

Grade 3

Unit 3.3	Unit Title Measurement –Area, Including Problem Solving	Lesson 1 of 4	Day 1 - 4
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	Measure area of plane shapes by counting unit squares.	SMP5 Use appropriate tools strategically.	How can you find the area of a plane shape?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> •Recognize properties of a square. •Understand the meaning of area. 	Row Column Square inch Square centimeter	Students may confuse area with perimeter and by doing so will measure only the squares around a shape and not every square inside a shape.	(This standard was also done in Unit 3.2 with 3.MD.5b) Investigations Unit 4 Snap-In 2.5A TM pp. CC23-CC27 SAB pp. 33A-33E (RM pp. C14 - C18). K-5 Math Resources Rectangles with Color Tiles Comparing Rectangles Rectangular Area Cards

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
<p>Teachers will be following lesson activities from Inv. Unit 4 session 2.5A. (TM pp. CC23-CC27) In the activity teachers will:</p> <p>Introduce the lesson by showing a 1-in square tile and a 5” X 6” rectangle and ask students how they can find the area of the rectangle using the tiles. Go over strategies with the students making sure to discuss and demonstrate how students should label their answer as square units or square inches. Give students pages 33A and 33B to do, and then go over page 33 B discussing how the areas of the two rectangles are the same. Ask students if they think the perimeters will be the same or if one has a greater perimeter than the other. After they have made their predictions have students then measure the perimeter of the two rectangles. Be sure to demonstrate finding the perimeter of each rectangle by adding the dimensions. Now have students look at p. C16. Each of these rectangles has a perimeter of 12 inches. Have students find the area of each rectangle.</p> <p>Please note that although this standard is on understanding area, it also addresses perimeter (3.MD.8), which is visited in unit 4.3.</p>	<p>In Investigations Unit 4 Session 2.5A students will:</p> <ul style="list-style-type: none"> •Use 1-inch tiles to find the area of rectangles •Label the area of the rectangles correctly. •Estimate and measure perimeter of rectangles. •Understand that rectangles can have the same area but different perimeters, or that they can have the same perimeter but different areas. • Complete Inv. SAB pp. 33A-33E (RM pp. C14 - C18). <p>In K-5 Math Resources students will:</p> <ul style="list-style-type: none"> •Find the number of rectangles you can make with 12 1-inch color tiles. •Record area and perimeter of rectangles and label in square inches and inches respectively. •Use rectangular area cards and estimate and compare areas of rectangles. Record area in square centimeters.

Grade 3

Unit 3.3	Unit Title Measurement –Area, Including Problem Solving	Lesson 2 of 4	Day 5 - 7
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
3.MD.7 Relate area to the operations of multiplication and addition. b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	Solving area problems using the strategy <i>find a pattern</i> .	SMP8 Look for and express regularity in repeated reasoning	How can you use the strategy <i>find a pattern</i> to solve area problems?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
Use multiplication to find the area of a rectangle. Understand a pattern changes in a consistent manner.			OnCore Lesson 90 Student pp. 179-180 K-5 Math Resources Developing a Formula for the Area of a Rectangle Area Word Problems

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide children to solve area problems by using the strategy <i>find a pattern</i> following the lesson guidelines in OnCore lesson 90 (TM p. 94), teachers will: Remind students that they have found the area of rectangles using multiplication. Tell students they will now find areas of related rectangles and identify how the areas are related to the length and width of the rectangles. Have students describe patterns they see in each column in the table on student p.180.	In Lesson 90 students will: <ul style="list-style-type: none"> • Solve problems involving areas of rectangles. • Find and describe a pattern of how the length and widths change in a sequence of rectangular murals. • Describe how the area of rectangles changes when the width changes. • Complete On Core Student Practice pp. 179-180. In K-5 Math Resources students will: <ul style="list-style-type: none"> • Develop a formula for the area of a rectangle. • Solve problems involving areas of rectangles.

Grade 3

Unit 3.3	Unit Title Measurement –Area, Including Problem Solving	Lesson 3 of 4	Day 8 - 11
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
3.MD.7 Relate area to the operations of multiplication and addition. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	<ul style="list-style-type: none"> •Apply the Distributive Property to area models. •Find the area of combined rectangles. 	SMP7 Look for and make use of structure.	How can you break apart a shape to find the area?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
Count unit squares to find the area of a rectangle. Use multiplication to find the area of a rectangle.	Distributive Property		OnCore Lesson 91 Student pp. 181-182 K-5 Math Resources Designing a Flower Bed <input type="checkbox"/> Area of Irregular Figures <input type="checkbox"/> Rectangular Robot <input type="checkbox"/>

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide children to apply the Distributive Property to area models and to find the area of combined rectangles following the lesson guidelines in OnCore lesson 91 (TM p. 95), teachers will: Introduce the lesson by drawing a rectangle on grid paper. Ask students to describe how they find its area. Explain that sometimes they can build upon what they know about finding area of rectangles to find the area of a combined shape (rectilinear shape). Discuss how two rectangles form the larger shape in the example on page 181. Have students draw lines to break apart the shape into two rectangles and discuss why the area for the total shape is the same using either of the two ways to break apart the combined shape.	In Lesson 91 students will: <ul style="list-style-type: none"> •Draw lines to break apart a rectilinear shape into rectangles. • Find the area of combined rectangles •Use the Distributive Property to find the area of rectangles and write their multiplication and addition equations. • Complete On Core Student Practice pp. 181-182. In K-5 Math Resources students will: <ul style="list-style-type: none"> •Design a flowerbed for a garden given constraints. • Find the area of irregular figures (rectilinear shapes) and order the figures from smallest to largest. •Draw a robot on centimeter grid paper that meets specific criteria.

Grade 3

Unit 3.3	Unit Title Measurement –Area, Including Problem Solving	Lesson 4 of 4	Day 12 - 15
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Lesson Focus

1. Standards Addressed	2. Content to be Learned	3. Mathematical Practices	4. Essential Question
3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	<ul style="list-style-type: none"> •Solve multiplication word problems involving equal groups and arrays. •Use arrays to model multiplication and find factors. 	SMP1 Make sense of problems and persevere in solving them.	<ul style="list-style-type: none"> •How can you represent this problem using a drawing and an equation with a symbol for the unknown number? •How can you draw an array to represent this word problem?
5. Prerequisite Knowledge	6. Essential Vocabulary	7. Possible Misconceptions	8. Necessary Materials
<ul style="list-style-type: none"> •Skip counting objects in equal groups. •Understand multiplication as combining equal groups. 	Array	Students do not always see that the first number in a multiplication problem represents the rows in an array and the second number in the multiplication problem represents the number in each row (the columns). For example: 5 X 8 is 5 rows with eight in each row or 8 columns.	K-5 Math Resources Building Arrays Number Story Arrays (Set 1) Number Story Arrays (Set 2) Multiplication Word Problems Equal Rows in a Marching Band Sharing Marbles Equally Number cubes, counters Books Amanda Bean’s Amazing Dream One Hundred Hungry Ants Stay in Line A Remainder of One

Instruction

9. Instruction Practices (What are the teachers doing)	10. Learning Practices (What are the students doing)
Teachers will guide children to build arrays, solve word problems using arrays, and find different ways to make arrays of certain given numbers following the activities in K-5 Math Resources. Teachers will: Supply students with number cubes and counters to build their arrays. Give students Number Story cards and have them draw an array for the number story. Supply counters for students to build arrays of	In K-5 Math Resources students will: <ul style="list-style-type: none"> •Roll two number cubes to make arrays and record how many counters in all for each array. • Read number stories and draw an array to represent the story. •Write an equation to represent a number story. • Choose one of the given numbers, suppose there are that many musicians and find all the different ways there are to arrange the musicians into equal rows. •Choose one of the given numbers and imagine they have that many marbles. Find

certain given numbers.

how many friends you could share them with so that you all have the same amount.