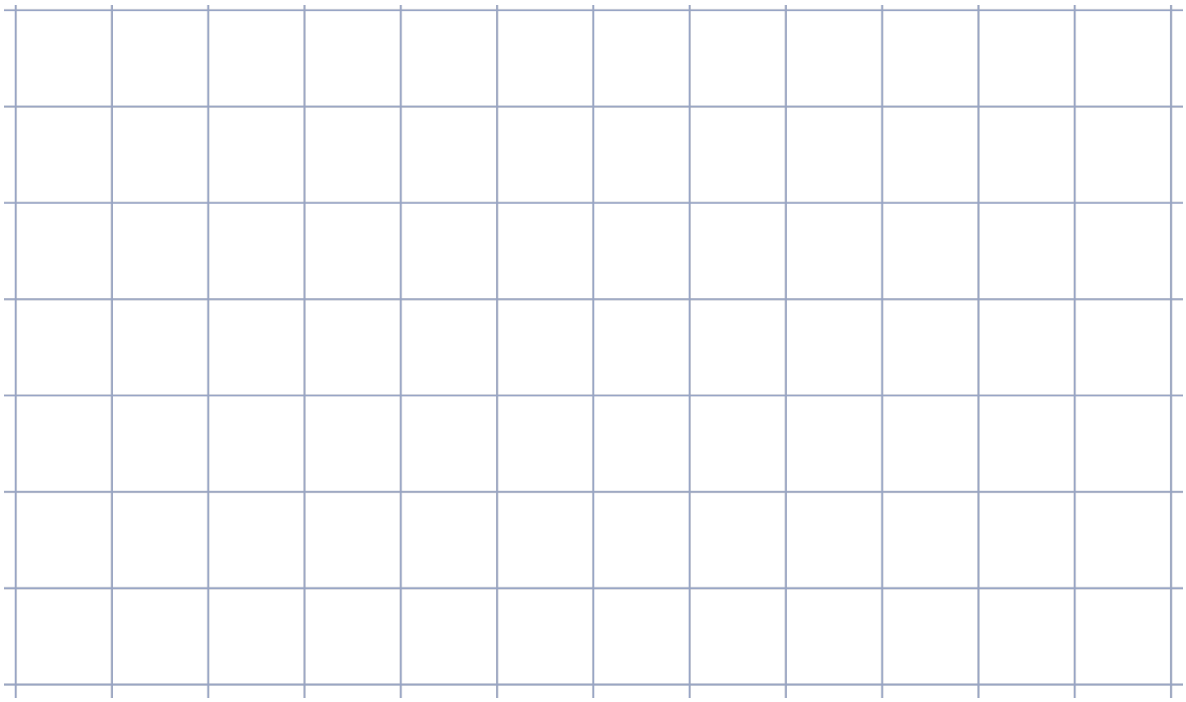
Name _____ Date _____

1. Use your ruler to draw a rectangle that measures $4\frac{1}{2}$ by $2\frac{3}{4}$ inches, and find its area.



2. Heather has a rectangular yard. She measures it and finds out it is $24\frac{1}{2}$ feet long by $12\frac{4}{5}$ feet wide.

   a. She wants to know how many square feet of sod she will need to completely cover the yard. Draw the yard, and label the measurements.

   b. How much sod will Heather need to cover the yard?

   c. If each square foot of sod costs 65 cents, how much will she have to pay to cover her yard?

3. A rectangular container that has a length of 30 cm, a width of 20 cm, and a height of 24 cm is filled with water to a depth of 15 cm. When an additional 6.5 liters of water are poured into the container, some water overflows. How many liters of water overflow the container? Use words, pictures, and numbers to explain your answer. (Remember: 1 cm^3 = 1 mL.)

4. Jim says that a $2\frac{1}{2}$ inch by $3\frac{1}{4}$ inch rectangle has a section that is 2 inches × 3 inches and a section that is $\frac{1}{2}$ inch × $\frac{1}{4}$ inch. That means the total area is just the sum of these two smaller areas, or $6\frac{1}{8}$ in^2. Why is Jim incorrect? Use an area model to explain your thinking. Then, give the correct area of the rectangle.

5. Miguel and Jacqui built towers out of craft sticks. Miguel's tower had a 4-inch square base. Jacqui's tower had a 6-inch square base. If Miguel's tower had a volume of 128 cubic inches and Jacqui's had a volume of 288 cubic inches, whose tower was taller? Explain your reasoning.

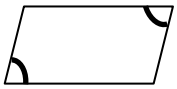
6. Read the statements. Circle True or False. Explain your choice for each using words and/or pictures.

a. All parallelograms are quadrilaterals. True False

b. All squares are rhombuses. True False

c. Squares are rhombuses but not rectangles. True False

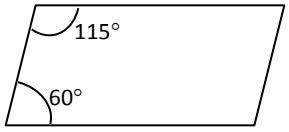
d. The opposite angles in a parallelogram have the same measure. True False



e. Because the angles in a rectangle are 90°, it is not a parallelogram. True False

f. The sum of the angle measures of any trapezoid is greater than the sum of the angle measures of any parallelogram. True False

g. The following figure is a parallelogram. True False



End-of-Module Assessment Task Standards Addressed — Topics A–D

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

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 $V = l \times w \times h$ and $V = b \times h$ 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.

Classify two-dimensional figures into categories based on their properties.

5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*
5.G.4	Classify two-dimensional figures in a hierarchy based on properties.

Evaluating Student Learning Outcomes

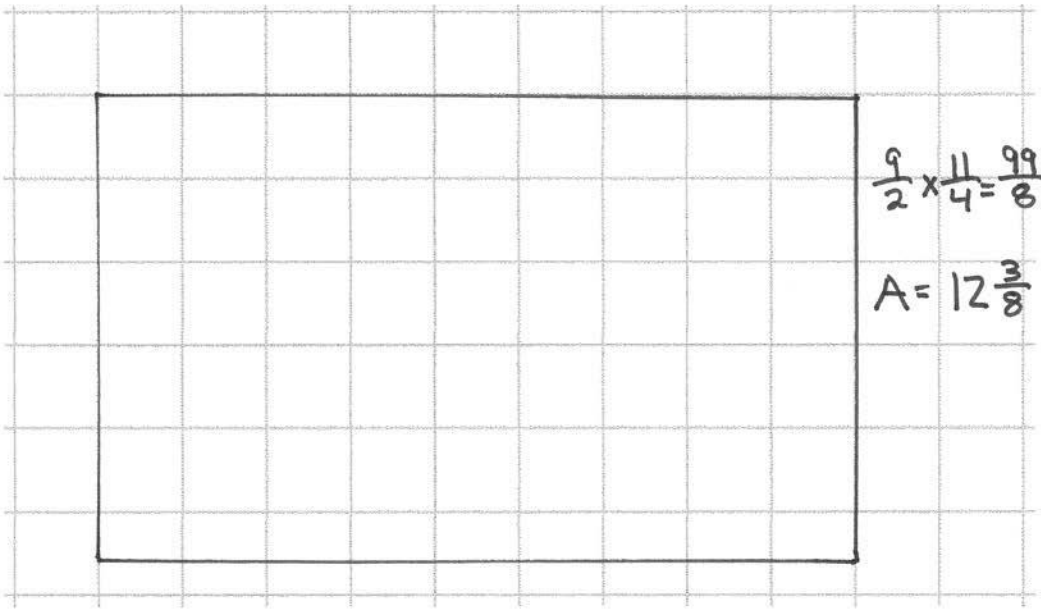
A Progression Toward Mastery is provided to describe steps that illuminate the gradually increasing understandings that students develop *on their way to proficiency.* In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for students is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

A Progression Toward Mastery				
Assessment Task Item and Standards Assessed	**STEP 1 Little evidence of reasoning without a correct answer. (1 Point)**	**STEP 2 Evidence of some reasoning without a correct answer. (2 Points)**	**STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)**	**STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)**
1 **5.NF.4b**	The student is unable to draw the rectangle and unable to find the area.	The student draws one dimension accurately but is unable to find the area.	The student accurately draws both dimensions of the rectangle but makes a calculation error when finding the area.	The student correctly does the following: ▪ Draws the rectangle. ▪ Calculates the area as $12\frac{3}{8}$ in^2.
2 **5.NF.4b** **5.NF.6**	The student is unable to draw the yard, calculate the area using appropriate units, or calculate the cost of the sod.	The student does one of the following: ▪ Draws and labels the yard. ▪ Calculates the area of the yard with or without the correct units (square feet). ▪ Finds the cost of the sod.	The student is able to correctly perform two of the following actions in any combination: ▪ Draws and labels the yard. ▪ Calculates the area of the yard with the correct units (square feet). ▪ Finds the cost of the sod.	The student correctly does the following: ▪ Draws the yard and labels correctly with the length as $24\frac{1}{2}$ ft and the width as $12\frac{4}{5}$ ft. ▪ Calculates the area of the yard using appropriate units as $313\frac{6}{10}$ ft^2 or $313\frac{3}{5}$ ft^2. ▪ Finds the cost of the sod to be \$203.84.
3 **5.MD.3** **5.MD.5**	The student is unable to find the volume of the water that has overflowed and is unable to explain the reasoning used.	The student finds the volume of the water that has overflowed but is unable to explain the reasoning used.	The student makes a calculation error in finding the volume of the water that has overflowed but is able to clearly explain the reasoning used.	The student finds the volume of the water that has overflowed to be 1.1 L and uses words, numbers, and pictures to clearly explain the reasoning used.

A Progression Toward Mastery				
4 **5.NF.4b** **5.NF.6**	The student is not able to draw an area model, provide an explanation of Jim's error, or give the correct area.	The student does one of the following: ▪ Accurately partitions the area model in both dimensions. ▪ Provides a clear explanation of Jim's error. ▪ Calculates the correct area of the rectangle.	The student does two of the following: ▪ Accurately partitions the area model in both dimensions. ▪ Provides a clear explanation of Jim's error. ▪ Calculates the correct area of the rectangle.	The student does the following: ▪ Accurately partitions the area model in both dimensions. ▪ Provides a clear explanation of Jim's error. ▪ Calculates the correct area of the rectangle as $8\frac{1}{8}$ in^2.
5 **5.MD.5**	The student is neither able to find the heights of the towers nor able to answer which tower is taller.	The student makes an attempt to calculate the towers' heights but makes errors in both calculations. Explanation of the reasoning used is unclear.	The student calculates the heights of the towers but makes a calculation error that causes an error in the determination of the taller tower. However, the explanation of the reasoning used is clear.	The student does the following: ▪ Accurately calculates the heights of both towers (8 inches). ▪ Explains clearly that the towers are equal in height.
6 **5.G.3** **5.G.4**	The student provides a combination of at least three correct true or false responses and/or explanations.	The student provides a combination of at least six correct true or false responses and/or explanations.	The student provides a combination of at least seven correct true or false responses and/or explanations.	The student provides seven correct true or false responses and clear explanations for all seven items. a. True b. True c. False d. True e. False f. False g. False

Name Jean Date

1. Use your ruler to draw a rectangle that measures $4\frac{1}{2}$ by $2\frac{3}{4}$ inches, and find its area.

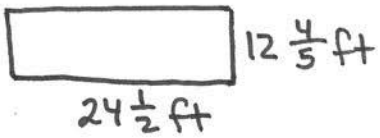


$\frac{9}{2} \times \frac{11}{4} = \frac{99}{8} = 12\frac{3}{8}$

$A = 12\frac{3}{8}$ in^2

2. Heather has a rectangular yard. She measures it and finds out it is $24\frac{1}{2}$ feet long by $12\frac{4}{5}$ feet wide.

   a. She wants to know how many square feet of sod she will need to completely cover the yard. Draw the yard, and label the measurements.



64 × 49 = 576 + 2560 = 3,136

3136 ÷ 2 = 1568; 1568 ÷ 5 = 313 R 3, so $313\frac{3}{5}$

   b. How much sod will Heather need to cover the yard?

$12\frac{4}{5} \times 24\frac{1}{2} = \frac{64}{5} \times \frac{49}{2} = \frac{3136}{10} = \frac{1568}{5} = 313\frac{3}{5}$

She'll need $313\frac{3}{5}$ ft^2 of sod to cover her yard.

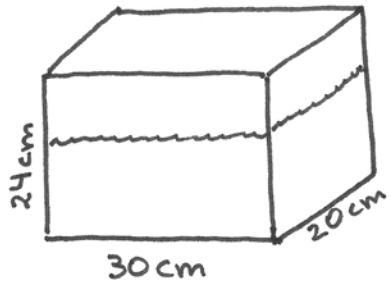
   c. If each square foot of sod costs 65 cents, how much will she have to pay to cover her yard?

$313\frac{3}{5} = 313.6$

313.6 × .65 = 15680 + 188160 = 203.840

Heather will have to pay $ 203.84 to cover her yard.

3. A rectangular container that has a length of 30 cm, a width of 20 cm, and a height of 24 cm is filled with water to a depth of 15 cm. When an additional 6.5 liters of water is poured into the container, some water overflows. How many liters of water overflow the container? Use words, pictures, and numbers to explain your answer. **(Remember 1 cm^3 = 1 mL.)**



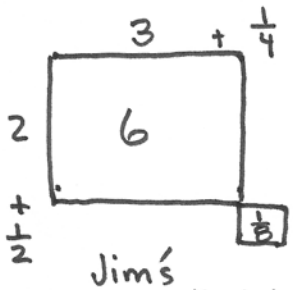
$30 \times 20 \times 24 = 720 \times 20 = 14{,}400$
Volume of the container = $14{,}400\ cm^3$

$30 \times 20 \times 15 = 450 \times 20 = 9{,}000$
Volume of water $9{,}000\ cm^3$

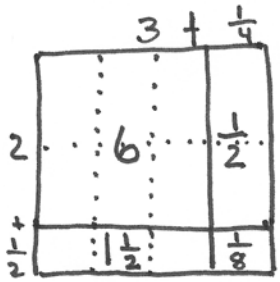
$14{,}400 - 9{,}000 = 5{,}400$
Room left in the container = $5{,}400\ cm^3$ or 5.4 L

$6.5\ L - 5.4\ L = 1.1\ L$ The water overflowed by 1.1 L or $1{,}100\ cm^3$.

4. Jim says that a $2\frac{1}{2}$ inch by $3\frac{1}{4}$ inch rectangle has a section that is 2 inches × 3 inches and a section that is $\frac{1}{2}$ inch × $\frac{1}{4}$ inches. That means the total area is just the sum of these two smaller areas, or $6\frac{1}{8}$ in^2. Why is Jim incorrect? Use an area model to explain your thinking. Then, give the correct area of the rectangle.



Jim's Incorrect Model

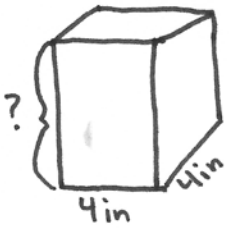


Correct Model

In order to find the area, all sections of the area model must be calculated and added.
$6 + \frac{1}{2} + 1\frac{1}{2} + \frac{1}{8} = 8\frac{1}{8}$

The area of the rectangle is $8\frac{1}{8}\ in^2$.

5. Miguel and Jacqui built towers out of craft sticks. Miguel's tower had a 4-inch square base. Jacqui's tower had a 6-inch square base. If Miguel's tower had a volume of 128 cubic inches and Jacqui's had a volume of 288 cubic inches, whose tower was taller? Explain your reasoning.



Miguel

$V = 128\ in^3$

$16\overline{)128}$ → 8, -128, 0

$V = 288\ in^3$

$36\overline{)288}$ → 8, -288, 0

Both towers have the same height of 8 in. I divided the volumes by the bases and got a height of 8 in.

6. Read the statements. Circle *True* or *False*. Explain your choice for each using words and/or pictures.

a. All parallelograms are quadrilaterals. (True) False

All parallelograms have 4 straight sides, so all parallelograms are a type of quadrilateral.

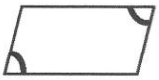
b. All squares are rhombuses. (True) False

All rhombuses have 4 equal sides, and so do all squares. Some rhombuses do not have 4 right angles, so not all rhombuses are squares.

c. Squares are rhombuses, but not rectangles. True (False)

All squares are both rhombuses and rectangles. Squares and rhombuses both have 4 equal sides. Squares and rectangles both have 4 right angles.

d. The opposite angles in a parallelogram have the same measure. (True) False



The opposite sides of parallelograms are parallel and equal in length. The four angles always add up to 360°. Opposite angles are always equal.

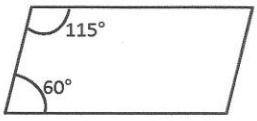
e. Because the angles in a rectangle are 90°, it is not a parallelogram. True (False)

All rectangles are parallelograms because all rectangles have 2 pairs of parallel sides.

f. The sum of the angle measures of any trapezoid is greater than the sum of the angle measures of any parallelogram. True (False)

The sum of the 4 angles of any quadrilateral, including trapezoids and parallelograms, is always 360°.

g. The following figure is a parallelogram. True (False)



Opposite angles in a parallelogram are always equal. If you add up these angles (60° + 60° + 115° + 115°) the sum is only 350°. Therefore, the opposite angles can't be equal, and this isn't a parallelogram. The angles need to add up to 360°.