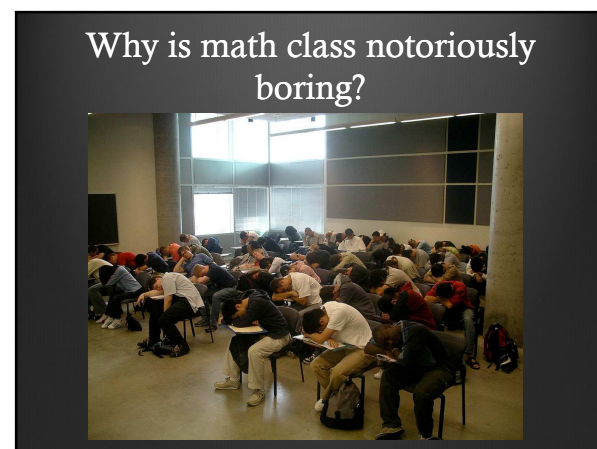


Turn to someone near you

- ⊗ DESCRIBE A HIGH SCHOOL MATH CLASS
- ⊗ CHOOSE TWO WORDS TO ENCAPSULATE YOUR THOUGHTS
- ⊗ SHARE

Did you ever have...?

- ⊗ “Do it my way or the highway”
- ⊗ “Just follow these steps...”
- ⊗ “What do YOU think the answer should be?”
- ⊗ “Do this worksheet (or the odds on page...)”



Why? Because...?

1. We're stuck in a rut
2. We don't have any more ideas
3. How else are they going to learn?
4. It's the only way to fit it all in
5. Math IS boring

Why do we teach math?

- ⊗ How I answer this directly impacts what I do.
- ⊗ I teach STUDENTS
- ⊗ I teach students the content MATH
- ⊗ I teach students the content math so that they will LOVE it ☺.

How I reach the goal... METHODS



The Rule of Three

1. I, the teacher, show you how to solve a problem (on the board, overhead, powerpoint, smartboard).
2. I, the teacher, solve the problem with you, the student, telling me what to do at each step.
3. You, the student, now solve the problem on your own.

Guided Discovery

- ⊗ Students are guided by the teacher (worksheet) to do certain activities and reflect on what they have done (Known as “reflection on activity-effect” in the math education world).
- ⊗ Students the draw a conclusion (guided to the correct one by the teacher).

Example: FRACTIONS

- ⊗ WORKSHEET #1
 - ⊗ 10 pairs of fractions
 - ⊗ Each pair has the same numerator
 - ⊗ DRAW each fraction and compare – which is the bigger fraction
 - ⊗ Make a generalization that starts “when fractions have the same numerator, the one with.... Is the larger fraction BECAUSE...”

Example: FRACTIONS

- ⊗ WORKSHEET #2
 - ⊗ 10 pairs of fractions
 - ⊗ Each pair has the same denominator
 - ⊗ DRAW each fraction and compare – which is the bigger fraction
 - ⊗ Make a generalization that starts “when fractions have the same denominator, the one with.... Is the larger fraction BECAUSE...”

Example: FRACTIONS

- ⊗ WORKSHEET #3
 - ⊗ 10 pairs of fractions
 - ⊗ Each pair has a different numerator/denominator
 - ⊗ DRAW each fraction and compare – which is the bigger fraction
 - ⊗ Make a generalization that starts “when fractions have different numerators and denominators, the larger fraction will be BECAUSE...”

JIGSAW METHOD

- ⊗ Put students into groups (probably homogeneous but not always)
- ⊗ Each group reads/does internet searches and asks the teacher questions to learn “their” concept or skill. (teacher is just ONE of several resources – usually the last resort ☺).

JIGSAW METHOD

- ⊗ Students prepare a 5-10 minute explanation of their particular concept/skill that is handed in to the teacher to be sure it is appropriate.
- ⊗ Number each student in each group (group 1: 1-5; group 2: 1-5, etc).
- ⊗ Put students together by NUMBER

JIGSAW METHOD

- ⊗ New groups now have an expert for each concept or skill.
- ⊗ Each member presents their concept or skill (using notes checked by teacher) to the rest of the group.
- ⊗ Can use a student-made assessment or your own.

Example: GRAPH SHAPES

- ⊗ Give each group a set of polynomials that all make the same basic shape when they are graphed.
- ⊗ Students graph the polynomials and then try to discover what is similar about their own polynomial.
- ⊗ The group is to come up with 5 of their own examples to make sure that their hypothesis is correct.

Example: GRAPH SHAPES

- ⊗ Finally, the group is to write a justification for how they know that their description of the polynomial will always give their description of the shape.
- ⊗ Teacher check
- ⊗ JIGSAW

“Speed Dating”

- ⊗ Used mostly in a skill lesson for student practice/ processing.
- ⊗ Have a worksheet that has enough problems that EACH student get his or her own problem.
- ⊗ Use a form for each student to use as he/she solves his/her problem.

“Speed Dating”

MATH PROBLEM STEP	WHAT TO DO IN WORDS	WHY I DO THIS STEP
$3x + 5 = 17$ $3x + 5 - 5 = 17 - 5$	First, you subtract 5 from both sides of the equation	Because I need to get x alone to figure out what it is. Also, if I do something to one side of the equation, I have to do it to the other to keep it equal
$3x = 12$ $(3/3)x = 12/3$	I divide both sides by 3.	To get x by itself, I divide out the coefficient (this is because it is Multiplied times some number – it's like factoring)
$x = 4$	ANSWER	

“Speed Dating”

- ☞ Teacher should “cruise” to make sure the students have the correct answer. This gives time for some individual attention to certain students.
- ☞ Set up for Speed Dating – Split the class in half.

“Speed Dating”- Round One

- ☞ One half of students sit at desk (“sitters”), other half will be the “moving” group (“movers”).
- ☞ Pair each mover with a sitter. Each student will have 1-2 (or so, depending on the problems) minutes to explain how to solve his/her problem and then the other student will have another 1-2 to explain his/her problem.

“Speed Dating” – Round One

- ☞ Students are to make sure that their partner understands how to solve. They may help each other “perfect” their explanation.
- ☞ After time, every mover moves one seat and they start again.
- ☞ Do this until all movers have explained their problem to all sitters.

“Speed Dating” – Round Two

- ☞ Now break movers into two groups – sitters A and movers A and break sitters in two groups – sitters B and movers B
- ☞ This time students pair A's with A's and B's with B's and repeat the process. This will be with people that they have not yet met with.

Speed Dating – additional rounds

- ☞ Additional rounds are sometimes needed.
- ☞ When the groups get to an small, odd number you can have them just finish the worksheet in groups.
- ☞ Each student will have explained his/her problem n-1 times with n being the number of students in the class.

Math Research Projects

- ⊗ Can be small group or individual
- ⊗ End products: Paper, Presentation, Bulletin Board
- ⊗ All students should be responsible for material given in presentations of bulletin boards.
- ⊗ Can use rubrics to let students assess each others work.

What other ideas?



Questions/Comments?

