Ensuring Equity in 6-8 Math

Kevin Liner, Illustrative Mathematics
Joseph DuLaney, LearnZillion
As an Educator...

1. My biggest strength is. . .

2. I want to learn more about. . .
@PRSMS_Eagles #PascoMath #Infogap
activity. Great way to end the week students.
#MP3 and #MP4 happening. Student 1: We
have us a good argument going here.
Student 2: I love being able to argue in math.
😊

Anne Agostinelli
@annagostinelli

Forming groups with matching (transformed)
triangles to get an interior angle sum of 180
sparked good debate and convos. Loved
hearing all those math terms! #learnwithIM
#d100inspires

Carmen Coleman
@kcamer_cub

Hearing such impressive math talk
@KammererCubs. Ss are building their
definition of standard deviation. This is
THINKING. 😐
Let’s Get to Know Each Other!

- Name
- Location and role
- How do you define “equity”?
Things to consider...

- Where are opportunities for ensuring equity?
- How does the lesson structure and routines strengthen the opportunities and supports to ensure equity?
NCTM Equity and Access Position

Achieving access and equity requires that all stakeholders—

- **ensure that all students have access to a challenging mathematics curriculum**, taught by skilled and effective teachers who differentiate instruction as needed;
- monitor student progress and make needed accommodations; and
- offer remediation or additional challenges when appropriate.
Curriculum Structures That Provide Access

- Grade Level, Unit and Lesson open with an *invitation to mathematics*
- Mathematical Content and Language Routines
- Coherent, Standards-aligned mathematical content
Problem-Based Lesson Structure
The Structure of a Lesson

- Warm-up
- Activity
- Activity Synthesis
- Lesson Synthesis
- Cool-down
# Units By Grade Level

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<td>7.9</td>
<td>Putting it All Together</td>
<td>8.9</td>
<td>Putting it All Together</td>
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## Unit 4 at a Glance
### Proportional Relationships and Percentages

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<td>Let’s Put it to Work</td>
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Let’s use fractions to describe increases and decreases.
Structure of a Lesson

- Warm-up
- Activity
- Activity Synthesis
- Lesson Synthesis
- Cool-down
Warm-up 4.1: Notice and Wonder: Tape Diagrams

What do you notice? What do you wonder?

[Diagram with tape diagrams and questions]
Structure of a Lesson

- Warm-up
- Activity
- Activity Synthesis
- Lesson Synthesis
- Cool-down
Activity 4.2: Walking Half as Much Again

1. Complete the table to show the total distance walked in each case.
   a. Jada’s pet turtle walked 10 feet, and then half that length again.
   b. Jada’s baby brother walked 3 feet, and then half that length again.
   c. Jada’s hamster walked 4.5 feet, and then half that length again.
   d. Jada’s robot walked 1 foot, and then half that length again.
   e. A person walked $x$ feet and then half that length again.

<table>
<thead>
<tr>
<th>initial distance</th>
<th>total distance</th>
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<tbody>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>$x$</td>
<td></td>
</tr>
</tbody>
</table>

2. Explain how you computed the total distance in each case.

3. Two students each wrote an equation to represent the relationship between the initial distance walked ($x$) and the total distance walked ($y$).
   - Mai wrote $y = x + \frac{1}{2} x$.
   - Kiran wrote $y = \frac{3}{2} x$.

   Do you agree with either of them? Explain your reasoning.
Grade 7 Unit 4 Lesson 4
Activity 4.3: More and Less

1. Match each situation with a diagram. A diagram may not have a match.

1. Han ate $x$ ounces of blueberries. Mai ate $\frac{1}{3}$ less than that.

2. Mai biked $x$ miles. Han biked $\frac{2}{3}$ more than that.

3. Han bought $x$ pounds of apples. Mai bought $\frac{2}{3}$ of that.
Activity 4.3: More and Less

2. For each diagram, write an equation that represents the relationship between \( x \) and \( y \).
   
   a. Diagram A:
   
   b. Diagram B:
   
   c. Diagram C:
   
   d. Diagram D:

3. Write a story for one of the diagrams that doesn't have a match.
Elena biked $x$ miles, and Noah biked $\frac{2}{3}$ more than that.

$$y = \frac{2}{3}x$$
Structure of a Lesson

1. Warm-up
2. Activity
3. Activity Synthesis
4. Lesson Synthesis
5. Cool-down
Students should understand the role the distributive property plays in making calculations more efficient. Ask students:

- “Give examples of how we can use the distributive property to create equivalent expressions that make it easier for us to calculate an amount plus (or minus) a fraction of that amount.” (e.g. $x + \frac{1}{2}x = 1\frac{1}{2}x$)

- “What does this look like in different representations?” (refer to the card sort examples)
Structure of a Lesson

- Warm-up
- Activity
- Activity Synthesis
- Lesson Synthesis
- Cool-down
1. Tyler ate \( x \) fruit snacks, and Han ate \( \frac{3}{4} \) less than that. Write an expression for the number of fruit snacks Han ate.

2. Mai skated \( x \) miles, and Clare skated \( \frac{3}{5} \) farther than that. Write an expression for the distance Clare skated.
The Structure of a Lesson

- Where are opportunities for ensuring equity?
- How does the structure of a lesson strengthen the opportunities and supports to ensure equity?
Reflection on Equity

Achieving access and equity requires that all stakeholders—

- ensure that all students have access to a challenging mathematics curriculum, taught by skilled and effective teachers who differentiate instruction as needed;
- monitor student progress and make needed accommodations; and
- offer remediation or additional challenges when appropriate.
Math Content Routines
How are routines used in the Curriculum?

- Where are opportunities for ensuring equity?
- How do these routines strengthen the opportunities and supports to ensure equity?
Let’s explore some math content routines.
Notice and Wonder

What do you notice? What do you wonder?
Kiran bent some wire around a rectangle to make a picture frame. The rectangle is 8 inches by 10 inches.

1. Find the perimeter of the wire picture frame. Explain or show your reasoning.

2. If the wire picture frame were stretched out to make one complete circle, what would its radius be?
Which One Doesn’t Belong?

A. $3^2 + b^2 = 5^2$
B. $b^2 = 5^2 - 3^2$
C. $3^2 + 5^2 = b^2$
D. $3^2 + 4^2 = 5^2$
1. Find \( c \).

2. Find \( b \).
Math Talk

Find each product mentally.

\[ 5 \cdot 102 \]

\[ 5 \cdot 98 \]

\[ 5 \cdot 999 \]
1. Select **all** the expressions that represent the area of the large, outer rectangle in figure A. Explain your reasoning.

- $6 + 3 + 2$
- $6 \cdot 3 + 6 \cdot 2$
- $6 \cdot 3 + 2$
- $6 \cdot 5$
- $6(3 + 2)$
- $6 \cdot 3 \cdot 2$
Routines in the Curriculum

- Where are opportunities for ensuring equity?
- How do these routines strengthen the opportunities and supports to ensure equity?

Math Content Routines
Math Language Routines
Reflection on Equity

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- ensure that all students have access to a challenging mathematics curriculum, taught by skilled and effective teachers who differentiate instruction as needed;
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# Reflection on Equity

Ensure that all students have access to a challenging mathematics curriculum, taught by skilled and effective teachers who differentiate instruction as needed;

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monitor student progress and make needed accommodations; and

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offer remediation or additional challenges when appropriate.

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