

## Function Families – Individual Work Scoring Sheet

Student Name: \_\_\_\_\_

Place a score (1-4) in each row corresponding to the student's college readiness level.

**Exceeding College Ready (4):** Substantially exceeds the performance expectations**College Ready (3):** Shows proficiency in all of the performance expectations**Approaching College Ready (2):** Meets only some of the performance expectations**Initiating College Ready (1):** Does not yet meet the performance expectations

KEY COGNITIVE SKILLS	Student's Self-Assessment	Instructor's Score
<b>Intellectual Curiosity</b> (engages in scholarly inquiry and dialogue; accepts constructive criticism and revises personal views when valid evidence warrants)		
<b>Reasoning</b> (considers arguments and conclusions of self and others; constructs well-reasoned arguments to explain phenomena, validate conjectures, support positions; gathers evidence to support arguments, findings, or lines of reasoning; supports or modifies claims based on inquiry)		
<b>Problem Solving</b> (collects evidence and data systematically and directly relates them to solving a problem)		
<b>Academic Behaviors</b> (self-monitors learning needs and seeks assistance when needed; uses good study habits; strives for accuracy and precision; perseveres to complete and master tasks)		
<b>Work Habits</b> (works independently)		
FOUNDATIONAL SKILLS	Student's Self-Assessment	Instructor's Score
<b>Writing Across the Curriculum</b> (writes clearly and coherently using standard writing conventions; writes in a variety of forms for various audiences and purposes)		
MATHEMATICS STANDARDS	Student's Self-Assessment	Instructor's Score
<b>Functions</b> (understands and analyzes features of a function; algebraically constructs and analyzes new functions)		

Score	College Readiness Level
25-28	Exceeding College Ready
21-24	College Ready
11-20	Approaching College Ready
0-10	Initiating College Ready

Total Score: \_\_\_\_\_

Grade: \_\_\_\_\_

See Scoring Guide for grade conversion chart.

Comments:

**Function Families – Group Work Scoring Sheet**

Group Name(s): \_\_\_\_\_

Place a score (1-4) in each row corresponding to the student's college readiness level.

**Exceeding College Ready (4):** Substantially exceeds the performance expectations**College Ready (3):** Shows proficiency in all of the performance expectations**Approaching College Ready (2):** Meets only some of the performance expectations**Initiating College Ready (1):** Does not yet meet the performance expectations

KEY COGNITIVE SKILLS	Group's Assessment	Instructor's Score
<b>Intellectual Curiosity</b> (engages in scholarly inquiry and dialogue)		
<b>Academic Behaviors</b> (strives for accuracy and precision; perseveres to complete and master tasks)		
<b>Work Habits</b> (works collaboratively)		
FOUNDATIONAL SKILLS	Group's Assessment	Instructor's Score
<b>Use of Data</b> (identifies patterns and departures from patterns among data)		

Score	College Readiness Level
14-16	Exceeding College Ready
12-13	College Ready
6-11	Approaching College Ready
0-5	Initiating College Ready

**Total Score:** \_\_\_\_\_**Grade:** \_\_\_\_\_

See Scoring Guide for grade conversion chart.

**Comments:**

## Function Families – Scoring Guide for Individual Work

*Note: The letters and numbers of the skills below refer to their designation in the College and Career Readiness Standards.*

### KEY COGNITIVE SKILLS

#### A. Intellectual Curiosity

##### 1. Engage in scholarly inquiry and dialogue.

*College Ready Description:* Student engages fellow classmates in discussion, correcting their misconceptions as well as considering their reasoning and arguments.

*Evidence for Scoring:* Student attempts to answer questions informally posed by the instructor.

##### 2. Accept constructive criticism and revise personal views when valid evidence warrants.

*College Ready Description:* Student recognizes errors in own reasoning and revises them accordingly.

*Evidence for Scoring:* Student revises their solutions to problems based on feedback from others.

#### B. Reasoning

##### 1. Consider arguments and conclusions of self and others.

*College Ready Description:* Student understands the arguments and conclusions of other students.

*Evidence for Scoring:* Student is able to understand solutions from other students.

##### 2. Construct well-reasoned arguments to explain phenomena, validate conjectures, or support positions.

*College Ready Description:* Student constructs and conveys arguments and conclusions.

*Evidence for Scoring:* Student writes clear descriptions of how changing values in functions transforms the shapes of their graphs.

##### 3. Gather evidence to support arguments, findings, or lines of reasoning.

*College Ready Description:* Student uses exploration to find patterns and make hypotheses.

*Evidence for Scoring:* Student completes handouts by graphing graphs of functions, finding patterns, and describing observations.

##### 4. Support or modify claims based on the results of an inquiry.

*College Ready Description:* Student reviews and checks strategies and calculations, using alternative approaches when necessary.

*Evidence for Scoring:* Student changes claims based on working through handouts and discussing with others.

## C. Problem Solving

### 3. Collect evidence and data systematically and directly relate to solving a problem.

*College Ready Description:* Student produces visual representations of data for the purpose of solving a problem.

*Evidence for Scoring:* Student draws graphs of function transformations to observe effects of changing function parameters.

## D. Academic Behaviors

### 1. Self-monitor learning needs and seek assistance when needed.

*College Ready Description:* Student keeps a mindful eye on his or her integration of knowledge as it progresses and is able to ask fellow students and the instructor for help.

*Evidence for Scoring:* Student is comfortable admitting he or she does not know an answer and is willing to re-examine the material to relearn.

### 2. Use study habits necessary to manage academic pursuits and requirements.

*College Ready Description:* Student looks over the material he or she needs to incorporate and tries to come up with a logical approach to complete the task in the allotted time.

*Evidence for Scoring:* Student manages time to complete assignment with appropriate amount of detail.

### 3. Strive for accuracy and precision.

*College Ready Description:* Student carefully and correctly identifies, records, and graphs the effects of transformations.

*Evidence for Scoring:* Student accurately graphs the various translations of a function.

### 4. Persevere to complete and master tasks.

*College Ready Description:* Student thoroughly accomplishes all parts of the task.

*Evidence for Scoring:* Student completes the *Transformations: Move Together Now* handouts and the summary report.

## E. Work Habits

### 1. Work independently.

*College Ready Description:* Student can work through the problems by themselves.

*Evidence for Scoring:* Student does not wait until the group work to start thinking about the activity.

## FOUNDATIONAL SKILLS

### B. Writing Across the Curriculum

#### 1. Write clearly and coherently using standard writing conventions.

*College Ready Description:* Student effectively uses symbols, graphs, and words to describe general principles of transformations of functions.

*Evidence for Scoring:* Student completes an accurate table summarizing the effects of transformations of functions.

#### 2. Write in a variety of forms for various audiences and purposes.

*College Ready Description:* Student writes clear descriptions their observations.

*Evidence for Scoring:* Student writes descriptions of their observations of the effects of changing function parameters on the parent function of various functions.

## MATHEMATICS STANDARDS

### VII. Functions.

#### B.1, 2. Analysis of Functions.

*College Ready Description:* Student understands and analyzes features of a function. Student algebraically constructs and analyzes new functions.

*Evidence for Scoring:* Student writes a summary discussing the general principles of transformations of functions.

## Function Families – Scoring Guide for Group Work

*Note: The letters and numbers of the skills below refer to their designation in the College and Career Readiness Standards.*

## KEY COGNITIVE SKILLS

### A. Intellectual Curiosity

#### 1. Engage in scholarly inquiry and dialogue.

*College Ready Description:* Group thoroughly investigates transformations of functions.

*Evidence for Scoring:* Group completes all parts of each worksheet.

### D. Academic Behaviors

#### 3. Strive for accuracy and precision.

*College Ready Description:* Group carefully and correctly identifies, records, and graphs the effects of transformations.

*Evidence for Scoring:* Group accurately graphs the various translations of a function.

**4. Persevere to complete and master tasks.**

*College Ready Description:* Group thoroughly accomplishes all parts of the task.

*Evidence for Scoring:* Group thoughtfully completes all parts of the *Transformation Station* handouts.

**E. Work Habits****2. Work collaboratively.**

*College Ready Description:* Group works effectively to solve a problem.

*Evidence for Scoring:* Group productively works together to investigate transformations of functions.

**FOUNDATIONAL SKILLS****D. Use of Data****1. Identify patterns or departures from patterns among data.**

*College Ready Description:* Group correctly identifies patterns illustrating general principles of transformations of functions.

*Evidence for Scoring:* Group concludes from observations that  $f(x)+c$  shifts the graph of  $f$  up or down by  $c$  units depending on whether  $c$  is positive or negative.

## Function Families – Scoring Instructions

There are two scoring sheets for this CRA: one for individual work and one for group work. Use either or both as desired for your class.

Place a score (1-4) in each row of the scoring sheet corresponding to the student's college readiness level.

**Exceeding College Ready (4):** Substantially exceeds the performance expectations

**College Ready (3):** Shows proficiency in all of the performance expectations

**Approaching College Ready (2):** Meets only some of the performance expectations

**Initiating College Ready (1):** Does not yet meet the performance expectations

Suggested Grade Conversion:

This chart reflects equal weight given to each skill. As key cognitive skills, foundational skills, and discipline content knowledge are all important elements of college readiness, we recommend this grading approach. However, you may certainly choose to implement different weights to particular scales and assign a grade at your discretion.

Individual Work:

Score	Grade		Score	Grade		Score	Grade		Score	Grade
28	100		22	88		16	78		10	67
27	99		21	85		15	77		9	65
26	97		20	84		14	75		8	63
25	95		19	82		13	73		7	60
24	94		18	80		12	71			
23	91		17	79		11	70			

Group Work:

Score	Grade		Score	Grade		Score	Grade		Score	Grade
16	100		12	85		8	75		4	60
15	97.5		11	82.5		7	72.5			
14	95		10	80		6	70			
13	90		9	77.5		5	65			