We need to know how much that is in the can.

\[
\begin{align*}
12 \div 2 &= 6 \text{ oz} \\
6 \times \frac{2}{3} &= \frac{12}{3} \div 3 = \frac{4}{1}
\end{align*}
\]

2 + 2 + 2 = 6

\begin{align*}
12 \text{ oz} \\
6 \text{ oz} \\
4 \text{ oz} &= \frac{1}{2} \text{ cup}
\end{align*}
CREATING THE 3 ACT MATH TASK

ACT 3

Dessert!
SOUNDS GREAT
BUT...

Dan Meyer
@ddmeyer
blog.mrmeyer.com

Graham Fletcher
@gfletchy
gfletchy.com

Robert Kaplinsky
@robertkaplinsky
robertkaplinsky.com/lessons

Teaching Channel
NEXT STEPS

- Use *anything* that is interesting, real world, & mathematical (math is ALL around us!) and start WONDERING!
- Take what you already have & start eliminating!
BITS OF ADVICE

● Baby steps!
● Use organizational tools with students
● Go with the flow!
● Encourage conversation & collaboration
● Support productive struggle