



Alberta Math Education Curriculum Component: Unit- **SHAPE AND SPACE (Measurement)** Chapter 8: Measurement

General Outcome:

→ Use direct and indirect measurement to solve problems

Students will able to:

- estimate, classify, measure, and draw angles
- demonstrate rules for the sum of the angles in triangles and quadrilaterals
- develop and use rules for calculating the perimeter of a polygon, the area of a rectangle, and the volume of a rectangular prism

Alberta Math Education Specific Concept (learning outcome): 1 to 3.

Classroom assessment is generally divided into three types: assessment *for* learning (Diagnostic Assessment: D), assessment *of* learning (Summative Assessment: S), assessment *as* learning (F).

→ For lesson **extra practice**, please visit:

<http://www.nelson.com/mathfocus/grade6/student/tryout.html>

Lesson Outline:

Lesson	Textbook Lesson Title	Learning Goals	Task **	Done
1	8.1-Identifying Angles	Identify and classify angles. → Materials: a ruler	Scaffolding for Getting Started (D) <input type="checkbox"/> HW: Workbook (pg. 58) (F) → On line: Extra Practice	
2	8.4-Measuring Angles	Use a circular protractor to measure angles. → Materials: a circular protractor and a ruler	<input type="checkbox"/> HW: Workbook (pg. 61) (F) → On line: Extra Practice	
3	8.5-Angle Relationships in Triangle	Demonstrate and use the sum of the interior angles of a triangle. → Materials: Triangle Tiles (blackline master), a protractor and a ruler	<input type="checkbox"/> HW: Workbook (pg. 63) (F) → On line: Extra Practice	
4	8.7-Angle Relationship in Quadrilaterals	Demonstrate and use the sum of the interior angles of a quadrilateral. → Materials: a protractor and a calculator	<input type="checkbox"/> HW: Workbook (pg. 64) (F) → On line: Extra Practice	
5	Mid-Chapter Review	Preparation for the quiz: Quiz Date: __ / __ / __ (mm/dd/yyyy)	<input type="checkbox"/> Textbook: Pg. 263 # 1 and 3 & Pg. 286 # 7-9 (F)	
6	8.8-Area of a Rectangle	Develop and use a rule to calculate the area of a rectangle. → Materials: grid paper and a calculator	<input type="checkbox"/> HW: Workbook (pg. 65) (F) → On line: Extra Practice	
7	8.9-Perimeter of a Polygon	Develop and use a rule to calculate the perimeter of a polygon.	<input type="checkbox"/> HW: Workbook (pg. 66) (F) → On line: Extra Practice	
8	8.10-Volume of a Rectangular Prism	Develop and use a rule to calculate the volume of a rectangular prism.. → Materials: centimetre cubes, base ten blocks and a calculator	<input type="checkbox"/> HW: Workbook (pg. 67) (F) → On line: Extra Practice	
9	Chapter Review	Preparation for the test: Test Date: __ / __ / __ (mm/dd/yyyy)	<input type="checkbox"/> Textbook: (F) → Pg. 285 - 286 (1, 4, 5, 10, 11): DOSO on letter) → Workbook (pg. 69) <input type="checkbox"/> Handout: (S) → Chapter 8: Journal Questions → Unit Project (Textbook Pg. 287): Planning a Solar Home → Chapter 8: Self-Assessment: Lesson Goals → Review of Essential Skills: Chapter 8	

Here are some of the *Key Words* that are being used in this chapter:

*angle *ray *protractor *acute *right angle *straight angle *reflex angle *obtuse angle *interior angle *volume

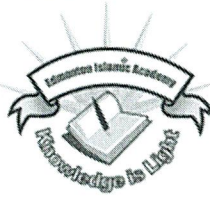
**** If the class work is not completed during class time, must be done for homework.**

I have read and went over this "SHAPE AND SPACE (Measurement) -Unit 3 Plan (Chapter 8)" with my child. JazakAllahu khayran

Parent/Guardian name (print)

Parent/Guardian signature

____/____/____ (dd/mm/yyyy)



Address: 14525 127 ST, Edmonton, AB T6V 0B3 Phone: (780) 454-4573

4th Muharram, 1438
September 14, 2018

RE: Chapter 8- Measurement Information Letter

As-salaamu Alaikum Wa Rahmatu Allahi Wa Barakaatuhu, ("Peace be unto you and so may the mercy of Allah and His blessings"),

Dear Respected Parents and Guardians of Grade 6:

Over the next two weeks, your child will be learning about measurement. Your child will estimate, classify, measure, and draw angles; demonstrate rules for the sum of angles in triangles and quadrilaterals; and develop and use rules for calculating the perimeter of a polygon, the area of a rectangle, and the volume of a rectangular prism. They will solve a problem by solving a simpler problem.

To reinforce the concepts your child is learning at school, you and your child can work on some at-home activities such as these:

- Have your child identify and measure angles in the home that are acute, right, obtuse, straight, and reflex.
- Have your child determine the perimeter of polygons found in the home, using items such as table tops, designs in tiles, or picture frames, among others.
- Have your child determine the area of rectangles found in the home, using items such as rugs, floors, ceilings, or television screens, among others.
- Have your child determine the volume of right rectangular prisms in the home, using items such as picture cubes, boxes, or microwave ovens, among others.

You may want to visit the Nelson website at

<http://www.nelson.com/mathfocus/grade6/student/tryout.html>

for more suggestions to help your child learn mathematics and develop a positive attitude toward learning mathematics. As well, you can check the Nelson website for links to other websites that provide online tutorials, math problems, brainteasers, and challenges.

Sincerely,

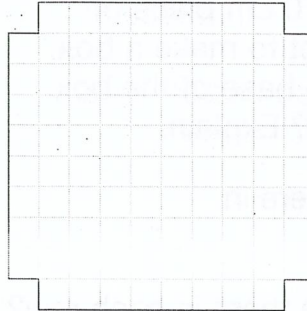
Mustafizur Rahman, **ATA, OPC, OCT**
Ed.D (candidate), **MEd, BEd, BSc**
Grade 6 Math // 6C: Art & Health

Scaffolding for Getting Started Page 1

STUDENT BOOK PAGES 242–243

Making Boxes

Tara cut a square from each corner of a 10 cm by 10 cm piece of grid paper. Then she folded this **net** to make a box without a top.



? How do the volume of the box and the area of its base change as the squares cut from the corners get larger?

A. What is the area of the base of Tara's box?

How many rows are there in the base? _____

How many squares are in each row? _____

What is the area of the base? _____

What is the volume of its box? Explain how you know.

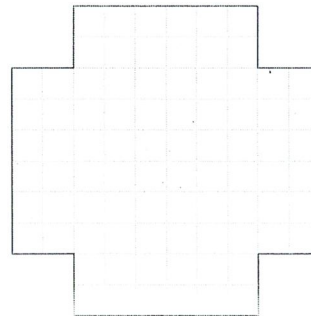
How many layers of cubes would fit in the box? _____

What is the volume of the box? _____

Scaffolding for Getting Started Page 2

STUDENT BOOK PAGES 242–243

- B.** Cut a 2 cm by 2 cm square out of each corner of a 10 cm by 10 cm piece of grid paper. Fold this net to make a box. What is the area of the base of the box and what is its volume? Explain.



How many rows are there in the base? _____

How many squares are there in each row? _____

What is the area of the base? _____

How many layers of cubes would fit in the the box? _____

What is the volume of the box? _____

- C.** Continue cutting square corners from your net to get different-sized boxes. Calculate and record the volume of each box and the area of its base.

Sizes of Boxes

Size of square cut from each corner (cm)	Area of base (cm ²)	Volume of box (cm ³)
1 × 1	8 × 8 =	64 × 1 =
2 × 2		
3 × 3		
4 × 4		

- D.** What do you notice about the areas of the bases and the volumes of the boxes?

Name: _____ Date: _____

Mid-Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGE 262

Q. How can you estimate the size of an angle?

A: _____

Q. How are angles classified?

A: _____

Q. How can you measure or draw an angle?

A: _____

Name: _____ Date: _____

Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGE 284

Q: What is the sum of the interior angles of a triangle and the interior angles of a quadrilateral?

A: _____

Q: How can you use formulas to calculate perimeter, area, and volume?

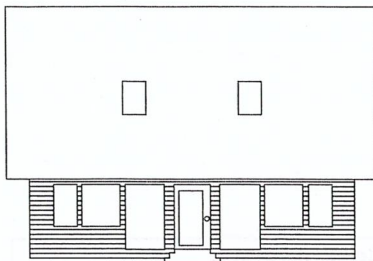
A: _____

Chapter 8 Task Page 1

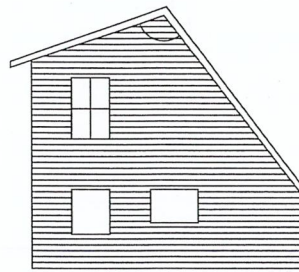
Planning a Solar Home

STUDENT BOOK PAGE 287

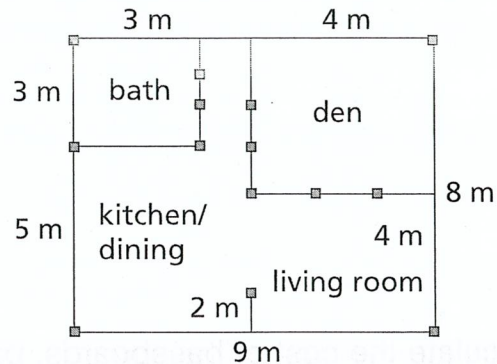
Reena's family wants to build a solar house. Reena found the following plans for a small rectangular house that has three levels, each 3 m high. The house is heated using solar panels that are placed on the steep angle of the roof.



front view



side view



first floor plan

? How can you use house plans to calculate costs?

Read the Task Checklist before you begin.

- A. Create larger front and side views of the house on chart paper. Use a ruler and a protractor. Label the side lengths and the angle measures.

Task Checklist

- Did you label your drawings?
- Did you show all the work for your calculations and measurements?
- Did you include appropriate units?

Name: _____

Date: _____

Chapter 8 Task Page 2

B. Copy the plan for the first floor of the house.
Use a ruler.

C. Calculate the cost of baseboards, paint, and flooring for one room of the house. Use the list of prices in the chart. Assume that the room is 3 m high.

D. One solar panel is needed to heat a space that is about 3 m by 3 m by 3 m. How many solar panels should be placed on the roof? Explain.

Cost of Items	
Item	Cost
baseboards	\$2 for 1 m
paint	\$35 for 1 L (covers 15 m ²)
hardwood flooring	\$90 for 1 m ²
carpet	\$25 for 1 m ²
tiles	\$75 for 1 m ²

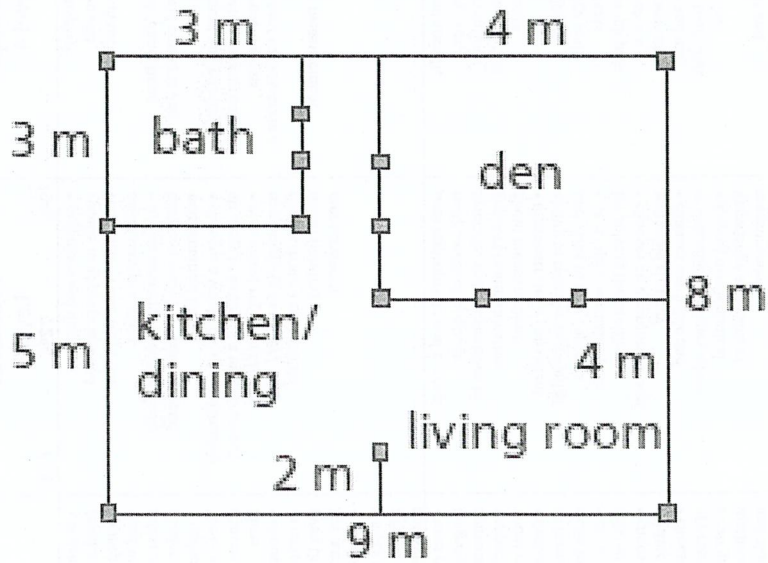


Chapter 8: Measurement

Chapter Task: Planning a Solar Home

B.

first floor plan





Chapter 8: Planning a Solar Home

Term: R 1 R 2

Date: ___/___/___ (dd/mm/yyyy)

Name: _____

Assessment type: R D R F R S

Overall: Mark://Level: ___/___/___; Class Average: ___; Parent Signature: _____

Criteria	Level	Excellent Level 4	Proficient Level 3	Adequate Level 2	Limited* Level 1	Insufficient/ Blank*
<p>Prompts A and B</p> <p>SS1. Demonstrate an understanding of angles by:</p> <ul style="list-style-type: none"> identifying examples of angles in the environment classifying angles according to their measure estimating the measure of angles using 45°, 90° and 180° as reference angles determining angle measures in degrees drawing and labelling angles when the measure is specified. <p>[C, CN, ME, V]</p>		<ul style="list-style-type: none"> organizes and displays results in effective and clear ways that enhance interpretation. makes insightful connections between real-world contexts and mathematical ideas chooses an efficient and effective strategy to estimate a measurement uses visual representations insightfully to foster/demonstrate a thorough understanding of measurement 	<p>79%</p> <ul style="list-style-type: none"> organizes and displays results in appropriate and reasonably clear ways that assist interpretation. makes meaningful connections between realworld contexts and mathematical ideas chooses a workable and reasonable strategy to estimate a measurement uses visual representations insightfully to foster/demonstrate a reasonable understanding of measurement <p>72%</p>	<ul style="list-style-type: none"> organizes and displays results in somewhat appropriate and partially clear ways that make inferring necessary by the reader makes simple connections between real-world contexts and mathematical ideas chooses a familiar strategy to estimate a measurement, even though it might not be the most appropriate uses visual representations simply to foster/demonstrate a basic understanding of measurement 	<ul style="list-style-type: none"> organizes and displays results in somewhat appropriate and partially clear ways that make inferring necessary by the reader makes simple connections between real-world contexts and mathematical ideas chooses a familiar strategy to estimate a measurement, even though it might not be the most appropriate uses visual representations simply to foster/demonstrate a basic understanding of measurement 	<ul style="list-style-type: none"> organizes and displays results in somewhat appropriate and partially clear ways that make inferring necessary by the reader makes simple connections between real-world contexts and mathematical ideas chooses a familiar strategy to estimate a measurement, even though it might not be the most appropriate uses visual representations simply to foster/demonstrate a basic understanding of measurement
<p>Prompts C and D</p> <p>SS3. Develop and apply a formula for determining the:</p> <ul style="list-style-type: none"> perimeter of polygons area of rectangles and squares volume of right rectangular prisms. <p>[C, PS, R, V]</p>		<ul style="list-style-type: none"> uses effective and specific mathematical language, symbols, and conventions to enhance communication about measurements demonstrates a sophisticated ability to transfer knowledge and skills to new contexts develops a thorough plan for solving the problem chooses an efficient and effective strategy and may demonstrate creativity and innovation in his/her approach chooses efficient and effective strategies when applying mathematical knowledge and skills of measurement uses insightful visual representations that lead to an effective solution 	<p>uses appropriate and correct mathematical language, symbols, and conventions to support communication about measurements</p> <ul style="list-style-type: none"> demonstrates a consistent ability to transfer knowledge and skills to new contexts develops a workable plan for solving the problem chooses an appropriate and workable strategy chooses workable and reasonable strategies when applying mathematical knowledge and skills of measurement uses meaningful visual representations that lead to a workable solution 	<ul style="list-style-type: none"> uses mathematical language, symbols, and conventions to partially support communication about measurements demonstrates a some ability to transfer knowledge and skills to new contexts develops a basic plan for solving the problem. chooses a simplistic and/or routine strategy chooses partially appropriate and workable strategies when applying mathematical knowledge and skills of measurement uses simple visual representations that lead to a general solution 	<ul style="list-style-type: none"> uses mathematical and nonmathematical language and conventions incorrectly and/or inconsistently, which interfere with communication about measurements demonstrates a limited ability to transfer knowledge and skills to new contexts develops a minimal and/or flawed plan for solving the problem chooses an inappropriate or unworkable strategy chooses inappropriate and/or unworkable strategies when applying mathematical knowledge and skills of measurement uses unclear visual representations that lead 	
Days Late	(_/1)	0	1	2	3++	--Not Hand In

Teacher's Comments – Area for Growth and Action Plans (if below "level 2"):

please use the given time in the classroom wisely by asking questions to further clarify the assignment or focus on the task at hand. Also, you need to follow the sample work shown in the class (if applicable) as a guideline to achieve level 3 in this rubric.

Name: _____

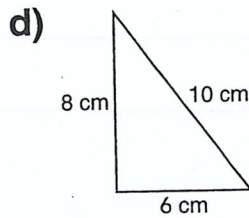
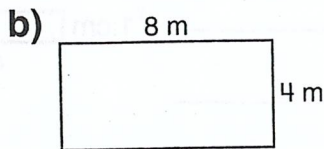
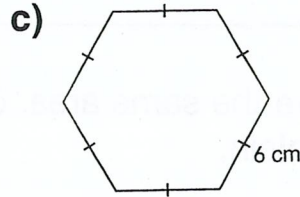
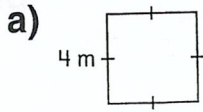
Date: _____

Chapter 8: Measurement

Perimeter

The perimeter of an object is the distance around the object.

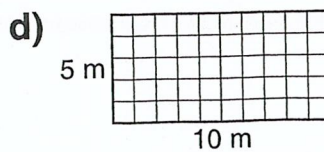
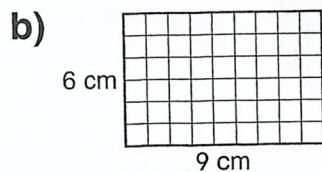
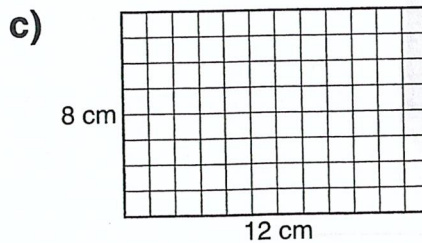
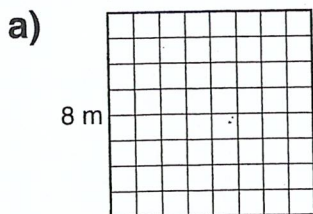
1. What is the perimeter of each shape?



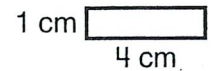
Area

Area is the number of square units to cover a surface.

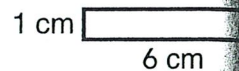
2. What is the area of each shape?



3. If two rectangles have the same perimeter, do they have the same area? Explain.



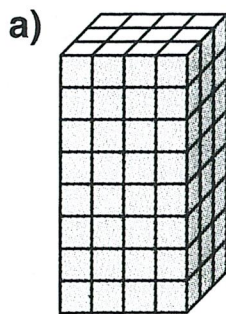
4. If two rectangles have the same area, do they have the same perimeter? Explain.

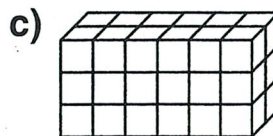


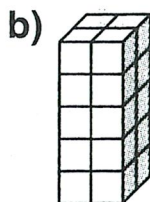
Volume

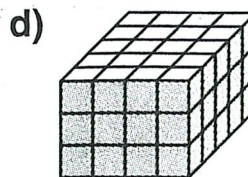
Volume is the amount of space occupied by a 3-D object.
Volume is measured in cubic units.

5. What is the volume of each prism?









Name: _____

Date: _____

Chapter 8 Self-Assessment: Lesson Goals

Place a check mark in the box that best describes your work.

Lesson Goals	Yes, on my own	Yes, with help	Sometimes/ Not sure	Not yet
I can identify and classify angles.				
I can construct a protractor to measure angles.				
I can estimate angle measures using common angle referents.				
I can use a circular protractor to measure angles.				
I can use a semicircular protractor to draw angles.				
I can demonstrate and use the sum of the interior angles of a triangle.				
I can demonstrate and use the sum of the interior angles of a quadrilateral.				
I can use a rule to calculate the area of a rectangle.				
I can use a rule to calculate the perimeter of a polygon.				
I can use a rule to calculate the volume of a rectangular prism.				
I can use a simpler problem to solve a problem.				
<p>Choose one of your answers from above. Give your evidence.</p> <p>My evidence for _____ is _____</p> <p>_____</p>				

Name: _____

Date: _____

Circular Protractor

Lesson 4: Measuring Angles

STUDENT BOOK PAGES 254-257

