

# Mathematics

## WARM-UPS

Grade 8



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# Introduction

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*Mathematics Warm-Ups for Common Core Georgia Performance Standards, Grade 8* is organized into seven units of CCGPS mathematics for Grade 8. Each warm-up addresses at least one of the standards within the following units:

- Unit 1: Transformations, Congruence, and Similarity
- Unit 2: Exponents
- Unit 3: Geometric Applications of Exponents
- Unit 4: Functions
- Unit 5: Linear Functions
- Unit 6: Linear Models and Tables
- Unit 7: Solving Systems of Equations

The Common Core Mathematical Practices standards are another focus of the warm-ups. All of the problems require students to “make sense of problems and persevere in solving them,” “reason abstractly and quantitatively,” and “attend to precision.” Students must “look for and make use of structure” when graphing functions and interpreting exponents. Students have opportunities to “use appropriate tools strategically” when they use graph paper to explore transformations. A full description of these standards can be found at <http://www.walch.com/CCSS/00006>.

The warm-ups are organized by corresponding grade units rather than by level of difficulty. Use your judgment to select appropriate problems for your curriculum.\* The problems are not necessarily meant to be completed in consecutive order—some are stand-alone, some can launch a topic, some can be used as journal prompts, and some refresh students’ skills and concepts. All are meant to enhance and complement your Grade 8 mathematics program. They do so by providing resources for those short, 5- to 15-minute interims when class time might otherwise go unused.

\* You may select warm-ups based on particular standards using the Standards Correlations table.

## About the CD-ROM

*Mathematics Warm-Ups for Common Core Georgia Performance Standards, Grade 8* is provided in two convenient formats: an easy-to-use reproducible book and a ready-to-print PDF on a companion CD-ROM. You can photocopy or print activities as needed, or project them on a screen via your computer.

The depth and breadth of the collection give you the opportunity to choose specific skills and concepts that correspond to your curriculum and instruction. Use the table of contents and the standards correlations to help you select appropriate tasks.

Suggestions for use:

- Choose an activity to project or print out and assign.
- Select a series of activities. Print the selection to create practice packets for learners who need help with specific skills or concepts.

# Standards Correlations

*Mathematics Warm-Ups for Common Core Georgia Performance Standards, Grade 8* is correlated to seven units of CCGPS Grade 8 mathematics. The page numbers, titles, and standard numbers are included in the table that follows. The full text of the CCGPS mathematics standards for Grade 8 can be found in the curriculum map at <http://www.walch.com/CCGPS/00003>.

Page number	Title	CCGPS addressed
<b>Unit 1: Transformations, Congruence, and Similarity</b>		
1	Double Trouble	MCC8.G.2
2	Up, Down, and All Around	MCC8.G.3
3	Translate This!	MCC8.G.3
4	Mirror, Mirror on the Wall	MCC8.G.4
5	Copy Cat	MCC8.G.4
6	Tree Dilemma	MCC8.G.4
<b>Unit 2: Exponents</b>		
7	Irrational Numbers	MCC8.NS.1
8	Where Do They Go?	MCC8.NS.2
9	Tearing and Stacking Paper	MCC8.EE.4
10	The Seesaw Problem	MCC8.EE.7b
<b>Unit 3: Geometric Applications of Exponents</b>		
11	Road Trip	MCC8.G.7
12	Comparing Cylinders	MCC8.G.9
13	Concession Concern	MCC8.G.9
14	Popcorn Pricing	MCC8.G.9
15	Juice Packaging	MCC8.G.9
16	Cylinder Expressions	MCC8.G.9

(continued)

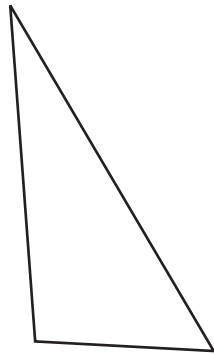
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**UNIT 1 • TRANSFORMATIONS, CONGRUENCE, AND SIMILARITY**  
**CCGPS MCC8.G.2**

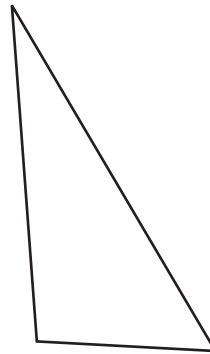
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**Double Trouble**

Look at the two triangles below. Are the two triangles similar, congruent, or both? Discuss your ideas with a partner, and write your answer below.



Triangle A



Triangle B

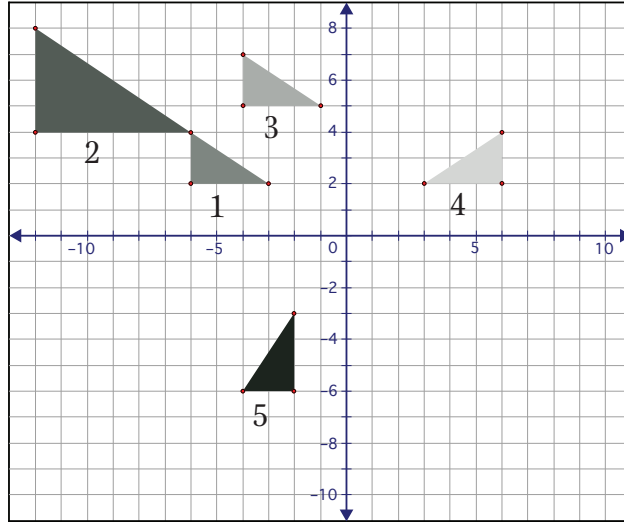


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**UNIT 1 • TRANSFORMATIONS, CONGRUENCE, AND SIMILARITY**  
**CCGPS MCC8.G.3**

**Up, Down, and All Around**

There are five triangles in the diagram below. Triangle 1 is the original triangle. The other four triangles came from changing Triangle 1 in some way.



Work with a partner to finish the following statements about the triangles in the diagram above.

1. To change Triangle 1 into Triangle 4, \_\_\_\_\_  
\_\_\_\_\_
2. To change Triangle 1 into Triangle 3, \_\_\_\_\_  
\_\_\_\_\_
3. To change Triangle 1 into Triangle 5, \_\_\_\_\_  
\_\_\_\_\_
4. To change Triangle 1 into Triangle 2, \_\_\_\_\_  
\_\_\_\_\_



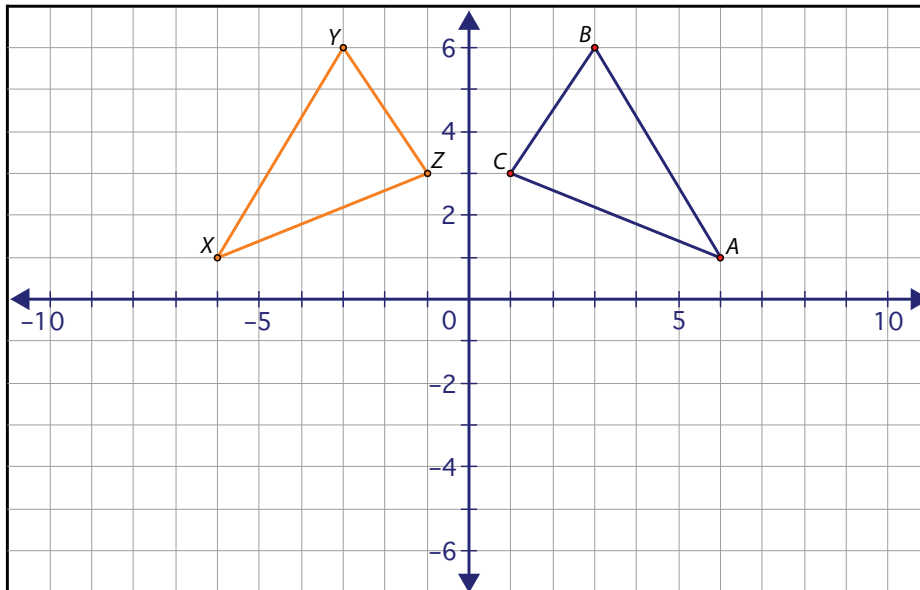


NAME: \_\_\_\_\_

**UNIT 1 • TRANSFORMATIONS, CONGRUENCE, AND SIMILARITY**  
**CCGPS MCC8.G.4**

**Mirror, Mirror on the Wall**

In the diagram below, triangles  $ABC$  and  $XYZ$  are mirror images of each other reflected over the  $y$ -axis.



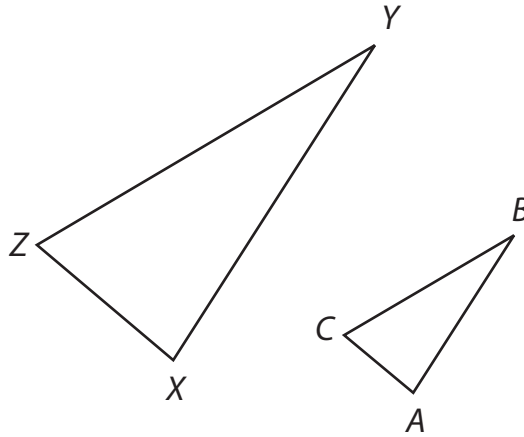
1. What are the coordinates of point  $X$ ?
2. What are the coordinates of point  $A$ ?
3. What are the coordinates of point  $Y$ ?
4. What are the coordinates of point  $B$ ?
5. What are the coordinates of point  $Z$ ?
6. What are the coordinates of point  $C$ ?
7. What do you notice about the coordinates of the points that are reflections of each other? Refer to the  $x$ -coordinate and the  $y$ -coordinate.

NAME: \_\_\_\_\_

**UNIT 1 • TRANSFORMATIONS, CONGRUENCE, AND SIMILARITY**  
**CCGPS MCC8.G.4**

**Copy Cat**

Examine the two triangles below. Triangle  $ABC$  is similar to triangle  $XYZ$  and is  $\frac{1}{2}$  the size.



1. Which side of triangle  $ABC$  is in the same place as side  $XY$ ?
2. Which side of triangle  $ABC$  is in the same place as side  $YZ$ ?
3. Which side of triangle  $ABC$  is in the same place as side  $ZX$ ?
4. Do angles  $A$  and  $X$  appear to be the same size?
5. Do angles  $B$  and  $Y$  appear to be the same size?
6. Do angles  $C$  and  $Z$  appear to be the same size?
7. How do the areas of the two triangles compare to one another?

NAME: \_\_\_\_\_

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**UNIT 1 • TRANSFORMATIONS, CONGRUENCE, AND SIMILARITY**  
**CCGPS MCC8.G.4**

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### Tree Dilemma

Eric's neighbor wants to cut down a dead tree that is in his yard. Eric is worried that when the tree is cut, it will fall on his garage, which is 42 feet from the tree. His neighbor decides to measure the height of the tree by using its shadow. The tree's shadow measures 47.25 feet. At the same time, Eric puts a yardstick next to the tree, and the yardstick casts a shadow of 3.5 feet. Will the tree hit Eric's garage if it falls the wrong way? Explain carefully. Include a sketch of the situation to help clarify your thinking.