SD Common Core State Standards Disaggregated Math Template

Domain:	Number and Operations-Fractions	**Cluster:**	Extend understanding of fraction equivalence and ordering.	**Grade level:**	4

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
3.NF.3.a. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. A.) Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. 3.NF.3.b Recognize ad generate simple equivalent fractions (e.g., 1/2=2/4, 4/6=2/3). Explain why the fractions are equivalent, (e.g., by using visual fraction model).	4.NF.1 Explain why a fraction a/b is equivalent to a fraction (n x a)/(n x b) by using visual fraction models, with attention to how the number and the size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	5.NF.1 Add and subtract fractions with unlike denominators by replacing given fractions with equivalent fractions. 5.NF.4.a.Interpret the product as parts of a partition into equal parts: equivalently, as result of a sequence of operations.

Student Friendly Language:
I can explain that a fraction is equal to another fraction by using hands on tools (manipulatives) even though the numbers are different. I can create a number sentence to make equivalent fractions.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)

● fraction; part of a whole
  ○ numerator
  ○ denominator
● equivalent fractions
● equivalent numbers
● equivalent means same as equal
● multiplication facts and multiples
	Fractions can be equivalent even though numerators and denominators aren't the same.
	
	You can create visual fractions to see the parts of a fraction.
		Manipulate fraction tools to make equals.
		
		Explain how two fractions are equal.
		
		Draw pictures to represent equivalent fractions.
		
		Create a number sentence using equivalent fractions.

Key Vocabulary:					
numerator	denominator	fraction	manipulate	equivalent	multiply
divide	compare	greater than	less than	fraction bar	

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?
Sharing portions of pizza, how can we divide this pizza into fractions that are equivalent? Balancing items on the scale, how can different numbers of items, still weigh the same? If we are using a recipe, what size of measuring cup could we use instead of two ¼ cups? Career related fields: wood work, engineers, mechanics, architect, carpenters, plumbers.

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Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. (d.)Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole.	4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols, >,<,= and justify the conclusions, e.g., by using a visual fraction model.	5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators.

Student Friendly Language:

I can determine if a fraction is greater than, less than, or equal to a well known fraction such as 1/2.
I can create common denominators to compare two fractions.
I can use >,<, = symbols to compare two fractions.
I can make a model to show I understand comparisons of fractions.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Numerator • Denominator • Visual fraction models • <,>,= • Multiplication • Division • Common denominator	The denominator is how many equal parts that make the whole and the numerator is the number of parts chosen or not chosen. Comparisons are valid only when the two fractions refer to the same whole. Other fractions can be used as a benchmark when making comparisons.	Construct a visual model of 2 fractions being compared. Use the correct symbol to compare fractions (<,>.=). Apply multiplication and division skills to change denominators in order to compare fractions. Use a variety of strategies to compare fractions.

Key Vocabulary:

numerator denominator common denominator benchmark fraction greater than
less than equal to visual fraction models justify

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

Comparing quantities and dividing portions equally.
Example: We ordered two equal sized pizzas. My pizza is cut into eighths. Your pizza is cut into sixths. We each eat two slices. Who ate more?

Using a ruler to cut, build, or construct.
Example: Sally measures her button and it is 2/8 inches wide. Billy measures his button at 1/4 inches wide. Who has the widest button?

SD Common Core State Standards Disaggregated Math Template

Domain:	(NF) Number and Operations – Fractions	**Cluster:**	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	**Grade level:**	4

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
3.NF.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.	4.NF.3 Understand a fraction a/b with a>1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8. c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. 5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators.

Student Friendly Language:

I can show and explain that fractions are parts of a whole that can be added or subtracted.
I can break fractions and mixed numbers apart and explain that those parts add back up to the original fraction or mixed number. Ex. 3/8 = 1/8 + 1/8 + 1/8 or 5/8 = 2/8 + 3/8
I can add and subtract fractions and mixed numbers that have the same denominator.
I can use what I know about adding and subtracting fractions and mixed numbers to solve word problems through equations, pictures, or manipulates.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• Fraction as part of a whole • Fractions with like denominators can be added or subtracted • Improper fractions are greater than a while • Improper fractions and mixed numbers are interchangeable.	A fraction is made up of smaller fractions with the same denominator that added together will equal that original fraction. When adding or subtracting fractions with like denominators, only the numerator is added or subtracted. A fraction can be broken apart and put back together in more than one way using the same denominator. There is a relationship between mixed numbers and their equivalent fractions.	Decompose a fraction into a sum of fractions with the same denominator in more than one way. Justify the decomposition and composition of fractions with a visual fraction model. Add and subtract fractions and mixed numbers with like denominators. Solve word problems involving addition and subtraction of fractions and mixed numbers with like denominators. Convert an improper fraction to a mixed fraction and a mixed fraction to an improper fraction.

Key Vocabulary:

numerator denominator improper fraction mixed number decomposition
composition fraction equivalent visual fraction model

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question “why do I have to learn this”?

Knowing quantities when ordering food – ordering pizza, a birthday cake, pie
Altering recipe measurements
Measurement in building, sewing,
Splitting something fairly
Fractional time frames – sporting events, computer lab times, calendar, school year (1st quarter, 2nd period, etc.)

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Domain:	Number & Operations-Fractions	**Cluster:**	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	**Grade level:**	4

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
3.NF.1 Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*. *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*. *a* parts of size 1/*b*. 3NF3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.* Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.* *Examples: Express 3 in the form* *3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*	4.NF.4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a.Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).* b.Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)* c.Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	5.NF.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a.Interpret the product (*a*/*b*) × *q* as a parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a* × *q* ÷ *b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*

Student Friendly Language:

I can show multiplication through repeated addition of a fraction to make a whole number.
I can multiply a fraction by a whole number.
I can use fraction models and equations to represent a problem.
I can solve word problems that include fractions and whole numbers.
I can explain the difference between a whole number and a fraction.

Know (Factual)	Understand (Conceptual) The students will understand that:	Do (Procedural, Application, Extended Thinking)
• multiplication is repeated addition • a fraction is a part of a whole. • Commutative Property of multiplication • Associative Property of multiplication • when a whole number is divided into fractions each fraction is an equal piece • there is a difference between a numerator and a denominator • whole numbers can be written as fractions	Using number lines and fraction models can help them multiply a fraction and a whole number. Decompositions with multiples can be compressed by multiplying by a whole number.	Multiply a whole number and a fraction. Use a visual fraction model and equation(s) to represent a problem. Solve a word problem involving a fraction and a whole number.

Key Vocabulary:

numerator, denominator, multiple, equation, equivalent, factor, whole number, fraction, product, commutative property, associative property

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question "why do I have to learn this"?

construction projects (measuring the length)
recipes (doubling a recipe)
party planning for large groups (how much to buy, etc)
sewing (figuring how many yards of fabric needed for a project)
sports stats (long jump, high jump, pole vault)
wages (babysit for 4 1/2 hour at $4/hour)
measurement-using a ruler
time- 1/4 hour, 1/2 hour

SD Common Core State Standards Disaggregated Math Template

Domain:	Number Operations, Fractions	**Cluster:**	Understand decimal notation for fractions, and compare decimal fractions	**Grade level:**	4

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
3.NF.3a- Understand two fractions as equivalent if they are the same size, or the same point on a number line.	4.NF.5 - Express a fraction with denominator 10 as an equivalent denominator 100,and use this technique to add two fractions with respective denominators 10 and 100. For example 3/10 as30/100 and add 3/10+4/100=34/100	5.NF.1 - Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example. 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b +c/d = (ad + bc)/bd.

Student Friendly Language:
I can change a fraction with a denominator of 10 to an equivalent fraction with a denominator of 100. I can then add those two fractions.

Know (Factual)	**Understand (Conceptual) The students will understand that:**	**Do (Procedural, Application, Extended Thinking)**
● Not all fractions have the same denominator ● place value ● fractions ● equivalency ● When adding fractions with like denominators, you only add the numerator ● multiples of 10	When creating equivalent fractions, you multiply the numerator and denominator by the same number. There is a relationship between fractions with denominators in powers of ten. (tenths and hundredths)	Change a fraction with a denominator of 10 to an equivalent fraction with a denominator of 100. Add two fractions with respective denominators of 10 and 100.

Key Vocabulary:
fractions denominator equivalency numerator multiples place value
Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question “why do I have to learn this”?
To have an understanding of the difference between money (0.10 to 0.05) and time. Find the percentage grade of a ten point assignment

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Domain:	Number and Operations--Fractions	**Cluster:**	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	**Grade level:**	4

Correlating Standard in Previous Year	Number Sequence & Standard	Correlating Standard in Following Year
3.NF.2a Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.	4.NF.6 Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 meters; locate 0.62 on a number line diagram.	5.NBT.3 Read, write, and compare decimals to thousandths.

Student Friendly Language:
I can write a fraction with a denominator of 10 or 100 as a decimal.

Know **(Factual)**	**Understand** **(Conceptual)** **The students will understand that:**	**Do** **(Procedural, Application, Extended Thinking)**
• Decimal notation to hundredths • Numerator indicates the number of parts of a whole • Denominator determines decimal notation • Place Value	Fractions and decimals represent parts of a whole. Fractions can be written as an equivalent decimal. There is a relationship between the denominator of a fraction and the place value of a decimal number. The position of a number in relation to the decimal point determines its value.	Rewrite fractions as decimals to the hundredths place. Identify the decimal that is equivalent to a fraction.

Key Vocabulary:				
fraction	decimal	decimal notation	numerator	denominator
tenths	hundredths	equivalent	decimal point	

Relevance and Applications: How might the grade level expectation be applied at home, on the job or in a real-world, relevant context? Include at least one example stem for the conversation with students to answer the question “why do I have to learn this”?

The winner of a race ran it in 12 seconds. The second place runner took 6/10 of a second more to complete the race. He ran the race in 12.6 seconds.

Gymnasts will lose 5/10 of a point for falling off the balance beam in competition. This will translate to a 0.5 point deduction off their total score.

A patient needs 0.4 cc of medicine. The patient will need to measure out 4/10 cc of the medicine.