



### Alberta Math Education Curriculum Component: Unit- **SHAPE AND SPACE (Transformations)**

#### Chapter 5: Motion Geometry

**General Outcome:**

→ Describe and analyze position and motion of objects and shapes.

**Students will able to:**

- translate, reflect, and rotate 2-D shapes on a coordinate grid
- identify transformations in a design
- combine transformations to produce a design
- communicate about transformations

**Alberta Math Education Specific Concept (learning outcome):** 6 to 9.

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	5.1-Translating Shapes	Translate shapes on a coordinate grid using a rule. → Materials: Translating Shapes (blackline master), grid paper and a ruler	Scaffolding for Getting Started (D) <input type="checkbox"/> HW: Workbook (pg. 35) (F) → On line: Extra Practice	
2	5.2-Reflecting Shapes	Reflect shapes on a coordinate grid using a rule. → Materials: grid paper, a transparent mirror and a ruler	<input type="checkbox"/> HW: Workbook (pg. 36) (F) → On line: Extra Practice	
3	5.3-Rotating Shapes	Rotate shapes on a coordinate grid using a rule. → Materials: grid paper, tracing paper and a ruler	<input type="checkbox"/> HW: Workbook (pg. 37) (F) → On line: Extra Practice	
4	5.4-Combing Transformations of the Same Kind	Form images of a 2-D shape using two or more of the same transformation. → Materials: grid paper, a ruler, a transparent mirror and tracing paper	<input type="checkbox"/> HW: Workbook (pg. 38) (F) → On line: Extra Practice	
5	5.6-Communicating about Transformations	Describe transformations using math language.	<input type="checkbox"/> HW: Workbook (pg. 40) (F) → On line: Extra Practice	
6	<b>Chapter Review</b>	Preparation for the test:  Test Date: __ / __ / __ (mm/dd/yyyy)	<input type="checkbox"/> Textbook: (F) → Pg. 171-172 (Q1 to Q3, and Q5: DOSO on letter) → Workbook (pg. 41) <input type="checkbox"/> Handout: (S) → Chapter 5: Journal Questions → Chapter 5: Self-Assessment: Lesson Goals → Review of Essential Skills: Chapter 5	

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

*Translations	*Reflections	*Rotations	*Transformations	*Coordinate grid
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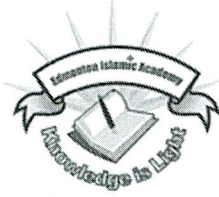
**\*\* If the class work is not completed during class time, must be done for homework.**

I have read and went over this "SHAPE AND SPACE (Transformations) -Unit 3 Plan (Chapter 5)" with my child. JazakAllahu khayran

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Parent/Guardian name (print)

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Parent/Guardian signature

\_\_\_\_/\_\_\_\_/\_\_\_\_ (dd/mm/yyyy)



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

**4<sup>th</sup> Muharram, 1438**  
September 14, 2018

**RE: Chapter 5- Motion Geometry 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 transformations on a coordinate grid, including translations (slides), reflections (flips), and rotations (turns).

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 look for transformations at home. These might include things like wrapping paper, art, and fabrics, and objects or characters in a board game or video game. Have your child describe how she thinks the motion or design was created.
- Have your child find and list congruent objects in the home and describe how to determine congruence by performing translations, rotations, and reflections.

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,

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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 146-147

On a website, you can use translations and rotations to move a Mars rover to examine rocks. To do this, the rover must find the rock in the maze and go over it. The rover must always move in the direction it faces.

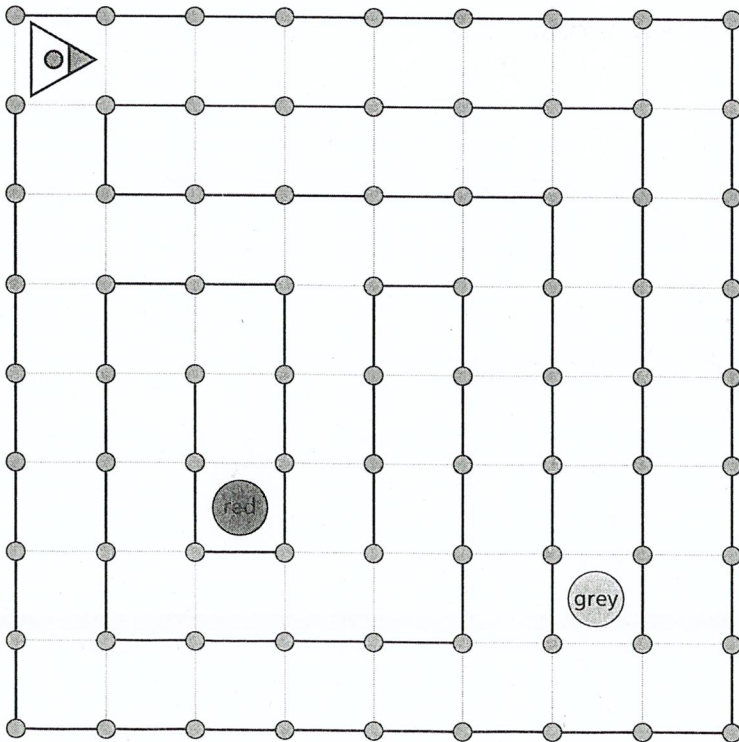
## Rules for moving the rover:

- ↑ moves the rover up 1 space.
- ↓ moves the rover down 1 space.
- moves the rover right 1 space.
- ← moves the rover left 1 space.
- ↷ rotates the rover  $\frac{1}{4}$  turn **clockwise (cw)** around the centre.
- ↶ rotates the rover  $\frac{1}{4}$  turn **counterclockwise (ccw)** around the centre.

## ? How can you move the rover to examine the rocks?

A. Move the rover from its starting position in the maze using the directions in the order shown below.


↷, ↓, ↓, ↶, →, →



# Scaffolding for Getting Started Page 2

STUDENT BOOK PAGES 146-147


**B.** What directions would you give to move the rover from its new position in Part A to the red rock?

- Draw the path with a pencil first.
- Record the moves using the symbols for the rules:  


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**C.** What directions would you give to move the rover from its starting position in the maze to the grey rock?

- Draw the path with a pencil first.
- Record the moves using the symbols for the rules:  


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Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Mid-Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGE 156

**Q:** How can you translate a shape on a coordinate grid?

**A:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q:** How can you reflect a shape on a coordinate grid?

**A:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q:** How can you rotate a shape on a coordinate grid?

**A:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Chapter Review—Frequently Asked Questions

STUDENT BOOK PAGE 170

**Q:** How can you combine translations, reflections, and rotations of shapes?

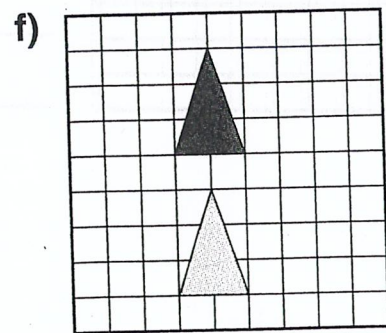
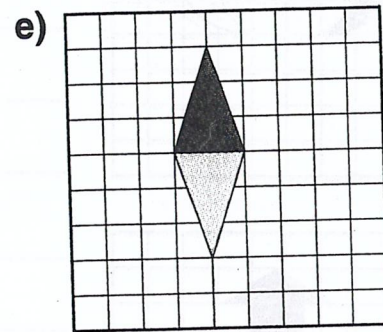
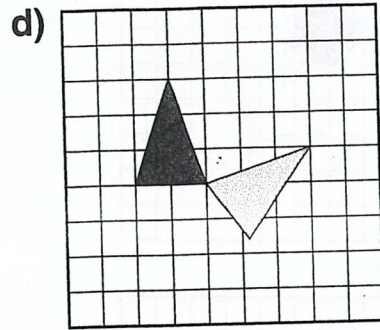
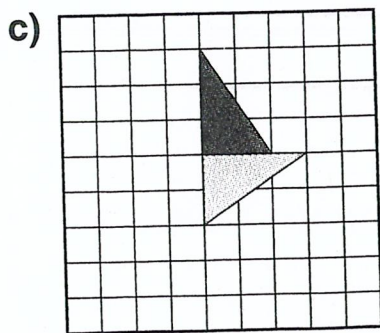
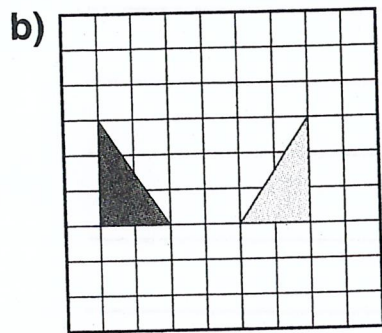
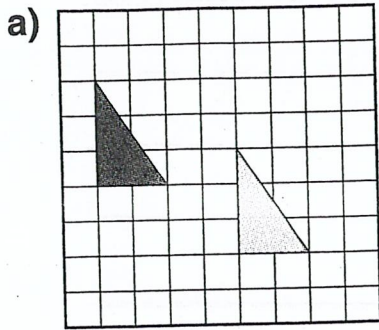
**A:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q:** How can you combine transformations to make a design?

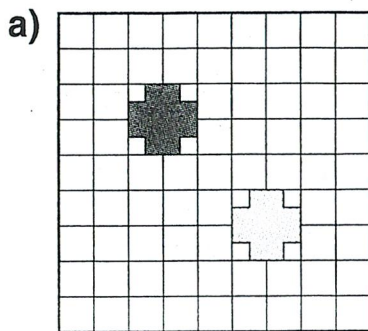
**A:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Chapter 5: Motion Geometry

1. Name the type of transformation shown in each picture:  
a translation, a reflection, or a rotation.



2. Describe how you can transform each dark grey shape to cover each light grey shape.



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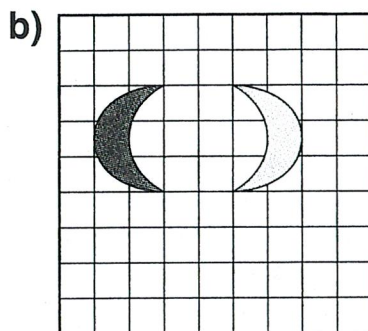
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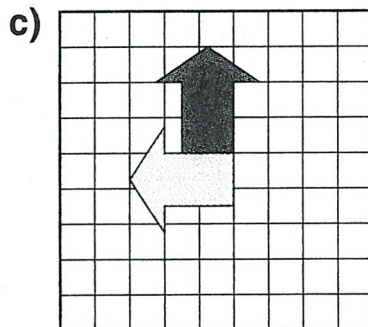
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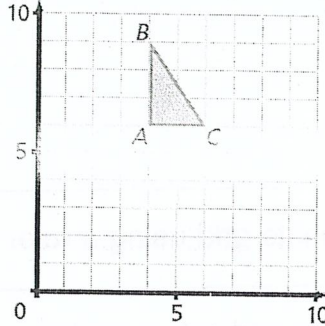


**Unit: SHAPE AND SPACE (Measurement)**

**Chapter 5: Motion Geometry**

**Journal Questions** (Hint: Make sure to show all your work.):

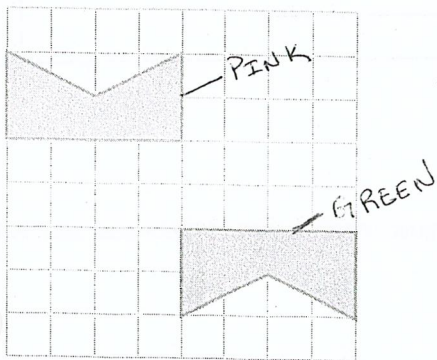
1. Which rule could you use to translate the green triangle on the grid at the left so that vertex A is at (0, 0)?
- A. (L6, D4)      B. (R4, U6)      C. (L0, D0)      D. (L4, D6)



2. The green triangle from Question 1 is reflected so that vertex C is at (6, 4) and vertex A is at (4, 4). Where will vertex B be?
- A. (4, 1)      B. (7, 3)      C. (3, 7)      D. (6, 1)

3. If the green triangle from Question 1 is rotated  $\frac{1}{2}$  turn around vertex C, where will vertex A be?
- A. (4, 6)      B. (6, 8)      C. (8, 3)      D. (8, 6)

4. Which combination of transformations would *not* move the pink shape onto the green shape?
- A. a translation and a reflection      B. two rotations  
C. two translations      D. a rotation and a translation



## Chapter 5 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 translate shapes on a coordinate grid using a rule.				
I can reflect shapes on a coordinate grid using a rule.				
I can rotate shapes on a coordinate grid using a rule.				
I can form images of a 2-D shape using two or more of the same transformation.				
I can describe and create designs using different transformations of 2-D shapes.				
I can describe transformations using math language.				
<p>Choose one of your answers from above. Give your evidence.</p> <p>My evidence for _____ is</p> <p>_____</p> <p>_____</p> <p>_____</p>				