



Mathematics Diagnostic Screeners

Grades 1 – Algebra 1

Implementation Guide



OVERVIEW

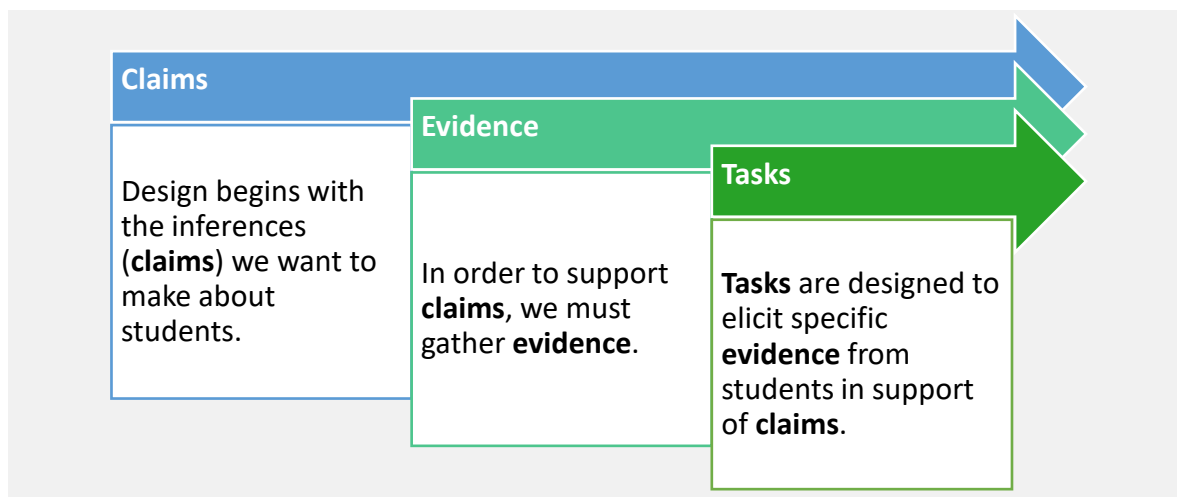
The CenterPoint Mathematics Diagnostic Screeners consist of 9 assessments, one at each grade/course, Grades 1 – 8 and Algebra 1, that each focus on the [Priority Standards](#) as identified by Student Achievement Partners. The purpose of the Screeners is to determine student's proficiency of skills and understandings of the most critical content from the previous grade to inform next steps in helping students gain proficiency of this critical content.

As an example, a primary use case is for 4th grade students at the beginning of the school year to take the Grade 4 Screener which assesses the most important content in grade 3. This gives critical information to teachers about skills and understandings where students may need support prior to or in conjunction with learning 4th grade content.

Each screener has a maximum of 30 questions so that testing time is minimal while still providing sufficient data about student strengths and areas of need in the most critical content areas. The screeners use traditional item types, e.g., multiple choice, as well as technology-enhanced items, e.g., drag and drop. CenterPoint utilizes item types that provide the best way for students to show the evidence of learning that is desired. All items are computer-scored, which provides immediate results allowing for educators to promptly consider next steps in learning.

Evidence Centered Design

CenterPoint uses evidence centered design to help to ensure the screeners provide quality data that can be used to make informed decisions. The design of the screeners begins with inferences, or **claims** we want to make about student proficiency. To support those claims, we must gather **evidence** from **tasks** that are designed to elicit specific evidence in support of the claims.



Claims

The CenterPoint Screeners were designed to provide information on the priority standards for the overall grade, at the cluster level, and in some cases, at the standard level.

Evidence and Tasks

Each question or task on the screeners was designed so that students could demonstrate evidence of learning to support the claims. Additionally, CenterPoint utilizes item types that provide the best way for students to show the evidence of learning that is desired. Below is a list of some of the item types utilized on the screeners.

Machine Scorable Item Types

- Selected Response
- Drag and Drop
- In-line Selection (Drop-down menu)
- Numeric Response

Universal Design

In addition to designing assessments within the framework of evidence-centered design, CenterPoint applies principles of universal design to increase the accessibility, and therefore fairness, of each assessment for all students. Universal design is essential to valid measurement practices. If assessment questions are not accessible or fair for every student, then the evidence collected will not provide meaningful information about students' knowledge and/or abilities.

Number of Questions

Each screener has a maximum of 30 questions allowing for students to complete the assessment within a typical 50-minute class period. The table below shows the number of questions per screener and information about calculator use. Check with your school test coordinator to understand your school's assessment platform capabilities regarding calculator accessibility. Most platforms include a calculator that can be accessed online to support the student in answering questions that allow calculator use.

Screener	# of Questions	Calculator Allowed Items
Grade 1	21	None
Grade 2	28	None
Grade 3	22	None
Grade 4	29	None
Grade 5	27	None
Grade 6	29	None
Grade 7	29	(18 – 29)
Grade 8	30	(22 – 30)
Algebra 1	28	(16 – 28)

Show Your Work Template

Although students submit their responses on their computer device, we suggest printing the Show Work template, so that students have a structured way of showing their work as they take the assessment. Feel free to print extra templates for students that need more than one piece of paper to show their work. Encourage students to write the question number in the template box that coincides with their work. Then, when students complete the assessment, teachers should collect students' work, which may provide useful when analyzing score results and determining where misunderstandings lie.

Scoring Guidance

Raw score data and questions showing actual student responses can be used by educators to determine patterns of student performance and to diagnose students' strengths and areas of need. Data may also illuminate areas within the curriculum and instruction that require tweaks and tune-ups.

USING THE DATA TO INFORM INSTRUCTION

The mathematics screeners are meant to provide information about student strengths and areas of improvement regarding how well students can solve problems in mathematics aligned to the most important college- and career-ready standards at each grade level. The score reports provide useful data, such as the number of points earned out of the number of points possible and the standard alignment which can be used to help inform instructional decisions and deepen educators' understanding of their students' learning progress toward college and career readiness.

When analyzing score reports, consider the percent earned by cluster and/or standard; however, be careful when considering standard level data especially if there are few questions aligned to that standard. For example, consider a student that incorrectly answers a question aligned to 3.OA.A.1 on the Grade 4 screener. As noted in the blueprint below, there is only 1 question aligned to that standard, so it would be better to consider how the student performed on the 3.OA.A cluster to help determine next steps and not jump to the immediate conclusion that support is needed with that standard.

GRADE 4 MATH SCREENER BLUEPRINT

Priority Clusters	Standards Assessed	# of Questions	# of Points
3.OA.A	3.OA.A.1	1	1
	3.OA.A.2	1	1
	3.OA.A.3	4	4
	3.OA.A.4	2	2
3.OA.B	3.OA.B.5	2	2
	3.OA.B.6	3	3
3.OA.C	3.OA.C.7	2	2
3.OA.D	3.OA.D.8	4	4
3.NF.A	3.NF.A.1	2	2
	3.NF.A.2	3	3
	3.NF.A.3	5	5
Totals		29	29



ANALYZING SCORE REPORTS

The score reports will depend on the platform for which students are taking the assessment. The screeners were designed so that the score reports would inform student proficiency on the most critical content from the previous grade, including the student percentage on the overall assessment, as well as achievement at the standard and cluster levels. See the sample reports below. Class and student reports should show student performance on each cluster and standard assessed. Note that reports will vary depending on the platform that the school utilizes.

SCREENER CLASS REPORT (SAMPLE)

	3.OA.A	3.OA.B	3.OA.C	3.OA.D	3.NF.A
Student A	75%	80%	100%	75%	70%
Student B	88%	100%	100%	75%	80%
Student C	88%	80%	50%	100%	50%
Student D	50%	80%	50%	50%	10%
Student E	75%	60%	50%	75%	40%
Student F	88%	100%	100%	100%	80%

SCREENER STUDENT REPORT (SAMPLE)

Cluster	Standards	# of Points Earned	# of Points Possible	Percent Correct
3.OA.A	3.OA.A.1	0	1	75%
	3.OA.A.2	1	1	
	3.OA.A.3	3	4	
	3.OA.A.4	2	2	
3.OA.B	3.OA.B.5	2	2	80%
	3.OA.B.6	2	3	
3.OA.C	3.OA.C.7	2	2	100%
3.OA.D	3.OA.D.8	2	4	50%
3.NF.A	3.NF.A.1	1	2	40%
	3.NF.A.2	1	3	
	3.NF.A.3	2	5	
Totals		18	29	62%

GUIDANCE WHEN ANALYZING REPORTS



The chart below provides general guidance when analyzing score reports and determining if support is needed to help students shore up misunderstandings and skill deficiencies. The percent earned should be considered for each cluster assessed and for standards assessed with 4 or more questions.

% Earned	Level	Description
75 and above	Proficient	Student is likely proficient with this content.
Between 75 and 45	Support likely needed	Student likely needs support. Look at data results to target where support is needed and the level of support to provide.
45 and below	Support needed	Student needs support. Look at data results to target where support is needed and the level of support to provide.

PATHS TO CONSIDER

1. For students needing support, consider reviewing the student’s “Show Work” paper to investigate and un-cover misunderstandings and other errors.
2. CenterPoint created Blueprint documents that include information about learning progressions which should be considered when preparing to teach certain topics. For example, if you have a 4th grade student that takes the screener, and the results indicate that the student needs support in cluster 3.NF.A, then you might consider one of two things:
 - a. Review the Blueprint documents to understand the learning progressions.
 - b. Use the [Achieve the Core map](#) to understand the learning progressions.

Both options will help you determine when to provide support for students regarding 3.NF.A content. With both options, you’ll want to:

- Determine when the 3.NF.A content is needed within the Grade 4 curriculum.
- Determine other grade 3 standards and prior grade level standards that are connected to the 3.NF.A standards as students might need support in those areas.
- Provide support on the 3.NF.A standards and possibly the prior grade level standards in conjunction with the connected 4th grade standards.
 - a. Depending on the level of support needed, additional time may be required to help students “catch up” in their areas of need. In cases as such, we suggest working with school leaders to think creatively about structures that allow such time for students to strengthen their math skills and understandings.



STRATEGIES FOR SUPPORTING STUDENTS IN MATHEMATICS

To support increased learning in mathematics:

- Have students describe his/her thinking as they solve math problems. Math problems can come from the screener, school curriculum, released items from the state summative assessment, or other open resources that are well-known for producing quality content. A list of resources at the end of this document may be of help. Since students may be unfamiliar with how to think aloud, teachers will likely want to model the process with a sample question. The act of listening to students as they think aloud is a great means to helping teachers and students uncover conceptual misunderstandings and provide insight into the nature of erroneous thinking.
- Teachers in a professional learning community (whether formal or informal) may find it helpful to share ideas on how to support students who are struggling with mathematics at a given grade level.
- To support the focus of learning on-grade level content, consider how the curriculum allows for embedding additional supports needed within upcoming lessons, thereby allowing for supports to be provided as part of daily core general instruction.
- Work with school leaders to think creatively about structures that allow additional time for students to strengthen their math skills and understandings, especially those needing intensive support.
- Model multiple techniques and approaches to demonstrate different pathways to solving problems.
- Use mathematics manipulatives to help students conceptualize abstract concepts.
- Have students work with others to solve problems.
- Create scaffolded problem sets to chunk the learning.
- Use easier numbers in problem sets to uncover conceptual misunderstandings.
- Share sample math questions with resource teachers and those who teach content other than mathematics, but whose content areas apply mathematics (e.g., science, computer science, technology education, etc.), and share how they can support students who require additional instruction and practice for identified skill gaps.

MATH RESOURCES FOR STUDENTS NEEDING SUPPORT

- **Illustrative Mathematics** provides [free access to their library of mathematics curriculum](#), instructional tasks, and resources including math resources for families.
- **Great Minds** has launched [Knowledge on the Go](#) with written materials for math (K-12) and Eureka Math daily instructional videos (K-8).
- **Student Achievement Partners** offers high-quality open-source classroom resources, including [Math lessons and assessments](#). Other resources include:
 - [Family Guides](#)
 - [Priority Standards](#)
 - [Fractions](#)
- **Kahn Academy**: Content in Math, Science & Engineering, Arts & Humanities, SAT: free standards-aligned practice and lessons
- **Citizen Math**: Search by standard or math topic to find math tasks related to real-world challenges. The Citizen Math mission is to make the world a better place by inspiring young



people to develop the problem-solving skills they will need to analyze, discuss, and solve the important issues faced by society.



SHOW YOUR WORK

Name: _____

Date: _____

Question _____

Question _____

Question _____



Question _____

Question _____

Question _____



SHOW YOUR WORK

Name: _____ Date: _____

Question _____

Question _____

Question _____

Question _____

Question _____

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Question ____

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