Believe Every Student Can:
Three Strategies that Promote and Foster Growth Mindset in Every Learner and Leader

By Chelsea McClellan
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http://bit.ly/BeLIEVE
Believe Every Student Can...
MISTAKES ARE POWERFUL!!!
Dot Card Number Talk

Ideas taken from youcubed Week of Inspirational Maths
A slide of dots will appear for just 2 seconds.
HOW MANY DOTS?
Turn to your neighbor and **describe** the pattern you used to count them.
You Can Do It!
- Engagement
- Relationship
- Feedback
Engagement
(The 4 C’s)
The opposite of bored is not entertained; it’s curious.

- John Stevens & Matt Vaudrey

classroomchef.com/book
#classroomchef
Ratios and Rates

In this lesson, you will
- find ratios, rates, and unit rates.
- find ratios and rates involving ratios of fractions.

Learning Standards
7.RP.1
7.RP.3
Example 1

There are 45 males and 60 females in a subway car. The subway car travels 2.5 miles in 5 minutes.

a. Find the ratio of males to females.

b. Find the speed of the subway car.
Which is more “Mullet-y” and why?
Solving Equations

In this lesson, you will

- use inverse operations to solve multi-step equations.
- use the Distributive Property to solve multi-step equations.

Learning Standards
8.EE.7a
8.EE.7b
Solve the equation. Check your solution.

6. $10x + 2 = 32$

8. $1.1x + 1.2x - 5.4 = -10$

10. $6(5 - 8v) + 12 = -54$

7. $19 - 4c = 17$

9. $\frac{2}{3}h - \frac{1}{3}h + 11 = 8$

11. $21(2 - x) + 12x = 44$
How Much Does a 100 x 100 In N Out Cheeseburger Cost?

- What do you wonder?
- What do you notice?
- What estimates do you have?
- What info do you already know?
- What info do you need?
Ember-

\[(n-1) \times 1.15 + 2.60\]

\(n\) is whatever you want the \(\square \times \square\) to be.

2.60 is the cost of 1 cheeseburger.

1.15 is the cost of a patty.
Isabelle

1.15n = X

If you want to find the cost of a 40x40, you need to replace 40 with the variable n and get X. A 40x40 equals $34.50. Then you add $1.45 and get $35.95.

mary:

1.15n + 1.45 = produce + buns

1.15n
1.15
1.15
x 2
230 + 1.45 = $3.75
The 4 C’s:

Creativity
Critical Thinking
Communication
Collaboration
NUMBER 1
from Pam Wilson

SHAPE 31
from Barb Seaton
Would You Rather?

Candy Data

I got 8 Skittles from the vending machine for 25¢.

I got 62 Skittles from a 61g bag for $1.16.
How many Malted Eggs inside the Cylinder?
How Big is the Guatemalan Sink Hole?

Robert Kaplinsky
http://robertkaplinsky.com/work/sink-hole/
Engagement
(The 4 C’s)

1. Find a partner or work alone at the 360 degree boards.
2. Decide/discuss "Which One Doesn’t Belong?"
3. Give evidence in writing of why you made your decision.
Relationship

Relationship

Relationship
“Kids don’t learn from people they don’t like.”

–Rita Pierson
Share who you are!
“We have the power to tear down or build up the children who walk into our lives every day.” – Adam
BELIEVE

#GOALS

Community ISD, 2-24-16, Youtube
GO' YOU!
Timely and Actionable
Alice Keeler @alicekeeler

The longer a student goes without receiving feedback the less they care about the feedback when they get it.
360 Degree
## Depth of Knowledge Matrix - Secondary Math

<table>
<thead>
<tr>
<th>Topic</th>
<th>Dividing Fractions</th>
<th>Solving Two-Step Equations</th>
<th>Exponents</th>
<th>Solving Equations with Variables on Both Sides</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCSS Standard(s)</td>
<td>6.NS.1</td>
<td>7.EE.4a</td>
<td>8.EE.1</td>
<td>8.EE.8, A-REI.3</td>
</tr>
</tbody>
</table>
| DOK 1 Example | Evaluate. \[
\frac{4}{9} \div \frac{2}{5}\] | Solve for \(x\). \[
2x + 3 = 9
\] | Evaluate. \[
3^4
\] | Solve for \(x\). \[
3x + 2 = -2x + 4
\] |
| DOK 2 Example | Use the digits 1 to 9, at most one time each, to fill in the boxes to make two different pairs of fractions that have a quotient of 2/3. \[
\frac{\square}{\square} \div \frac{\square}{\square} = \frac{2}{3}
\] | Use the digits 1 to 9, at most one time each, to create two equations: one where \(x\) has a positive value and one where \(x\) has a negative value. \[
\square x + \square = \square
\] | Use the digits 1 to 9, at most one time each, to fill in the boxes to make two true number sentences. \[
\square = 64
\] | Use the digits 1 to 9, at most two times each, to fill in the boxes to make an equation with no solutions. \[
\square + \square = \square + \square
\] |
| DOK 3 Example | Use the digits 1 to 9, at most one time each, to fill in the boxes to make two fractions that have a quotient that is as close to 4/11 as possible. \[
\frac{\square}{\square} \div \frac{\square}{\square}
\] | Use the digits 1 to 9, at most one time each, to create an equation where \(x\) has the greatest possible value. \[
\square x + \square = \square
\] | Use the digits 1 to 9, at most one time each, to fill in the boxes to make a result that has the greatest value possible. \[
\square = \square
\] | Use the digits 1 to 9, at most one time each, to fill in the boxes so that the solution is closest to zero. \[
\square x + \square = \square + \square
\] |
Open Middle Task: Creating Triangles

Directions: Using the numbers -9 to 9, create an Isosceles Triangle and then a Scalene Triangle.

Hint: Use Desmos or a coordinate plane for evidence.

Please keep a record of your thinking journey in your journal IF you work together on the board.

- What patterns do you see?
- What doesn’t seem to work?

Record in Journals

You may work together using the 360 Degree Math Boards.
Levels of Convincing
Levels of Convincing

Easiest
- Self
- Friend
- Undecided

Hardest
- Doubter
- Prosecutor

Construct a viable argument
Critique the reasoning of others

Robert Kaplinsky – robertkaplinsky.com
Open Middle Task: Creating Triangles

**Directions:** Using the numbers 9 to 1, create an Isosceles Triangle and then a Scalene Triangle.

**Hint:** Use Desmos or a coordinate plane for evidence.

- What patterns do you see?
- What doesn't seem to work?

**Record in Journals**

I started with the isosceles triangle. I thought I had 4 points: (2,3), (4,3), (4,1), and (2,1). But then I realized I only needed 3 points. I chose (2,3), (4,3), and (4,1). I then drew the triangle on the board.

I also put a point on the coordinate plane: (1,0). Then I added a point at (3,0) and another at (0,3). Finally, I added a point at (0,0). I then connected these points to form a triangle.

**Note:** The sides of the triangle are the same. No sides are the same.

**Post-Note:**

1. You wrote down a lot of words explaining how you made it, and you showed your triangles.
2. I was amazed by all the work you put in this good job.

**Shelby:** Look at this. Hey sweets! I had to change this because I realized you never labeled your vertices.

This is so important.
4 - Convinced a Doubter. All of your responses demonstrate in depth reasoning, connections and applications. Your thinking and how you developed your conjecture is clearly stated. You reflected on your own learning process.

4.0 - I gave you a 4 because I think all of your responses explain your thinking. I really like your strategy and that you explained it. Your mistakes showed mind growth and that you see when you have made a mistake.

I think that you did a good job showing directions on what to do. Maybe next time you could talk about your personal connections of the mistakes you made.
Open Middle Task: Standard Form

Directions: Use any whole number from 1-9 to find the "steepest" and then the "flattest" slope. Also find the highest and lowest y-intercept possible with the equations you create. You may only use each number once.

Please keep a record of your thinking journey in your journal if you work together on the board.

- What patterns do you see?
- Is it the same or not?

You may work together

360 Degree Math Book

You have a 4-sided dice and the numbers are

- 1
- 2
- 3
- 4

Then you roll your dice and each side is label as x = ___ and y = ___ to make a linear equation.

-\( x + y = 6 \)
-\( 8x + 3y = 12 \)
-\( 9x + 6y = 18 \)
-\( 1x + 3y = 9 \)
-\( 9x + 3y = 9 \)
-\( 8x + 2y = 6 \)
-\( 5x + 2y = 6 \)
-\( y = -4x + 3 \)
-\( y = -2x + 1 \)
-\( y = -1x + 1 \)

4: Convince a Doubter. All of your responses demonstrate in depth reasoning, connections and applications. Your thinking and how you developed your conjecture is clearly stated. You reflected on your own learning process.

Reflection: We investigated our unit on linear equations. Because we didn't have a larger x-value in each equation, we worked with smaller x-values in order to create different and yet meaningful problems. Once we made our charts and graphs, we looked at the linear equations and their graphs. We noticed how the equation we just worked on has a different graph than the one we did before. We also worked on converting an equation to standard form and when the y-intercept was zero. We tried to make the equation with the same slope and then found the equation with the greatest and least slope, and when we listed them all, we just listed them all down the page.
4. Your work is excellent but if you could go back in time, don't erase your mistakes. That's what a doubter wants to see. I like how you found a method and stuck with it but maybe try to use those points to do the same steepness but negative. I can tell you spent time on it so great job.
#ObserveMe
Welcome! Please come inside and observe me. I’d love feedback on:

- How can I improve the way I set up a problem to allow students to become engaged without immediately becoming overwhelmed?
- How can I improve the questions I ask students to further the problem solving process?
- What other opportunities do you see for students getting to be the classroom thought leaders?

#ObserveMe

bit.ly/rkfeedback

Follow this on Twitter.
Are you on Twitter?

Robert Kaplinsky
@robertkaplinsky

Here’s my sign! You don't have to wait to #ObserveMe. Watch videos of me teaching here: robertkaplinsky.com/watch-teach-
Teacher Report
Cards
...encourages making mistakes.

98 responses
...believes that I am a math person.

98 responses

![Graph showing responses]

- 5 responses (5.1%)
- 2 responses (2%)
- 7 responses (7.1%)
- 15 responses (15.3%)
- 69 responses (70.4%)
<table>
<thead>
<tr>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work doesn’t lose points if it’s late</td>
</tr>
<tr>
<td>That we can usually pick where we sit and move around and that it is easy to learn with our teacher.</td>
</tr>
<tr>
<td>being able to listen to music</td>
</tr>
<tr>
<td>How she encourages us to have a growth mindset.</td>
</tr>
<tr>
<td>What I like best about the class is the consistent help with math and other problems.</td>
</tr>
<tr>
<td>What I like best about the class is that Mrs. McClellan puts on background music to help us focus. Also, she helps us if/ when we need help with our work.</td>
</tr>
<tr>
<td>360 math</td>
</tr>
<tr>
<td>That I can make a mistake without feeling bad.</td>
</tr>
<tr>
<td>she lets us pick our seats</td>
</tr>
<tr>
<td>the class is usually quiet during work times</td>
</tr>
<tr>
<td>how every week she tries to pick new seats</td>
</tr>
</tbody>
</table>
Student Motivation Survey

Please answer each question truthfully, as it helps me be a better teacher.

Affirmation (Select all that apply)
- [ ] I am accepted in this class just as I am.
- [ ] I feel safe here mentally, physically, and emotionally.
- [ ] My teacher cares about me.
- [ ] I am listened to in this class. (I'm 'get me!"
- [ ] My teacher knows how I'm doing and it matters that I do well.

Reflection Friday!
Do the best you can until you know better. Then when you know better, do better. ～Maya Angelou
Growth Mindset?
Engagement
Relationship
Feedback
Believe Every Student Can...
Questions?
In education, student engagement refers to the degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education.

Student Engagement Definition - The Glossary of Education Reform
http://edglossary.org/student-engagement/
Research/Blogs on Formative Feedback:

https://www.edutopia.org/blog/providing-feedback-as-formative-assessment-troy-hicks
https://s3.amazonaws.com/amplify-assets/regional/Heritage_FA.pdf
http://www.emilywray.com/rise-model
http://www.brilliant-insane.com/2014/10/assessment-3-0-4-simple-words-that-will-revolutionize-learning.html

https://www.cmu.edu/teaching/assessment/basics/formative-summative.html
https://www.edutopia.org/blog/tips-providing-students-meaningful-feedback-marianne-stenger