Eureka Acceleration Tool: Algebra I
Module 2, Topic C

To become mathematically proficient, students **must** access on-grade-level content. This document aims to help teachers who use the Eureka curriculum to ensure readiness for students before and during on-grade-level work, creating opportunities for timely support directly connected to the new learning.

About this Topic

Focus Standards:

A1: S-ID.B.5: Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.★

A1: S-ID.C.9: Distinguish between correlation and causation.★

Topic Overview per the Eureka Curriculum

In Topic C, students reconnect with previous work in Grade 8 involving categorical data. Students use a two-way frequency table to organize data on two categorical variables. Students calculate the conditional relative frequencies from the frequency table. They explore a possible association between two categorical variables using differences in conditional relative frequencies. Students also come to understand the distinction between association of two categorical variables and a causal relationship between two variables. This provides a foundation for work on sampling and inference in later grades.

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Overview

Eureka Acceleration Tools include:

1. a diagnostic assessment to help teachers determine the misunderstandings or gaps in mathematical knowledge related to a specific Topic in the Eureka curriculum
2. guidance for teachers to analyze student work on the diagnostic assessment
3. suggested materials for targeted remedial instruction

Note: The use of this guidance is not intended to delay students' engagement with on-grade-level learning. On-grade-level learning should be the focus of instructional time and be treated as an opportunity for students to "finish" learning previous skills and deepen conceptual understanding.

Diagnostic Assessment

The diagnostic assessment is designed to be administered to targeted students prior to beginning instruction on the given Topic. When appropriate, it is broken into parts (Part A, Part B, and so on); each part addresses a different prerequisite standard and contains three problems. If a student correctly answers at least 2 out of the 3 problems, it can be assumed that he/she is ready to engage with the new content of the Topic with little to no support needed prior to engaging with the Topic. The diagnostic assessment is designed in this way so that teachers can determine the "entry point" to remedial instruction and/or opportunities for unfinished learning within the context of the new learning. The entry points and opportunities for unfinished learning will vary between students.

Guidance for Acceleration

The Acceleration Guidance is designed for teacher use. It is also broken into parts (Part A, Part B, and so on) and correlates to the parts on the diagnostic assessment. Each part contains the following:

1. **The focus standard**: The focus standards are strategically chosen to address prerequisite skills and are purposefully arranged in the order that students typically master the skills and knowledge.
2. **Why this is important for current grade level work**: This section describes how the work of the prerequisite standard relates to the standard(s) addressed in the Topic of instruction.
3. **Using the diagnostic assessment to identify gaps**: This section identifies common errors students make on the diagnostic assessment items.
4. **Acceleration Resources for Targeted Instruction**: The resources pinpoint specific Eureka lessons and parts of lessons for teachers to use to address gaps in mathematical knowledge. Using Eureka materials to address acceleration ensures alignment to the standards, consistency in approach to learning, and similarities in strategies for solving problems.

Part A: 8.SP.A.4

1. The administration of a new high school did surveys to determine the interests of their students. The following two-way table displays data for the sample of 200 students who completed the survey on their preferred after-school activities.

Gender	**Sports**	**Academic Clubs**	**Service**	**TOTAL**
Female	26	48	12	86
Male	52	44	18	114
TOTAL	78	92	30	200

What percent of those who completed the survey were male? Show your work and/or explain your answer.

2. The two-way table has row relative frequencies showing data on taking a study skills course prior to high school and passing core academic classes in the 9th grade year for a group of 160 freshmen.

	At least one core class with a D or F	Passed all core classes with C or higher	Row Total
No Study skills course	.26	.74	1.00
Study Skills Course	.12	.88	1.00

If a student was enrolled in a study skills course, how much more likely were they to pass all of their core classes with a C or higher? Show your work and/or explain your answer.

3. An intramural softball league is organizing a tournament. There will be two divisions in the tournament: The Black Division and the Gold Division. Each Division will have all-male teams, as well as co-ed (male and female) teams.

Type	**Black Division**	**Gold Division**	**TOTAL**
All-male	5	8	13
Co-ed	7	4	11
Total	12	12	24

If you are placed on an all-male team, are you more likely to be in the Black or Gold Division? Explain.

Solutions:

1. 57%
2. (sample) A student was 76% more likely to pass all of their core classes with a C or better given they enrolled in a study skills course.
3. (sample) 8 out of 13 (approx. 62%) of the all-male teams are in the Gold Division, so you are more likely to be placed on an all-male team in the Gold Division.

Part A Focus: 8.SP.A.4: Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

Why this is important for current grade level work:
In the target Topic, students continue to work with data organized in two-way frequency tables. This includes calculating a percent, comparing relative frequencies and looking for correlations or associations between variables. In order to find associations between two categorical variables, students must first be able to explore and make sense of data summarized in tables. Students must understand how to interpret information in a table with multiple variables and should be able to calculate a percent after determining what is the "part" and what is the "whole" for a particular question using rows, columns or totals in a table. These items will assess the foundational understandings needed to be successful in the target Topic. The problems scaffold in difficulty.

Using the Diagnostic Assessment to identify gaps:

Problem 1:
Look for students who calculate a relative frequency of males instead of the asked for total percentage of males surveyed. The language of the item is clear and should be accessible to most students. Also, look for students who know the answer is some form of the fraction $\frac{114}{200}$ but are undable to correctly convert this to a percentage.

Problem 2:
An additive comparison, as shown in the sample solution, is acceptable as is a multiplicative comparison (e.g., a student is more than 7 times more likely…). If a student reports a decimal answer, question him/her to see if they understand the implied percentage as well.

Problem 3:
While explanations will vary to some degree, this item gets at the heart of the foundational standard, assessing whether students can use the information to determine possible associations. This will lead them to be able to make decisions to larger questions within the context of the data.

Acceleration Resources for Targeted Instruction:

8th Grade, Module 6, Topic D, Lesson(s) 13 – 14

Use the Classwork portion of each Lesson and a sampling of problems from the Problem Set focused on conceptual understanding.