

SD38 GRADES 3-5 MATHEMATICS FOUNDATIONS TASKS

ASSESSMENT BOOKLET

This booklet contains the protocol and indicators of proficiency for the six Mathematics Foundations tasks that are part of the SD38 Grades 3-5 Numeracy Assessment Tool. Each task is on one page, for each of administration.

Materials needed:

- two sets of 0-9 digit cards (or playing cards with 10s and face cards removed)
- a tub of square tiles/colour tiles of various colours
- a geoboard for each student and elastics
- mini whiteboards and markers or paper and pencil
- class profile list
- individual student recording forms

***Task 1:** Deal out three (grade 4 – four, grade 5 – five or six) digit cards to each student. Ask the student to create the greatest (biggest, largest – if not familiar with the term greatest) number possible. Ask the student to read the number and explain why it’s the greatest number possible. If working with a small group, ask students to order their numbers from least to greatest. Ask the student what number would be 10 more and to write that number. Ask the student what number would be 200 less and to write that number. Ask student to draw a number line and record the beginning with 0 and then end with 1000. Ask them to record one of the numbers they have made in this task along the number line.

Observe and listen for: place value concepts to 1000, 10 000, 100 000; comparing and ordering numbers. If the greatest number is not presented, note what number student created.

Extension questions: *How do you know that your number is the greatest/biggest/largest that you can make using your cards? Which player has the greatest/biggest/largest number? How do you know? What number is one hundred more/less? Five hundred less? Nine thousand more?*

Indicators of proficiency: The student can represent a number to 1000 (grade 3), 10 000 (grade 4) and 1 000 000 (grade five) in written form, read the number correctly and compare the magnitude of the number to other numbers and by place value (knowing what digit to look at and determine what number is 10 more or 200 less).

TASK	Indicators of Proficiency
One	<p>The student can:</p> <ul style="list-style-type: none"> represent a number to 1000 (grade 3), 10 000 (grade 4) and 1 000 000 (grade five) in written form read the number correctly compare the magnitude of the number to other numbers and by place value (knowing what digit to look at and determine what number is 10 more or 200 less)

Grade 3

Proficient
-the student can represent, read, and compare numbers to 1000 in written form demonstrating understanding of place values -the student can add or subtract 10s or 100s from a three-digit number fluently -the student can place a three-digit number in an appropriate place on an open number line from 0-1000

Grade 4

Proficient
-the student can represent, read, and compare numbers to 10 000 in written form demonstrating understanding of place values -the student can add or subtract 10s or 100s from a four-digit number fluently -the student can place a four-digit number in an appropriate place on an open number line from 0-10 000

Grade 5

Proficient
-the student can represent, read, and compare numbers to 1 000 000 in written form demonstrating understanding of place values -the student can add or subtract 10s or 100s from a five or six-digit number fluently -the student can place a five or six-digit number in an appropriate place on an open number line from 0 - 1 000 000

***Task 2:** Place 20 square tiles in a pile on the table. Ask students: How many different equal groups can you create? Can you create an array to represent how you have grouped the tiles? As students are creating equal groups, ask them to represent the groups in equation form. How would you represent these groups and number of tiles in different equations? If the student does not represent the groups in both multiplication and division equations, provide a prompt such as: Can you think of a division equation for how you have grouped the tiles?
 For Grade 5: Teacher can then ask student to orally explain a larger number such as 120 and offer a whiteboard and marker or paper and pencil to the student.

Observe and listen for: understanding of decomposing into equal groups, array representation, relationship between multiplication and division, concrete to symbolic representation of operations

Indicators of proficiency: The student can demonstrate and understanding of the processes of multiplication and division with concrete materials and using arrays (all grades). The student can record multiplication and division equations for different decomposing in equal groupings (all grades). Grade 5 students can demonstrate an understanding of the relationship between multiplication, division, and decomposing numbers with three-digit numbers through arrays and partial products.

TASK	Indicators of Proficiency
Two	The student can: <ul style="list-style-type: none"> • demonstrate and understanding of the processes of multiplication and division with concrete materials • represent equal groups in arrays • record multiplication and division equations for different decomposing in equal groupings • can demonstrate an understanding of the relationship between multiplication, division, and decomposing numbers with three-digit numbers through arrays and partial products (grade 5)

Grade 3

Proficient
-the student can represent understanding of multiplication and division with concrete materials, including arrays -the student can record multiplication and division equations corresponding to concrete representations

Grade 4

Proficient
- the student can represent understanding of multiplication and division with concrete materials, including arrays, pictorial and symbolic forms, including equations

Grade 5

Proficient
-- the student can represent understanding of multiplication and division with concrete materials, including arrays, pictorial and symbolic forms - demonstrate an understanding of the relationship between multiplication and division, by using arrays and partial products fluently with three-digit number operations

***Task 3:** What different ways can you make 1000 (grade 3), 10 000 (grade 4) or 1 000 000 (grade 5) using addition and subtraction equations? If you notice that the student is only using equations with benchmark numbers (100s, 1000s, etc), ask them to decompose the numbers in a greater variety of ways. Provide enough time for students to record at least three different equations (with at least one addition and one subtraction equation).

Observe and listen for: representing, decomposing numbers, addition and subtraction to 1000 (grade 3), 10 000 (grade 4) and 1 000 000 (grade 5), relationship between addition and subtraction and notice fluency with use of different numbers

Indicators of proficiency: The student can decompose quantities and represent that process in addition and subtraction equations. The student demonstrates place value understanding. The student uses mental math strategies (decomposing, benchmark numbers, relating addition and subtraction, etc).

TASK	Indicators of Proficiency
Three	<p>The student can:</p> <ul style="list-style-type: none"> • decompose quantities and represent that process in addition and subtraction equations • demonstrates place value understanding • use mental math strategies (decomposing, benchmark numbers, relating addition and subtraction, etc). <p>* to 1000 (grade 3), 10 000 (grade 4) and 1 000 000 (grade 5)</p>

Grade 3

Proficient
-the student can demonstrate flexible and fluent use of numbers to 1000 by composing and decomposing different types of numbers (benchmarks, complementary numbers, numbers that make 10s, 100s, etc) through addition and subtraction equations

Grade 4

Proficient
-the student can demonstrate flexible and fluent use of numbers to 10 000 by composing and decomposing different types of numbers (benchmarks, complementary numbers, numbers that make 10s, 100s,1000s, etc) through addition and subtraction equations

Grade 5

Proficient
-the student can demonstrate flexible and fluent use of numbers to 1 000 000 by composing and decomposing different types of numbers (benchmarks, complementary numbers, numbers that make 10s, 100s,1000s, etc) through addition and subtraction equations

Task 4: Provide the students with a pile of colour tiles. Ask students to show at least two ways to represent the fraction $\frac{1}{4}$ (grade 3), $\frac{3}{4}$ (grade 4) or $\frac{4}{6}$ (grade 5) with the tiles and then ask students to record the written form of the fraction. For grade 4s, continue the task by asking the students to compare $\frac{3}{4}$ to $\frac{1}{2}$ - Which is greater? How do you know? For grade 5s, continue the task by asking the students to create or write an equivalent fraction for $\frac{4}{6}$ and ask them to explain how they know.

Observe and listen for: fraction concepts, equal parts, concrete to symbolic notation (understanding of numerator and denominator), comparing and ordering fractions, equivalent fractions

Indicators of proficiency: The student can represent the fraction with concrete materials and in symbolic form. The student can compare fractions (grade 4). The student can create equivalent fractions (grade 5).

TASK	Indicators of Proficiency
Four	The student can: <ul style="list-style-type: none"> • represent the fraction with concrete materials and in symbolic form • compare fractions (grade 4) • create equivalent fractions (grade 5). $\frac{1}{4}$ (grade 3), $\frac{3}{4}$ (grade 4), $\frac{4}{6}$ (grade 5)

Task 5: Provide the students with a pile of colour tiles. Ask students represent the fraction $\frac{2}{10}$ with the tiles. Ask grade 3 students to record the fraction in symbolic form. Ask grades 4 and 5 students to record the fraction and decimal form. For grades 4 and 5: What is a decimal that is less than 0.2? What is decimal that is more than 0.2? How do you know? For grade 5: Which decimal number is greater: 0.2 or 0.05? How do you know?

Observe and listen for: fraction concepts, concrete to symbolic notation, representing decimals, comparing and ordering decimals

Indicators of proficiency: The student can create a representation of $\frac{2}{10}$ with concrete materials and in symbolic form. The student can record $\frac{2}{10}$ in decimal form. The student can compare decimal numbers and explain their thinking.

TASK	Indicators of Proficiency
Five	<p>The student can:</p> <ul style="list-style-type: none"> • create a representation of $\frac{2}{10}$ with concrete materials and record the fraction in symbolic form • record $\frac{2}{10}$ in decimal form (grades 4 & 5) • compare decimal numbers and explain their thinking - more than, less than 0.2 (grades 4 & 5) • explain which decimal is greater 0.2 or 0.05

Task 6: Provide each student with a geoboard and elastics. Ask them to make a rectangle. For grade 3: What multiplication equation can be represented with your rectangle? How do you know? (How many squares in each row? How many rows?) For grade 4: Using the units on the geoboard, what is the perimeter of the rectangle? How do you know? For grade 5: Using the units on the geoboard, what is the perimeter and area of the rectangle? How do you know?

Observe and listen for: ability to create an array/rectangle, connection of array representation to multiplication and area, use of units to measure perimeter and areas, relationship between perimeter and area

Indicators of proficiency: The student can create an array/rectangle. The student can make connections between an array/rectangle and multiplication. The student can measure the perimeter of the rectangle. The student can use multiplication to measure the area of the rectangle.

Extension questions: What other arrays can you make? What do you notice about the relationship between perimeter and area?

TASK	Indicators of Proficiency
Six	The student can: <ul style="list-style-type: none"> • create an array/rectangle • make connections between an array/rectangle and multiplication • measure the perimeter of the rectangle (grade 4) • use multiplication to measure the area of the rectangle (grade 5)