



Illustrative
Mathematics



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Ensuring Equity in 6-8 Math

Kevin Liner, Illustrative Mathematics
Joseph DuLaney, LearnZillion



@LearnZillion
@IllustrateMath



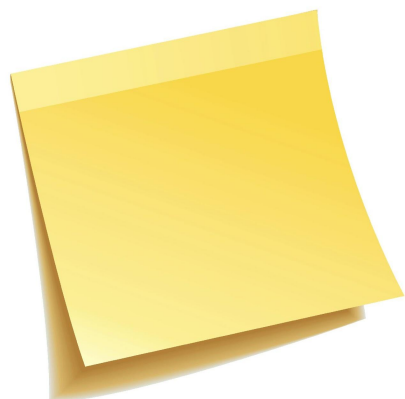
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#LearnWithIM

As an Educator...



1. My biggest strength is. . .



2. I want to learn more about. . .

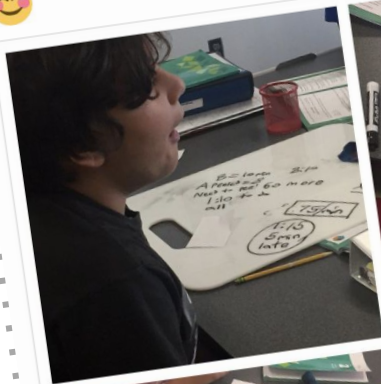
#LearnWithIM



Mary
@meandmy3boyz8

@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.

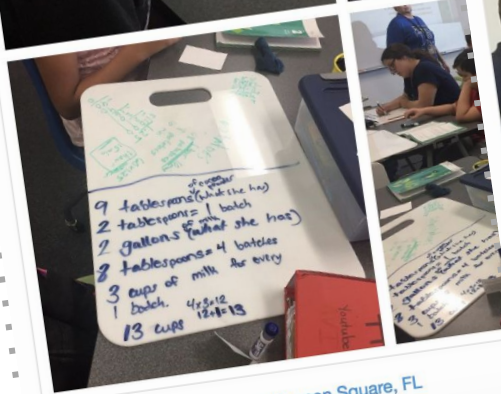
Follow



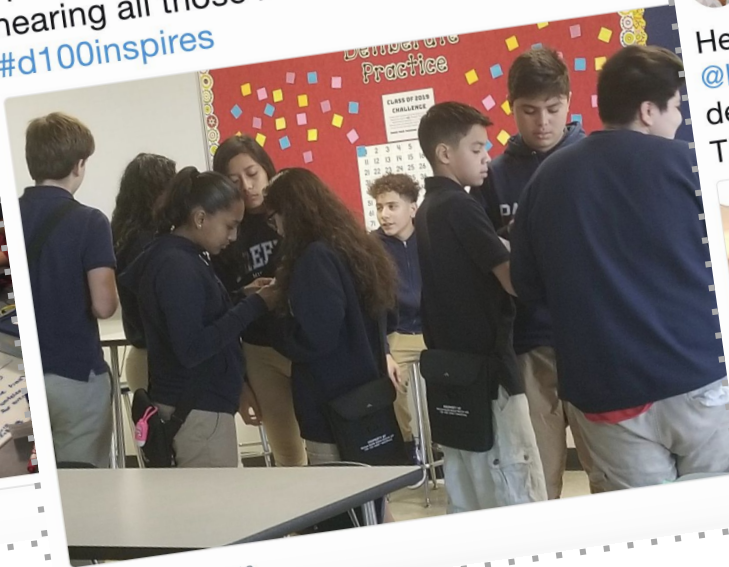
Anne Agostinelli
@anneagost

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

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5:04 AM - 22 Sep 2018 from Beacon Square, FL



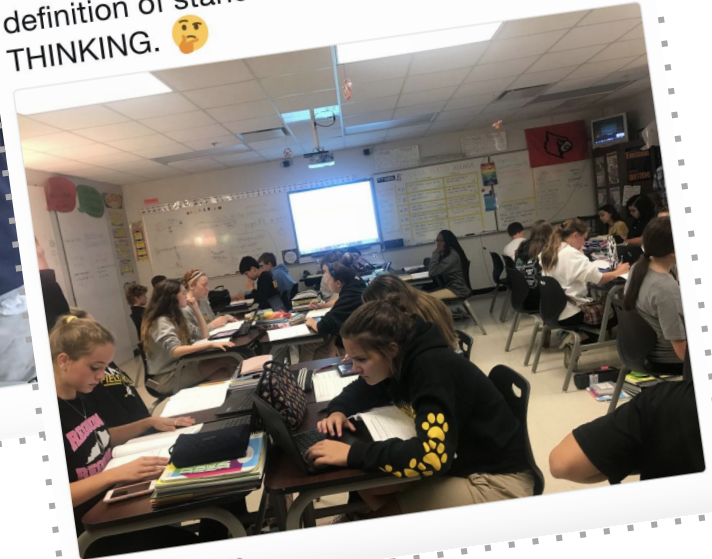
3:49 PM - 24 Sep 2018



Carmen Coleman
@kids_inspire

Hearing such impressive math talk @KammererCubs. Ss are building their definition of standard deviation. This is THINKING. 🤔

Follow



7:02 AM - 31 Aug 2018

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?



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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.



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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



Units By Grade Level

6.1	Area and Surface Area
6.2	Introducing Ratios
6.3	Unit Rates and Percentages
6.4	Dividing Fractions
6.5	Arithmetic in Base Ten
6.6	Expressions and Equations
6.7	Rational Numbers
6.8	Data Sets and Distribution
6.9	Putting it All Together

7.1	Scale Drawings
7.2	Introducing Proportional Relationships
7.3	Measuring Circles
7.4	Proportional Relationships and Percentages
7.5	Rational Number Arithmetic
7.6	Expressions, Equations, and Inequalities
7.7	Angles, Triangles, and Prisms
7.8	Probability and Sampling
7.9	Putting it All Together

8.1	Rigid Transformations and Congruence
8.2	Dilations, Similarity and Introducing Slope
8.3	Linear Relationships
8.4	Linear Equations and Linear Systems
8.5	Functions and Volume
8.6	Associations in Data
8.7	Exponents and Scientific Notation
8.8	Pythagorean Theorem and Irrational Numbers
8.9	Putting it All Together

Unit 4 at a Glance

Proportional Relationships and Percentages

Proportional Relationships with Fractions	Lessons 1, 2, 3, 4, 5
Percent Increase and Decrease	Lessons 6, 7, 8, 9
Applying Percentages	Lessons 10, 11, 12, 13, 14, 15
Let's Put it to Work	Lessons 16

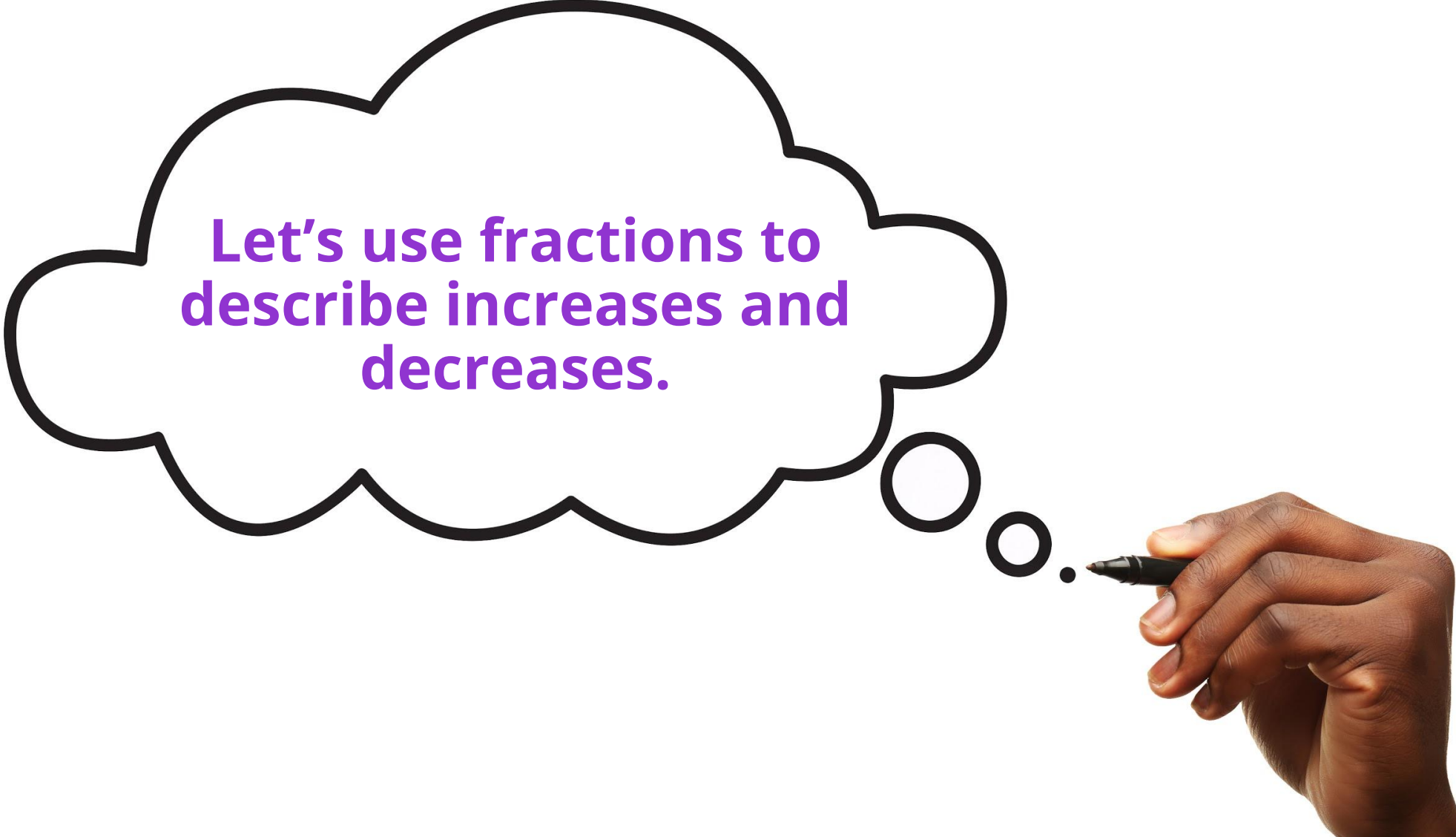


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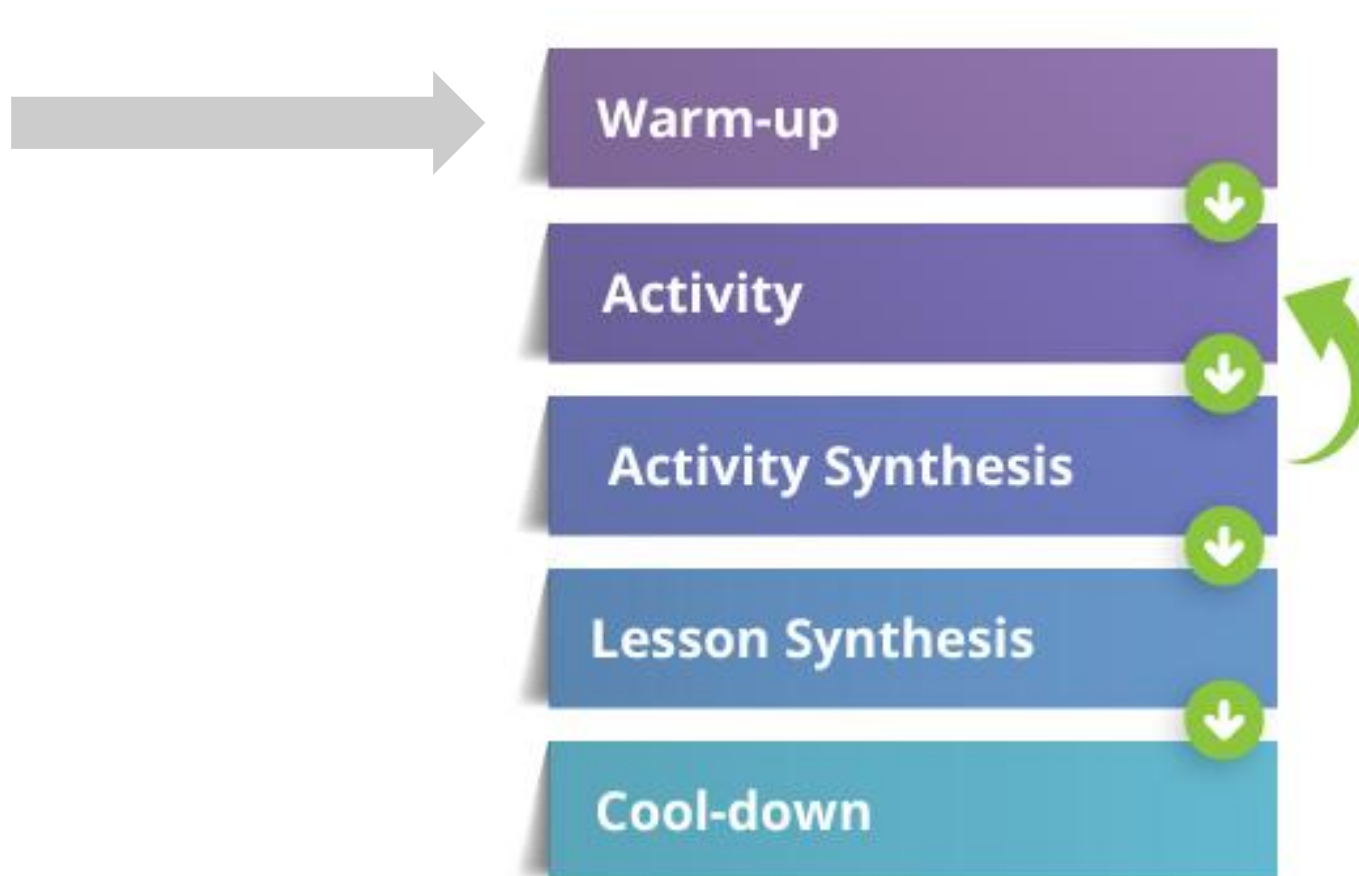


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Let's use fractions to
describe increases and
decreases.

Structure of a Lesson



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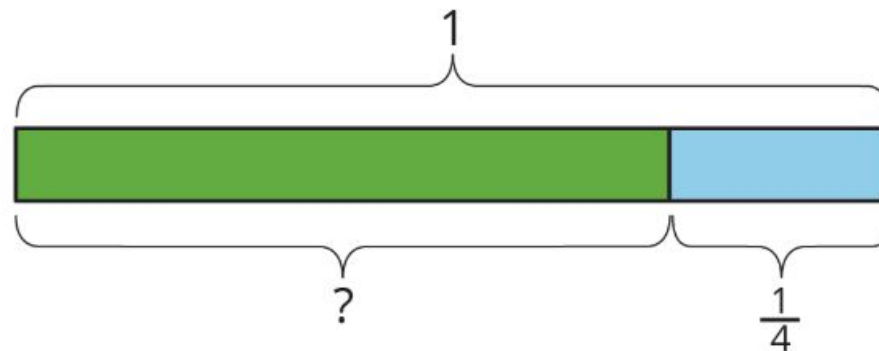
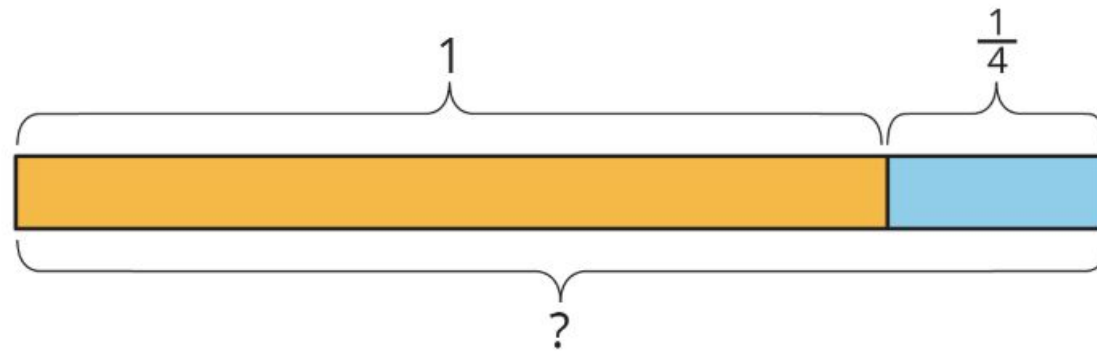
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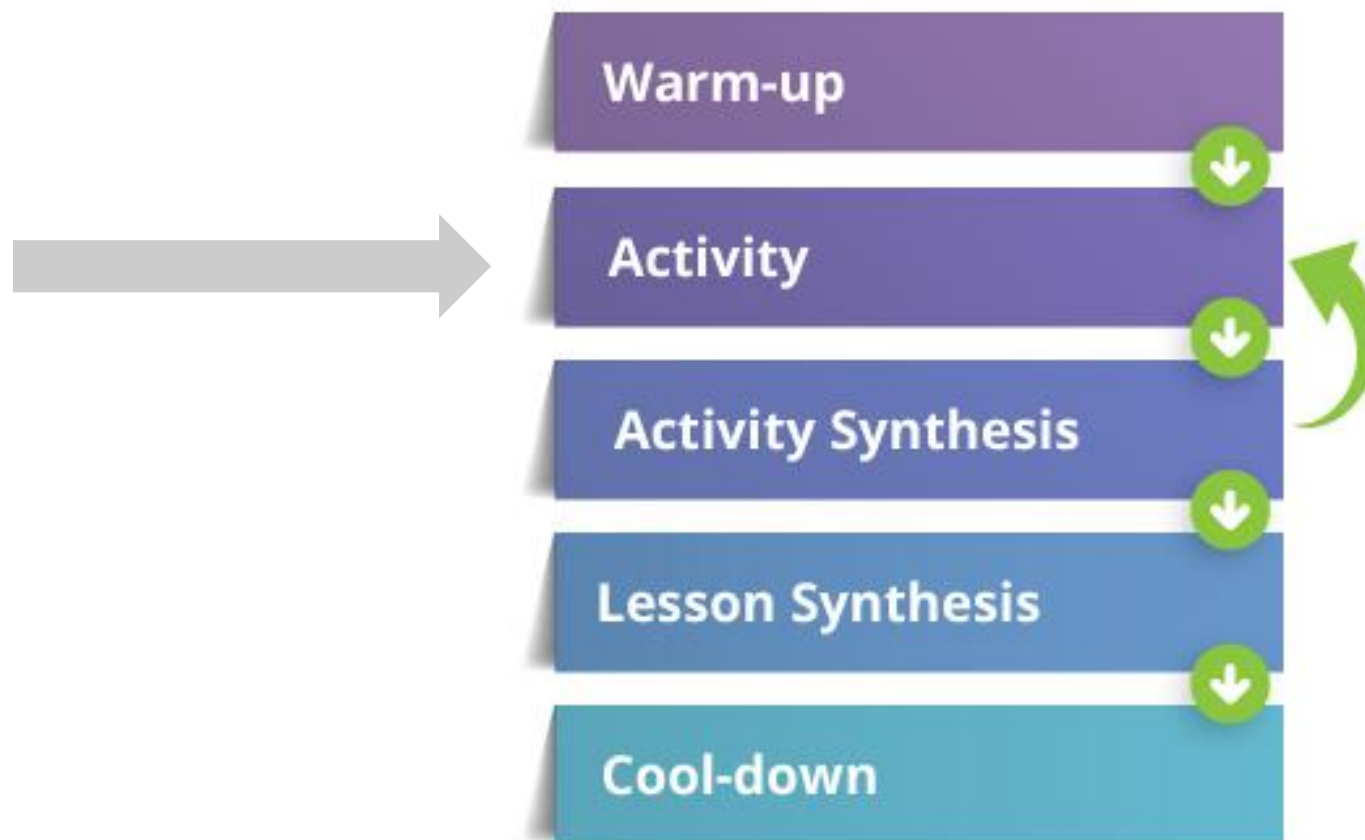
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Warm-up 4.1: Notice and Wonder: Tape Diagrams

What do you notice? What do you wonder?



Structure of a Lesson



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Activity 4.2: Walking Half as Much Again

1. Complete the table to show the total distance walked in each case.

- Jada's pet turtle walked 10 feet, and then half that length again.
- Jada's baby brother walked 3 feet, and then half that length again.
- Jada's hamster walked 4.5 feet, and then half that length again.
- Jada's robot walked 1 foot, and then half that length again.
- A person walked x feet and then half that length again.

initial distance	total distance
10	
3	
4.5	
1	
x	

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 $y = \frac{3}{2}x$.

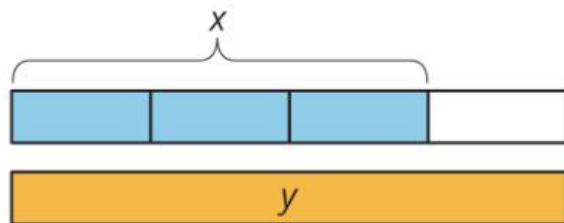
Do you agree with either of them? Explain your reasoning.

Grade 7 Unit 4 Lesson 4

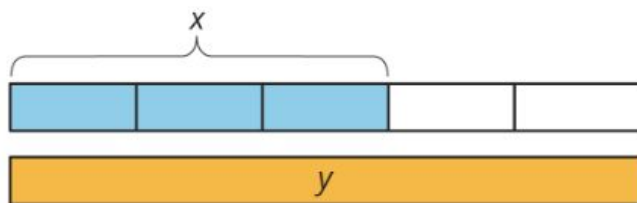
Activity 4.3: More and Less

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

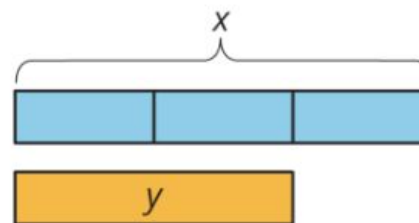
A



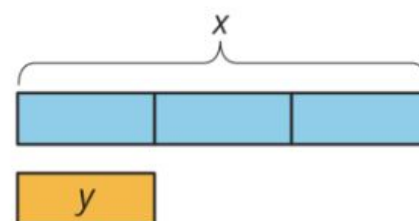
B



C



D



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.



Grade 7 Unit 4 Lesson 4

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.



Card Sort: Representations of Proportional Relationships

Elena biked x miles, and
Noah biked $\frac{2}{3}$ more than that.

Card Sort: Representations of
Proportional Relationships

$$y = \frac{2}{3}x$$



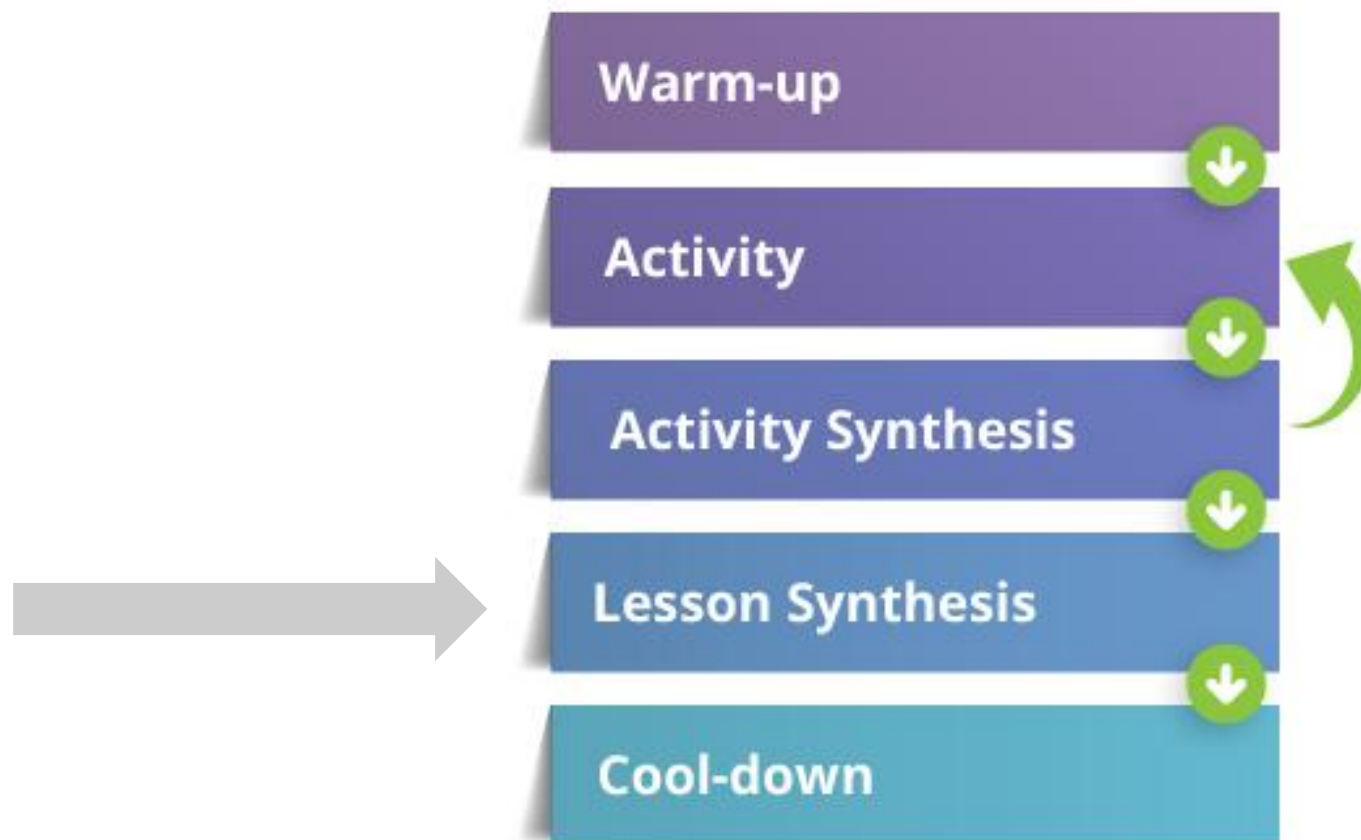
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Structure of a Lesson



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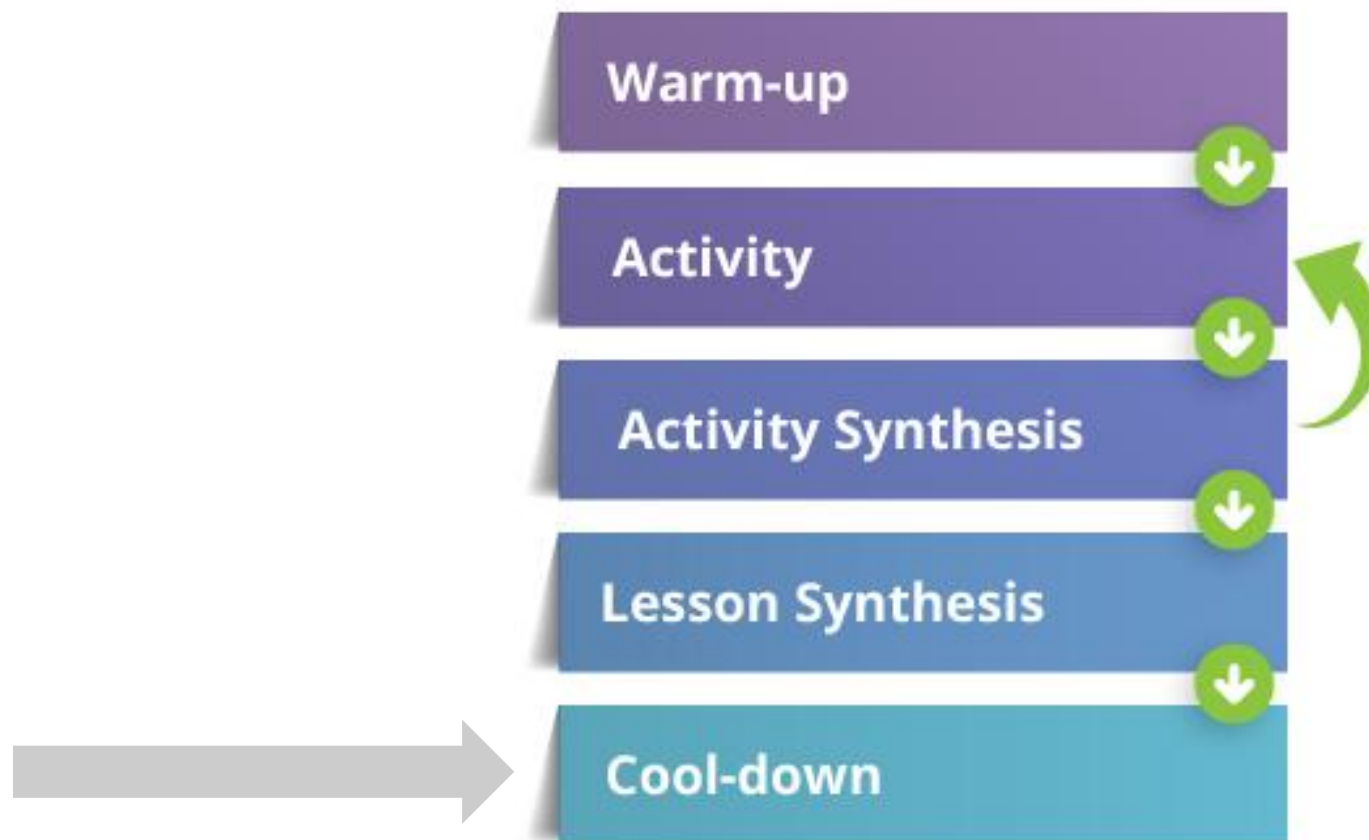
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Lesson 4: Lesson Synthesis

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



Cool-down 4.5: Fruit Snacks and Skating

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;
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Math Content Routines

How are routines used in the Curriculum?

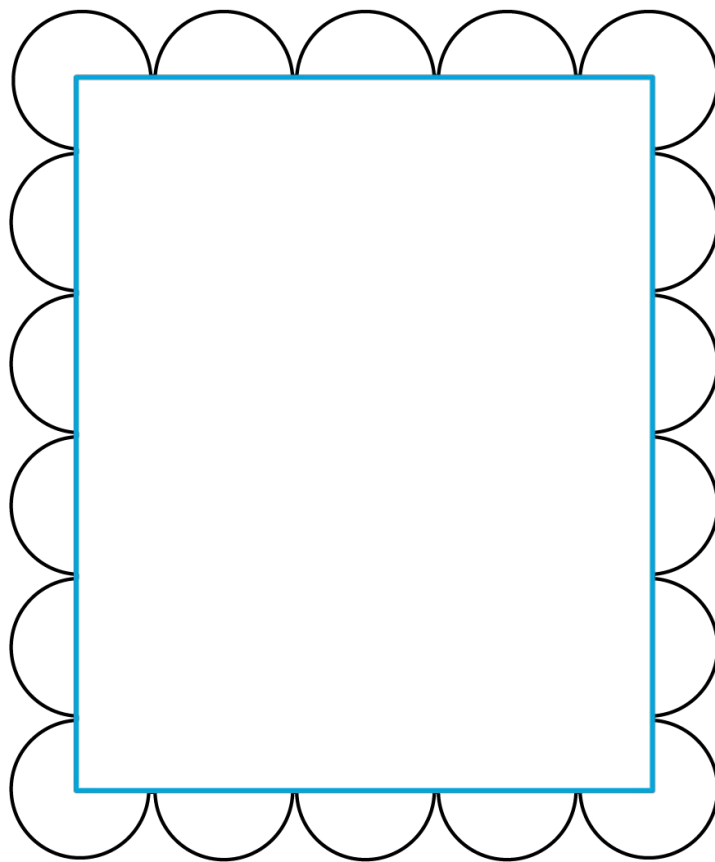
- Where are opportunities for ensuring equity?
- How do these routines strengthen the opportunities and supports to ensure equity?



**Let's explore some
math content
routines.**

Notice and Wonder

What do you notice? What do you wonder?



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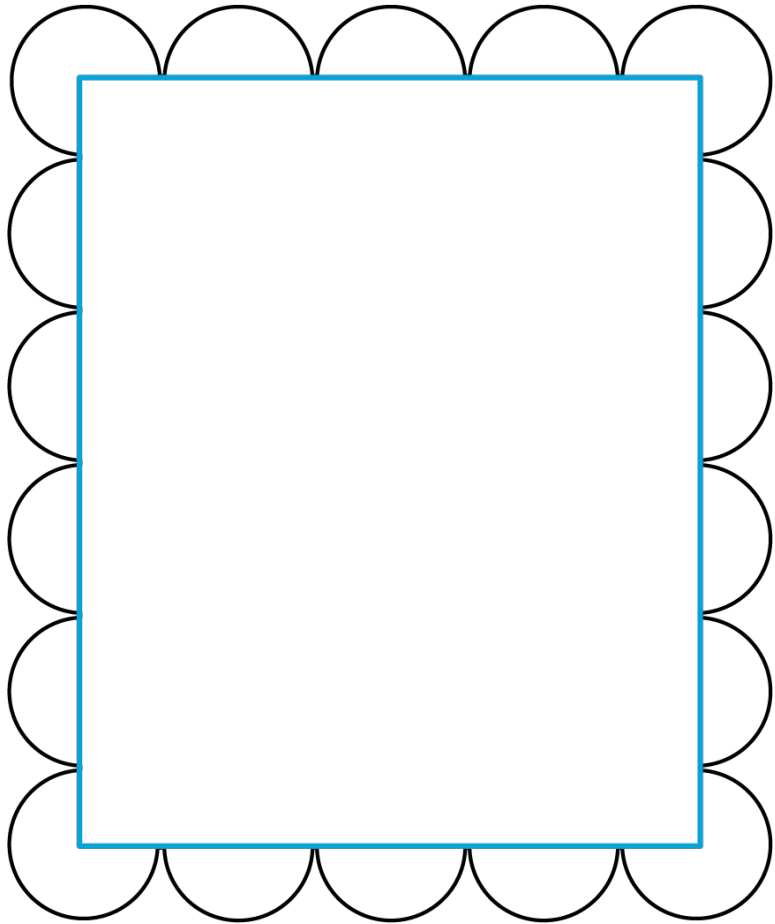
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Grade 7 Unit 3 Lesson 4 Activity 4

Measuring a Picture Frame



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. $b^2 = 5^2 - 3^2$

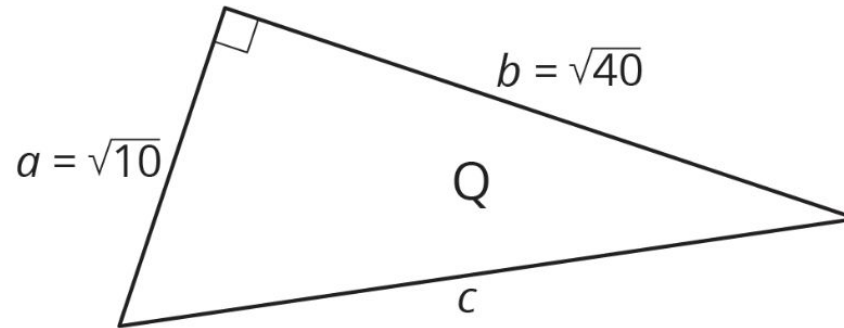
C. $3^2 + 5^2 = b^2$

D. $3^2 + 4^2 = 5^2$

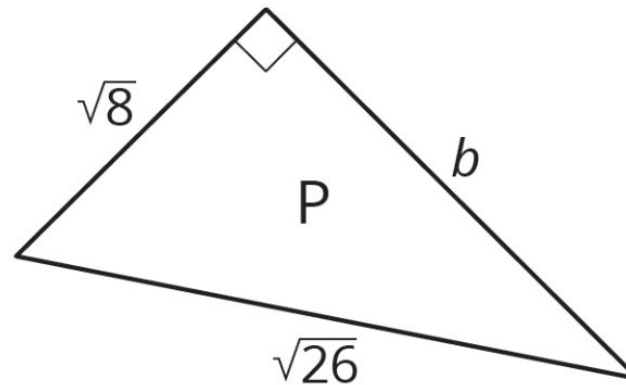
Grade 8 Unit 8 Lesson 8 Activity 3

Finding the Missing Side Lengths

1. Find c .



2. Find b .



Math Talk

Find each product mentally.

$$5 \cdot 102$$

$$5 \cdot 98$$

$$5 \cdot 999$$

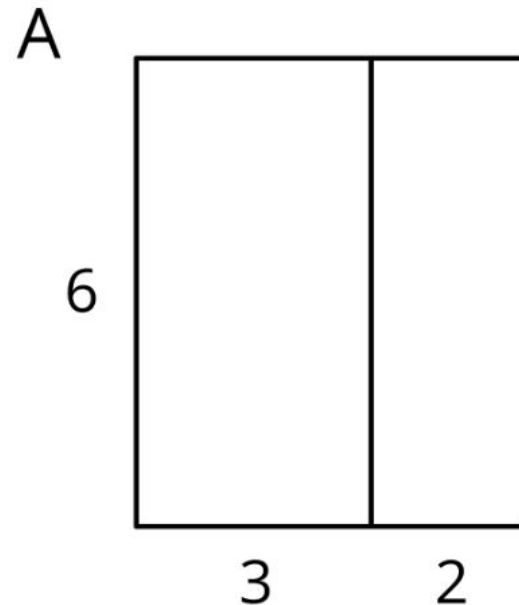


Grade 6 Unit 6 Lesson 9 Activity 2

Ways to Represent Areas of a Rectangle

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

SCALE
Stanford Center for Assessment, Learning, & Equity
Understanding Language

Reflection on Equity

Achieving access and equity requires that all stakeholders—

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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;	<ul style="list-style-type: none">• Warm Up Notice/Wonder Routine• Teacher prompts that encourage discussion guiding questions/suggestions• Launch and Sequence of Activity• Optional Activity
monitor student progress and make needed accommodations; and	<ul style="list-style-type: none">• Activity 1 - 5 Practices• Suggested questions for teachers
offer remediation or additional challenges when appropriate.	<ul style="list-style-type: none">• Supports for English Language Learners• Supports for SwD• Are you Ready for More?

Certified Partners



What is the value of working with an IM Certified Partner?

Certified Partners



What is the value of
working with
LearnZillion?

How can I review materials?

It's as easy as 1-2-3!

1. Set up an appointment
2. Receive free access to demo account
3. Post demo review

THANK YOU



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