Number Talks in the High School Math Classroom

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Overview of Session

Why number talk is good for students?

What does a number talk feel like as a student?

What does a number talk look like in a classroom?

Example of concept… fractions

How to create a number talk?
Why Number Talk is “good” for students...

Develop mathematical thinking

• Promotes “sense making” beyond memorizing algorithms
• Bring multiple solutions to the surface
• Fluency!
A first grader described this as an even number turning into an odd number.
Multiple Solutions

Jaime Bonato @ms_bonato · 7 Apr 2015
38 x 5. High school. #mathtalks #mathtalktour

38 x 5 = 190

\[ \frac{4}{38} \times 5 = \frac{200}{190} \]
\[ -(2 \times 5) = \frac{-10}{190} \]
Fractions to percents. Inside the mind of a seventh grader. #numbertalks
#numbertalktour #math
What does a Number Talk feel like as a learner?
Basic Logistics of a Number Talk

1. Students clear desks and use hand signal (fist to chest) to show ready

2. Teacher writes a problem on the board - write HORIZONTALLY

3. Students solve the problem mentally and use hand signal to show they have one or more solutions

4. When most students are done, teacher asks for answers and records suggested answers
Basic Logistics of a Number Talk

5. Teacher asks students to explain how they got answer

6. Students first tell which answer they are defending and then explains thinking

7. Teacher supports student in working through the reasoning by asking additional probing questions

8. Teacher decides when to wrap up the number talk depending on time and how many responses
Example of a Number Talk in a HS Classroom
Making Sense of Fractions — From Making Number Talks Matter

“More or Less than ½?” Number Talks

“Closer to 0, ½, or 1?” Number Talks

“Which is Greater?” Number Talks

“Fractions on the Number Line” Number Talks

Adding Fractions… About ½, About 1, About 2

Products and Quotients

Decimals, Percents, …
“More or Less than ½ ?” Number Talks

3/8   16/31   14/25   50/99

Less  \( \frac{3}{8} \)  \( \frac{1}{2} \) would be \( \frac{16}{31} \)

More  \( \frac{16}{31} \)  half of 31 is 15\( \frac{1}{2} \)

More  \( \frac{14}{25} \)  half of 25 is 12.5
and 14 is more than 12.5
“Closer to 0, ½, or 1?” Number Talks

2/3, 13/24, 16/25, 5/16, 3/10

Students think of a fraction that is closer to 0 than to ½ or 1
“Which is Greater?” Number Talks

9/10 and 6/7

3/6 and 7/15

1/7 and 1/5

11/13 and 9/11
“Fractions on the Number Line” Number Talks

\[ \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{11}{13}, \frac{9}{11}, \frac{7}{9}, \frac{7}{11} \]
More “Fractions on the Number Line”
More “Fractions on the Number Line”
How to create a number talk and number talk progressions…

Think about starting with dot talks* to get students comfortable with the process

Use concepts that are commonly “mixed up” as a topic

Pick an operation - subtraction, addition, division, multiplication

Focus on Fractions! Fractions, Decimals, Percents
Dot Talk

How many dots?

How did you see the dots?
What is a string?

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There are MANY resources! Save your energy making up problems and use that energy to lead a number talk!

http://www.mathtalks.net/

Final Thoughts…

Wait time is okay!

Be curious!

Number Talk regularly – and don’t give up!

Keep the physical routines (hand signals)

Attach student names to ideas

Practice recording thinking

Make the most of multiple answers

Encourage academic vocabulary
Resources


Fawn Nguyen -

http://www.mathtalks.net/