

Unit Title: Analyzing the Effect of change of Scale on 2-D objects

Grade Level: 7

Subject Area: Math

Duration/Length/Number of class periods: 7 (52 minutes periods) ***additional days to complete project , small components of final project will be done throughout the unit*

Description:

After analyzing the effects scale has on similar figures, students will create an enlarged version of either (1) a picture of an object or (2) an enlarged object. This can be done either digitally or physically, depending on their level. By studying all the components that makes two figures similar, students will see WHY figures can be enlarged or shrunk. They will relate what we are doing in our class to the real world.

Established Goals (National, State, Local):

7.3.2 Analyze the effect of change of scale on two dimensional figures.

7.3.2.1 Describe the properties of similarity, compare geometric figures for similarity, and determine scale factors.

7.3.2.2 Apply scale factors, length ratios and area ratios to determine side lengths and areas of similar geometric figures.

What Enduring Understandings are desired?

Proportional relationships express how quantities change in relationship to each other.

Analyzing geometric relationships develops reasoning and justification skills.

What Essential Questions will be considered?

What Effect does change of scale have on a figure's side lengths? (extension lesson could be adding in qualities of perimeter and area)

How does changing scale relate to equivalent ratios?

Students will complete a project using scaling.

Students will know / be able to:

- ☐ Determine similarity characteristics between 2 figures.
- ☐ Determine scale factors and missing side lengths given 2(or 3) similar figures.
- ☐ Determine IF figures are similar using ratios and proportions.
- ☐ Enlarge a picture or object, digitally or on paper using a scale factor >2

Description	Fo rm ati ve	Su m m ati ve	Intr od uct ory Act	Le arn ing Act	Stu de nt Tec hn	Tea cher Tec hnol ogy	ISTE Sta nda rds
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			ivity	ivity	ology Used	Used	
<p>Day 1</p> <p>Daily Starter: What do scaling up and scaling down mean? Form (review students responses before the next day's class)</p> <ol style="list-style-type: none"> 1) rubber band stretcher activity--students will enlarge a basic image (provided on paper to them). They will then compare lengths of the sides by writing as ratios. They will also measure the angles of the figures and compare those. They will discuss their findings with their table partners. 2) as a group, students make a SHARED google slide on what they discovered. All of these will be compiled into one slideshow to view in class tomorrow 3) As an ending, write an unsolved proportion on the padlet to solve for tomorrow. click here 			x	x	x		7b, 1c
<p>Day 2:</p> <p>Daily Starter: If 3 inches on a map represent 175 miles how far would 8.25 inches represent? (on google forms)</p> <ol style="list-style-type: none"> 1) Solve the proportions from yesterday's padlet. click here 2) Discuss what it means for 2 figures to be similar, use yesterday's google slides to spark discussion. 3) Using the computer, find 2 images of items in the real world that have either been scaled up or scaled down from their original size. Make 2 google slides. Each slide must have the image, and a description of how you think it has been scaled up or down. (ex. this building was scaled up from the original blueprint that was drawn of it) 4) Exit slip: Write 2 statements that are true about similar figures. 	x			x	x		1c 2b 3c 3d
<p>Day 3:</p> <p>Daily Starter:</p> <ol style="list-style-type: none"> 1) Link for watching video on How to find Scale factor video Answer the questions as you go and click 'done'. 2) Go over slides from yesterday. Relate this concept to our lives. 3) Book pages 538-540: Identify Similarity (can either do in the book or use the digital version and take a picture of your work and submit) 4) HW: Review worksheet on equivalent ratios. May use a calculator. 5) Additional Video on finding Scale Factor: video 			x	x		x	

<p>Day 4:</p> <p>Daily Starter: Find the missing side lengths on the google form. (2 similar triangles)</p> <ol style="list-style-type: none"> 1) Watch the video on scale. 2) make a poster using BigHugeLabs (click here) BigHugeLabs *(the students will already have been exposed to using BigHugeLabs, so will just give a quick review/tips on how to use it) with 3 things you need to know about scaling/scale factor on **Due at the start of the next classtime 				x	x		1b
<p>Day 5:</p> <p>Daily Starter: If it takes 3 cups for 14 hamburgers, how many cups will be needed for 20 hamburgers? (on google form)</p> <ol style="list-style-type: none"> 1) Class review from the week using Kahoot (similar figures, scale, scale factor) *do as a class or assign individually as Quizzizz 2) IXL, X17, (X.17 Side lengths and angle measures of similar figures) must get to at least 72 3) make a google slide listing the most important thing you learned this week about scaling--must include an image/drawing or video 	x			x	x	x	1c
<p>Day 6:</p> <p>Daily Starter: using google forms, list the 3 concepts you feel you have 'mastered' in this unit.</p> <ol style="list-style-type: none"> 1) Similar polygons lesson, book pages 545-548; including watching video (from Glencoe Curriculum) on determining whether figures are similar; do review problems in book (page 549) or do them on the google form and turn in by tomorrow. 2) Finish up IXL if not done; 3) show Ms. Rops selected object or picture for project (we will have talked about this prior to this in the unit) 				x			1c
<p>Day 7:</p> <p>Daily starter:</p> <ol style="list-style-type: none"> 1) Students will enlarge a figure on paper or digitally. (handout) <p>OBJECTIVE: To take a small picture and enlarge it so that the two pictures are accurate scale drawings of each other. Every part of these pictures should be proportionate in size and shape. Proportional Scaling is when both the width and the length of an object are reduced or enlarged according to the same ratio.</p> <ul style="list-style-type: none"> the students have the option of either doing this digitally or on paper. Either way, they must PROVE That the figures are similar using corresponding side lengths being proportional, corresponding angles are equivalent, and determine the scale factor used. All WORK must be provided so that proof of learning/computation has taken place. Due date to be determined. 	x						<p>*3d *4b</p> <p>*if they choose the digital version</p>

2) <i>Final part:</i> ALL students will present their project in a 90 second video using Flipgrid . click They will need to show their original preimage and the new scaled image, and explain the scale factor used.						
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Materials, tools and resources: rulers, graph paper, computer, calculator, angle rulers/protractors, white drawing paper, crayons/colored pencils, sheet protectors or blank transparency film, dry erase markers
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Additional credit given to: