Amplify Fractions

Scope and sequence with standards alignment

Common Core State Standards for Mathematics

Amplify Fractions is a digital math program that offers a new approach to learning fractions through a blend of adaptive learning and interactive storytelling. Built inside the framework of quirky stories, each lesson covers an individual fractions skill, taught with real-world context, purpose, and humor.

All lessons include accompanying practice problems.

Amplify Fractions' lesson content with related Standards

Amplify Fractions Lesson Title	Fractions Topic Covered in the Lesson	Big Idea	Sub-Skills Covered	Related CCSS-M Standard(s)
Lesson 1 Sharing the Gold	**Strand:** Division **Skill:** Fair Sharing	Fair sharing is the same as division.	• Fair sharing collections of discrete objects • Relating quantities within situations of fair sharing evenly divisible collections mathematically	Extension of 1.G.A.3 3.OA.A.1 3.OA.A.2 3.OA.A.3 3.OA.A.4
Lesson 2 Glorious Statues	**Strand:** Division **Skill:** Dividing Length	Dividing lengths is just like dividing discrete objects.	• Relating quantities within situations of fair sharing evenly divisible collections mathematically • Fair sharing a single continuous length with an external unit of measure	Extension of 1.G.A.3 3.OA.A.1 3.OA.A.2 3.OA.A.3 3.OA.A.4
Lesson 3 Lasagna in the Jungle	**Strand:** Unit Fractions **Skill:** Dividing the Whole	Wholes can be divided (fairly shared) into fractional pieces.	• Fair sharing a single continuous rectangle • Representing unit fractions with rectangular area models	1.G.A.3 3.G.A.2 3.NF.A.1
Lesson 4 Breakfast of Fractions	**Strand:** Unit Fractions **Skill:** Circles	Circles can be divided by making equally spaced cuts from the center.	• Fair sharing a single continuous circle • Representing unit fractions with circular area models	1.G.A.3 3.G.A.2 3.NF.A.1
Lesson 5 Da Vinci's Divisions	**Strand:** Unit Fractions **Skill:** Shapes	Different shapes can be divided in different ways.	• Fair sharing a single continuous polygon • Relating equivalence of non-congruent shares in area models • Representing unit fractions with polygonal area models	2.G.A.3 3.G.A.2 3.NF.A.1
Lesson 6 Long Journey Home	**Strand:** Unit Fractions **Skill:** Length	Lengths can also be divided into fractional pieces.	• Fair sharing a single continuous length with an internal unit of measure • Representing unit fractions with length models	Extension of 3.G.A.2 3.NF.A.1

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Lesson 7 Royal Builder's Day Off	**Strand:** Unit Fractions **Skill:** Outside the Whole	Unit fractions can be made outside the original whole.	Representing unit fractions with area and length models as external units of measure	3.NF.A.1
Lesson 8 Part Blue, Part Rebel	**Strand:** Non-Unit Fractions **Skill:** Part-Whole	A fraction's denominator shows the total parts in a whole, and the numerator is how many of those parts are selected.	Representing non-unit proper fractions with area and length models	3.NF.A.1
Lesson 9 Improper by Nature	**Strand:** Non-Unit Fractions **Skill:** Improper Fractions	Fractions can go beyond the whole.	Representing non-unit improper fractions with area and length models	3.NF.A.1
Lesson 10 Mixed-Up Mastermind	**Strand:** Non-Unit Fractions **Skill:** Mixed Numbers	Combining whole numbers and proper fractions is a handy way to write numbers.	Representing mixed numbers with area and length models	3.NF.A.1
Lesson 11 Rebels with a Cause	**Strand:** Non-Unit Fractions **Skill:** Outside the Whole	Any fraction can be made outside the original whole.	Representing non-unit fractions with area and length models as external units of measure	3.NF.A.1
Lesson 12 Belly of the Beast	**Strand:** Non-Unit Fractions **Skill:** Fractions and Division	A fraction's value is the same as its numerator divided by its denominator.	Relating quantities within situations of fair sharing multiple continuous wholes mathematically	3.NF.A.1 5.NF.B.3
Lesson 13 Mystery on the Map	**Strand:** The Number Line **Skill:** Distance from Zero	Fractions are between whole numbers on the number line, located according to their distance from zero.	Representing fractions as distance from 0 on the number line	3.NF.A.2a 3.NF.A.2b
Lesson 14 The Hunt for Lost Gold	**Strand:** The Number Line **Skill:** Fractions on the Number Line	You can locate fractions on the number line by dividing unit lengths on the number line itself.	Representing fractions on the number line by equipartitioning the number line as a length model	3.NF.A.2a 3.NF.A.2b
Lesson 15 Mixed Matter	**Strand:** The Number Line **Skill:** Mixed Numbers on the Number Line	Mixed numbers can be found on the number line by looking at their whole-number part and then their proper fraction.	Representing mixed numbers on the number line	3.NF.A.2a 3.NF.A.2b
Lesson 16 Stranger Games	**Strand:** Intro to Equivalence & Comparison **Skill:** Comparing Unit Fractions	As the denominator gets bigger, the value gets smaller.	Comparing and ordering unit fractions	3.NF.A.3d

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Lesson 17 DIshwashers of Olympus	**Strand:** Intro to Equivalence & Comparison **Skill:** Whole Numbers are Fractions	Whole numbers are also fractions, with a 1 in the denominator.	Recognizing fraction equivalents for whole numbers with models	3.NF.A.3c
Lesson 18 Through the Looking Glass	**Strand:** Intro to Equivalence & Comparison **Skill:** Intro to Equivalence	Different fractions can have the same value. When they do, they'll be in the same place on the number line.	Recognizing equivalent fractions with models	3.NF.A.3a 3.NF.A.3b
Lesson 19 Growth Spurt	**Strand:** Intro to Equivalence & Comparison **Skill:** Comparing When Numerators or Denominators are the Same	When two fractions have matching denominators, the one with the greater numerator is larger. When two fractions have matching numerators, the one with the greater denominator is smaller.	Comparing and ordering fractions with either the same numerator or the same denominator	3.NF.A.3d
Lesson 20 To the Nearest Snack	**Strand:** Intro to Equivalence & Comparison **Skill:** Rounding Fractions	Just like whole numbers, fractions can be rounded. You'll usually round them to the nearest whole number.	Rounding fractions to the nearest whole number	Extension of 3.NF.A.3b 3.NF.A.3c 3.NF.A.3d
Lesson 21 Strange Deals	**Strand:** Intro to Equivalence & Comparison **Skill:** Comparing with Benchmarks	Some fractions can be compared by looking for a value (like 1/2 or 1) that's close to them or between them.	Comparing other special cases of fractions using benchmarking strategies	Extension of 3.NF.A.3b 3.NF.A.3c 3.NF.A.3d
Lesson 22 Training on Olympus	**Strand:** Adding and Subtracting with the Same Denominator **Skill:** Adding with the Same Denominator	When adding fractions with the same denominator, you can add their numerators.	Adding fractions with the same denominator	4.NF.B.3a 4.NF.B.3b 4.NF.B.3d 4.NF.C.5
Lesson 23 Subterranean Subtraction	**Strand:** Adding and Subtracting with the Same Denominator **Skill:** Subtracting with the Same Denominator	When subtracting fractions with the same denominator, you can subtract their numerators.	Subtracting fractions with the same denominator	4.NF.B.3a 4.NF.B.3b 4.NF.B.3d 4.NF.C.5
Lesson 24 Behold, Zard!	**Strand:** Adding and Subtracting with the Same Denominator **Skill:** Adding and Subtracting Mixed Numbers	To add or subtract mixed numbers, you can work with the whole numbers and fractions separately.	Adding and subtracting mixed numbers with the same denominator, but not requiring regrouping	4.NF.B.3c 4.NF.B.3d 4.NF.C.5

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Lesson 25 Regrouping the Apples	**Strand:** Adding and Subtracting with the Same Denominator **Skill:** Regrouping Mixed Numbers	When adding mixed numbers, you can have a new whole. When subtracting mixed numbers, you may need to borrow a whole.	Adding and subtracting mixed numbers with the same denominator, and also requiring regrouping	4.NF.B.3c 4.NF.B.3d 4.NF.C.5
Lesson 26 The Art of Equivalence	**Strand:** Equivalence & Comparison Algorithms **Skill:** Finding Equivalent Fractions	Multiplying (or dividing) the numerator and denominator by the same value results in an equivalent fraction.	Generating equivalent fractions by multiplying or dividing the numerator and denominator by the same factor	4.NF.A.1
Lesson 27 Dr. Equivallo's Complications	**Strand:** Equivalence & Comparison Algorithms **Skill:** Simplifying Fractions	You can simplify a fraction by dividing its numerator and denominator by a common factor. When you can't do it anymore, the fraction is in its simplest form.	Using common factors to find equivalent fractions with lesser values in the numerator and denominator, and recognizing those with the least values are in "simplest form"	Extension of 4.NF.A.1
Lesson 28 An Improper Bake-Off	**Strand:** Equivalence & Comparison Algorithms **Skill:** Converting Mixed Numbers	Turn mixed numbers into improper fractions by writing the whole as a fraction and adding. Turn improper fractions into mixed numbers by dividing and looking at remainders.	Identifying a pattern and formulating an algorithm for converting a mixed number to an improper fraction	Extension of 4.NF.B.3b
Lesson 29 Treasure Beyond Compare	**Strand:** Equivalence & Comparison Algorithms **Skill:** Comparing Any Fractions	Compare any fractions by making equivalent fractions with the same denominators (or numerators) and compare those.	Comparing fractions with different denominators by using equivalent fractions	4.NF.A.2
Lesson 30 Climbing Mount Bud	**Strand:** Addition & Subtraction Algorithms **Skill:** Add & Subtract When Denominators are Multiples	Add or subtract fractions by finding equivalent fractions with the same denominator.	Adding and subtracting fractions with given denominators that are multiples, requiring at least one equivalent fraction to be generated	5.NF.A.1 5.NF.A.2
Lesson 31 A Balance of Balloons	**Strand:** Addition & Subtraction Algorithms **Skill:** Add and Subtract Any Fractions	You often need to find equivalent fractions for both fractions so they have the same denominator.	Adding and subtracting fractions with given denominators that are not multiples, requiring two equivalent fractions to be generated	5.NF.A.1 5.NF.A.2

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Lesson 32 Ghostly Delays	**Strand:** Addition & Subtraction Algorithms **Skill:** Add and Subtract Any Mixed Numbers	With mixed numbers, add wholes and proper fractions separately. Or convert everything to improper fractions.	Adding and subtracting mixed numbers with different denominators, requiring at least one equivalent mixed number to be generated	5.NF.A.1 5.NF.A.2
Lesson 33 Junior Powers Up	**Strand:** Multiplying Fractions and Wholes **Skill:** Multiplying Fractions by Whole Numbers	Just like with whole numbers, repeated addition works with fractions.	Multiplying a fraction by a whole number, in which the whole number is the operator	4.NF.B.4a 4.NF.B.4b 4.NF.B.4c
Lesson 34 Fractions of Focus Groups	**Strand:** Multiplying Fractions and Wholes **Skill:** Multiplying Whole Numbers by Unit Fractions	When you take a fraction "of" a whole number, you're really multiplying. For unit fractions, the whole number becomes the numerator.	Multiplying a whole number by a unit fraction, in which the fraction is the operator	5.NF.B.4a 5.NF.B.6
Lesson 35 Cutting the Cheese	**Strand:** Multiplying Fractions and Wholes **Skill:** Multiplying Fractions' Whole Numbers by Non-Unit Fractions	First take the unit fraction of the whole number, then multiply by the numerator.	Multiplying a whole number by a non-unit fraction, in which the fraction is the operator	5.NF.B.4a 5.NF.B.6
Lesson 36 Alien Abduction	**Strand:** Multiplying Fractions and Wholes **Skill:** Multiplying Fractions by Whole Numbers	When taking fractions of different whole numbers, compare the products rather than just the fractions or just the whole numbers.	• Multiplying different whole numbers by the same fraction and comparing the products • Identifying a fractional amount of a discrete set of objects, in which the resulting product is a whole number • Recognizing that a specific fraction only represents a fixed value on the number line (relative to the unit 1), but can be used to represent different values when multiplied by different whole numbers	5.NF.B.5a 5.NF.B.6
Lesson 37 Camp Wicked	**Strand:** Multiplying Fractions and Wholes **Skill:** Area of a Rectangle with a Fractional Side Length	Another way to visualize multiplication of fractions is to find the area of a rectangle.	Relating multiplication and the area formula for rectangles to determine the area when one side has a fractional length	5.NF.B.4b 5.NF.B.6

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Lesson 38 Commutative Escape	**Strand:** Multiplying Fractions and Wholes **Skill:** Multiplicative Commutativity	Whether you take a whole number of copies of a fraction, or take that fraction "of" the whole number, you get the same results. Just what you'd expect from multiplication!	• Recognizing that the commutative property of multiplication still holds when one of the factors is a fraction • Relating the commutative property of multiplication involving fractions to various equivalent expression and the meanings of numerators and denominators	Extension of 5.NF.B.4b 5.NF.B.6
Lesson 39 Downsizing Olympus	**Strand:** Multiplying Fractions by Fractions **Skill:** Multiplying Unit Fractions	You can multiply fractions by slicing a rectangular area in different directions. And with unit fractions, you can multiply the denominators.	Multiplying a unit fraction by a unit fraction, and relating to fair sharing and area models	5.NF.B.4a 5.NF.B.4b 5.NF.B.6
Lesson 40 Lunch Quest	**Strand:** Multiplying Fractions by Fractions **Skill:** Multiplying Any Fractions (Part 1)	You can multiply any fractions by slicing an area in different directions. It turns out that you can multiply the numerators together and multiply the denominators together.	Multiplying any two fractions, and relating to area models	5.NF.B.4a 5.NF.B.5a 5.NF.B.6
Lesson 41 Marshmallow Mayhem	**Strand:** Multiplying Fractions by Fractions **Skill:** Multiplying Any Fractions (Part 2)	You can multiply any fractions by slicing an area in different directions. It turns out that you can multiply the numerators and multiply the denominators.	• Multiplying any two fractions, and relating to a standard algorithm • Applying the commutative property of multiplication to products involving any two fractions • Recognizing that the product of a non-unit fraction, a/b, and any number is also a multiple of 1/b	5.NF.B.4a 5.NF.B.5a
Lesson 42 Maritime Mix-Up	**Strand:** Multiplying Fractions by Fractions **Skill:** Multiplying Mixed Numbers	A good way to multiply mixed numbers is to convert them into improper fractions and then multiply.	• Multiplying a mixed number and any other number, and relating to area models and a standard algorithm • Relating multiplication by a mixed number to the distributive property of multiplication over addition	Extension of 5.NF.B.4a 5.NF.B.5a 5.NF.B.5b

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Lesson 43 Bathrooms of Olympus	**Strand:** Multiplying Fractions by Fractions **Skill:** Multiplying by 1	Equivalent fractions are really equivalent because going from one to the other is the same as mulitplying by 1.	• Recognizing that the identity property of multiplication still holds when the other factor is a fraction or mixed number • Applying the identity property of multiplication to products involving fractions equivalent to 1, and recognizing the product and the other factor as equivalent fractions	5.NF.B.5b 5.NF.B.6
Lesson 44 Interdimensional Road Trip	**Strand:** Multiplying Fractions by Fractions **Skill:** Multiplying Gives Smaller or Larger Values	Multiplying by a proper fraction results in a smaller value, while multiplying by an improper fraction results in a greater value.	• Relating the relative size of a product to one factor when the other factor is a fraction acting as the operator, based on the relative size of the operator to the unit 1 • Interpreting multiplication by a fraction as a series of scaling operations on the other factor	5.NF.B.5b 5.NF.B.6
Lesson 45 Division is Bazaar	**Strand:** Dividing Fractions **Skill:** Partitive and Quotitive Division	You can divide into a number or parts, or set the size of the parts. Either way you get the same result.	Dividing a fraction by a whole number, relating to fair sharing	3.OA.A.2 3.OA.A.3 3.OA.A.4 3.OA.B.6
Lesson 46 Wicked Arts and Crafts	**Strand:** Dividing Fractions **Skill:** Dividing Fractions by Whole Numbers	Dividing by a whole number is the same as multiplying by 1 over that number.	Relating the two models for division — partitive and quotitive — to interpret quotients involving fractions, especially as divisors	5.NF.B.7a 5.NF.B.7c
Lesson 47 Unidentified Fractional Objects	**Strand:** Dividing Fractions **Skill:** Dividing Whole Numbers by Unit Fractions	Dividing a whole number by a unit fraction is the same as multiplying by the denominator.	Dividing a whole number by a unit fraction, relating to a quotitive division model	5.NF.B.7b 5.NF.B.7c
Lesson 48 Real Gods: Where Are They Now?	**Strand:** Dividing Fractions **Skill:** Dividing Fractions with a Common Denominator	Dividing fractions with a common denominator is the same as dividing their numerators.	Dividing a whole number by a non-unit fraction, relating to a quotitive division model	6.NS.A.1
Lesson 49 The Great and Powerful Div	**Strand:** Dividing Fractions **Skill:** Dividing Any Fractions (Quotitive)	One way to divide fractions with different denominators is to first find equivalent fractions with a common denominator, and then divide those equivalent fractions. The quotient will be the same.	Dividing any fraction by a non-unit fraction, relating to a quotitive division model and a standard algorithm	6.NS.A.1

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Lesson 50 Kayla's Big Hike	**Strand:** Dividing Fractions **Skill:** Dividing by Unit Fractions (Partitive)	Dividing by a fraction with a numerator of 1 is the same as multiplying by the denominator.	Dividing any fraction by a unit fraction, relating to a partitive division model	6.NS.A.1
Lesson 51 Grand Flipping Finale	**Strand:** Dividing Fractions **Skill:** Dividing Any Fractions (Partitive)	When dividing by a fraction, multiply by the denominator and divide by the numerator. In other words, flip the second fraction and multiply!	Dividing any fraction by a non-unit fraction, relating to a partitive division model and a standard algorithm	6.NS.A.1

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