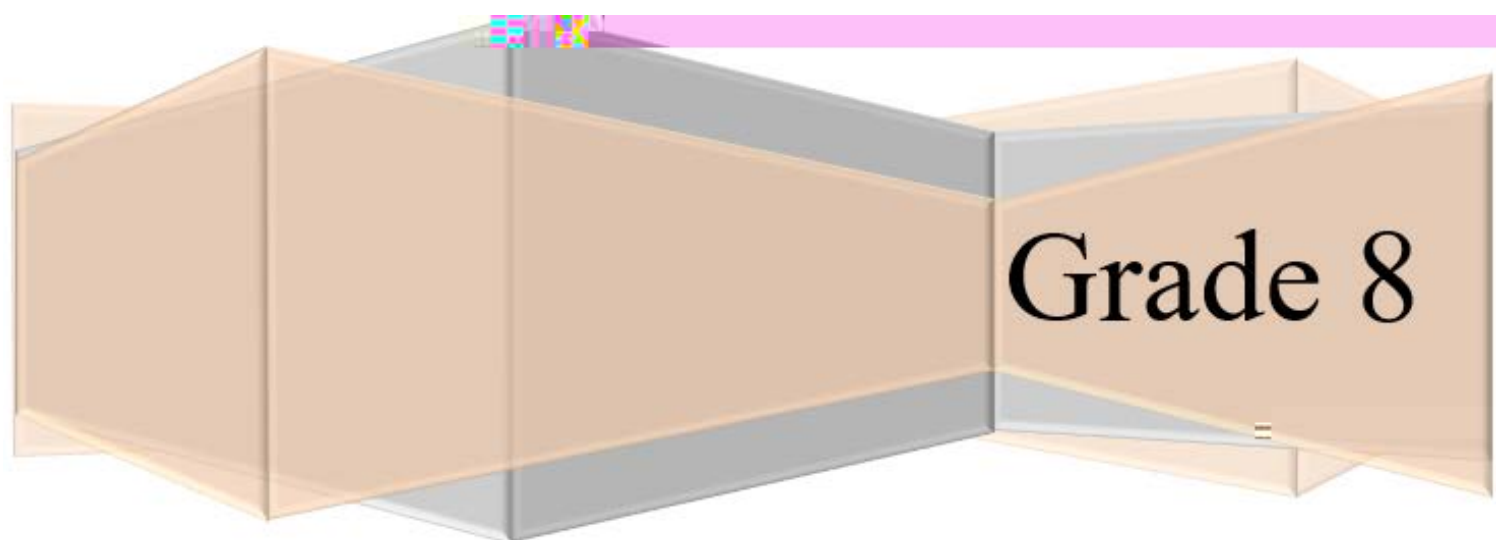


Scaffolding Instruction for All Students:

A Resource Guide for Mathematics





Scaffolding Instruction for All Students: A Resource Guide for Mathematics Grade 8

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Introduction

The Next Generation English Language Arts (ELA) and Mathematics Learning Standards intend to foster the 21st century skills needed for college and career readiness and to prepare students to become lifelong learners and thinkers. Learning standards provide the “destination” or expectation of what students should know and be able to do while teachers provide “the map” for getting there through high-quality instruction. Lessons need to be designed to ensure accessibility to a general education curriculum designed around rigorous learning standards for all students, including students who learn differently (e.g., students with disabilities, English Language Learners (ELLs)/Multilingual Learners (MLLs), and other students who are struggling with the content). It is vital that teachers utilize a variety of research-based instructional and learning strategies while structuring a student-centered learning environment that addresses individual learning styles, interests, and abilities present among

How to Use These Guides

The provision of scaffolds should be thoughtfully planned as to not isolate or identify any student or group of students as being “different” or requiring additional support. Therefore, in the spirit of inclusive and culturally responsive classrooms, the following is suggested:

- x Make scaffolded worksheets or activities available to all students.
- x Heterogeneously group students in group activities when appropriate.
- x Provide ELLs/MLLs with opportunities to utilize their home language knowledge and skills in the context of the learning environment.
- x Make individualized supports or adapted materials available without emphasizing difference.
- x Consistently and thoughtfully use technology to make materials more accessible to all students.

In the ELA guides, the Table of Contents is organized to allow teachers to access strategies based on the instructional focus (reading, writing, speaking and listening, and language) and includes a list of scaffolds that can be used to address those needs. In the mathematics guides, the Table of Contents

Warm-up Review

Exemplar from:

[Module 1: Topic A: Lesson 4](#) Multiplication of Numbers in Exponential Form

Explanation of scaffold:

This scaffold provides students with the opportunity to review previously learned skills and concepts that are needed to build a strong foundation for new lesson material. Establishing a warm-up review routine at the beginning of class allows students to connect with prior knowledge and allows teachers to quickly assess student understanding of key concepts and automaticity and fluency of important skills and concepts and give targeted corrective feedback.

Teacher actions/instructions:

A waw 12 -0 0 12 54 68Tw 0 4g3 0 Td [(p)-10 (o)d ()Tj ET 54 5511.P 50688 2.1 p rTJ 0)005 Tc7 (w)]T0 0.

Answer to Problem 3:

$\frac{3}{4}$ When a negative number is raised to an even power, the sign of the answer is positive

x Student uses an equation to demonstrate. For example:

o $(-5)^6 = (-5)(-5)$
 $= 25$

o $(-2)^8 = (-2)(-2)(-2)(-2)$
 $= (4)(4)$
 $= 16$

Answer to Problem 4:

$\frac{3}{4}$ When a negative number is raised to an odd power, the sign of the answer is negative

x Student uses an equation to demonstrate. For example:

o $(-5)^7 = (-5)(-5)(-5)$
 $= (25)(-5)$
 $= -125$

o $(-2)^9 = (-2)(-2)(-2)(-2)(-2)$
 $= (4)(4)(-2)$
 $= (16)(-2)$
 $= -32$

Student actions:

Students complete the Warm-up Review sheet and participate in the warm-up review routine as directed.

Student handouts/materials:

Warm-up Review sheet (found on the next page)

Guided Notes with Partially Completed Problems

Exemplar from:

[Module 2: Topic C: Lesson 1](#) Definition of Congruence and Some Basic Properties

Explanation of scaffold:

This scaffold supports students who require new information to be presented in smaller steps and increased opportunities to respond. It provides a structure in which difficult tasks are broken down and student practice is guided. When completed, guided notes with partially completed problems serve as a useful reference tool.

Teacher actions/instructions:

Guided notes with partially completed problems can be used with individual students, small groups, or the whole class.

Guided Notes

Module 2, Topic C, Lesson 11:

Instruction with Computer Technology

Exemplar from:

[Module 3: Topic A: Lesson 1](#) What Lies Behind “Same Shape”?

Explanation of scaffold:

Instruction with computer technology involves using computer programs and websites to increase academic engagement and reinforce understanding of concepts. This scaffold provides visual and conceptual support for students who need additional models and practice opportunities to learn new information. Videos and game applications are an engaging way for students to interact with new information, practice skills, and receive immediate feedback. Guided notes or checkout activities can be used to assist students in learning and allow teachers to check for understanding.

Guided Notes Dilating Points

Name _____ Date _____

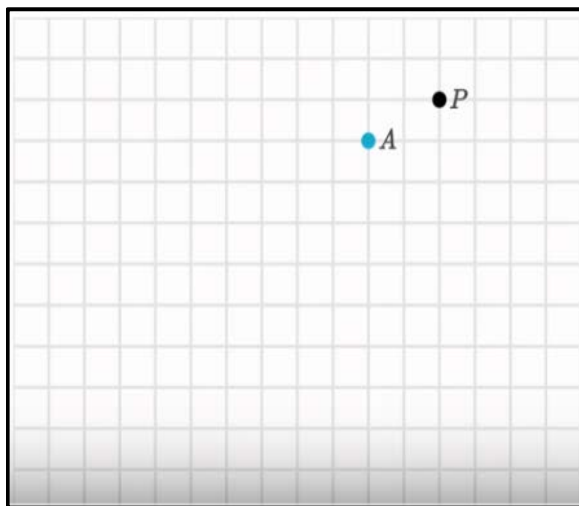
Plot the image of point A under a dilation about point P with a scale factor of 3.

xIf we dilate point A about point P with a scale factor of 3, it's going to be _____ times further in the _____ direction.

xThe first thing we need to do is think about how far point A is from point P.

xTo go from P to A, we have to go _____ down and _____ to the left, so minus 1 and minus 2.

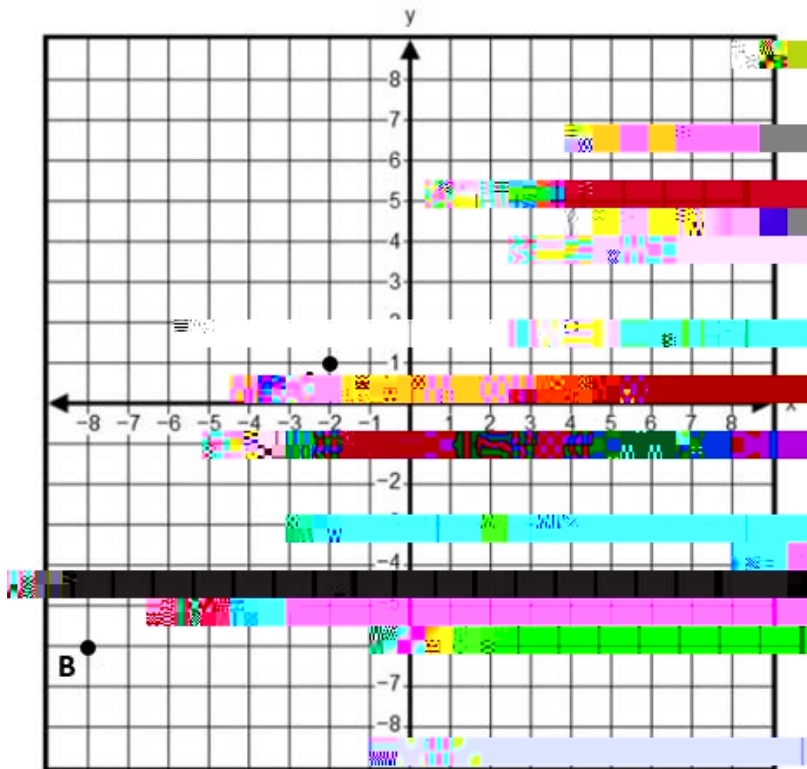
xUnder a dilation about point P with a scale factor of 3, m'



Plot the image of point A under a dilation about the origin (0, 0) with a scale factor of $\frac{5}{7}$.

Check for Understanding

Plot the images of point A and point B under a dilation about the origin. Use a scale factor of 4 to dilate point A and a scale factor of $\frac{5}{6}$ to dilate point B. Label the dilated images # and \$." Show your work.



How does a scale factor greater than 1 affect the image of the point being dilated?

It moves the image_____.

How does a scale factor less than 1 (but greater than 0) affect the image of the point being dilated?

It moves the image_____.

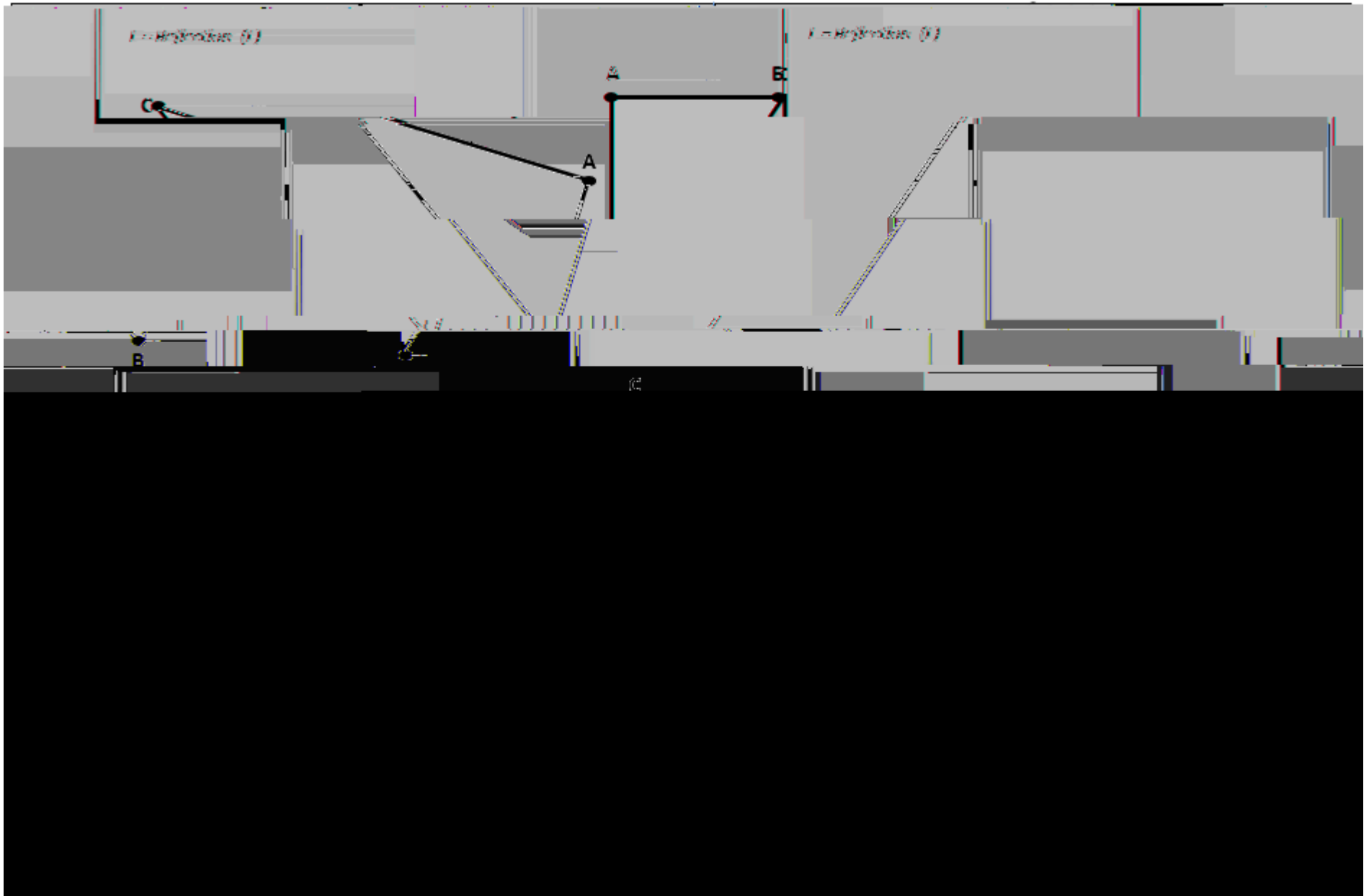
Abstract

1. Direct students to label the points of each reflected image using #, \$, and %
2. Discuss how each point is reflected across the line.
3. Discuss what is true about the corresponding angle measures of triangle ABC and triangle
4. Discuss what is true about the corresponding side lengths of triangle ABC and triangle
5. Discuss what is true about the line segment that connects a point to its image and the line of reflection.
6. Proceed as indicated on pages 391- of the

Practice with Reflection

Name _____

Date _____



Triangle Cut-out Templates

Frayer Model

Exemplar from:

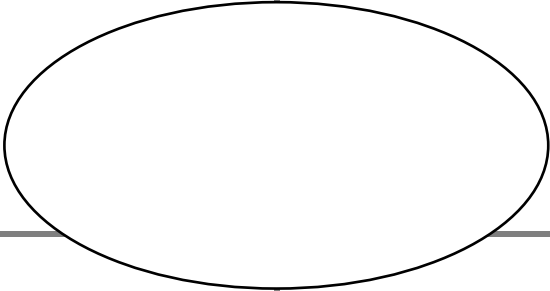
[Module 2: Topic A: Lesson 2](#) Definition of Translation and Three Basic Properties

Explanation of scaffold:

NAME: _____

Fray Model

Definition	Characteristics
Examples	Nonexamples



References

Archer, A. and Hughes, C. (2011) *Explicit instruction: Effective and efficient teaching*. New York, NY: The Guilford Press.