<u>Unit Plan - Gr. 6/7 Measurement- Term 2</u>

## Grade 6 OEs and SEs

### OEs:
-determine the relationships among units and measurable attributes,including the area of a parallelogram,the area of a triangle,

### SEs:
-construct a rectangle,a square,a triangle, and a parallelogram,using a variety of tools (e.g.,concrete materials,geoboard dynamic geometry software,grid paper), given the area and/or perimeter (Sample problem:Create two different triangles with an area of 12 square units,using a geoboard.);

–determine,through investigation using a variety of tools (e.g.,pattern blocks,Power Polygons,dynamic geometry software, grid paper) and strategies (e.g.,paper fold- ing,cutting,and rearranging),the relation- ship between the area of a rectangle and the areas of parallelograms and triangles, by decomposing (e.g.,cutting up a parallelogram into a rectangle and two congruent triangles) and composing (e.g.,combining two congruent triangles to form a parallelogram);

–solve problems involving the estimation and calculation of the areas of triangles and the areas of parallelograms (Sample problem:Calculate the areas of parallelograms that share the same base and the same height,including the special case where the parallelogram is a rectangle.);

–solve problems involving the estimation and calculation of the surface area and volume of triangular and rectangular prisms (Sample problem:How many square centimetres of wrapping paper are required to wrap a box that is 10 cm long, 8 cm wide,and 12 cm high?).

–determine,through investigation using a variety of tools (e.g.,nets,concrete materials,dynamic geometry software, Polydrons) and strategies,the surface area of rectangular and triangular prisms;

–develop the formulas for the area of a parallelogram (i.e.,Area of parallelogram= base× height) and the area of a triangle [i.e.,Area of triangle=(base× height)÷2],using the area relationships among rectangles, parallelograms,and triangles (Sample problem:Use dynamic geometry software to show that parallelograms with the same height and the same base all have the same area.);

**Summative Task 1**
Demonstrate understanding of the surface area of a triangular prism.
**Summative Task 2**
Demonstrate understanding of the surface area of a rectangular prism.

**Grade 7 OEs and SEs**

**OE's**
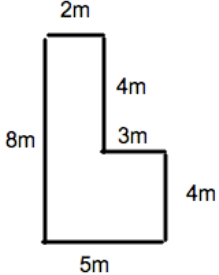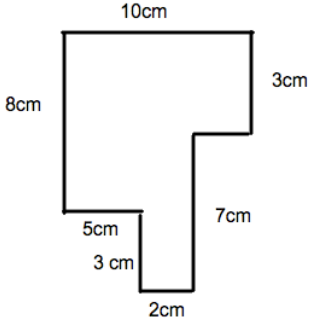- report on research into real-life applications of area measurements

**SE's**
- research and report on real-life applications of area measurements (e.g.,building
a skateboard; painting a room)
- determine,through investigation using a variety of tools (e.g.,concrete materials,
dynamic geometry software) and strategies, the relationship for calculating the area of
a trapezoid,and generalize to develop the formula [i.e.,Area=(sum of lengths of parallel
sidesx height)÷2](Sample problem:Determine the relationship between the area of a
parallelogram and the area of a trapezoid by composing a parallelogram from congruent
trapezoids.);
- solve problems involving the estimation and calculation of the area of a trapezoid;
- estimate and calculate the area of composite two-dimensional shapes by decomposing into
  shapes with known area relationships (e.g.,rectangle,parallelogram,triangle) (Sample
  problem:Decompose a pentagon into shapes with known area relationships to find the area of
  the pentagon.);

- **Summative Task 1**
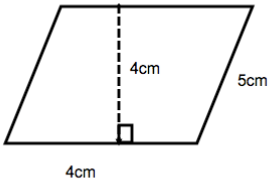Demonstrate understanding of the surface area of a triangular prism.
**Summative Task 2**
Demonstrate understanding of the surface area of a rectangular prism.

| Day | Problem/Checkpoint | Intent |
|---|---|---|
| 1<br><br>WAAAAC | Warm-up: Ask "What is area? What is perimeter?"<br><br>Activity: Find the area and the perimeter of the playground.<br><br>2m<br>4m<br>8m    3m<br>4m<br>5m<br><br>Consolidation: Discussion of how students found the area and the perimeter of the playground.<br>Bansho<br><br>Homework:  Find the area and the perimeter of the playground.<br><br>10cm<br>3cm<br>8cm<br>7cm<br>5cm<br>3 cm<br>2cm | *starting point to see what ideas students have about measuring area and perimeter*<br><br>*Look fors:*<br>*1. uses formula*<br>*2. counting up using the dimensions*<br>*3. uses grid paper* |

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| 2<br><br>WAAAAC | Warm-up:<br>Jessica used 34 m of fencing to enclose a rectangular section of her backyard.  What might the area of the enclosed section be?<br>(MMS pg. 349 #8)<br><br>Activity:<br>The Smiths are putting a flagstone deck around their pool.  The pool is rectangular.  Its dimensions are 8 m by 4m. The deck will surround the pool. It will have a width of 2 m.<br>What is the area of the deck?<br>How much security fencing is required around the deck?<br>(MMS pg 351 #1)<br><br>Consolidation:<br>Bansho- discuss results<br><br>Homework:<br>The Jones are putting a flagstone deck around their pool.  The pool is rectangular.  Its dimensions are 10 m by 6 m.  The deck will surround the pool. It will have a width of 3 m.<br>What is the area of the deck?<br>How much security fencing is required around the deck? | *Differentiating area and perimeter with different dimensions*<br>*Finding the perimeter without being told to find the perimeter*<br>*knowledge, thinking*<br><br><br>*Look fors:*<br>*1. calculate area*<br>*2. calculate perimeter*<br>*3. Take area of pool out of answer*<br>*4. add width of deck*<br>*5. used perimeter of deck to find fencing* |

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| 3<br><br>WAAACCC | Warm-up: Look at a box (klennex box). Discuss how you could find out how much wrapping paper you would need to wrap the box.<br>-discuss the faces of a rectangular prism (6) | *Calculating the surface area without a formula*<br><br>*Finding out the formula to determine the surface area of a 3D rectangle* |
| | Activity: Question from Math Curriculum document (pg. 91)<br>"How many square centimetres of wrapping paper are required to wrap a box that is 10 cm long, 8 cm wide, and 12 cm high?"<br><br>Consolidation: BANSHO<br>- surface area<br><br>Homework:<br>"How many square centimetres of wrapping paper are required to wrap a box that is 14 cm long, 12 cm wide, and 16 cm high?" | *Look fors:*<br>*1. area of 1 face and then x2*<br>*2. area of each face and then add* |

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| 4 Checkpoint<br><br>WAAACCC | Warm-up: take up homework<br><br>Independent Activity: Surface Area question from EQAO | *Apply the knowledge of surface area to a word problem*<br>*Find surface area without being told to find the surface area* |
| 5 | Gizmo | *Review of area, perimeter, surface area* |

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| 6<br><br>WWAAAC | Warm-up: Activity 8.17 Page 255 in Van De Walle book "Area of a Parallelogram"<br><br>Activity: Math Makes Sense Page 354 #7<br>A student says the area of this parallelogram is 20 cm2.  Explain the student's error?<br><br>4cm   5cm<br>4cm<br><br>Consolidation:  discussion of methods from activity.<br><br>Homework: Draw a parallelogram with base 3 cm and height 2 cm.  Then draw a parallelogram with twice the area. | *Use what they know about area of a rectangle to find the area of a parallelogram.* |

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| 7<br><br>WWAAAAC | Warm up: Activity 8.18 "Area of a Triangle" in Van De Walle book<br><br>Activity: Answer the question: "What is the relationship between the area of a triangle and the area of a parallelogram?"<br><br>Homework:<br>"Draw a parallelogram on 1 cm grid paper. Draw a diagonal to divide the parallelogram into 2 triangles. Find the area of each triangle. What is the relationship between a parallelogram and a triangle?"<br>Math Makes Sense Page 361 #5 | *Use what they know about area of a rectangle to find the area of a triangle.* |

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| 8<br><br>AAACCCCCCCCC | Warm Up: Surface Area of a Triangular Prism<br>What is the difference between a triangular prism and a rectangular prism?<br>- discussion with a Tolberone bar<br><br>Activity:<br>How is the strategy for finding the surface area of a triangular prism similar to finding the area of a rectangular prism?  How is it different. Use an example to support your answer.<br>(Record the steps)<br><br>Homework:<br>Find the surface area of the triangular prism. Explain the steps you used. (Need example of triangle here) | *Relating knowledge of surface area of a rectangular prism to surface area of a triangular prism* |
| 9 Checkpoint | Warm Up: Take up homework<br><br>Independent Activity: page 369#8<br>The rectangular faces of a triangular prism have areas of 30 cm2, 40 cm2, and 50 cm2.  The 2 triangular faces have a combined area of 12 cm2. What are the dimensions of the triangular prism? Explain your thinking using pictures, numbers, and words. | *Check understanding of surface area of a triangular prism.* |

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| 10 | Summative Task<br>Choice of 1 question.<br><br>Kara wants to paint her barn roof.  The dimensions of the barn roof are: base 5 m, height 12 m, and the third side of the triangle is 13 m.  The prism is 25 m long.  There is a square air vent in the roof 1m by 1m. How much paint will Kara need?<br><br>or<br><br>Jeremy's bedroom is 6 m long, 4 m wide, and 3 m high.  It has a doorway 1m by 2 m and two small windows each 1 m by 1m. How much wallpaper is needed to cover the walls? | |