

Common Core Mathematics Lesson Plan

Lesson Title: Composite Functions	
<p>Learning Objective(s): Common Core State Standards in Mathematics Grade 8, High School, Functions, Build New Functions from Existing Functions ISTE 1.6.c Models and Visualizations</p>	<p>Materials: Desmos, projector, pencil, paper</p>
<p>Topic Source (page numbers): OpenStax Calculus Volume 1: Chapter 1.1 Review of Functions Topic: Function Composition</p>	<p>Key Vocabulary: composite, function, combining, domain, range, function map, iPad or laptop</p>
<p>Prerequisite / Background Knowledge: Understanding of functions, knowledge of graphing.</p>	
Teacher Actions	Student Actions
<p>Introduction (10 minutes): Intro, definition of purpose, demonstrations, etc. -</p> <p>Teacher begins by reviewing functions, function maps, domains and ranges of functions.</p> <p>Teacher demonstrates how ranges can be treated as domains for other functions.</p> <p>Teacher demonstrates rules for function composition.</p>	<p>None</p>
<p>Guided Practice (20 minutes): include questioning tactics, engagement strategies and feedback methods -</p> <p>Teacher uses two example functions, $f(x)$ and $g(x)$, to demonstrate an example problem calculating $(g \circ f)$, $(f \circ g)$, $(g \circ g)$, and $(f \circ f)$</p> <p>Teacher demonstrates how to check these problems using the Desmos graphing calculator</p>	<p>Students repeat the example problem using two different functions and then check them using Desmos.</p>
<p>Monitor: checks for understanding / assessments (5-10 min)</p> <p>Teacher checks for understanding and if understanding is poor, works the student's example with them</p>	<p>See above</p>

<p>Exit Ticket (5 minutes):</p> <p>Teacher gives the student a graded exit ticket to upload in the digital classroom.</p>	<p>Students are given $f(x)$, $g(x)$, and $h(x)$ and are asked to find $(h(f(g(x))))$ and check it with Desmos, then screenshot, and upload their work & Desmos to the classroom LMS.</p>
<p>Differentiation:</p>	<p>The OpenStax online textbook is available in different languages and an ELL student can read the function rules in the textbook in their native tongue and it will be the same information as their peers.</p>