

### **Program Overview and Sample Lessons**



Teachers are the most important factor in student learning.

That's why every Standards Plus Lesson is directly taught by a teacher.

#### **Standards Plus materials include:**

- A printed Teacher Edition
- A printed Student Edition
- Online access to the Standards Plus Digital Platform
- An Intervention Program Printable Tier 2 & 3 Intervention Lessons

## **Standards Plus Works in Any Setting:**



- Teachers directly teach lessons to the students in-class **or** in a virtual setting.
- Students complete the lessons in their printed student edition **or** respond in the Standards Plus Digital Platform.

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**TEACHERS** are the most important factor in student learning.



**DIRECT INSTRUCTION** lessons are proven to foster the most significant gains in student achievement.



**DISCRETE LEARNING TARGETS** provide easily understood instruction that allow students to retain information.



**MULTIPLE EXPOSURES TO EACH STANDARD/SKILL** Skills are presented in four to eight lessons, providing students multiple opportunities to practice and retain information.



**IMMEDIATE FEEDBACK** after every lesson provides the most powerful single modification that enhances student achievement.



**FORMATIVE ASSESSMENTS** are proven to be highly effective in providing information that leads to increased student achievement.



#### **IMMEDIATE INTERVENTION**

Provides scaffolded instruction to assist students in mastering the standards.



#### **BUILT ON RESEARCH AND BACKED BY EVIDENCE**

All Standards Plus lessons are designed according to educational research and meet ESSA evidence-based guidelines.

# **Standards Plus Includes**

#### Grade Level Lessons and Assessments

136 Lessons and 34 Assessments (DOK 1-2)

Students learn essential grade level skills with targeted 15-20 minute lessons. Brief formative assessments are provided to monitor student progress.



#### Integrated Projects 3 Projects (DOK 4)

Integrated projects incorporate standards from multiple topics and require that students plan, synthesize information, and produce present high quality products. These are long-term projects that will be completed during multiple class sessions.

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# Teach a Grade Level Concept with Four Concise Lessons





### Assessments

Use the assessments to identify students' understanding of the concepts taught in the lesson set and identify students for Standards Plus Intervention.



**Print Assessment** 

**Digital Assessment** 

Assessments can be completed in the student edition or online in the Standards Plus Digital Platform.

When students take the assessment online, the platform will create groups of students that scored below 60% and recommend tier 2 & tier 3 intervention lessons.

# **Tier 2 & Tier 3 Intervention**

These lessons are for students that need more support and are available to print in the Standards Plus Digital Platform.



Our scaffolded intervention lessons teach the prerequisite skills necessary to master grade-level standards.

## Performance Lessons (DOK 3)

These lessons require students to apply what they have learned using reasoning, planning, and knowledge gained from the prior lessons.

#### Many standards are assessed at this level of rigor on state assessments.



# **Integrated Projects** (DOK 4)

Integrated Projects incorporate standards from many topics and are completed during multiple class sessions.



# Integrated Projects require students to:

Plan

Synthesize information

Produce high-quality products

Present their findings

### The Integrated Projects must be taught, not assigned, and completed in class.

- Integrated projects teach students how to complete high-level projects.
- Each project requires students to adapt their knowledge to real-world situations.
- Integrated projects provide opportunities to demonstrate a deep understanding of the knowledge and skills students have learned in prior lessons.



# **EL Support**











# Standards Plus materials are designed to meet the needs of English Learners by:

- Explicitly targeting the standards
- Emphasizing academic vocabulary
- Accelerating language development
- Providing immediate feedback to students
- Improving student confidence

Explore our EL Support Portal to view additional resources that provide a greater level of support for English Learners.

Visit the EL Support Portal at **www.standardsplus.org/el-support** 





### Standards Plus Mathematics Grade 7

### **Lesson Index**

The lesson index lists the standard, focus, and DOK level for every Standards Plus lesson.

Lessons that address the high impact standards are highlighted. These lessons are included and can also be purchased separately in our High Impact Standards Program.



Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level	
1	Unit Rate		30	3		
2	Unit Rate	7.RP.1: Compute unit rates	32	4		
3	Unit Rate	including ratios of lengths, areas and other quantities measured in like or	34	5	1-2	
4	Unit Rate	different units.	36	6		
A1	Assessment – Unit Rate		38	7		
	Ratios and Proportional Relationships Performance	Lesson 1 – Using Unit Rates	40	9-10	3	
5	Proportional Relationships	7.RP.2a: Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	44	11		tandards
6	Proportional Relationships	7.RP.2a, 7.RP.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	46	12	1_2	act St
7	Proportional Relationships		48	13-14	1-2	dul
8	Proportional Relationships		52	15-16		Higł
A2	Assessment – Proportional Relationships		56	17		
9	Proportional Relationships		58	19		
10	Proportional Relationships	/.ĸr.za, /.ĸr.zo	60	20-21		
11	Multistep Ratio Problems	7.RP.3: Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest	64	22	1-2	
12	Multistep Ratio Problems	tax, markups & markdowns, gratuities & commissions, fees, percent increase & decrease, percent error.	66	23		
A3	Assessment – Proportional Relationships	7.RP.2a, 7.RP.2b, 7.RP.3	68	24		
13	Multistep Ratio Problems		70	25		
14	Multistep Ratio Problems	7.RP.3	72	26		
15	Simple Interest		74	27	1-2	
16	Multistep Ratio Problems		76	28		
A4	Assessment – Simple Interest		78	29		

#### **Ratios and Proportional Relationships**

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level
17	Sales Tax & Gratuities		80	31	
18	Sales Tax & Gratuities		82	32	
19	Discount	7.RP.3	84	33	1-2
20	Discount		86	34	
A5	Tax, Gratuity, & Discount		88	35	
21	Markup		90	37	
22	Markup		92	38	
23	Commission & Fees	7.RP.3	94	39	1-2
24	Commission & Fees		96	40	
A6	Commission & Fees		98	41	
25	Percent Increase/Decrease		100	43	
26	Percent Increase/Decrease		102	44	
27	Percent Error	7.RP.3	104	45	1-2
28	Percent Increase, Decrease, & Error		106	46	
A7	Markdown, Markup, Commission & Percent of Change		108	47	
Ratios and Proportional Relationships Performance Lesson 2 – Exploring Proportionality			110	49-52	3

#### **Ratios and Proportional Relationships**

#### The Number System

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level	
1	Opposite Quantities on the Number Line	7.NS.1a: Describe situations in which opposite quantities combine to make 0. For example, a	120	53		
2	Opposite Quantities on the Number Line	hydrogen atom has 0 charge because its two constituents are oppositely charged.	122	54		
3	Adding Rational Numbers on the Number Line	7.NS1.b: Understand $p + q$ as the number located a distance $ q $ from $p$ , in the positive or negative direction depending on whether $q$ is	124	55	1-2	
4	Adding Rational Numbers on the Number Line	positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	126	56		ndards
A1	Adding Rational Numbers	7.NS.1a, 7.NS.1b	128	57		t Stai
5	Adding Quantities on the Number Line	7.NS.1b	130	59		mpac
6	Subtraction and Additive Inverses	7.NS1c: Understand subtraction of rational numbers as adding the	132	60		l igh I
7	Absolute Value on a Number Line	Show that the distance between two rational numbers on the number line	134	61	1-2	-
8	Absolute Value in Real-World Contexts	is the absolute value of their difference, and apply this principle in real-world contexts.	136	62		
A2	Assessment – Adding and Subtracting Rational Numbers	7.NS.1b, 7.NS.1b	138	63		
9	Adding and Subtracting Integers		140	65		
10	Adding and Subtracting Integers		142	66		
11	Adding and Subtracting Integers	7.NS.1d: Apply properties of operations as strategies to add and subtract rational numbers.	144	67	1-2	
12	Adding and Subtracting Decimals		146	68		
A3	Adding and Subtracting Decimals		148	69		
13	Adding and Subtracting Decimals		150	71		
14	Adding and Subtracting Decimals	]	154	72		
15	Adding and Subtracting Decimals	7.NS.1d	156	73	1-2	
16	Adding and Subtracting Decimals		160	74		
A4	Assessment – Adding and Subtracting Decimals	1	162	75		
The	The Number System Performance Lesson 1 – Adding and Subtracting Rational Numbers			77-78	3	

#### The Number System

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level	
17	Multiplying Integers with Tiles	7.NS.2a: Understand that	168	79		
18	Multiplying Integers on a Number Line	multiplication is extended from fractions to rational numbers by requiring that operations continue to	170	80		
19	Integers and the Distributive Property	satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) =	172	81	1-2	
20	Products in Real-World Contexts	1 and the rules for multiplying signed numbers. Interpret products of	174	82		
A5	Assessment – Multiplying Integers	world contexts.	176	83		
21	Decimals and the Distributive Property	7.NS.2a	178	85		
22	Multiplying Fractions	7.NS.2a, 7.NS.2b: Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If $p$ and q are integers, then $-(p/q) = (-p)/q =p/(-q)$ . Interpret quotients of rational numbers by describing real world contexts.	180	86	1-2	ds
23	Dividing Rational Numbers	7 N C 01	182	. 87		andar
24	Dividing Rational Numbers	7.INS.20	184	88		ict Sta
A6	Assessment – Multiplying and Dividing Rational Numbers	7.NS.2a, 7.NS.2b	186	89		Impa
25	Multiplying Rational Numbers	7.NS.2c: Apply properties of	188	91		High
26	Dividing Rational Numbers	and divide rational numbers.	190	92		
27	Converting Rational Numbers to Decimals	7.NS.2d: Convert a rational number to a decimal using long division; know	192	93	1-2	
28	Converting Rational Numbers to Decimals	number terminates in 0s or eventually repeats.	194	94		
A7	Assessment – Multiplying, Dividing and Converting Rational Numbers	d 7.NS2c, 7.NS2d <b>196</b>		95		
The Number System Performance Lesson 2 – Multiplying and Dividing Rational Numbers			198	97-99	3	
29	Solving Problems Involving the Four Operations with Rational Numbers		202	100		
30	Solving Problems Involving the Four Operations	7.NS3: Solve real-world and mathematical problems involving the	204	101	1-2	
31	Solving Real-World Problems	four operations with rational numbers.	206	102	. 2	
32	Solving Real-World Problems	-	208	103		

#### Integrated Project 1: Launching Your Business

**Overview:** In this project, the students will create a business plan. They will determine a business that they would like to have, research and determine prices for their goods or services, and determine the percent of profit they would expect to make. They will create a spreadsheet that shows their expected activity in the first year of operation.

**Product:** The students will create a plan to launch a new business. They will present their plans to the class.

Integrates the following standards: Ratios and Proportional Relationships and The Number System

Student Edition Pages: 105-108

Teacher Edition Pages: 213-224

**DOK Level 4** 

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Expressi	ons	and	Ea	uations
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Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level	
1	Simplify Algebraic Expressions		232	109		
2	Generate Equivalent Expressions	7 FF 1: Apply properties of	234	110		
3	Generate Equivalent Expressions	operations as strategies to add, subtract, factor, and expand linear	236	111	1-2	
4	Generate Equivalent Expressions	expressions with rational coefficients.	238	112		
A1	Assessment – Generating Equivalent Expressions		240	113		
5	Factor Generate Equivalent Expressions	7 55 1	242	115		
6	Factor Generate Equivalent Expressions	7.EE.I	244	116		dards
7	Expressions in Problem Situations	7.EE.2: Understand that rewriting an expression in different forms in a problem context can shed light on the problem and	246	117	1-2	Stan
8	Expressions in Problem Situations	how the quantities in it are related. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."	248	118		mpact
A2	Assessment – Use Properties of Operations to Generate Equivalent Expressions	7.EE.1 & 7.EE.2	250	119		High I
	Expressions and Equations Performance Lesson 1 -	- Working with Expressions	252	121-122	3	
9	Solve Multi-Step Real-Life Problems	7.EE.3: Solve multi-step real-life and mathematical problems posed with	256	123		
10	Solve Multi-Step Real-Life Problems	positive and negative rational numbers in any form (whole numbers, fractions, and decimals) using tools	258	124		
11	Solve Multi-Step Real-Life Problems	strategically. Apply properties of operations to calculate with numbers	260	125	1-2	
12	Solve Multi-Step Real-Life Problems	appropriate; and assess the reasonableness of answers using	262	126		
A3	Assessment – Solving Multi-Step Real-Life Problems	mental computation and estimation strategies.	264	127		
13	Solving Multi-Step Real-Life Problems		266	129		
14	Solving Multi-Step Real-Life Problems		268	130		
15	Solving Multi-Step Real-Life Problems	7.EE.3	270	131	1-2	
16	Solving Multi-Step Real-Life Problems		272	132		
A4	Assessment – Solve Multi-Step Real-Life Problems		274	133		

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level	
17	Solve Equations in the Form of $px + q = r$	7 EE 4a: Solve word problems	276	135		
18	Solve Equations in the Form of $p(x+q) = r$		278	136		
19	Solve Word Problems	leading to equations of the form $px + q = r$ and $p(x + q) = r$ , where $p$ , $q$ , and	280	137	1-2	
20	Solve Word Problems	r are specific rational numbers.	282	138		st
A5	Assessment – Solve Linear Equations and Word Problems		284	139		ndarc
	Expressions and Equations Performance Le	sson 2 – Equations	286	141-142	3	ct Sta
21	Solve Word Problems	7.EE.4a 7.EE.4b: Solve word problems leading to inequalities of the form px	290	143		lmpa
22	Solve Linear Equations and Word Problems		292	144		High
23	Solve and Graph Solutions to Inequalities		294	145	1-2	
24	Solve and Graph Solutions to Inequalities	r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	296	146		
A6	Assessment – Solve Equations and Inequalities	7.EE.4a and 7.EE.4b	298	147		
25	Solve Word Problems Leading to Inequalities		300	149		
26	Solve Word Problems Leading to Inequalities		302	150		
27	Solve Word Problems Leading to Inequalities	7.EE.4b	304	151	1-2	
28	Solve Word Problems Leading to Inequalities	-	306	152		
A7	Assessment – Solve Word Problems Leading to Inequalities		308	153		
Expressions and Equations Performance Lesson 3 – Inequalities			310	155-156	3	

#### **Expressions and Equations**

#### **Statistics and Probability**

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level
1	Understanding Probabilities	7.SP.5: Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood A prohability near 0 indicates an	330	159	
2	Understanding Probabilities	unlikely event, a probability area of indicates and unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	332	160	
3	Experimental Probabilities	7.SP.6: Approximate the probability	334	161	1-2
4	Experimental Probabilities	on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given	336	162	
A1	Assessment – Theoretical and Experimental Probability	the probability.	338	163	
5	Determine Probabilities	<ul> <li>7.SP.7a: Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</li> <li>7.SP.7b: Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.</li> </ul>	340	165	
6	Determine Probabilities		342	166	
7	Understanding Probabilities		344	167-168	1-2
8	Understanding Probabilities		348	169	
A2	Assessment – Determining Probability	7.SP.7a-b	350	170	
9	Finding Probabilities of Compound Events	7.SP.8a: Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	352	171	
10	Finding Compound Probabilities	7.SP.8a-b: Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams.	354	172	
11	Finding Compound Probabilities	7.SP.8b	356	173	1-2
12	Using a Simulation	7.SP.8c: Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with tyme A blood?	360	174	
A3	Finding Compound Probabilities	7.SP.8a, 7.SP.8b, and 7.SP.8c	364	175	
	Statistics and Probability Performance Lesson 1	– Exploring Probability	366	177-178	3

#### Integrated Project 2: In the Real World...

**Overview:** In this project, the students will analyze a report of income over a year for a painter. They will write expressions, equations, and inequalities to interpret the fluctuations and provide a written explanation of the fluctuations. They will analyze the information to determine how to influence future earnings and estimate those earnings. The students will share their findings in peer groups. Since this is a learning activity, all components will be completed in class.

**Product:** The students will analyze a scenario of income over a year and write expressions, equations, and inequalities to interpret fluctuations. The students will analyze the information to estimate future income under given circumstances.

#### Integrates the following standards: Expressions and Equations

#### Student Edition Pages: 157-158

Teacher Edition Pages: 313-321 DOK Level 4

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level
13	Sample Population	7.SP.1: Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	370	179	
14	Making Inferences of a Population	7.SP.2: Use data from a random sample to draw inferences about a	372	180	1-2
15	Making Inferences of a Population	characteristic of interest. Generate multiple samples (or simulated	374	181	
16	Evaluate Multiple Samples	the variation in estimates or predictions.	376	182	
A4	Assessment – Random Sampling and Drawing Inferences	7.SP.1, 7.SP.2	380	183	
17	Assess Overlap Between Data Distributions	7.SP.3: Informally assess the degree of visual overlap of two numerical data distributions with similar	382	185-186	
18	Assess Overlap of Data Distributions	variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	386	187-188	
19	Inferences about Two Populations	7.SP.4: Use measures of center and	390	189-190	1-2
20	Inferences about Two Populations	measures of variability for numerical data from random samples to draw informal comparative inferences	394	191	
A5	Assessment – Inferences about Two Populations	about two populations.	396	192	
	Statistics and Probability Performance Lesson 2 – Exploring Statistics				3

#### Integrated Project 3: Powerful Words

**Overview:** In this project the students will select four different sources of print (e.g., magazines, newspapers, comic books, novels, graphic novels, math textbooks, history books, etc.). They will sample three different sets of 100 words within each source to find the average word length. They will analyze and display their findings. Then they will predict the average word length in materials similar to those they have sampled. They will determine the probability of similar word lengths and test their theories. They will select the results of one print source and the similar source to which it was compared to share with the class.

**Product:** The students will analyze four different sources of print to determine the average word length in each. They will determine the probability of finding a similar average word length in similar materials. They will test their theories and report the results.

#### Integrates the following standards: Statistics and Probability

Student Edition Pages: 196-197

Teacher Edition Pages: 403-411

**DOK Level 4** 

#### Geometry

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level
1	Scale Factors		418	199	
2	Similar Figures	7.G.1: Solve problems involving scale	420	200	
3	Computing Lengths and Area of Scale Drawings	including computing actual lengths and areas from a scale drawing and	422	201	1-2
4	Reproduction of Scale Drawings	reproducing a scale drawing at a different scale.	424	202-203	
A1	Assessment – Similarity and Scale Drawings		428	204	
	Geometry Performance Lesson 1 – D	raw It to Scale	430	205-207	3
5	Classification of Triangles		434	208	
6	Constructing Triangles Using Angles	7.G.2: Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given	436	209	
7	Constructing Triangles Using Side Lengths	conditions. Focus on constructing triangles from three measures of angles or sides, poticing when the	438	210	1-2
8	Determining Unique Triangles	triangle, more than one triangle, or no triangle, more than one triangle, or no	440	211	
A2	Assessment – Constructions		442	212	
9	Planes and Three-Dimensional Figures	7.G.3: Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular provermide	444	213	
10	Relationship of Pi	7.G.4: Know the formulas for the area	446	214	
11	Circumference of a Circle	them to solve problems; give an informal derivation of the relationship	448	215	1-2
12	Circumference of Circles in Real-Life	between the circumference and area of a circle.	450	216	
A3	Slicing 3-Dimensional Figures and Circumference of a Circle	7.G.3 and 7.G.4	452	217	
	Geometry Performance Lesson 2 – Two- and Th	ree-Dimensional Figures	454	219-221	3
13	Area of a Circle	7.6.4	458	222	
14	Areas of Circles in Real-Life	7.G.4 –	460	223	
15	Complimentary and Supplementary Angles	7.G.5: Use facts about supplementary, complementary, vertical and adjacent angles in a	462	224	1-2
16	Vertical Adjacent Angles	multi-step problem to write and solve simple equations for an unknown angle in a figure.	464	225	
A4	Assessment – Circular Area and Angles	7.G.4 and 7.G.5	466	226	

#### Geometry

Lesson	Focus	Standard(s)	TE Ed. Page	St. Ed. Page	DOK Level
17	Finding Unknown Angles		468	227	
18	Unknown Angles in Real-World	7.0.5	470	228	
19	Area of Parallelograms	7.G.6: Solve real-world and mathematical problems involving	472	229	1-2
20	Area of Triangles	and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	474	230	
A5	Assessment – Finding Unknown Angles and Area	7.G.5, 7.G.6	476	231	
	Geometry Performance Lesson 3 – All	About Angles	478	233	3
21	Area of Trapezoids		480	234	
22	Area of Composite Figures		482	235	
23	Area in Real-World Contexts	7.G.6	484	236	1-2
24	Surface Area of Prisms and Pyramids		486	237	
A6	Assessment – Area in Real-World Contexts		488	238	
25	Surface Area of Cubic Figures		490	239	
26	Surface Area in Real-World Context		492	240	
27	Volume	7.G.6	494	241	1-2
28	Volume in Real-World Contexts		496	242	
A7	Surface Area and Volume		498	243	







# Sample Lessons



Lesson	Focus	Standard(s)
1	Unit Rate	
2	Unit Rate	7.RP.1: Compute unit rates associated with ratios of
3	Unit Rate	fractions, including ratios of lengths, areas and other quantities measured in like or different units.
4	Unit Rate	
A1	Assessment – Unit Rate	

### **Sample Teacher Lesson Plan**

	Standards Plus <sup>®</sup> – Mathematics – Grade 7
Domain: Ratio	s & Proportional Relationships <u>Focus</u> : Unit Rate <u>Lesson</u> : #
Standard: 7.RP. quantities measu	<ol> <li>Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other ired in like or different units.</li> </ol>
Lesson Obje fractional am	ective: Students will learn how to compare two ratios and calculate unit rate using ounts.
Introduction	: "Today we will find unit rate using complex fractions."
Instruction: more fraction	"The unit rate is the rate for one item. A complex fraction is a fraction that has one or s in the numerator and / or denominator. Ratios can compare fractional quantities to 1
other fraction	al quantities. Look at Example A. I am going to represent this ratio as: $\frac{2}{\frac{2}{3}}$ yards per
hour. This ra	tio is an example of a <i>complex fraction</i> because it has a fraction in the <i>numerator</i> and 1
another fract	ion in the <i>denominator</i> . I know that $\frac{\overline{2}}{2}$ mathematically means $\frac{1}{2}$ divided by $\frac{2}{3}$ .
Following the	e rule for division of fractions, first write $\frac{1}{2} \div \frac{2}{3}$ . Next I rewrite the division sign as a
multiplication	sign and invert the fraction to the right of the sign and write $\frac{1}{2} \times \frac{3}{2}$ . Then I multiply the
numerators,	and I multiply the denominators $\frac{1}{2} \times \frac{3}{2} = \frac{3}{4} + \frac{3}{4} + \frac{\text{square yards}}{1 \text{ hour}}$ . Therefore, Jose can sweep
$\frac{3}{4}$ of a squar	e yard in one hour (square yards per hour). The label of square yards per hour is a
combination	of the two labels <i>square yards</i> and <i>one hour</i> from the initial problem.
Guided Prac student volur division prob division and o be on this pro-	tice: "Let's look at Example B. Write the complex fraction on your worksheet. (Select a teer to write that fraction on the board.) Rewrite your complex fraction as a fractional em. (Select another student to share their written response.) Perform the indicated compute the resulting answer." Ask another student to identify the unit label that should oblem.
Independent students wor	t <b>Practice:</b> Follow the same process to complete the problems on your worksheet. As k, continue to monitor their progress and answer questions.
Review: Wh	en students are finished, go over the answers.
Closure: "To	oday we found unit rates using complex fractions."
Answers:	1. White rabbit: $\frac{7}{10}$ ; Brown rabbit: $\frac{1}{2}$ ; White rabbit travels faster because he/she covered more distance.
	<ol> <li>Kristi runs a lap in 6 minutes; Marie runs a lap in 7 minutes. Kristi is the faster runner because it took her less time to run 1 lap.</li> </ol>

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Each lesso

### Sample Student Lesson

	Student Page
	Standards Mus <sup>×</sup> – Watnematics – Grade /
	<u>Standard</u> : 7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
	<b>Directions:</b> Fill in the boxes with the correct number.
	<b>Example A:</b> Jose can sweep $\frac{1}{2}$ of a square yard in $\frac{2}{3}$ of an hour. What is his speed in terms of
	square yards per hour? $ \square = \square \div \square = \square \bullet \square = \square \frac{square yards}{1 hour} $
	<b>Example B:</b> A garden hose fills $\frac{4}{9}$ of a gallon bucket in $\frac{2}{3}$ minutes. What is the flow rate in gallons
	per minute?
ach lesson	
also has	
an easy to	
follow	Directions: Find the correct answer to each question and explain your answer.
student	1. The white rabbit travels $^2$ miles in $^4$ days. The brown rabbit travels 3 miles in 6 days. Which
page.	rabbit travels at the faster pace? Explain how you know.
	2. It takes Kristi 15 minutes to run $2\frac{1}{2}$ laps. It takes Marie, her friend, $3\frac{1}{2}$ minutes to run $\frac{1}{2}$ of a lap. Explain which girl runs the fastest lap and how you can tell.
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# Sample Digital Teacher Lesson Plan (3rd Grade Math Sample)

	à	
Digital	Standards Plus     GRADE 3       DIGITAL     MATHEMATICS   Divide Numbers	
	Standard(s)	
versions	Lesson Objective	
of every	The students will interpret products of whole numbers by drawing the number of grouped objects that create a set, recording the repeated-addition sentence, and writing the multiplication symbol for the problem.	
lesson and	Introduction	
	"Today we will continue to learn about <i>multiplication</i> and how a total number of objects can be determined by combining a specific number of groups with the same number of objects in each group."	
assessment	Instruction	
are included.	Guided Practice	
	Independent Practice	
	Baview	
	Answers	
	Teacher E1 E2 1 2 Noxt	

#### Instruction

"We have learned that when we have groups of objects and we want to determine the total number of objects, we can *multiply*. We *multiply* by adding the same number over and over again. Look at Example 1. Maria has 4 boxes of limes. Each box has 4 limes in it. To find out the total number of limes Maria has, we add 4 + 4 + 4 + 4. We can also write this  $4 \times 4$ . The product is 16 limes. *Multiplication* lets us add more quickly and efficiently."

#### **Guided Practice**

~

 $\mathbf{\wedge}$ 

"Let's look at some problems involving groups of objects. Listen as I read the problem for Example 2. Juan has three groups of glass marbles. Each group has five marbles. What is Juan's total number of glass marbles? Now we will draw the problem to show each group of marbles. As I draw each group of marbles, you draw each group on your sheet. We will record the number of marbles in each group on the lines to show repeated addition of the number of objects in each group. The first group has 5 marbles so we will write a 5 in the blank. (Continue recording the number 5 in each blank:  $5 + 5 + 5 = 3 \times 5 = 15$ . Next we will show that the two factors, or numbers, are multiplied. We will use an x to show it is multiplication in the blank."

Each section of the digital lesson plan is expandable.

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# Sample Digital Student Lesson (3rd Grade Math Sample)

Standards Plus DIGITAL	GRADE 3 MATHEMATICS	Domain: Operations & Algebraic Thinking Lesson: #2 Focus: Products of Whole Numbers	
Directions: Read each proble sentence, the multiplication sy sentence. Make sure you write	n below. Draw a picture of the ob mbol, and the total number of obj the product on the last line.	Standard(s) ects in groups. Record the repeated-addition ects on the line to complete each number	Mimics the functionality
Example 2: Juan has three groups of glass marbles? Finish the picture by	marbles. Each group has five ma putting the marbles in the circles.	bles. What is Juan's total number of glass	of online state test
			items
	J J	Clear	
	+ + = 3	5= product	



Students respond online in the digital lessons. In this example students draw marbles to show repeated additon and type below.

### **Sample Teacher Lesson Plan**

	Teacher Lesson Plan
	Standards Plus <sup>®</sup> – Mathematics – Grade 7
	Domain:         Ratios & Proportional Relationships         Focus:         Unit Rate         Lesson:         #3           Standard:         7.RP.1:         Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.         Lesson:         #3
	<b>Lesson Objective:</b> Students will use their knowledge of unit rates and unit price to find the total number of items or the total cost.
	Introduction: "Today we will use your knowledge of unit rate and unit price information to find out the total amount for more than 1 item."
	Instruction: "Let's look at Example A. Write the solution process on your paper as I write it on the board. The first thing I need to calculate is the unit rate. I calculate unite rate by setting up the ratio for the relationship
	between seconds and yards by writing the complex fraction $\frac{2\frac{1}{6}}{7\frac{1}{2}}$ seconds. After writing the complex fraction, I
	$\frac{1}{2}$ yang
Each lesson Ian includes	will rewrite the mixed numbers as fractions $\frac{\frac{13}{6}}{\frac{15}{2}}$ . Next I will change the division sign to a multiplication sign
ne following	$\frac{13}{6} \cdot \frac{2}{15}$ . I will multiply the numerators and then multiply the denominators $\frac{26}{90}$ . I can simplify $\frac{26}{90}$ to $\frac{13}{45}$ .
airect	divide $13 \div 45$ and get $0.2\overline{8}$ and round to 0.3. 0.3 is the unit rate, the number of seconds it takes Alexis to run 1 yard. This is not the final answer. I'll reread the question which asks me to find how long it will take for Alexis to
omponents:	run 50 yards. If it takes Alexis 0.3 seconds to cover 1 yard and she has to travel for 50 yards, then it will take her 0.3•50 seconds to travel the 50 yards. It will take Alexis 15 seconds to travel 50 yards."
troduction	Guided Practice: "Look at Example B, what information do we need to find first? (The unit rate.) Write the unit
Instruction	rate ratio in fraction form $\left  \frac{110 \text{ miles}}{4\frac{2}{2} \text{ gallons}} \right $ . How do we simplify the resulting complex fraction? (Multiply the
Guided	110
Practice	numerator by the reciprocal of the denominator.) Find the unit rate. $\left(\frac{1}{\frac{14}{14}} = \frac{110}{1} \cdot \frac{3}{14} = \frac{330}{14} = 23.6 \text{ mpg}\right)$ . Nathan
dependent	3 can drive 23.6 miles ner callon of cas. (Select another student to evolain the next sten in the solution process:
Practice	multiply the 23.6 miles per 1 gallon of gas times 12 gallons of gas). Perform the operation on your worksheet. (Choose a student to share their answer: 283.2 miles. Examples A and B were solved by using the following
Review	process: <i>Total Cost = Unit Price • Number of Items</i> .) Write the total cost formula on your worksheet in the bottom margin."
Closure	Independent Practice: "Follow the same process to complete the problems on your worksheet."
	Review: When students are finished, go over the correct answers.
	<b>Closure:</b> "Today you used your knowledge of unit rate and unit price to find the total number of items or the total cost. One way to find the total amount of an item is to first find the unit rate and multiply that answer by how many items there are in the problem."
	Answers:         1. 125 pgs/hr; 300 pgs           2. Store A: \$1.50/lb.; Store B: \$1.64/lb; \$45.75 (from Store A)
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### Sample Student Lesson



### **Sample Teacher Lesson Plan**

Demain: Det	Standards Plus <sup>®</sup> – Mathematics – Grade /	Lassan
Domain: Rati Standard: 7 R	OS & Proportional Relationsnips <u>Focus</u> : Unit Rate	Lesson: and other
quantities mea	sured in like or different units.	
•		
Lesson Obje	ective: Students will transform and convert unit rates.	
Introduction	• "Today we will transform unit rates to complete measurement conversions. In ord	er to perform
the conversion	ons in this lesson, we will be required to use multiple unit rates within each problem."	'
	· · · · · · · · · · · · · · · · · · ·	
Instruction:	"Let's look at Example A together. I am going to convert 6 km. / hour to meters / se	cond using
three otepo.	(6 km)	
<ul> <li>Step 1: I</li> </ul>	'll write the initial problem in fraction form $\left(\frac{3 \text{ Km}}{1 \text{ hr}}\right)$ .	
• Step 2 <sup>·</sup>	will use the measurement conversion table to select the appropriate measurement	unit In this
case, I n	eed to select a conversion rate that will involve kilometers, so the kilometer in the pro-	oblem can be
matham	tically eliminated $\begin{pmatrix} 6 \text{ km} & 1000 \text{ m} \end{pmatrix}$ Since km is equal to 1, the km can be elimin	atad without
mathema	$\frac{1}{1 \text{ m}}$ $\frac{1}{1 \text{ m}$	
	the value of the second s	
cnanging	the value of the equation, resulting in: $\frac{1}{1 \text{ hr}}$ heads to be written in this	s manner so
the km la	bel in the denominator can cancel out the km label in the numerator. Since the final	answer need
to be in t	he form meters, the numerator portion of the conversion has been completed.	
	second .	
• Step 3: 1	Now the term of $\frac{6000 \text{ m}}{1 \text{ br}}$ needs the denominator to be converted to seconds. By ch	ecking the
measure	ment conversion table there is no conversion indicated between hours and seconds:	however. I
	6000 m 1 hr 6000 m 100 m	, 
know tha	t 60 minutes equals 1 hour $\left(\frac{1}{1} \text{ br} \cdot \frac{60 \text{ min}}{60 \text{ min}} = \frac{1}{1 \text{ min}}\right)$ . The last step in t	ne process is
	1 min	
to convei	t the minutes located in the denominator to seconds by multiplying by $\frac{1}{60}$ sec. Sim	plifying,
100 m	1 min 100 m 100 m	
	$\frac{1}{60 \text{ sec}} = \frac{1}{60 \text{ sec}}$ . Performing the indicated calculation $\frac{1}{60 \text{ sec}} = 1.7 \text{ meters/sec.}^{\circ}$	
1 /1		
Guided Prac	tice: "Let's follow the same process to complete Example B. We will be converting	yards per ho
to feet per mi	nute. Which unit measure will be converted first? (Students can convert either the to the hours to minutes (denominator). For ease of consistency, instruct students to	yards to feet
the conversion	on with the numerator.) Review the measurement conversion table and select an ap	plicable
conversion fa	ctor. Remember our goal is to transition from yards to feet. You will use the steps I	modeled."
Guide studer	its through each step.	
Independen	t <b>Practice:</b> Use the steps to complete problems $1 - 2$ from the worksheet. As stude	ents work,
continue to m	nonitor their progress and answer questions.	
Poviow: W/r	en students have finished, ao over the correct answers	
ILEVIEW. WI	en students have inished, go over the correct answers.	
Closure: "To	oday we used the measurement conversion table to transform and convert unit rates	i.
Answers:	1 0.3 centimeters per second	
Allowers.	2. 6.8 inches per foot	

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Each lesson plan includes an answer \_\_\_\_ key

### Sample Student Lesson



### Sample Assessment - Teacher Page

	Standards Plus <sup>®</sup> – Mathematics – Grade 7
Domain: Ratios	& Proportional Relationships <u>Focus</u> : Unit Rate
	Assessment: #1
This asses	sment may be used in the following ways:
• As a f	ormative assessment of the students' progress
• As an	additional opportunity to reinforce the yearbulary concepts, and
• As all	additional opportunity to remove the vocabulary, concepts, and
KHOWI	edge presented in the previous 4 lessons.
Standard:	7.RP.1 Compute unit rates associated with ratios of fractions.
including rat	tios of lengths, areas and other quantities measured in like or
different uni	ts
Procedure:	Read the directions aloud and ensure that students understand
how to resp	ond to each item.
<ul> <li>If you</li> </ul>	are using this as a formative assessment, have the students
compl	ete the evaluation independently.
<ul> <li>If you</li> </ul>	are using this to reinforce instruction, determine the items that will
be co	npleted as guided practice, and those that will be completed as
indepe	endent practice.
Additional	Tips:
<ul> <li>All Sta</li> </ul>	andards Plus assessments are available in an interactive digital
forma	t in the Standards Plus Digital Platform.
<ul> <li>When</li> </ul>	the assessments are administered and scored digitally, the platform
autom	atically creates intervention groups and recommends additional
printa	ble intervention lessons.
You c	an also access the printable intervention lessons from the home
screei	n in the digital platform.
Review: R	eview the correct answers with students as soon as they are
finished.	
A 10 01 10 10 1	1 (7 DD 1) them A: \$1 GO; them D: \$1 GE, them D is the better
Answers:	1. (7.RP.1) Item A. \$1.00, Item B. \$1.00. Item B is the better
	2. (7.RP.1) 62.1 pages
	<ol> <li>(7.RP.1) 62.1 pages</li> <li>(7.RP.1) 3.6 hamburgers per minute</li> </ol>
	<ol> <li>(7.RP.1) 62.1 pages</li> <li>(7.RP.1) 3.6 hamburgers per minute</li> <li>(7.RP.1) 451.5 miles</li> </ol>

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### Sample Assessment - Student Page

	<u>n:</u> Ratios & Propo	ortional Relationship	ssessment: #1	Focus: Unit R
		<u>.</u>		
Direct answe	ons: Find the answ r. (Round all calcul	ver to each of the follo ations to the nearest to	wing problems while working independe enth.)	ently. Circle your
1.	Which is the bette \$1.98?	r buy, Item A, selling a	t $5\frac{2}{3}$ pounds for \$9.52 or Item B, selling	g at $1\frac{1}{5}$ pounds for
2.	Riley reads $35\frac{2}{5}$ r she read each hou	bages of her library bo ur?	ok every $\frac{4}{7}$ of an hour. How many page	ges of her book does
3.	During an eating o	contest, Claire can eat	$2\frac{3}{7}$ of a hamburger in $\frac{2}{3}$ of a minute.	How many hamburger
4.	Dylan can drive 1 gas?	$10\frac{1}{4}$ miles on $3\frac{2}{3}$ gall	ons of gas. How many miles can he tra	vel with 15 gallons of
Use th	e following table for	question 5:		
Use th	e following table for	question 5:	REMENT CONVERSIONS	
Use th	e following table for	<b>QUESTION 5:</b> MEASU LENGTH 1 foot (ft) = 12 inches (in.) 1 yard (yd) = 3 feet 1 yard = 36 inches 1 mile = 1,760 yards 1 mile = 5,280 feet 1 km = 1,000 m 1 m = 100 cm	REMENT CONVERSIONS CAPACITY 1 cup (c) = 8 fluid ounces 1 pint (pt) = 2 cups 1 quart (qt) = 2 pints 1 quart = 4 cups 1 gallon (gal) = 4 quarts WEIGHT 1 pound (lb) = 16 ounces (oz) 1 ton (T) = 2,000 pounds	
Use th	e following table for	question 5: <u>MEASU</u> LENGTH 1 foot (ft) = 12 inches (in.) 1 yard (yd) = 3 feet 1 yard = 36 inches 1 mile = 1,760 yards 1 mile = 5,280 feet 1 km = 1,000 m 1 m = 100 cm	REMENT CONVERSIONS         CAPACITY         1 cup (c) = 8 fluid ounces         1 pint (pt) = 2 cups         1 quart (qt) = 2 pints         1 quart = 4 cups         1 gallon (gal) = 4 quarts         WEIGHT         1 pound (lb) = 16 ounces (oz)         1 ton (T) = 2,000 pounds         TWEEN CUSTOMARY AND METRIC         MEASUREMENT	
Use th	e following table for	MEASU           LENGTH           1 foot (ft) = 12 inches (in.)           1 yard (yd) = 3 feet           1 yard = 36 inches           1 mile = 1,760 yards           1 mile = 5,280 feet           1 km = 1,000 m           1 m = 100 cm           1 yard = 0.914 m           1 foot = 0.305 m           1 inch = 2.54 cm	REMENT CONVERSIONS CAPACITY 1 cup (c) = 8 fluid ounces 1 pint (pt) = 2 cups 1 quart (qt) = 2 pints 1 quart = 4 cups 1 gallon (gal) = 4 quarts WEIGHT 1 pound (lb) = 16 ounces (oz) 1 ton (T) = 2,000 pounds TWEEN CUSTOMARY AND METRIC MEASUREMENT 1 quart = 0.946 L 1 ounce = 28.35 g 1 pound = 0.45 kg	
Use th	e following table for 30 kilometers per	question 5: <u>MEASU</u> 1 foot (ft) = 12 inches (in.) 1 yard (yd) = 3 feet 1 yard = 36 inches 1 mile = 1,760 yards 1 mile = 5,280 feet 1 km = 1,000 m 1 m = 100 cm <u>CONVERSION BE</u> 1 yard = 0.914 m 1 foot = 0.305 m 1 inch = 2.54 cm	REMENT CONVERSIONS         CAPACITY         1 cup (c) = 8 fluid ounces         1 pint (pt) = 2 cups         1 quart (qt) = 2 pints         1 quart = 4 cups         1 gallon (gal) = 4 quarts         WEIGHT         1 pound (lb) = 16 ounces (oz)         1 ton (T) = 2,000 pounds         TWEEN CUSTOMARY AND METRIC         MEASUREMENT         1 quart = 0.946 L         1 ounce = 28.35 g         1 pound = 0.45 kg	



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