WAMC Lab Template

Math Concept(s): 8.G.3 - Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

Source / Text: Open Up Resources – Unit 1 lesson 1

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Attach the following documents:

- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool – Formative assessment is in with the lab instructions

Short Description (Be sure to include where in your instruction this lab takes place):

In groups of 2, the students will describe one of 3 possible dances, on worksheet it is 2 squares & a triangle in a square, and the partner identifies which dance is being described. Listen for students who use specific and detailed language to describe the dance to the class. Part of the purpose of this is to come up with common terminology for slide & rotate.

Lab Plan

Lab Title: Triangle Square dance

Prerequisite skills: Ability to give directions and describe pictures.

Lab objective: students will begin to observe and describe translations and rotations

Standards: *(Note SPECIFIC relationship to Science, Technology, and/or Engineering)*

Mathematics K–12 Learning Standards:

- Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

Standards for Mathematical Practice:

- Attend to precision.

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):

- ELA-Literacy.SL.8.1 – Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics.

K-12 Science Standards

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Technology

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Engineering

-

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

☐ Global Awareness ☐ Financial/Economic/Business/Entrepreneurial Literacy ☐ Civic Literacy
☐ Health/Safety Literacy ☐ Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION

Creativity and Innovation
- ☒ Think Creatively
- ☒ Work Creatively with Others
- ☒ Implement Innovations

Critical Thinking and Problem Solving
- ☐ Reason Effectively
- ☒ Use Systems Thinking
- ☒ Make Judgments and Decisions
- ☐ Solve Problems

Communication and Collaboration
- ☒ Communicate Clearly
- ☒ Collaborate with Others

INFORMATION, MEDIA & TECHNOLOGY SKILLS

Information Literacy
- ☐ Access and Evaluate Information
- ☐ Use and manage Information

Media Literacy
- ☐ Analyze Media
- ☐ Create Media Products

Information, Communications and Technology (ICT Literacy)
- ☐ Apply Technology Effectively

LIFE & CAREER SKILLS

Flexibility and Adaptability
- ☐ Adapt to Change
- ☐ Be Flexible

Initiative and Self-Direction
- ☐ Manage Goals and Time
- ☐ Work Independently
- ☐ Be Self-Directed Learners

Social and Cross-Cultural
- ☒ Interact Effectively with Others
- ☒ Work Effectively in Diverse Teams

Productivity and Accountability
- ☐ Manage Projects
- ☐ Produce Results

Leadership and Responsibility
- ☒ Guide and Lead Others
- ☒ Be Responsible to Others

Teacher Preparation: (What materials and set-up are required for this lab?)

Materials

- 3 pages of the triangle square dance

Set-Up Required:

- 1 set of the 3 pages for every 2 students

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Communicate clearly
- Collaborate with others

Cooperative Learning:

- Work in groups of 2

Expectations:

In groups of 2, students take turns describing one of 3 possible dances, presented in cartoon form, and the partner identifies which dance is being described.

Timeline:

- 25 min.

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- Being able to describe how something has moved or changed

Career Applications

-

Optional or Extension Activities

-

Triangle Square Dance (25 minutes)

Setup:

Groups of 2. Provide a copy of all 3 blackline masters to each group.

Student task statement

I will give you three pictures. Each shows a different set of dance moves.

1. Arrange the three pictures so you and your partner can both see them right way up. Choose who will start the game.
   - The starting player mentally chooses A, B, or C and describes the dance to the other player.
   - The other player identifies which dance is being talked about: A, B, or C.
2. After one round, trade roles. When you have described all three dances, come to an agreement on the words you use to describe the moves in each dance.
3. With your partner, write a description of the moves in each dance.

Possible responses

Answers vary. Sample response: A: move right, turn 90º clockwise, move up, move left, turn 90º counterclockwise; B: move right, turn 90º clockwise, move left, move up, turn 90º counterclockwise; C: move right, turn 90º counterclockwise, move left, move up, turn 90º clockwise

Anticipated misconceptions

Students often confuse or are unsure about the meaning of the terms clockwise and counterclockwise. Discuss with them (and demonstrate, if possible) how the hands on a clock rotate, emphasizing the direction of the rotation. Students may also be unsure of how to measure the rotation in terms of degrees. Consider asking a student who expresses angle measures in terms of degrees to explain how they see it.

Are you ready for more?

We could think of each dance as a new dance by running it in reverse, starting in the 6th frame and working backwards to the first.

1. Pick a dance and describe in words one of these reversed dances.
2. How do the directions for running your dance in the forward direction and the reverse direction compare?

Possible Responses

1. Answers vary. Sample response:

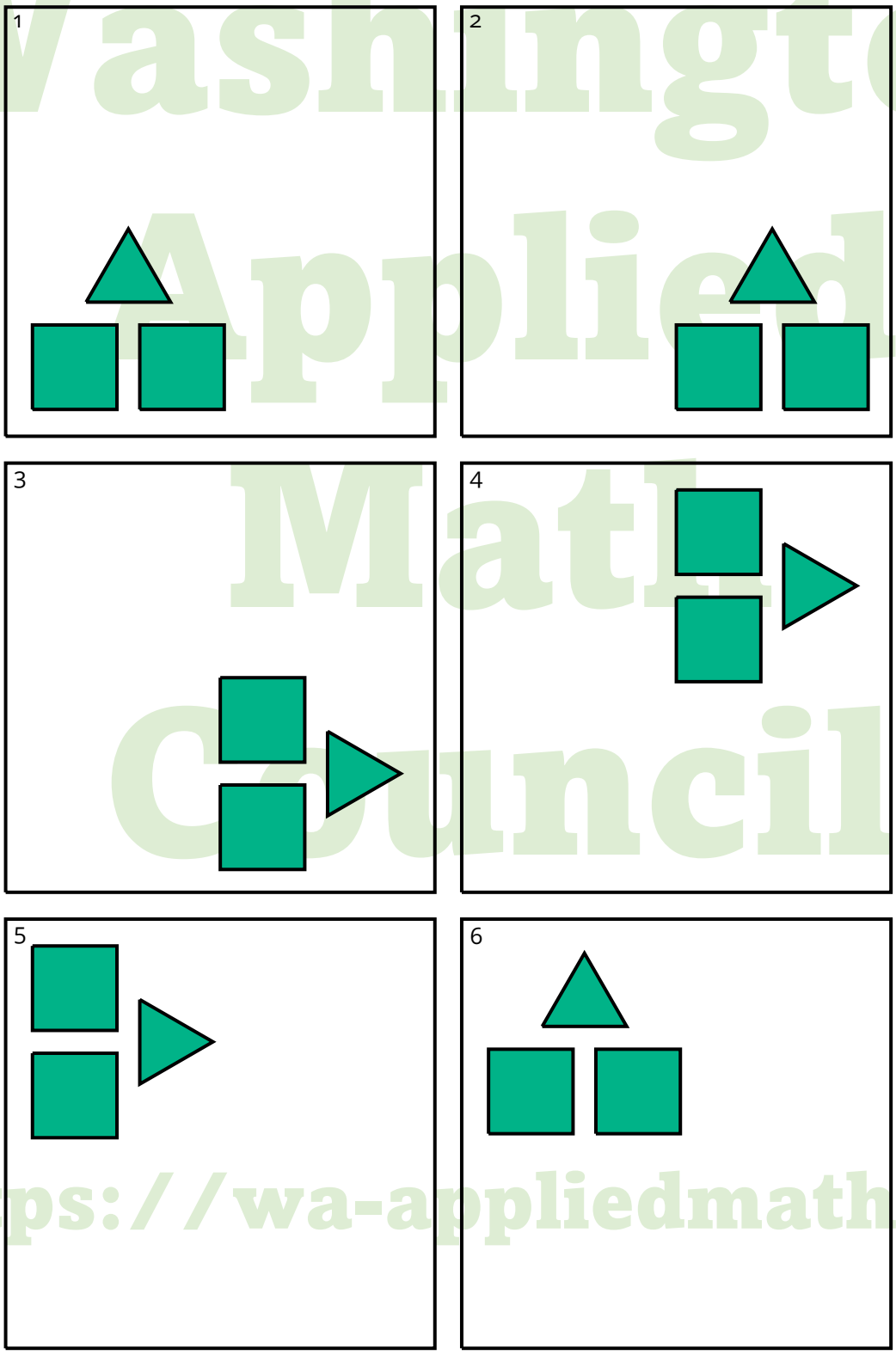
   A: turn 90º clockwise, move right, move down, turn 90º counterclockwise, move left, B: turn 90º clockwise, move down, move right, turn 90º counterclockwise, move left, C: turn 90º counterclockwise, move down, move right, turn 90º clockwise, move left
2. The steps are listed in reverse order. Right gets replaced by left and left with right and clockwise gets replaced with counterclockwise and vice versa.

Formative Assessment

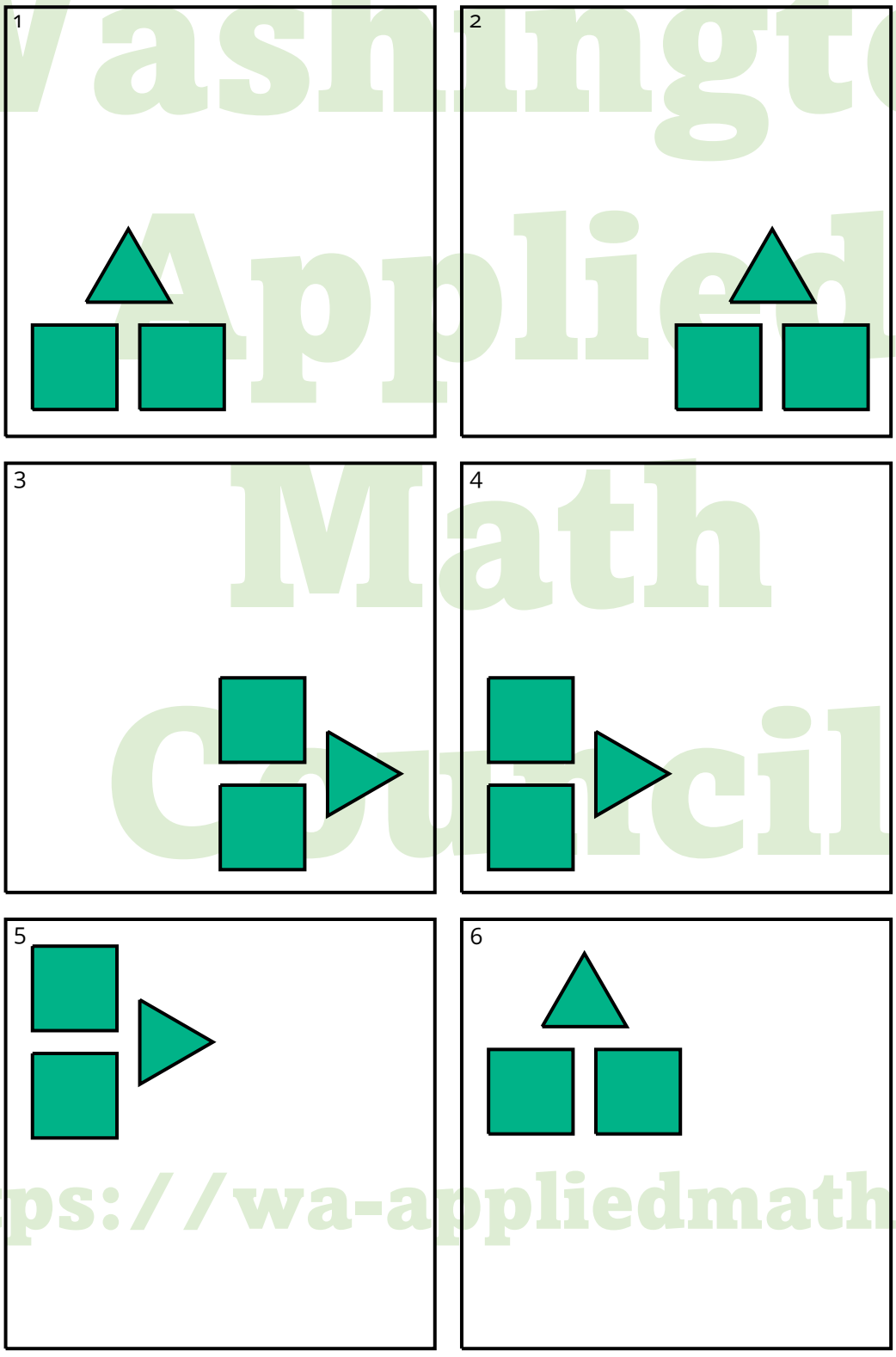
What moves did we see today? What words did we use to describe the moves?

Blackline Master for Classroom Activity 8.1.1.2: Triangle Square Dance

A



B



C