Connecticut Core Standards addressed in this Unit include:

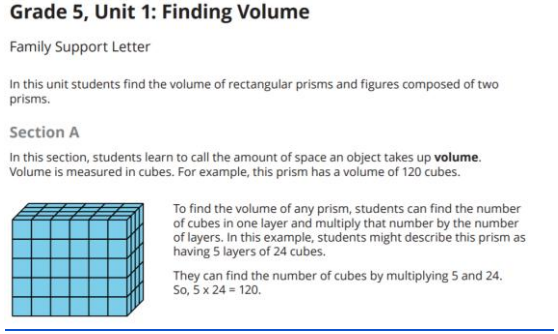
Priority Standards:

- **5.MD.3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.**
  - **a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.**
  - **b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.**
- **5.MD.4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.**
- **5.MD.5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.**
  - **a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.**
  - **b. Apply the formulas V = l x w x h and V = b x h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.**
  - c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. **(Supporting)**

Supporting Standards:

- 5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Family Letter for Unit One



Grade 5, Unit 1: Finding Volume

Family Support Letter

In this unit students find the volume of rectangular prisms and figures composed of two prisms.

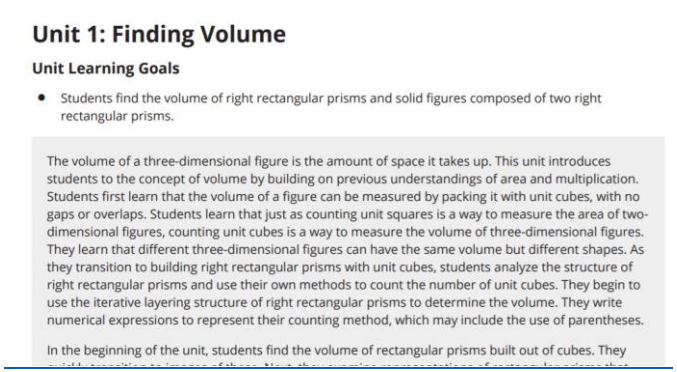
Section A

In this section, students learn to call the amount of space an object takes up **volume**. Volume is measured in cubes. For example, this prism has a volume of 120 cubes.

To find the volume of any prism, students can find the number of cubes in one layer and multiply that number by the number of layers. In this example, students might describe this prism as having 5 layers of 24 cubes.

They can find the number of cubes by multiplying 5 and 24. So, 5 x 24 = 120.

Unit Overview



Unit 1: Finding Volume

Unit Learning Goals

- Students find the volume of right rectangular prisms and solid figures composed of two right rectangular prisms.

The volume of a three-dimensional figure is the amount of space it takes up. This unit introduces students to the concept of volume by building on previous understandings of area and multiplication. Students first learn that the volume of a figure can be measured by packing it with unit cubes, with no gaps or overlaps. Students learn that just as counting unit squares is a way to measure the area of two-dimensional figures, counting unit cubes is a way to measure the volume of three-dimensional figures. They learn that different three-dimensional figures can have the same volume but different shapes. As they transition to building right rectangular prisms with unit cubes, students analyze the structure of right rectangular prisms and use their own methods to count the number of unit cubes. They begin to use the iterative layering structure of right rectangular prisms to determine the volume. They write numerical expressions to represent their counting method, which may include the use of parentheses.

In the beginning of the unit, students find the volume of rectangular prisms built out of cubes. They

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Weekly Planning Guide for Teachers - Grade 5 *Illustrative Mathematics* **Unit 1: Finding Volume**

Setting Procedure and Routines **September 8-11, 2020**

This week students will explore what it will look like to be a mathematician in grade 5 this year and explore some of the technology tools they will use in Google Classroom.

	Day 1 **Explore, Play, Discuss**	Day 2 **Explore, Play, Discuss**	Day 3 **Explore, Play, Discuss**	Day 4 **Explore, Play, Discuss**
Lesson Content	Activity 1 	Activity 2 	Activity 3 	Activity 4 
Meeting Style and Links	Synchronous	Synchronous	Synchronous	Synchronous
Student Assignments	**All students:** [LINK] Could assign multi-digit multiplication review this week	**All students:** [LINK] Could assign multi-digit multiplication review this week	**All students:** [LINK] Could assign multi-digit multiplication review this week	**All students:** [LINK] Could assign multi-digit multiplication review this week

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Additional Resources	Desmos Area/Multiplication Work Desmos Multiplication Practice Unit 1 Adaptation Pack Center Ideas (**PDF**)

Weekly Planning Guide for Teachers - Grade 5 Illustrative Mathematics **Unit 1: Finding Volume**

5.1 Adaptation Pack for Unit 1: Week-at-a-Glance **September 14-18, 2020**

This week students will review how to find the area of rectangles and explore factor pairs in preparation to begin the study of volume next week.
I can recognize multiples and factors of a given number.

	Day 1 and 2 **Explore, Play, Discuss**	Day 3 **Synthesize, Apply**	Day 4 and 5 **Explore, Play, Discuss**
Lesson Content	Students will explore and create different sized rectangles that meet given conditions. Lesson Overview Student Materials **Grade 5 Adaptation Pack Unit 1 - Lesson 1** • Warm Up (**GS**) • Activity 1 (**GS**) • Activity 2 (**JB**)	Review student solutions from Activity 2 as a way to launch whole class discussion. **Asynchronous**: Post Class Jamboard with solutions from Activity 2 (Days 1 and 2) and ask students to respond. **Synchronous**: **React to 5.1.A Lesson 1** • Small group focus on misconceptions related to area and multiples. Focus on using l x w to calculate area. • Challenge students to find the area of composite shapes (extend)	Students will find all the possible pairs of side lengths given the area of a rectangle and recognize that the side lengths of rectangles are factor pairs. Lesson Overview Student Materials **Grade 5 Adaptation Pack Unit 1 - Lesson 2** • Warm Up (**oral**) • Activity 1 (**JB**) • Activity 2 (**JB**) (**Gallery Walk posters**) - could do virtually (Jamboard) for the entire class to respond.

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Meeting Style(s)	Whole Class meeting		Whole Class and Small group meetings	Whole Class meeting	
Student Assignment	**Day 1** **1** - Cool Down 1 (**PDF**) Cool Down 1 (**JB**) **2**- Pre Practice (**GS**)	**Day 2** **1** - Pre Practice (**GS**) **2** -Cool Down 1 (**PDF**) Cool Down 1 (**JB**)	**Day 3** **1 and 2** - Teacher Choice based on student need	**Day 4** **1 -** Cool Down 2 (**PDF**) OR Cool Down 2 (**GS**) **2 -** Factor Chain **(GD)**	**Day 5** **1 -** Mini Assess **(JB)** **2 -** Cool Down 2 (**PDF**) OR Cool Down 2 (**GS**)
Additional Resources	Desmos Area/Multiplication Work Desmos Multiplication Practice Virtual Manipulatives: color tiles				

Weekly Planning Guide for Teachers - Grade 5 Illustrative Mathematics **Unit 1: Finding Volume**

5.1 Unit 1 - Section A: Week-at-a-Glance **September 21-25, 2020**

This week students will find the volume of rectangular prisms by counting unit cubes.
I can find the volume of a rectangular prism by counting unit cubes.

	Day 1 and 2 **Explore, Play, Discuss**	Day 3 **Synthesize, Apply**	Day 4 and 5 **Explore, Play, Discuss**

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<table>
<tr><td>Lesson Content</td><td colspan="2">Students will learn that 3D shapes have measurable attributes and volume is one of those.

Grade 5.1 - Lesson 1
• Warm Up - Which One? (GS)
• Activity 1 - Build Objects w/Cubes (GS)
• Activity 2 - Build and Order (SB)</td><td>Students will learn that 3D shapes have measurable attributes and volume is one of those.
Asynchronous Post: Warm Up: Cubes (GF)
Synchronous: React to 5.1 Lesson 1
• Debrief Warm Up: Cubes
• Small group focus on misconceptions related to viewing prisms and counting cubes. Can pull from Lesson 2 materials.
• Potential to focus on review of multi-digit multiplication for students who struggled with any assignments related to this from Week 1.</td><td colspan="2">Students will find the volume of a rectangular prism using the layered structure.

Grade 5.1 - Lesson 3
• Warm Up: Number Talk:Multiplication (ULS)
• Activity 1 - Build Rectangular Prisms (SB) and (PDF) Need linking cubes
• Activity 2 - Practice Finding Volume (GS) This can be done in small groups or independently.</td></tr>
<tr><td>Meeting Style(s)</td><td colspan="2">Whole Class meeting</td><td>Whole Class and Small group meetings</td><td colspan="2">Whole Class meeting</td></tr>
<tr><td>Student Assignment</td><td>Day 1
1 - Cool Down 1 (GS)
2 - Mini Assess (JB)</td><td>Day 2
1 - Cool Down 2 (GS)
2 - Cool Down 1 (GS)
Cool Down 2 (GS)</td><td>Day 3
1 and 2 - Teacher Choice based on student need</td><td>Day 4
1 - Cool Down 3 (GS)
2 -Less. 4 Warm Up (GS)</td><td>Day 5
1 - Less. 4 Warm Up (GS)
2 - Cool Down 3 (GS)</td></tr>
<tr><td>Additional Resources</td><td colspan="5">Virtual Manipulatives: cubes
Open Middle Multiplication</td></tr>
</table>

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This week students will calculate the volume of different rectangular prisms by examining the base area/height as well as the length/width/height.
I can find the volume of a rectangular prism by counting unit cubes. (Days 1-3)
I can apply a formula to find the volume of a rectangular prism. (Day 4-5)

	Day 1 and 2 **Deep Dive**		Day 3 **Synthesize, Apply**	Day 4 and 5 **Explore, Play, Discuss**	
Lesson Content	Students will apply their understanding of layered structure to find the volume of a rectangular prism when they can't see all the cubes. **Grade 5.1 - Lesson 4** • Warm Up - Use the results from Lesson 4 Warm Up assigned from last week to launch this lesson. • Activity 1 - Layers in Rect. Prisms (**GS**) • Activity 2 - Finding Volume in Different Ways (**GS**)		Reaction Day to Section A Checkpoint **Asynchronous Post:** Layer Problem (**GS**) **Synchronous - React to Section A Chkpt** • Warm Up - Class discussion on Layer Problem • Small Group Instruction ○ Place students in small groups for reteaching or enrichment based on Section A Checkpoint results as well as Cool Downs.	Students will explore the volume of prisms when given a base and differing heights. **Grade 5.1 - Lesson 5** • Warm Up -Notice&Wonder - Prism (**GS**) • Activity 1 - Match the Base (**GS**) • Activity 2 - Growing Prism (**GS**)	
Meeting Style(s)	Whole Class meeting		Whole Class and Small group meetings	Whole Class meeting	
Student Assignment	**Day 1** **1 -** Chkpt A #1-3 **(GS)** **2 -** Chkpt A #1 (**GS**)	**Day 2** **1 -**Cool Down 4 (**GS**) **2 -** Chkpt A #2-3 (**GS**)	**Day 3** **1 and 2 -** Redo Section A Checkpt problems students missed based on feedback	**Day 4** **1 -** Cool Down 5 **(GS)** **2 -** Cool Down 4 (**GS**)	**Day 5** **1 -**Lesson 5 Work (**GF**) **2 -** Cool Down 5 **(GS)**
Additional Resources	Layer Problem 2 Virtual Manipulatives: cubes				

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Weekly Planning Guide for Teachers - Grade 5 Illustrative Mathematics **Unit 1: Finding Volume**

5.1 Unit 1 - Section A and B: Week-at-a-Glance **October 5 - 9, 2020**

This week students will calculate the volume of different rectangular prisms by examining the base area/height as well as the length/width/height.
I can apply a formula to find the volume of a rectangular prism.

	Day 1 and 2 **Deep Dive**		Day 3 **Synthesize, Apply**	Day 4 and 5 **Explore, Play, Discuss**	
Lesson Content	Students will use their understanding of the structure of a rectangular prism to find volume and write numerical expressions. **Grade 5.1 - Lesson 6** • Warm Up- True or False? (**ULS**) • Activity 1 - Card Sort (**Desmos**) • Activity 2 - Tale of 2 Tables (**GS**)		Students will use their understanding of the structure of a rectangular prism to find volume and write numerical expressions. **Asynchronous Post:** Teacher Choice **Synchronous**: **React to Lessons 5 and 6** • Small group focus on misconceptions related to writing expressions to represent the volume of a prism. • Potential to focus on review of multi-digit multiplication for students who struggled with any assignments related to this skill.	Students will use their understanding of the structure of a rectangular prism to find volume by multiplying base x height or length x width x height. **Grade 5.1 - Lesson 7** • Warm Up - Notice & Wonder (**JB**) • Activity 1 - What are the Units? (**GS**) • Activity 2 - Sizing Up the Cubic Units (**SB**)	
Meeting Style(s)	Whole Class meeting		Whole Class and Small group meetings	Whole Class meeting	
Student Assignment	**Day 1** **1 -** Cool Down 6 **(GF)** **2 -** Lesson 5 Work (**GF**)	**Day 2** **1 -**Two Truths (**JB**) **2 -** Cool Down 6 (**GF**)	**Day 3** **1 and 2** - Teacher Choice based on student need	**Day 4** **1 -** Cool Down 7 **(GS)** **2 -** Two Truths (**JB**)	**Day 5** **1 -** Checkpoint B (**GF**) **2 -** Cool Down 7 (**GS**)
Additional Resources	Virtual Manipulatives: cubes Section B Practice Problems (**GF**)				

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Weekly Planning Guide for Teachers - Grade 5 Illustrative Mathematics **Unit 1: Finding Volume**

5.1 Unit 1 - Section A and B: Week-at-a-Glance **October 13 - 16, 2020**

This week students will calculate the volume of different rectangular prisms by examining the base area/height as well as the length/width/height.
I can find the volume of a figure composed of rectangular prisms.

	Day 1 and 2 **Deep Dive-Day 1**		Day 3 and 4 **Explore, Play, Discuss**	
Lesson Content	Students will recognize the structure of a solid figure is made up of two non-overlapping right rectangular prisms and understand its volume is **Grade 5.1 - Lesson 8** • Warm Up - Which One Doesn't Belong? (**GS**) • Activity 1 - Put It Together (**GS**) • Activity 2- I See Two Prisms (**GS**)		Students will use their understanding of the structure of a rectangular prism to find volume and write numerical expressions. **Grade 5.1 - Lesson 10** • Warm Up- What Do You Notice? What Do You Wonder? (**GF**) • Activity 1 - Compare Expressions (**GS**) • Activity 2-Find the Volume in Different Ways (**GS**)	
Meeting Style(s)	Whole Class meeting		Whole Class	
Student Assignment	**Day 1** **1 -** Cool Down 8 **(GS)** **2 -** Checkpoint B (**GF**)	**Day 2** **1 -** Prism Expressions (**GS**) **2 -** Cool Down 8 (**GS**)	**Day 3** **1 -** Cool Down 10 **(GS)** **2 --** Prism Expressions (**GS**)	**Day 4** **1 -** Open Middle volume (**GS**) **2 -** Cool Down 10 (**GS**)
Additional Resources	Virtual Manipulatives: cubes			

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Weekly Planning Guide for Teachers - Grade 5 Illustrative Mathematics **Unit 1: Finding Volume**

5.1 Unit 1 - Section A and B: Week-at-a-Glance **October 19 - 23, 2020**

This week students will calculate the volume of different rectangular prisms by examining the base area/height as well as the length/width/height.
I can find the volume of a figure composed of rectangular prisms.

	Day 1 and 2 **Explore, Play, Discuss**		Day 3 **Deep Dive**	Day 4 and 5 **Synthesize, Apply**	
Lesson Content	Students will use their understanding of the structure of a rectangular prism to find volume and write numerical expressions. **Grade 5.1 - Lesson 11** • Warm Up - Many Prisms (**GF**) • Activity 1 - Prims in World (**GS**) • Activity 2 - Prob Solving (**GS**)		Students will solidify their understanding of volume learned throughout the topic by participating in small group sessions focused on essential learning. **Asynchronous Post:** Teacher Choice **Grade 5.1 - Unit Review** • Students can work in small groups based on understanding of unit content	Students will apply their understanding of volume learned throughout the unit to complete the unit assessment and reflection. **Grade 5.1 - Unit Assessment** • Unit 1 Assessment	
Meeting Style(s)	Whole Class meeting		Whole Class and Small group meetings	Whole Class meeting	
Student Assignment	**Day 1** **1 -** Cool Down 11 **(GS)** **2 -** Open Middle (**GS**)	**Day 2** **1 -**Section C Pract. (**GF**) **2 -** Cool Down 11(**GS**)	**Day 3** **1 and 2 -** Unit Practice Problems - pull from unit materials or have students look through what they have completed.	**Day 4** **1 -** Assessment **(GF)** **2-** Section C Pract. (**GF**)	**Day 5** **1 -** Reflection (**GD**) **2 -** Assessment (**GF**) and Reflection (**GD**)

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Additional Resources	Virtual Manipulatives: cubes

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