## High Impact Standards



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.

## The High Impact Standards Program includes:



- Standards Plus Online Digital Platform
- Access to an Intervention Program -

Printable Tier 2 \& 3 Intervention Lessons

- Printed Teacher Edition \& Student Editions


## Standards Plus Works in Any Setting:




## Distance <br> Learning

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


## How Standards Plus Increases 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．

## High Impact Standards Includes:

## High Impact Grade Level Lessons and Assessments 56 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.


## Tier 2 \& Tier 3 Intervention Lessons 50+ Lessons (DOK 1-2)

Students learn prerequisite skills that scaffold below grade-level.
These lessons are for students that need more support and are available to print in the Standards Plus Digital Platform. Printed student editions can be purchased separately.


## Performance Lessons 5+ Lessons (DOK 3)

Performance lessons require students to apply the skills they learned in previous Standards Plus lessons. These lessons provide students the opportunity to incorporate technology, text analysis, reflection and research.

## Teach a Grade Level Concept with Four Concise Lessons



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

Standards Plus lessons are grouped in sets that teach a grade-level concept.

| TEACH | TEACH | TEACH | TEACH | ASSESS |
| :---: | :---: | :---: | :---: | :---: |
| Lesson | Lesson | Lesson | Lesson | Assessment |
| 1 | 2 | 3 | 4 | 1 |

A Standards Plus lesson set includes 4 lessons and 1 assessment.

## Assessments

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


Digital Assessment


Print Assessment

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

When students take the assessment online, the platform will create groups of students that scored below 60\% and recommend 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.

## How the Intervention Lessons Work



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.

Like terms: Monomials that have the same variables and powers.
Term: An individual element of any math expression. It could be a single number or variable, or it could be the product of several numbers or variables separated from another term by a $(+)$ or $(-)$ sign in an overall expression. For example $6+7 y-4 x^{2} y z$ has 3 terms. The terms are $6,7 y$, and $4 x^{2} y z$. Coefficient: The number multiplied by the variable of an algebraic expression in an algebraic term. Constant: A number without a variable; a value that does not change.
Variable: A letter that represents a number
Distributive Property: A number can be decomposed and its parts multiplied and result in the same product if the number is not decomposed: $a(b+c)=a b+a c$.
Algebraic expression: An expression that contains a variable and/or numbers, and mathematica operation symbols.
Factor: A number or expression that is multiplied by another number or expression to get a product. Greatest Common Factor: The largest factor two numbers have in common.
Inequality: An expression in which the two values being compared are not equal.
Continuous: There are infinite answers.
Discrete: There are finite answers.
Evaluate: To solve an expression.
The symbol < means less than. The inequality $x<3$ is said " $x$ is less than 3 ." To graph the solution set on a number line, use an open circle at 3 since the number 3 is NOT included in the solution set. Shade the number line to the left of the open circle to represent the infinite solution set.


The symbol $\leq$ means less than or equal to. The inequality $x \leq 3$ is said " $x$ is less than or equal to 3 ." To graph the solution set on a number line, use a closed circle at 3 since the number 3 is included in the solution set. Shade the number line to the left of the closed circle to represent the infinite solution set.


The symbol > means greater than. The inequality $x>3$ is said " $x$ is greater than 3." To graph the solution set on a number line, use an open circle at 3 since the number 3 is NOT included in the solution set. Shade the number line to the right of the open circle to represent the infinite solution set.


The symbol $\geq$ means greater than or equal to. The inequality $x \geq 3$ is said " $x$ is greater than or equal to 3." To graph the solution set on a number line, use a closed circle at 3 since the number 3 is included in the solution set. Shade the number line to the right of the closed circle to represent the infinite solution set.


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1. Solve each inequality below and graph the solution set:
$4.5 \geq 9 x-7$
$-\frac{3}{4} z+16 \leq 14$
2. Write a scenario that describes an inequality with a discrete answer. Write the inequality and define the variable. Graph the solution on a number line
3. Write a scenario that describes an inequality with a continuous answer. Write the inequality and define the variable. Graph the solution on a number line.
4. What is an inequality? Draw a model to show what inequality means.

## Pacing Options

## 14-Week Implementation <br> Teach one lesson per day.

## 7-Week Implementation <br> Teach two lessons per day.

## Intensive / Bootcamp Implementation

Catch up on the high impact standards in three weeks. Teach four lessons per day.

## Grade 7 Mathematics High Impact Standards Lesson Index

| Domain | Lesson | Focus | Standard(s) | TE Pg | St. Ed. Pg |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | Unit Rate | 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. | 14 | 3 |
|  | 2 | Unit Rate |  | 16 | 4 |
|  | 3 | Unit Rate |  | 18 | 5 |
|  | 4 | Unit Rate |  | 20 | 6 |
|  | A1 | Assessment - Unit Rate |  | 22 | 7 |
|  | P1 | Performance Lesson \#1 - Using Unit Rates |  | 24 | 9-10 |
|  | 5 | Proportional Relationships | 7.RP.2a: Decide whether two quantities are in a proportional relationship. | 28 | 11 |
|  | 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. | 30 | 12 |
|  | 7 | Proportional Relationships |  | 32 | 13-14 |
|  | 8 | Proportional Relationships |  | 36 | 15-16 |
|  | A2 | Assessment - Proportional Relationships |  | 40 | 17 |
|  | 9 | Proportional Relationships | 7.RP.2a, 7.RP.2b | 42 | 19 |
|  | 10 | Proportional Relationships |  | 44 | 20-21 |
|  | 11 | Multistep Ratio Problems | 7.RP.3: Use proportional relationships to solve multistep ratio and percent problems. | 48 | 22 |
|  | 12 | Multistep Ratio Problems |  | 50 | 23 |
|  | A3 | Assessment - Proportional Relationships | 7.RP.2a, 7.RP.2b, 7.RP. 3 | 52 | 24 |
|  | 1 | Opposite Quantities on the Number Line | 7.NS.1a: Describe situations in which opposite quantities combine to make 0 . | 56 | 26 |
|  | 2 | Opposite Quantities on the Number Line |  | 58 | 27 |
|  | 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 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. | 60 | 28 |
|  | 4 | Adding Rational Numbers on the Number Line |  | 62 | 29 |
|  | A1 | Adding Rational Numbers | 7.NS.1a, 7.NS.1b | 64 | 30 |
|  | 5 | Adding Quantities on the Number Line | 7.NS.1b | 66 | 32 |
|  | 6 | Subtraction and Additive Inverses | 7.NS1c: Understand subtraction of rational numbers as adding the additive inverse, $p-q=p+(-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. | 68 | 33 |
|  | 7 | Absolute Value on a Number Line |  | 70 | 34 |
|  | 8 | Absolute Value in Real-World Contexts |  | 72 | 35 |
|  | A2 | Assessment - Adding and Subtracting Rational Numbers | 7.NS.1b, 7.NS.1b | 74 | 36 |
|  | 17 | Multiplying Integers with Tiles | 7.NS.2a: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1)=1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. | 76 | 38 |
|  | 18 | Multiplying Integers on a Number Line |  | 78 | 39 |
|  | 19 | Integers and the Distributive Property |  | 80 | 40 |
|  | 20 | Products in Real-World Contexts |  | 82 | 41 |
|  | A5 | Assessment - Multiplying Integers |  | 84 | 42 |

## Grade 7 Mathematics High Impact Standards Lesson Index

| Domain | Lesson | Focus | Standard(s) | TE Pg | St. Ed. Pg |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 21 | Decimals and the Distributive Property | 7.NS.2a | 86 | 44 |
|  | 22 | Multiplying Fractions | 7.NS.2a, 7.NS.2b: | 88 | 45 |
|  | 23 | Dividing Rational Numbers | 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. | 90 | 46 |
|  | 24 | Dividing Rational Numbers |  | 92 | 47 |
|  | A6 | Assessment - Multiplying and Dividing Rational Numbers | 7.NS.2a, 7.NS.2b | 94 | 48 |
|  | 25 | Multiplying Rational Numbers | 7.NS.2c: Apply properties of operations as strategies to multiply and divide rational numbers. | 96 | 50 |
|  | 26 | Dividing Rational Numbers |  | 98 | 51 |
|  | 27 | Converting Rational Numbers to Decimals | 7.NS.2d: Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in Os or eventually repeats. | 100 | 52 |
|  | 28 | Converting Rational Numbers to Decimals |  | 102 | 53 |
|  | A7 | Assessment - Multiplying, Dividing and Converting Rational Numbers | 7.NS2c, 7.NS2d | 104 | 54 |
|  | P4 | Performance Lesson \#4 - Multiplying and Dividing Rational Numbers |  | 106 | 56-58 |
|  | 29 | Solving Problems Involving the Four Operations with Rational Numbers | 7.NS3: Solve real-world and mathematical problems involving the four operations with rational numbers. | 110 | 59 |
|  | 30 | Solving Problems Involving the Four Operations |  | 112 | 60 |
|  | 31 | Solving Real-World Problems |  | 114 | 61 |
|  | 32 | Solving Real-World Problems |  | 116 | 62 |
|  | A8 | Solving Real-World Problems |  | 118 | 63 |
| 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 | 1 | Simplify Algebraic Expressions | 7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. | 122 | 65 |
|  | 2 | Generate Equivalent Expressions |  | 124 | 66 |
|  | 3 | Generate Equivalent Expressions |  | 126 | 67 |
|  | 4 | Generate Equivalent Expressions |  | 128 | 68 |
|  | A1 | Assessment - Generating Equivalent Expressions |  | 130 | 69 |
|  | 5 | Factor Generate Equivalent Expressions | 7.EE. 1 | 132 | 71 |
|  | 6 | Factor Generate Equivalent Expressions |  | 134 | 72 |
|  | 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 how the quantities in it are related. | 136 | 73 |
|  | 8 | Expressions in Problem Situations |  | 138 | 74 |
|  | A2 | Assessment - Use Properties of Operations to Generate Equivalent Expressions | 7.EE. 1 \& 7.EE. 2 | 140 | 75 |
|  | P5 | Performance Lesson \#5 - Working with Expressions |  | 142 | 77-78 |

## Grade 7 Mathematics High Impact Standards Lesson Index

| Domain | Lesson | Focus | Standard(s) | TE Pg | St. Ed. Pg |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 9 | Solve Multi-Step Real-Life Problems | 7.EE.3: Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. | 146 | 79 |
|  | 10 | Solve Multi-Step Real-Life Problems |  | 148 | 80 |
|  | 11 | Solve Multi-Step Real-Life Problems |  | 150 | 81 |
|  | 12 | Solve Multi-Step Real-Life Problems |  | 152 | 82 |
|  | A3 | Assessment - Solving Multi-Step Real-Life Problems |  | 154 | 83 |
|  | 17 | Solve Equations in the Form of $p x+q=r$ | 7.EE.4a: Solve word problems leading to equations of the form $p x+q=r$ and $p(x+q)=r$, where $p, q$, and $r$ are specific rational numbers. | 156 | 85 |
|  | 18 | Solve Equations in the Form of $p(x+q)=r$ |  | 158 | 86 |
|  | 19 | Solve Word Problems |  | 160 | 87 |
|  | 20 | Solve Word Problems |  | 162 | 88 |
|  | A5 | Assessment - Solve Linear Equations and Word Problems |  | 164 | 89 |
|  | P6 | Performance Lesson \#6-Equations |  | 166 | 91-92 |
|  | 21 | Solve Word Problems | 7.EE.4a | 170 | 93 |
|  | 22 | Solve Linear Equations and Word Problems |  | 172 | 94 |
|  | 23 | Solve and Graph Solutions to Inequalities | 7.EE.4b: Solve word problems leading to inequalities of the form $p x+q>r$ or $p x+q<r$, where $p, q$, and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. | 174 | 95 |
|  | 24 | Solve and Graph Solutions to Inequalities |  | 176 | 96 |
|  | A6 | Assessment - Solve Equations and Inequalities | 7.EE.4a and 7.EE.4b | 178 | 97 |

## High Impact Standards

## Sample Lessons



| Lesson | Focus |  |
| :---: | :--- | :--- |
| $\mathbf{1}$ | Unit Rate |  |
| $\mathbf{2}$ | Unit Rate | 7.RP.1: Compute unit rates associated with ratios of |
| $\mathbf{3}$ | Unit Rate | fractions, including ratios of lengths, areas and other <br> quantities measured in like or different units. |
| $\mathbf{4}$ | Unit Rate |  |
| A1 | Assessment - Unit Rate |  |

# Sample Teacher Lesson Plan 

## Teacher Lesson Plan

| Standards Plus ${ }^{\circledR}$ - Mathematics - Grade 7 |  |  |
| :--- | :--- | :---: |
| Domain: Ratios \& Proportional Relationships $\quad$ Focus: Unit Rate |  |  |
| Standard: 7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other |  |  |

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 Objective: Students will learn how to compare two ratios and calculate unit rate using fractional amounts.

Introduction: "Today we will find unit rate using complex fractions."
Instruction: "The unit rate is the rate for one item. A complex fraction is a fraction that has one or more fractions in the numerator and / or denominator. Ratios can compare fractional quantities to other fractional quantities. Look at Example A. I am going to represent this ratio as: $\frac{\frac{1}{2}}{\frac{2}{3}}$ yards per hour. This ratio is an example of a complex fraction because it has a fraction in the numerator and another fraction in the denominator. I know that $\frac{\frac{1}{2}}{\frac{2}{3}}$ mathematically means $\frac{1}{2}$ divided by $\frac{2}{3}$. Following the 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 $\frac{1}{2} \times \frac{3}{2}=\frac{3}{4} \quad \frac{3}{4} \frac{\text { square yards }}{1 \text { hour }}$. Therefore, Jose can sweep $\frac{3}{4}$ of a square yard in one hour (square yards per hour). The label of square yards per hour is a combination of the two labels square yards and one hour from the initial problem.

Guided Practice: "Let's look at Example B. Write the complex fraction on your worksheet. (Select a student volunteer to write that fraction on the board.) Rewrite your complex fraction as a fractional division problem. (Select another student to share their written response.) Perform the indicated division and compute the resulting answer." Ask another student to identify the unit label that should be on this problem.

Independent Practice: Follow the same process to complete the problems on your worksheet. As students work, continue to monitor their progress and answer questions.

Review: When students are finished, go over the answers.
Closure: "Today we found unit rates using complex fractions."
Answers: $\quad$ 1. White rabbit: $\frac{7}{10}$; Brown rabbit: $\frac{1}{2}$; White rabbit travels faster because he/she covered more distance.
2. 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.

[^0]
## Sample Student Lesson

| Standards Plus ${ }^{\circledR}-$ Mathematics - Grade 7 |  |  |
| :--- | :--- | :---: |
| Domain: Ratios \& Proportional Relationships $\quad$ Focus: Unit Rate |  |  |
| Standard: 7. RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and otherson: \#1 |  |  |
| quantities measured in like or different units. |  |  |

Directions: Fill in the boxes with the correct number.
Example A: 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?


Example 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?

## Each lesson

 also hasan easy to follow student page.


Directions: Find the correct answer to each question and explain your answer.

1. The white rabbit travels $\frac{2}{5}$ miles in $\frac{4}{7}$ days. The brown rabbit travels 3 miles in 6 days. Which 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.

## Sample Digital Teacher Lesson Plan (3rd Grade Math Sample)



## Guided Practice

"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.

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



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 ${ }^{\circledR}$ - 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 Objective: 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 $\frac{2 \frac{1}{6} \text { seconds }}{7 \frac{1}{2} \text { yards }}$. After writing the complex fraction, I will rewrite the mixed numbers as fractions $\frac{\frac{13}{\frac{15}{2}}}{}$. Next I will change the division sign to a multiplication sign $\frac{13}{6} \cdot \frac{2}{15}$. I will multiply the numerators and then multiply the denominators $\frac{26}{90}$. I can simplify $\frac{26}{90}$ to $\frac{13}{45}$. I 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 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 $0.3 \cdot 50$ seconds to travel the 50 yards. It will take Alexis 15 seconds to travel 50 yards."

Guided Practice: "Look at Example B, what information do we need to find first? (The unit rate.) Write the unit rate ratio in fraction form $\left(\frac{110 \text { miles }}{4 \frac{2}{3} \text { gallons }}\right)$. How do we simplify the resulting complex fraction? (Multiply the numerator by the reciprocal of the denominator.) Find the unit rate. $\left(\frac{\frac{110}{14}}{\frac{14}{3}}=\frac{110}{1} \cdot \frac{3}{14}=\frac{330}{14}=23.6 \mathrm{mpg}\right)$. Nathan can drive 23.6 miles per gallon of gas. (Select another student to explain the next step in the solution process: 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 process: Total Cost $=$ Unit Price • Number of Items.) Write the total cost formula on your worksheet in the bottom margin."

Independent Practice: "Follow the same process to complete the problems on your worksheet."
Review: When students are finished, go over the correct answers.
Closure: "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. $125 \mathrm{pgs} / \mathrm{hr} ; 300 \mathrm{pgs}$
2. Store A: $\$ 1.50 / \mathrm{lb} . ;$ Store B: $\$ 1.64 / \mathrm{lb}$; $\$ 45.75$ (from Store A)
[^1]
## Sample Student Lesson

## Standards Plus ${ }^{\circledR}$ - 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.

Directions: Use unit rate to find the answers to the following problems. (Round all calculations to the nearest tenth.)

Example A: Alexis runs $7 \frac{1}{2}$ yards every $2 \frac{1}{6}$ seconds. How long will it take her to run 50 yards?

## Each student

 page includes examples forGuided Practice.
...and Practice.

Example B: Nathan can drive 110 miles with $4 \frac{2}{3}$ gallons of gas. How many miles can he drive with 12 gallons of gas?

1. It takes Lily $\frac{4}{5}$ of an hour to read 100 pages of her book. How many pages can she read in $2 \frac{2}{5}$ hours?
2. Logan wants to buy $30 \frac{1}{2}$ pounds of grapes. Store $A$ has them priced at $\$ 4.00$ for $2 \frac{2}{3}$ pounds. Store $B$ has them priced at $\$ 3.00$ for $1 \frac{5}{6}$ pounds. What is the least he will have to pay for his grapes?

# Sample Teacher Lesson Plan 

## Teacher Lesson Plan

| Standards Plus ${ }^{\circledR}$ - Mathematics - Grade 7 |  |
| :--- | :--- |
| Domain: Ratios \& Proportional Relationships $\quad$ Focus: Unit Rate |  |
| Standard: 7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other \#4 |  |

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 Objective: Students will transform and convert unit rates.
Introduction: "Today we will transform unit rates to complete measurement conversions. In order to perform the conversions 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 / second using three steps.

- Step 1: I'll write the initial problem in fraction form $\left(\frac{6 \mathrm{~km}}{1 \mathrm{hr}}\right)$.
- Step 2: I will use the measurement conversion table to select the appropriate measurement unit. In this case, I need to select a conversion rate that will involve kilometers, so the kilometer in the problem can be mathematically eliminated. $\left(\frac{6 \mathrm{~km}}{1 \mathrm{hr}} \cdot \frac{1000 \mathrm{~m}}{1 \mathrm{~km}}\right)$. Since $\frac{\mathrm{km}}{\mathrm{km}}$ is equal to 1 , the km can be eliminated without changing the value of the equation, resulting in: $\frac{6000 \mathrm{~m}}{1 \mathrm{hr}} \cdot \frac{1000 \mathrm{~m}}{1 \mathrm{~km}}$ needs to be written in this manner so the km label in the denominator can cancel out the km label in the numerator. Since the final answer needs to be in the form $\frac{\text { meters }}{\text { second }}$, the numerator portion of the conversion has been completed.
- Step 3: Now the term of $\frac{6000 \mathrm{~m}}{1 \mathrm{hr}}$ needs the denominator to be converted to seconds. By checking the measurement conversion table there is no conversion indicated between hours and seconds; however, I know that 60 minutes equals 1 hour $\left(\frac{6000 \mathrm{~m}}{1 \mathrm{hr}} \cdot \frac{1 \mathrm{hr}}{60 \mathrm{~min}}=\frac{6000 \mathrm{~m}}{60 \mathrm{~min}}=\frac{100 \mathrm{~m}}{1 \mathrm{~min}}\right)$. The last step in the process is to convert the minutes located in the denominator to seconds by multiplying by $\frac{1 \mathrm{~min}}{60 \mathrm{sec}}$. Simplifying, $\frac{100 \mathrm{~m}}{1 \mathrm{mmin}} \cdot \frac{1 \mathrm{mmin}}{60 \mathrm{sec}}=\frac{100 \mathrm{~m}}{60 \mathrm{sec}}$. Performing the indicated calculation $\frac{100 \mathrm{~m}}{60 \mathrm{sec}}=1.7 \mathrm{~meters} / \mathrm{sec}$."

Guided Practice: "Let's follow the same process to complete Example B. We will be converting yards per hour to feet per minute. Which unit measure will be converted first? (Students can convert either the yards to feet (numerator) or the hours to minutes (denominator). For ease of consistency, instruct students to always start the conversion with the numerator.) Review the measurement conversion table and select an applicable conversion factor. Remember our goal is to transition from yards to feet. You will use the steps I modeled." Guide students through each step.

Independent Practice: Use the steps to complete problems 1 - 2 from the worksheet. As students work, continue to monitor their progress and answer questions.

Review: When students have finished, go over the correct answers.
Closure: "Today we used the measurement conversion table to transform and convert unit rates.

## Answers: 1. 0.3 centimeters per second <br> 2. 6.8 inches per foot

## Sample Student Lesson

## Student Page

| Standards Plus ${ }^{\circledR}$ - Mathematics - Grade 7 |  |
| :--- | :--- |
| Domain: Ratios \& Proportional Relationships $\quad$ Focus: Unit Rate |  |
| Standard: 7.RP.1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other |  |

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.

Directions: Perform the indicated conversion. (Round all computations to the nearest tenth.)

## Practice,

## review

each item
to check for
understanding.

Example A: 6 kilometers per hour = $\qquad$ meters per second

1. $\quad 12$ meters per hour $=$ $\qquad$ centimeters per second
2. 1000 yards per mile $=$ $\qquad$ inches per foot

# Sample Assessment - Teacher Page 

## Teacher Lesson Plan

| Standards Plus ${ }^{\circledR}$ - Mathematics - Grade 7 |  |  |
| :---: | :---: | :---: |
| Domain: Ratios \& Proportional Relationships | Focus: Unit Rate |  |
| Assessment: \#1 |  |  |

Assessment: \#1
This assessment may be used in the following ways:

- As a formative assessment of the students' progress.
- As an additional opportunity to reinforce the vocabulary, concepts, and knowledge presented in the previous 4 lessons.

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.

Procedure: Read the directions aloud and ensure that students understand how to respond to each item.

- If you are using this as a formative assessment, have the students complete the evaluation independently.
- If you are using this to reinforce instruction, determine the items that will be completed as guided practice, and those that will be completed as independent practice.


## Additional Tips:

- All Standards Plus assessments are available in an interactive digital format in the Standards Plus Digital Platform.
- When the assessments are administered and scored digitally, the platform automatically creates intervention groups and recommends additional printable intervention lessons.
- You can also access the printable intervention lessons from the home screen in the digital platform.

Review: Review the correct answers with students as soon as they are finished.

Answers: 1. (7.RP.1) Item A: \$1.68; Item B: \$1.65. Item B is the better buy.
2. (7.RP.1) 62.1 pages
3. (7.RP.1) 3.6 hamburgers per minute
4. (7.RP.1) 451.5 miles
5. (7.RP.1) 8.3 meters per second

[^2]
## Sample Assessment - Student Page

Student Page

| Standards Plus ${ }^{\circledR}$ - Mathematics - Grade 7 |  |  |
| :---: | :---: | :---: |
| Domain: Ratios \& Proportional Relationships | Focus: Unit Rate |  |

Directions: Find the answer to each of the following problems while working independently. Circle your answer. (Round all calculations to the nearest tenth.)

1. Which is the better buy, Item $A$, selling at $5 \frac{2}{3}$ pounds for $\$ 9.52$ or Item $B$, selling at $1 \frac{1}{5}$ pounds for $\$ 1.98 ?$
2. Riley reads $35 \frac{2}{5}$ pages of her library book every $\frac{4}{7}$ of an hour. How many pages of her book does she read each hour?
3. During an eating contest, Claire can eat $2 \frac{3}{7}$ of a hamburger in $\frac{2}{3}$ of a minute. How many hamburgers can she eat in 1 minute?
4. Dylan can drive $110 \frac{1}{4}$ miles on $3 \frac{2}{3}$ gallons of gas. How many miles can he travel with 15 gallons of gas?

Use the following table for question 5 :

5. 30 kilometers per hour $=$ $\qquad$ meters per second

## All Standards Plus purchases include live online teacher training to ensure a successful implementation.



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