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Fluency Support for Grades 6–8

INTRODUCTION

The Common Core Standards for Mathematics call for students to obtain and demonstrate not only conceptual understanding and problem solving, but also procedural skill and fluency. Documents released by Student Achievement Partners go on to describe procedural skill and fluency as speed and accuracy in calculation that enable students to apply mental resources to more complex concepts and processes.

Standards in grades K-6 use the word *fluent*, or *fluently*, to explicitly call for students to achieve quickness and accuracy in calculations. In later grades the standards themselves do not use the word *fluent* or *fluently*. By middle school, fluency is less about calculation, and more about ease of manipulation of expressions, equations, notations, etc. Thus fluency exercises are applied toward any skill needed to manipulate expressions and equations with ease. For example, in Grade 8 students should work towards quickly and accurately solving general, one-variable linear equations.

An additional resource for guiding fluency work in later grades is the *PARCC Model Content Frameworks for Mathematics*. This document provides a section entitled, *Key Fluencies and Examples of Culminating Standards*. The table below lists the standards identified therein for Grades 6-8, along with the accompanying narrative from the document.

PARCC Model Content Frameworks for Mathematics¹ –

Fluency Expectations or Examples of Culminating Standards for Grades 6–8

6.NS.2	Students fluently divide multi-digit numbers using the standard algorithm. This is the culminating standard for several years' worth of work with division of whole numbers.
6.NS.3	Students fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. This is the culminating standard for several years' worth of work relating to the domains of Number and Operations in Base Ten, Operations and Algebraic Thinking, and Number and Operations—Fractions.
6.NS.1	Students interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions. This completes the extension of operations to fractions.
7.EE.3	Students solve multistep problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. This work is the culmination of many progressions of learning in arithmetic, problem solving and mathematical practices.
7.EE.4	In solving word problems leading to one-variable equations of the form $px + q = r$ and $p(x + q) = r$, students solve the equations fluently. This will require fluency with rational number arithmetic (7.NS.1–3), as well as fluency to some extent with applying properties operations to rewrite linear expressions with rational coefficients (7.EE.1).

¹ The PARCC Model Content Frameworks for Mathematics can be found at <http://parconline.org/mcf/mathematics/overview-parcc-model-content-frameworks-mathematics>

7.NS.1-2	Adding, subtracting, multiplying, and dividing rational numbers is the culmination of numerical work with the four basic operations. The number system will continue to develop in grade 8, expanding to become the real numbers by the introduction of irrational numbers, and will develop further in high school, expanding to become the complex numbers with the introduction of imaginary numbers. Because there are no specific standards for rational number arithmetic in later grades and because so much other work in Grade 7 depends on rational number arithmetic (see below), fluency with rational number arithmetic should be the goal in Grade 7.
8.EE.7	Students have been working informally with one-variable linear equations since as early as kindergarten. This important line of development culminates in Grade 8 with the solution of general one-variable linear equations, including cases with infinitely many solutions or no solutions as well as cases requiring algebraic manipulation using properties of operations. Coefficients and constants in these equations may be any rational numbers.
8.G.9	When students learn to solve problems involving volumes of cones, cylinders, and spheres—together with their previous Grade 7 work in angle measure, area, surface area and volume (7.G.4–6)—they will have acquired a well-developed set of geometric measurement skills. These skills, along with proportional reasoning (7.RP) and multistep numerical problem solving (7.EE.3), can be combined and used in flexible ways as part of modeling during high school—not to mention after high school for college and careers. ¹⁹

Development of fluency for any skill, computational or otherwise, is achieved optimally through exercises that create excitement through use of time constraints or time-related goals. Note, however, that fluency exercises are not a means for learning the skill for the first time, rather fluency exercises are to be conducted after the delivery of one or several lessons which develop conceptual understanding and which provide opportunities to practice newly learned skills in a non-time-constrained setting. Students must first understand why the procedures or processes they are using work and must achieve a general capacity in that skill before they are ready to work on quick accuracy.

A second critical element in an effective fluency exercise is providing students with immediate feedback to the correctness of their work and to their progress in developing speed.

This document provides fluency exercises of two types, the Rapid White Board Exchange (RWBE) and the Sprint. The RWBE allows time for students to share their work with a partner, to remediate small learning gaps, and for the teacher to assess each student's readiness for further fluency work on that skill. The RWBE supports a class of students in moving towards readiness for fluency, while allowing those students who are ready, to begin the work of fluency. Thus, the RWBE should be used before a Sprint on a given skill. Additionally, the RWBE is a practical tool for students to utilize when practicing skills that require more written support or work space.

While Sprints are not useful for skills that require significant work space, they are immensely effective at improving fluency for skills requiring little written support. For example, a Sprint is not practical for practicing the long division algorithm, but is practical for multiplication of integers which can be computed mentally. Sprints on a given skill should always be administered as a back-to-back pair of coordinated Sprints on the same skill. There is a designated period of time between the two Sprints where students can work at a slower pace, asking questions and getting assistance if needed.

This document provides RWBE's and Sprints to support each of the fluencies identified in the Standards and the PARCC Model Content Framework. It is *not* recommended that fluency work be restricted to the module(s) in which a given skill is introduced. Rather, teachers are encouraged to work on fluencies throughout the year, once conceptual understanding has been established. Reusing the same fluency

exercise as often as once every two weeks is a reasonable and appropriate means of developing and improving fluency on a given skill.

Rapid White Board Exchanges

Implementing an RWBE requires that each student be provided with a personal white board, a white board marker, and an eraser. An economic choice for these materials is to place two sheets of tag board (recommended) or cardstock, one red and one white, into a sheet protector. The white side is the “paper” side that students write on. The red side is the “signal” side, which can be used for students to indicate they have finished working—“Show red when ready.” Sheets of felt cut into small squares can be used as erasers.

An RWBE consists of a sequence of 10 to 20 problems on a specific topic or skill that starts out with a relatively simple problem and progressively gets more difficult. The teacher should prepare the problems in a way that allows the teacher to reveal them to the class one at a time. A flip chart or PowerPoint presentation can be used, or the teacher can write the problems on the board and either cover some with paper or simply write only one problem on the board at a time.

The teacher reveals, and possibly reads aloud, the first problem in the list and announces, “Go.” Students work the problem on their personal white boards as quickly as possible. Depending on teacher preference, students can be directed to hold their work up for their teacher to see their answers as soon as they have the answer ready or to turn their white boards face down to show the red side when they have finished. In the latter case, the teacher says, “Hold up your work,” once all students have finished. The teacher gives immediate feedback to each student, pointing and/or making eye contact with the student and responding with an affirmation for correct work, such as “Good job!”, “Yes!”, or “Correct!”, or responding with guidance for incorrect work such as “Look again,” “Try again,” “Check your work,” etc. Feedback can also be more specific, such as “Watch your division facts,” or “Error in your calculation.”

If many students have struggled to get the answer correct, go through the solution of that problem as a class before moving on to the next problem in the sequence. Fluency in the skill has been established when the class is able to go through a sequence of problems leading up to and including the level of the relevant student objective, without pausing to go through the solution of each problem individually.

Sprints

Sprints are designed to develop fluency. They should be fun, adrenaline-rich activities that intentionally build energy and excitement. A fast pace is essential. During Sprint administration, teachers assume the role of athletic coaches. A rousing routine fuels students’ motivation to do their personal best. Student recognition of increasing success is critical, and so every improvement is acknowledged. (See the Sprint Delivery Script for the suggested means of acknowledging and celebrating student success.)

One Sprint has two parts with closely related problems on each. Students complete the two parts of the Sprint in quick succession with the goal of improving on the second part, even if only by one more. The problems on the second Sprint should not be harder, or easier, than the problems on the first Sprint. The problems on a Sprint should progress from easiest to hardest. The first quarter of problems on the Sprint should be simple enough that all students find them accessible (though not all students will finish the first quarter of problems within one minute). The last quarter of problems should be challenging enough that even the strongest students in the class find them challenging.

Sprints scores are not recorded. Thus, there is no need for students to write their names on the Sprints. The low-stakes nature of the exercise means that even students with allowances for extended time can participate. When a particular student finds the experience undesirable, it is reasonable to either give the student a copy of the sprint to practice with the night before, or to allow the student to opt out and take the Sprint home.

With practice, the Sprint routine takes about 8 minutes.

Sprint Delivery Script

Gather the following: stopwatch, a copy of Sprint A for each student, a copy of Sprint B for each student, answers for Sprint A and Sprint B. The following delineates a script for delivery of a pair of Sprints.

This sprint covers: *topic*.

Do not look at the Sprint; keep it turned face down on your desk.

There are xx problems on the Sprint. You will have 60 seconds. Do as many as you can. I do not expect any of you to finish.

On your mark, get set, GO.

60 seconds of silence.

STOP. Circle the last problem you completed.

I will read the answers. You say “YES” if your answer matches. Mark the ones you have wrong by circling the number of the problem. Don’t try to correct them.

Energetically, rapid-fire call the answers ONLY.

Stop reading answers after there are no more students answering, “Yes.”

Fantastic! Count the number you have correct, and write it on the top of the page. This is your personal goal for Sprint B.

Raise your hand if you have 1 or more correct. 2 or more, 3 or more...

Let us all applaud our runner-up, [insert name], with x correct. And let us applaud our winner, [insert name], with x correct.

You have a few minutes to finish up the page and get ready for the next Sprint.

Students are allowed to talk and ask for help; let this part last as long as most are working seriously.

Stop working. I will read the answers again so you can check your work. You say “YES” if your answer matches.

Energetically, rapid-fire call the answers ONLY.

Optionally, ask students to stand, and lead them in an energy-expanding exercise that also keeps the brain going. Examples are jumping jacks or arm circles, etc., while counting by 15’s starting at 15, going up to 150 and back down to 0. You can follow this first exercise with a cool down exercise of a similar nature, such as calf raises with counting by one-sixths $\left(\frac{1}{6}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{5}{6}, 1 \dots\right)$.

Hand out the second Sprint, and continue reading the script.

Keep the Sprint face down on your desk.

There are xx problems on the Sprint. You will have 60 seconds. Do as many as you can. Your goal is to improve your score from the first Sprint.

On your mark, get set, GO.

60 seconds of silence.

STOP. Circle the last problem you completed.

I will read the answers. You say “YES” if your answer matches. Mark the ones you have wrong by circling the number of the problem. Don’t try to correct them.

Quickly read the answers ONLY.

Count the number you have correct, and write it on the top of the page. Write the amount by which your score improved at the top of the page and circle it.

Raise your hand if you have 1 or more correct. 2 or more, 3 or more, ...

Let us all applaud our runner-up, [insert name], with x correct. And let us applaud our winner, [insert name], with x correct.

Raise your hand if you improved your score by 1 or more. 2 or more, 3 or more, ...

Let us all applaud our runner-up for most improved, [insert name]. And let us applaud our winner for most improved, [insert name].

You can take the Sprint home and finish it if you want.

Grade 6 Mapping of Fluency Exercises to Fluency Requirements

The following table lists all fluency exercises provided for use in Grade 6; footnotes by the related standard indicate whether fluency is specifically called for by the standard itself and/or by the PARCC Model Content Frameworks for Mathematics. Depending on the level of skill of the students, it may be appropriate to supplement these exercises with additional fluency exercises from Grades 3–5 of *A Story of Units*.

The table also indicates the earliest recommended use—in all cases, fluency exercises should not be conducted until after conceptual understanding has been taught and achieved through the lessons in *A Story of Ratios*. Below the table, the text of each related standard is provided for reference.

Grade 6 Fluency Exercises		
Related Standard	Fluency Exercise	Earliest Recommended Use
5.NF.B.4	<i>Sprint</i> —Multiplication of Fractions I	Grade 6, Module 1
5.NF.B.4	<i>Sprint</i> —Multiplication of Fractions II	Grade 6, Module 1
6.NS.A.1 [∇]	<i>Sprint</i> —Division of Fractions I	Grade 6, Module 2
6.NS.A.1 [∇]	<i>Sprint</i> —Division of Fractions II	Grade 6, Module 2
6.NS.B.2 ^{*∇}	<i>RWBE</i> —Long Division Algorithm	Grade 6, Module 2
6.NS.B.3 ^{*∇}	<i>RWBE</i> —Addition of Decimals	Grade 6, Module 2
6.NS.B.3 ^{*∇}	<i>Sprint</i> —Addition of Decimals I	Grade 6, Module 2
6.NS.B.3 ^{*∇}	<i>Sprint</i> —Addition of Decimals II	Grade 6, Module 2
6.NS.B.3 ^{*∇}	<i>RWBE</i> —Subtraction of Decimals	Grade 6, Module 2
6.NS.B.3 ^{*∇}	<i>Sprint</i> —Subtraction of Decimals	Grade 6, Module 2
6.NS.B.3 ^{*∇}	<i>RWBE</i> —Multiplication of Decimals	Grade 6, Module 2

[∇] Identified by the PARCC Model Content Frameworks for Mathematics in the section Key Fluencies and Examples of Culminating Standards

* Standard explicitly calls for fluency by using the word *fluent* or *fluently*.

No footnote: This activity supports procedural fluency as an instructional shift. It is necessary to pursue this shift in conjunction with conceptual understanding/application in the context of this standard.

6.NS.B.3 ^{*∇}	<i>Sprint</i> —Multiplication of Decimals I	Grade 6, Module 2
6.NS.B.3 ^{*∇}	<i>Sprint</i> —Multiplication of Decimals II	Grade 6, Module 2
6.NS.B.4	<i>Sprint</i> —Greatest Common Factor	Grade 6, Module 2
6.NS.C.7a	<i>Sprint</i> —Rational Numbers: Inequality Statements	Grade 6, Module 3
6.EE.B.7	<i>Sprint</i> —Addition and Subtraction Equations	Grade 6, Module 4
6.EE.B.7	<i>RWBE</i> —Multiplication and Division Equations with Fractions	Grade 6, Module 4
6.G.A.1	<i>RWBE</i> —Area of Shapes	Grade 6, Module 5

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

- a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
- b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb. of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?

Compute fluently with multi-digit numbers and find common factors and multiples.

- 6.NS.B.2** Fluently divide multi-digit numbers using the standard algorithm.
- 6.NS.B.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- 6.NS.B.4** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$.

Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.C.7a** Understand ordering and absolute value of rational numbers.
- a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*

Reason about and solve one-variable equations and inequalities.

- 6.EE.B.7** Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

Solve real-world and mathematical problems involving area, surface area, and volume.

- 6.G.A.1** Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

Grade 7 Mapping of Fluency Exercises to Fluency Requirements

The following table lists all fluency exercises provided for use in Grade 7; footnotes by the related standard indicate whether fluency is specifically called for by the PARCC Model Content Frameworks for Mathematics. (Note that there are no standards in Grade 7 that call for fluency explicitly by use of the word *fluent* or *fluently*.) Depending on the level of skill of the students, it may be appropriate to supplement these exercises with additional fluency exercises from Grade 6 and/or from Grades 3–5 of *A Story of Units*.

The table also indicates the earliest recommended use—in all cases, fluency exercises should not be conducted until after conceptual understanding has been taught and achieved through the lessons in *A Story of Ratios*. Below the table, the text of each related standard is provided for reference.

Grade 7 Fluency Exercises		
Related Standard	Fluency Exercise	Earliest Recommended Use
7.NS.A.2c [∇]	<i>Sprint</i> —Integer Addition	Grade 7, Module 2
7.NS.A.2c [∇]	<i>Sprint</i> —Integer Subtraction	Grade 7, Module 2
7.NS.A.2c [∇]	<i>Sprint</i> —Integer Multiplication	Grade 7, Module 2
7.NS.A.2c [∇]	<i>Sprint</i> —Integer Division	Grade 7, Module 2
7.EE.A.2	<i>Sprint</i> —Generating Equivalent Expressions	Grade 7, Module 3
7.EE.B.3 [∇]	<i>RWBE</i> —Equations	Grade 7, Module 3
7.EE.B.4b [∇]	<i>RWBE</i> —Inequalities	Grade 7, Module 3
7.RP.A.3	<i>Sprint</i> —Fractions, Decimals, Percents	Grade 7, Module 4
7.RP.A.3	<i>Sprint</i> —Part, Whole, Percent	Grade 7, Module 4
7.RP.A.3	<i>Sprint</i> —Percent More or Less	Grade 7, Module 4
7.RP.A.3	<i>Sprint</i> —Fractional Percents	Grade 7, Module 4

[∇] Identified by the PARCC Model Content Frameworks for Mathematics in the section Key Fluencies and Examples of Culminating Standards

Analyze proportional relationships and use them to solve real-world and mathematical problems.

- 7.RP.A.3** Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

- 7.NS.A.2c** Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
- c. Apply properties of operations as strategies to multiply and divide rational numbers.

Use properties of operations to generate equivalent expressions.

- 7.EE.A.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. *For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”*

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

- 7.EE.B.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. *For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*
- 7.EE.B.4b** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
- b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, 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. *For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.*

Grade 8 Mapping of Fluency Requirements to Fluency Exercises

The following table lists all fluency exercises provided for use in Grade 8; footnotes by the related standard indicate whether fluency is specifically called for by the PARCC Model Content Frameworks for Mathematics. (Note that there are no standards in Grade 8 that call for fluency explicitly by use of the word *fluent* or *fluently*.) Depending on the level of skill of the students, it may be appropriate to supplement these exercises with additional fluency exercises from Grades 6 and 7.

The table also indicates the earliest recommended use—in all cases, fluency exercises should not be conducted until after conceptual understanding has been taught and achieved through the lessons in *A Story of Ratios*. Below the table, the text of each related standard is provided for reference.

Grade 8 Fluency Exercises		
Related Standard	Fluency Exercise	Earliest Recommended Use
8.EE.A.1	<i>Sprint</i> —Equivalent Expressions in Exponential Notation I	Grade 8, Module 1
8.EE.A.1	<i>Sprint</i> —Equivalent Expressions in Exponential Notation II	Grade 8, Module 1
8.EE.A.4	<i>RWBE</i> —Operations with Numbers Expressed in Scientific Notation I	Grade 8, Module 1
8.EE.A.4	<i>RWBE</i> – Operations with Numbers Expressed in Scientific Notation II	Grade 8, Module 1
8.EE.C.7 [∇]	<i>RWBE</i> —Multistep Equations I	Grade 8, Module 5
8.EE.C.7 [∇]	<i>RWBE</i> —Multistep Equations II	Grade 8, Module 5
8.EE.C.7 [∇]	<i>RWBE</i> – Multistep Equations III	Grade 8, Module 5
8.G.C.9 [∇]	<i>RWBE</i> —Area and Volume I	Grade 8, Module 7
8.G.C.9 [∇]	<i>RWBE</i> —Area and Volume II	Grade 8, Module 7

[∇] Identified by the PARCC Model Content Frameworks for Mathematics in the section Key Fluencies and Examples of Culminating Standards

Work with radicals and integer exponents.

- 8.EE.A.1** Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.*
- 8.EE.A.4** Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Analyze and solve linear equations and pairs of simultaneous linear equations.

- 8.EE.C.7** Solve linear equations in one variable.
- Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
 - Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

- 8.G.C.9** Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Number Correct: _____

Multiplication of Fractions I—Round 1

Directions: Determine the product of the fractions.

1.	$\frac{1}{2} \times \frac{3}{4}$	
2.	$\frac{5}{6} \times \frac{5}{7}$	
3.	$\frac{3}{4} \times \frac{7}{8}$	
4.	$\frac{4}{5} \times \frac{8}{9}$	
5.	$\frac{1}{4} \times \frac{3}{7}$	
6.	$\frac{5}{7} \times \frac{4}{9}$	
7.	$\frac{3}{5} \times \frac{1}{8}$	
8.	$\frac{2}{9} \times \frac{7}{9}$	
9.	$\frac{1}{3} \times \frac{2}{5}$	
10.	$\frac{3}{7} \times \frac{5}{8}$	
11.	$\frac{2}{3} \times \frac{9}{10}$	
12.	$\frac{3}{5} \times \frac{1}{6}$	
13.	$\frac{2}{7} \times \frac{3}{4}$	
14.	$\frac{5}{8} \times \frac{3}{10}$	
15.	$\frac{4}{5} \times \frac{7}{8}$	

16.	$\frac{8}{9} \times \frac{3}{4}$	
17.	$\frac{3}{4} \times \frac{4}{7}$	
18.	$\frac{1}{4} \times \frac{8}{9}$	
19.	$\frac{3}{5} \times \frac{10}{11}$	
20.	$\frac{8}{13} \times \frac{7}{24}$	
21.	$2\frac{1}{2} \times 3\frac{3}{4}$	
22.	$1\frac{4}{5} \times 6\frac{1}{3}$	
23.	$8\frac{2}{7} \times 4\frac{5}{6}$	
24.	$5\frac{2}{5} \times 2\frac{1}{8}$	
25.	$4\frac{6}{7} \times 1\frac{1}{4}$	
26.	$2\frac{2}{3} \times 4\frac{2}{5}$	
27.	$6\frac{9}{10} \times 7\frac{1}{3}$	
28.	$1\frac{3}{8} \times 4\frac{2}{5}$	
29.	$3\frac{5}{6} \times 2\frac{4}{15}$	
30.	$4\frac{1}{3} \times 5$	

Multiplication of Fractions I—Round 1 [KEY]

Directions: Determine the product of the fractions.

1.	$\frac{1}{2} \times \frac{3}{4}$	$\frac{3}{8}$
2.	$\frac{5}{6} \times \frac{5}{7}$	$\frac{25}{42}$
3.	$\frac{3}{4} \times \frac{7}{8}$	$\frac{21}{32}$
4.	$\frac{4}{5} \times \frac{8}{9}$	$\frac{32}{45}$
5.	$\frac{1}{4} \times \frac{3}{7}$	$\frac{3}{28}$
6.	$\frac{5}{7} \times \frac{4}{9}$	$\frac{20}{63}$
7.	$\frac{3}{5} \times \frac{1}{8}$	$\frac{3}{40}$
8.	$\frac{2}{9} \times \frac{7}{9}$	$\frac{14}{81}$
9.	$\frac{1}{3} \times \frac{2}{5}$	$\frac{2}{15}$
10.	$\frac{3}{7} \times \frac{5}{8}$	$\frac{15}{56}$
11.	$\frac{2}{3} \times \frac{9}{10}$	$\frac{18}{30} = \frac{3}{5}$
12.	$\frac{3}{5} \times \frac{1}{6}$	$\frac{3}{30} = \frac{1}{10}$
13.	$\frac{2}{7} \times \frac{3}{4}$	$\frac{6}{28} = \frac{3}{14}$
14.	$\frac{5}{8} \times \frac{3}{10}$	$\frac{15}{80} = \frac{3}{16}$
15.	$\frac{4}{5} \times \frac{7}{8}$	$\frac{28}{40} = \frac{7}{10}$

16.	$\frac{8}{9} \times \frac{3}{4}$	$\frac{24}{36} = \frac{2}{3}$
17.	$\frac{3}{4} \times \frac{4}{7}$	$\frac{12}{28} = \frac{3}{7}$
18.	$\frac{1}{4} \times \frac{8}{9}$	$\frac{8}{36} = \frac{2}{9}$
19.	$\frac{3}{5} \times \frac{10}{11}$	$\frac{30}{55} = \frac{6}{11}$
20.	$\frac{8}{13} \times \frac{7}{24}$	$\frac{56}{312} = \frac{7}{39}$
21.	$2\frac{1}{2} \times 3\frac{3}{4}$	$\frac{75}{8} = 9\frac{3}{8}$
22.	$1\frac{4}{5} \times 6\frac{1}{3}$	$\frac{171}{15} = 11\frac{2}{5}$
23.	$8\frac{2}{7} \times 4\frac{5}{6}$	$\frac{1682}{42} = 40\frac{1}{21}$
24.	$5\frac{2}{5} \times 2\frac{1}{8}$	$\frac{459}{40} = 11\frac{19}{40}$
25.	$4\frac{6}{7} \times 1\frac{1}{4}$	$\frac{170}{28} = 6\frac{1}{14}$
26.	$2\frac{2}{3} \times 4\frac{2}{5}$	$\frac{176}{15} = 11\frac{11}{15}$
27.	$6\frac{9}{10} \times 7\frac{1}{3}$	$\frac{1518}{30} = 50\frac{3}{5}$
28.	$1\frac{3}{8} \times 4\frac{2}{5}$	$\frac{242}{40} = 6\frac{1}{20}$
29.	$3\frac{5}{6} \times 2\frac{4}{15}$	$\frac{782}{90} = 8\frac{31}{45}$
30.	$4\frac{1}{3} \times 5$	$\frac{65}{3} = 21\frac{2}{3}$

Number Correct: _____

Improvement: _____

Multiplication of Fractions I—Round 2

Directions: Determine the product of the fractions.

1.	$\frac{5}{6} \times \frac{1}{4}$	
2.	$\frac{2}{3} \times \frac{5}{7}$	
3.	$\frac{1}{3} \times \frac{2}{5}$	
4.	$\frac{5}{7} \times \frac{5}{8}$	
5.	$\frac{3}{8} \times \frac{7}{9}$	
6.	$\frac{3}{4} \times \frac{5}{6}$	
7.	$\frac{2}{7} \times \frac{3}{8}$	
8.	$\frac{1}{4} \times \frac{3}{4}$	
9.	$\frac{5}{8} \times \frac{3}{10}$	
10.	$\frac{6}{11} \times \frac{1}{2}$	
11.	$\frac{6}{7} \times \frac{5}{8}$	
12.	$\frac{1}{6} \times \frac{9}{10}$	
13.	$\frac{3}{4} \times \frac{8}{9}$	
14.	$\frac{5}{6} \times \frac{2}{3}$	
15.	$\frac{1}{4} \times \frac{8}{11}$	

16.	$\frac{3}{7} \times \frac{2}{9}$	
17.	$\frac{4}{5} \times \frac{10}{13}$	
18.	$\frac{2}{9} \times \frac{3}{8}$	
19.	$\frac{1}{8} \times \frac{4}{5}$	
20.	$\frac{3}{7} \times \frac{2}{15}$	
21.	$1\frac{1}{2} \times 4\frac{3}{4}$	
22.	$2\frac{5}{6} \times 3\frac{3}{8}$	
23.	$1\frac{7}{8} \times 5\frac{1}{5}$	
24.	$6\frac{2}{3} \times 2\frac{3}{8}$	
25.	$7\frac{1}{2} \times 3\frac{6}{7}$	
26.	$3 \times 4\frac{1}{3}$	
27.	$2\frac{3}{5} \times 5\frac{1}{6}$	
28.	$4\frac{2}{5} \times 7$	
29.	$1\frac{4}{7} \times 2\frac{1}{2}$	
30.	$3\frac{5}{6} \times \frac{3}{10}$	

Multiplication of Fractions I—Round 2 [KEY]

Directions: Determine the product of the fractions.

1.	$\frac{5}{6} \times \frac{1}{4}$	$\frac{5}{24}$
2.	$\frac{2}{3} \times \frac{5}{7}$	$\frac{10}{21}$
3.	$\frac{1}{3} \times \frac{2}{5}$	$\frac{2}{15}$
4.	$\frac{5}{7} \times \frac{5}{8}$	$\frac{25}{56}$
5.	$\frac{3}{8} \times \frac{7}{9}$	$\frac{21}{72} = \frac{7}{24}$
6.	$\frac{3}{4} \times \frac{5}{6}$	$\frac{15}{24} = \frac{5}{8}$
7.	$\frac{2}{7} \times \frac{3}{8}$	$\frac{6}{56} = \frac{3}{28}$
8.	$\frac{1}{4} \times \frac{3}{4}$	$\frac{3}{16}$
9.	$\frac{5}{8} \times \frac{3}{10}$	$\frac{15}{80} = \frac{3}{16}$
10.	$\frac{6}{11} \times \frac{1}{2}$	$\frac{6}{22} = \frac{3}{11}$
11.	$\frac{6}{7} \times \frac{5}{8}$	$\frac{30}{56} = \frac{15}{28}$
12.	$\frac{1}{6} \times \frac{9}{10}$	$\frac{9}{60} = \frac{3}{20}$
13.	$\frac{3}{4} \times \frac{8}{9}$	$\frac{24}{36} = \frac{2}{3}$
14.	$\frac{5}{6} \times \frac{2}{3}$	$\frac{10}{18} = \frac{5}{9}$
15.	$\frac{1}{4} \times \frac{8}{11}$	$\frac{8}{44} = \frac{2}{11}$
16.	$\frac{3}{7} \times \frac{2}{9}$	$\frac{6}{63} = \frac{2}{21}$
17.	$\frac{4}{5} \times \frac{10}{13}$	$\frac{40}{65} = \frac{8}{13}$
18.	$\frac{2}{9} \times \frac{3}{8}$	$\frac{6}{72} = \frac{1}{12}$
19.	$\frac{1}{8} \times \frac{4}{5}$	$\frac{4}{40} = \frac{1}{10}$
20.	$\frac{3}{7} \times \frac{2}{15}$	$\frac{6}{105} = \frac{2}{35}$
21.	$1\frac{1}{2} \times 4\frac{3}{4}$	$\frac{57}{8} = 7\frac{1}{8}$
22.	$2\frac{5}{6} \times 3\frac{3}{8}$	$\frac{459}{48} = 9\frac{9}{16}$
23.	$1\frac{7}{8} \times 5\frac{1}{5}$	$\frac{390}{40} = 9\frac{3}{4}$
24.	$6\frac{2}{3} \times 2\frac{3}{8}$	$\frac{380}{24} = 15\frac{5}{6}$
25.	$7\frac{1}{2} \times 3\frac{6}{7}$	$\frac{405}{14} = 28\frac{13}{14}$
26.	$3 \times 4\frac{1}{3}$	$\frac{39}{3} = 13$
27.	$2\frac{3}{5} \times 5\frac{1}{6}$	$\frac{403}{30} = 13\frac{13}{30}$
28.	$4\frac{2}{5} \times 7$	$\frac{154}{5} = 30\frac{4}{5}$
29.	$1\frac{4}{7} \times 2\frac{1}{2}$	$\frac{55}{14} = 3\frac{13}{14}$
30.	$3\frac{5}{6} \times \frac{3}{10}$	$\frac{69}{60} = 1\frac{3}{20}$

Number Correct: _____

Multiplication of Fractions II—Round 1

Directions: Determine the product of the fractions.

1.	$\frac{1}{2} \times \frac{5}{8}$	
2.	$\frac{3}{4} \times \frac{3}{5}$	
3.	$\frac{1}{4} \times \frac{7}{8}$	
4.	$\frac{3}{9} \times \frac{2}{5}$	
5.	$\frac{5}{8} \times \frac{3}{7}$	
6.	$\frac{3}{7} \times \frac{4}{9}$	
7.	$\frac{2}{5} \times \frac{3}{8}$	
8.	$\frac{4}{9} \times \frac{5}{9}$	
9.	$\frac{2}{3} \times \frac{5}{7}$	
10.	$\frac{2}{7} \times \frac{3}{10}$	
11.	$\frac{3}{4} \times \frac{9}{10}$	
12.	$\frac{3}{5} \times \frac{2}{9}$	
13.	$\frac{2}{10} \times \frac{5}{6}$	
14.	$\frac{5}{8} \times \frac{7}{10}$	
15.	$\frac{3}{5} \times \frac{7}{9}$	

16.	$\frac{2}{9} \times \frac{3}{8}$	
17.	$\frac{3}{8} \times \frac{8}{9}$	
18.	$\frac{3}{4} \times \frac{7}{9}$	
19.	$\frac{3}{5} \times \frac{10}{13}$	
20.	$1\frac{2}{7} \times \frac{7}{8}$	
21.	$3\frac{1}{2} \times 3\frac{5}{6}$	
22.	$1\frac{7}{8} \times 5\frac{1}{5}$	
23.	$5\frac{4}{5} \times 3\frac{2}{9}$	
24.	$7\frac{2}{5} \times 2\frac{3}{8}$	
25.	$4\frac{2}{3} \times 2\frac{3}{10}$	
26.	$3\frac{3}{5} \times 6\frac{1}{4}$	
27.	$2\frac{7}{9} \times 5\frac{1}{3}$	
28.	$4\frac{3}{8} \times 3\frac{1}{5}$	
29.	$3\frac{1}{3} \times 5\frac{2}{5}$	
30.	$2\frac{2}{3} \times 7$	

Multiplication of Fractions II—Round 1 [KEY]

Directions: Determine the product of the fractions.

1.	$\frac{1}{2} \times \frac{5}{8}$	$\frac{5}{16}$
2.	$\frac{3}{4} \times \frac{3}{5}$	$\frac{9}{20}$
3.	$\frac{1}{4} \times \frac{7}{8}$	$\frac{7}{32}$
4.	$\frac{3}{9} \times \frac{2}{5}$	$\frac{6}{45}$
5.	$\frac{5}{8} \times \frac{3}{7}$	$\frac{15}{56}$
6.	$\frac{3}{7} \times \frac{4}{9}$	$\frac{12}{63}$
7.	$\frac{2}{5} \times \frac{3}{8}$	$\frac{6}{40} = \frac{3}{20}$
8.	$\frac{4}{9} \times \frac{5}{9}$	$\frac{20}{81}$
9.	$\frac{2}{3} \times \frac{5}{7}$	$\frac{10}{21}$
10.	$\frac{2}{7} \times \frac{3}{10}$	$\frac{6}{70} = \frac{3}{35}$
11.	$\frac{3}{4} \times \frac{9}{10}$	$\frac{27}{40}$
12.	$\frac{3}{5} \times \frac{2}{9}$	$\frac{6}{45} = \frac{2}{15}$
13.	$\frac{2}{10} \times \frac{5}{6}$	$\frac{10}{60} = \frac{1}{6}$
14.	$\frac{5}{8} \times \frac{7}{10}$	$\frac{35}{80} = \frac{7}{16}$
15.	$\frac{3}{5} \times \frac{7}{9}$	$\frac{21}{45} = \frac{7}{15}$

16.	$\frac{2}{9} \times \frac{3}{8}$	$\frac{6}{72} = \frac{1}{12}$
17.	$\frac{3}{8} \times \frac{8}{9}$	$\frac{24}{72} = \frac{1}{3}$
18.	$\frac{3}{4} \times \frac{7}{9}$	$\frac{21}{36} = \frac{7}{12}$
19.	$\frac{3}{5} \times \frac{10}{13}$	$\frac{30}{65} = \frac{6}{13}$
20.	$1\frac{2}{7} \times \frac{7}{8}$	$\frac{63}{56} = 1\frac{1}{8}$
21.	$3\frac{1}{2} \times 3\frac{5}{6}$	$\frac{161}{12} = 13\frac{5}{12}$
22.	$1\frac{7}{8} \times 5\frac{1}{5}$	$\frac{390}{40} = 9\frac{3}{4}$
23.	$5\frac{4}{5} \times 3\frac{2}{9}$	$\frac{841}{45} = 18\frac{31}{45}$
24.	$7\frac{2}{5} \times 2\frac{3}{8}$	$\frac{703}{40} = 17\frac{23}{40}$
25.	$4\frac{2}{3} \times 2\frac{3}{10}$	$\frac{322}{30} = 10\frac{11}{15}$
26.	$3\frac{3}{5} \times 6\frac{1}{4}$	$\frac{450}{20} = 22\frac{1}{2}$
27.	$2\frac{7}{9} \times 5\frac{1}{3}$	$\frac{400}{27} = 14\frac{22}{27}$
28.	$4\frac{3}{8} \times 3\frac{1}{5}$	$\frac{560}{40} = 14$
29.	$3\frac{1}{3} \times 5\frac{2}{5}$	$\frac{270}{15} = 18$
30.	$2\frac{2}{3} \times 7$	$\frac{56}{3} = 18\frac{2}{3}$

Number Correct: _____

Improvement: _____

Multiplication of Fractions II—Round 2

Directions: Determine the product of the fractions.

1.	$\frac{2}{3} \times \frac{5}{7}$	
2.	$\frac{1}{4} \times \frac{3}{5}$	
3.	$\frac{2}{3} \times \frac{2}{5}$	
4.	$\frac{5}{9} \times \frac{5}{8}$	
5.	$\frac{5}{8} \times \frac{3}{7}$	
6.	$\frac{3}{4} \times \frac{7}{8}$	
7.	$\frac{2}{5} \times \frac{3}{8}$	
8.	$\frac{3}{4} \times \frac{3}{4}$	
9.	$\frac{7}{8} \times \frac{3}{10}$	
10.	$\frac{4}{9} \times \frac{1}{2}$	
11.	$\frac{6}{11} \times \frac{3}{8}$	
12.	$\frac{5}{6} \times \frac{9}{10}$	
13.	$\frac{3}{4} \times \frac{2}{9}$	
14.	$\frac{4}{11} \times \frac{5}{8}$	
15.	$\frac{2}{3} \times \frac{9}{10}$	

16.	$\frac{3}{11} \times \frac{2}{9}$	
17.	$\frac{3}{5} \times \frac{10}{21}$	
18.	$\frac{4}{9} \times \frac{3}{10}$	
19.	$\frac{3}{8} \times \frac{4}{5}$	
20.	$\frac{6}{11} \times \frac{2}{15}$	
21.	$1\frac{2}{3} \times \frac{3}{5}$	
22.	$2\frac{1}{6} \times \frac{3}{4}$	
23.	$1\frac{2}{5} \times 3\frac{2}{3}$	
24.	$4\frac{2}{3} \times 1\frac{1}{4}$	
25.	$3\frac{1}{2} \times 2\frac{4}{5}$	
26.	$3 \times 5\frac{3}{4}$	
27.	$1\frac{2}{3} \times 3\frac{1}{4}$	
28.	$2\frac{3}{5} \times 3$	
29.	$1\frac{5}{7} \times 3\frac{1}{2}$	
30.	$3\frac{1}{3} \times 1\frac{9}{10}$	

Multiplication of Fractions II—Round 2 [KEY]

Directions: Determine the product of the fractions.

1.	$\frac{2}{3} \times \frac{5}{7}$	$\frac{10}{21}$
2.	$\frac{1}{4} \times \frac{3}{5}$	$\frac{3}{20}$
3.	$\frac{2}{3} \times \frac{2}{5}$	$\frac{4}{15}$
4.	$\frac{5}{9} \times \frac{5}{8}$	$\frac{25}{72}$
5.	$\frac{5}{8} \times \frac{3}{7}$	$\frac{15}{56}$
6.	$\frac{3}{4} \times \frac{7}{8}$	$\frac{21}{32}$
7.	$\frac{2}{5} \times \frac{3}{8}$	$\frac{6}{40} = \frac{3}{20}$
8.	$\frac{3}{4} \times \frac{3}{4}$	$\frac{9}{16}$
9.	$\frac{7}{8} \times \frac{3}{10}$	$\frac{21}{80}$
10.	$\frac{4}{9} \times \frac{1}{2}$	$\frac{4}{18} = \frac{2}{9}$
11.	$\frac{6}{11} \times \frac{3}{8}$	$\frac{18}{88} = \frac{9}{44}$
12.	$\frac{5}{6} \times \frac{9}{10}$	$\frac{45}{60} = \frac{3}{4}$
13.	$\frac{3}{4} \times \frac{2}{9}$	$\frac{6}{36} = \frac{1}{6}$
14.	$\frac{4}{11} \times \frac{5}{8}$	$\frac{20}{88} = \frac{5}{22}$
15.	$\frac{2}{3} \times \frac{9}{10}$	$\frac{18}{30} = \frac{3}{5}$

16.	$\frac{3}{11} \times \frac{2}{9}$	$\frac{6}{99} = \frac{2}{33}$
17.	$\frac{3}{5} \times \frac{10}{21}$	$\frac{30}{105} = \frac{2}{7}$
18.	$\frac{4}{9} \times \frac{3}{10}$	$\frac{12}{90} = \frac{2}{15}$
19.	$\frac{3}{8} \times \frac{4}{5}$	$\frac{12}{40} = \frac{3}{10}$
20.	$\frac{6}{11} \times \frac{2}{15}$	$\frac{12}{165} = \frac{4}{55}$
21.	$1\frac{2}{3} \times \frac{3}{5}$	$\frac{15}{15} = 1$
22.	$2\frac{1}{6} \times \frac{3}{4}$	$\frac{39}{24} = 1\frac{15}{24} = 1\frac{5}{8}$
23.	$1\frac{2}{5} \times 3\frac{2}{3}$	$\frac{77}{15} = 5\frac{2}{15}$
24.	$4\frac{2}{3} \times 1\frac{1}{4}$	$\frac{70}{12} = 5\frac{10}{12} = 5\frac{5}{6}$
25.	$3\frac{1}{2} \times 2\frac{4}{5}$	$\frac{98}{10} = 9\frac{8}{10} = 9\frac{4}{5}$
26.	$3 \times 5\frac{3}{4}$	$\frac{69}{4} = 17\frac{1}{4}$
27.	$1\frac{2}{3} \times 3\frac{1}{4}$	$\frac{65}{12} = 5\frac{5}{12}$
28.	$2\frac{3}{5} \times 3$	$\frac{39}{5} = 7\frac{4}{5}$
29.	$1\frac{5}{7} \times 3\frac{1}{2}$	$\frac{84}{14} = 6$
30.	$3\frac{1}{3} \times 1\frac{9}{10}$	$\frac{190}{30} = 6\frac{10}{30} = 6\frac{1}{3}$

Number Correct: _____

Division of Fractions – Round 1

Directions: Evaluate each expression. Place the final answer in the last column in each section.

1.	9 ones ÷ 3 ones	
2.	$9 \div 3$	
3.	9 tens ÷ 3 tens	
4.	$90 \div 30$	
5.	9 hundreds ÷ 3 hundreds	
6.	$900 \div 300$	
7.	9 halves ÷ 3 halves	
8.	$\frac{9}{2} \div \frac{3}{2}$	
9.	9 fourths ÷ 3 fourths	
10.	$\frac{9}{4} \div \frac{3}{4}$	
11.	$\frac{9}{8} \div \frac{3}{8}$	
12.	$\frac{2}{3} \div \frac{1}{3}$	
13.	$\frac{1}{3} \div \frac{2}{3}$	
14.	$\frac{6}{7} \div \frac{2}{7}$	
15.	$\frac{5}{7} \div \frac{2}{7}$	
16.	$\frac{3}{7} \div \frac{4}{7}$	
17.	$\frac{6}{10} \div \frac{2}{10}$	
18.	$\frac{6}{10} \div \frac{4}{10}$	
19.	$\frac{6}{10} \div \frac{8}{10}$	
20.	$\frac{7}{12} \div \frac{2}{12}$	
21.	$\frac{6}{12} \div \frac{9}{12}$	
22.	$\frac{4}{12} \div \frac{11}{12}$	

23.	$\frac{6}{10} \div \frac{4}{10}$	
24.	$\frac{6}{10} \div \frac{2}{5} = \frac{6}{10} \div \frac{4}{10}$	
25.	$\frac{10}{12} \div \frac{5}{12}$	
26.	$\frac{5}{6} \div \frac{5}{12} = \frac{5}{12} \div \frac{5}{12}$	
27.	$\frac{10}{12} \div \frac{3}{12}$	
28.	$\frac{10}{12} \div \frac{1}{4} = \frac{10}{12} \div \frac{3}{12}$	
29.	$\frac{5}{6} \div \frac{3}{12} = \frac{5}{12} \div \frac{3}{12}$	
30.	$\frac{5}{10} \div \frac{2}{10}$	
31.	$\frac{5}{10} \div \frac{1}{5} = \frac{5}{10} \div \frac{2}{10}$	
32.	$\frac{1}{2} \div \frac{2}{10} = \frac{5}{10} \div \frac{2}{10}$	
33.	$\frac{1}{2} \div \frac{1}{5} = \frac{5}{10} \div \frac{2}{10}$	
34.	$\frac{1}{2} \div \frac{2}{4}$	
35.	$\frac{3}{4} \div \frac{2}{8}$	
36.	$\frac{1}{2} \div \frac{3}{8}$	
37.	$\frac{2}{3} \div \frac{1}{6}$	
38.	$\frac{1}{3} \div \frac{4}{9}$	
39.	$\frac{5}{9} \div \frac{2}{3}$	
40.	$\frac{5}{6} \div \frac{2}{12}$	
41.	$\frac{2}{3} \div \frac{5}{12}$	
42.	$\frac{5}{12} \div \frac{1}{2}$	
43.	$\frac{2}{7} \div \frac{3}{14}$	
44.	$\frac{2}{7} \div \frac{9}{14}$	

Division of Fractions – Round 1 [KEY]

Directions: Evaluate each expression. Place the final answer in the last column in each section.

1.	9 ones ÷ 3 ones	$\frac{9}{3} = 3$
2.	9 ÷ 3	$\frac{9}{3} = 3$
3.	9 tens ÷ 3 tens	$\frac{9}{3} = 3$
4.	90 ÷ 30	$\frac{9}{3} = 3$
5.	9 hundreds ÷ 3 hundreds	$\frac{9}{3} = 3$
6.	900 ÷ 300	$\frac{9}{3} = 3$
7.	9 halves ÷ 3 halves	$\frac{9}{3} = 3$
8.	$\frac{9}{2} \div \frac{3}{2}$	$\frac{9}{3} = 3$
9.	9 fourths ÷ 3 fourths	$\frac{9}{3} = 3$
10.	$\frac{9}{4} \div \frac{3}{4}$	$\frac{9}{3} = 3$
11.	$\frac{9}{8} \div \frac{3}{8}$	$\frac{9}{3} = 3$
12.	$\frac{2}{3} \div \frac{1}{3}$	$\frac{2}{1} = 2$
13.	$\frac{1}{3} \div \frac{2}{3}$	$\frac{1}{2}$
14.	$\frac{6}{7} \div \frac{2}{7}$	$\frac{6}{2} = 3$
15.	$\frac{5}{7} \div \frac{2}{7}$	$\frac{5}{2} = 2\frac{1}{2}$
16.	$\frac{3}{7} \div \frac{4}{7}$	$\frac{3}{4}$
17.	$\frac{6}{10} \div \frac{2}{10}$	$\frac{6}{2} = 3$
18.	$\frac{6}{10} \div \frac{4}{10}$	$\frac{6}{4} = 1\frac{1}{2}$
19.	$\frac{6}{10} \div \frac{8}{10}$	$\frac{6}{8} = \frac{3}{4}$
20.	$\frac{7}{12} \div \frac{2}{12}$	$\frac{7}{2} = 3\frac{1}{2}$
21.	$\frac{6}{12} \div \frac{9}{12}$	$\frac{6}{9} = \frac{2}{3}$
22.	$\frac{4}{12} \div \frac{11}{12}$	$\frac{4}{11}$

23.	$\frac{6}{10} \div \frac{4}{10}$	$\frac{6}{4} = 1\frac{1}{2}$
24.	$\frac{6}{10} \div \frac{2}{5} = \frac{6}{10} \div \frac{4}{10}$	$\frac{6}{4} = 1\frac{1}{2}$
25.	$\frac{10}{12} \div \frac{5}{12}$	$\frac{10}{5} = 2$
26.	$\frac{5}{6} \div \frac{5}{12} = \frac{5}{12} \div \frac{5}{12}$	$\frac{10}{5} = 2$
27.	$\frac{10}{12} \div \frac{3}{12}$	$\frac{10}{3} = 3\frac{1}{3}$
28.	$\frac{10}{12} \div \frac{1}{4} = \frac{10}{12} \div \frac{3}{12}$	$\frac{10}{3} = 3\frac{1}{3}$
29.	$\frac{5}{6} \div \frac{3}{12} = \frac{5}{12} \div \frac{3}{12}$	$\frac{10}{3} = 3\frac{1}{3}$
30.	$\frac{5}{10} \div \frac{2}{10}$	$\frac{5}{2} = 2\frac{1}{2}$
31.	$\frac{5}{10} \div \frac{1}{5} = \frac{5}{10} \div \frac{2}{10}$	$\frac{5}{2} = 2\frac{1}{2}$
32.	$\frac{1}{2} \div \frac{2}{10} = \frac{5}{10} \div \frac{2}{10}$	$\frac{5}{2} = 2\frac{1}{2}$
33.	$\frac{1}{2} \div \frac{2}{4}$	$\frac{2}{2} = 1$
34.	$\frac{3}{4} \div \frac{2}{8}$	3
35.	$\frac{1}{2} \div \frac{3}{8}$	$\frac{4}{3} = 1\frac{1}{3}$
36.	$\frac{1}{2} \div \frac{1}{5} = \frac{5}{10} \div \frac{2}{10}$	$\frac{5}{2} = 2\frac{1}{2}$
37.	$\frac{2}{4} \div \frac{1}{3}$	$\frac{6}{4} = 1\frac{1}{2}$
38.	$\frac{1}{4} \div \frac{4}{6}$	$\frac{3}{8}$
39.	$\frac{3}{4} \div \frac{2}{6}$	$\frac{9}{4} = 2\frac{1}{4}$
40.	$\frac{5}{6} \div \frac{1}{4}$	$\frac{10}{3} = 3\frac{1}{3}$
41.	$\frac{2}{9} \div \frac{5}{6}$	$\frac{4}{15}$
42.	$\frac{5}{9} \div \frac{1}{6}$	$\frac{15}{3} = 5$
43.	$\frac{1}{2} \div \frac{1}{7}$	$\frac{7}{2} = 3\frac{1}{2}$
44.	$\frac{5}{7} \div \frac{1}{2}$	$\frac{10}{7} = 1\frac{3}{7}$

Number Correct: _____

Improvement: _____

Sprint Title – Round 2

Directions: Evaluate each expression. Place the final answer in the last column in each section

1.	12 ones ÷ 2 ones	
2.	$12 \div 2$	
3.	12 tens ÷ 2 tens	
4.	$120 \div 20$	
5.	12 hundreds ÷ 2 hundreds	
6.	$1,200 \div 200$	
7.	12 halves ÷ 2 halves	
8.	$\frac{12}{2} \div \frac{2}{2}$	
9.	12 fourths ÷ 3 fourths	
10.	$\frac{12}{4} \div \frac{3}{4}$	
11.	$\frac{12}{8} \div \frac{3}{8}$	
12.	$\frac{2}{4} \div \frac{1}{4}$	
13.	$\frac{1}{4} \div \frac{2}{4}$	
14.	$\frac{4}{5} \div \frac{2}{5}$	
15.	$\frac{2}{5} \div \frac{4}{5}$	
16.	$\frac{3}{5} \div \frac{4}{5}$	
17.	$\frac{6}{8} \div \frac{2}{8}$	
18.	$\frac{6}{8} \div \frac{4}{8}$	
19.	$\frac{6}{8} \div \frac{5}{8}$	
20.	$\frac{6}{10} \div \frac{2}{10}$	
21.	$\frac{7}{10} \div \frac{8}{10}$	
22.	$\frac{4}{10} \div \frac{7}{10}$	

23.	$\frac{6}{12} \div \frac{4}{12}$	
24.	$\frac{6}{12} \div \frac{2}{6} = \frac{6}{12} \div \frac{6}{12}$	
25.	$\frac{8}{14} \div \frac{7}{14}$	
26.	$\frac{8}{14} \div \frac{1}{2} = \frac{8}{14} \div \frac{7}{14}$	
27.	$\frac{11}{14} \div \frac{2}{14}$	
28.	$\frac{11}{14} \div \frac{1}{7} = \frac{11}{14} \div \frac{2}{14}$	
29.	$\frac{1}{7} \div \frac{6}{14} = \frac{2}{14} \div \frac{6}{14}$	
30.	$\frac{7}{18} \div \frac{3}{18}$	
31.	$\frac{7}{18} \div \frac{1}{6} = \frac{7}{18} \div \frac{3}{18}$	
32.	$\frac{1}{3} \div \frac{12}{18} = \frac{6}{18} \div \frac{12}{18}$	
33.	$\frac{1}{6} \div \frac{4}{18}$	
34.	$\frac{4}{12} \div \frac{8}{6}$	
35.	$\frac{1}{3} \div \frac{3}{15}$	
36.	$\frac{2}{6} \div \frac{1}{9} = \frac{2}{18} \div \frac{2}{18}$	
37.	$\frac{1}{6} \div \frac{4}{9}$	
38.	$\frac{2}{3} \div \frac{3}{4}$	
39.	$\frac{1}{3} \div \frac{3}{5}$	
40.	$\frac{1}{7} \div \frac{1}{2}$	
41.	$\frac{5}{6} \div \frac{2}{9}$	
42.	$\frac{5}{9} \div \frac{2}{6}$	
43.	$\frac{5}{6} \div \frac{4}{9}$	
44.	$\frac{1}{2} \div \frac{4}{5}$	

Sprint Title – Round 2 [KEY]

Directions: Evaluate each expression. Place the final answer in the last column in each section

1.	12 ones ÷ 2 ones	$\frac{12}{2} = 6$
2.	$12 \div 2$	$\frac{12}{2} = 6$
3.	12 tens ÷ 2 tens	$\frac{12}{2} = 6$
4.	$120 \div 20$	$\frac{12}{2} = 6$
5.	12 hundreds ÷ 2 hundreds	$\frac{12}{2} = 6$
6.	$1,200 \div 200$	$\frac{12}{2} = 6$
7.	12 halves ÷ 2 halves	$\frac{12}{2} = 6$
8.	$\frac{12}{2} \div \frac{2}{2}$	$\frac{12}{2} = 6$
9.	12 fourths ÷ 3 fourths	$\frac{12}{3} = 4$
10.	$\frac{12}{4} \div \frac{3}{4}$	$\frac{12}{3} = 4$
11.	$\frac{12}{8} \div \frac{3}{8}$	$\frac{12}{3} = 4$
12.	$\frac{2}{4} \div \frac{1}{4}$	$\frac{2}{1} = 2$
13.	$\frac{1}{4} \div \frac{2}{4}$	$\frac{1}{2}$
14.	$\frac{4}{5} \div \frac{2}{5}$	$\frac{4}{2} = 2$
15.	$\frac{2}{5} \div \frac{4}{5}$	$\frac{2}{4} = \frac{1}{2}$
16.	$\frac{3}{5} \div \frac{4}{5}$	$\frac{3}{4}$
17.	$\frac{6}{8} \div \frac{2}{8}$	$\frac{6}{2} = 3$
18.	$\frac{6}{8} \div \frac{4}{8}$	$\frac{6}{4} = 1\frac{1}{2}$
19.	$\frac{6}{8} \div \frac{5}{8}$	$\frac{6}{5} = 1\frac{1}{5}$
20.	$\frac{6}{10} \div \frac{2}{10}$	$\frac{6}{2} = 3$
21.	$\frac{7}{10} \div \frac{8}{10}$	$\frac{7}{8}$
22.	$\frac{4}{10} \div \frac{7}{10}$	$\frac{4}{7}$

23.	$\frac{6}{12} \div \frac{4}{12}$	$\frac{6}{4} = 1\frac{1}{2}$
24.	$\frac{6}{12} \div \frac{2}{6} = \frac{6}{12} \div \frac{2}{12}$	$\frac{6}{4} = 1\frac{1}{2}$
25.	$\frac{8}{14} \div \frac{7}{14}$	$\frac{8}{7} = 1\frac{1}{7}$
26.	$\frac{8}{14} \div \frac{1}{2} = \frac{8}{14} \div \frac{1}{14}$	$\frac{8}{7} = 1\frac{1}{7}$
27.	$\frac{11}{14} \div \frac{2}{14}$	$\frac{11}{2} = 5\frac{1}{2}$
28.	$\frac{11}{14} \div \frac{1}{7} = \frac{11}{14} \div \frac{1}{14}$	$\frac{11}{2} = 5\frac{1}{2}$
29.	$\frac{1}{7} \div \frac{6}{14} = \frac{1}{14} \div \frac{6}{14}$	$\frac{2}{6} = \frac{1}{3}$
30.	$\frac{7}{18} \div \frac{3}{18}$	$\frac{7}{3} = 2\frac{1}{3}$
31.	$\frac{7}{18} \div \frac{1}{6} = \frac{7}{18} \div \frac{1}{18}$	$\frac{7}{3} = 2\frac{1}{3}$
32.	$\frac{1}{3} \div \frac{12}{18} = \frac{1}{18} \div \frac{12}{18}$	$\frac{6}{12} = \frac{1}{2}$
33.	$\frac{1}{6} \div \frac{4}{18}$	$\frac{3}{4}$
34.	$\frac{4}{12} \div \frac{8}{6}$	$\frac{4}{16} = \frac{1}{4}$
35.	$\frac{1}{3} \div \frac{3}{15}$	$\frac{5}{3} = 1\frac{2}{3}$
36.	$\frac{2}{6} \div \frac{1}{9} = \frac{2}{18} \div \frac{1}{18}$	$\frac{6}{2} = 3$
37.	$\frac{1}{6} \div \frac{4}{9}$	$\frac{3}{8}$
38.	$\frac{2}{3} \div \frac{3}{4}$	$\frac{8}{9}$
39.	$\frac{1}{3} \div \frac{3}{5}$	$\frac{5}{9}$
40.	$\frac{1}{7} \div \frac{1}{2}$	$\frac{2}{7}$
41.	$\frac{5}{6} \div \frac{2}{9}$	$\frac{15}{4} = 3\frac{3}{4}$
42.	$\frac{5}{9} \div \frac{2}{6}$	$\frac{10}{6} = 1\frac{2}{3}$
43.	$\frac{5}{6} \div \frac{4}{9}$	$\frac{15}{8} = 1\frac{7}{8}$
44.	$\frac{1}{2} \div \frac{4}{5}$	$\frac{5}{8}$

Number Correct: _____

Division of Fractions II—Round 1

Directions: Determine the quotient of the fractions.

1.	$\frac{4}{10} \div \frac{2}{10}$	
2.	$\frac{9}{12} \div \frac{3}{12}$	
3.	$\frac{6}{10} \div \frac{4}{10}$	
4.	$\frac{2}{8} \div \frac{3}{8}$	
5.	$\frac{2}{7} \div \frac{6}{7}$	
6.	$\frac{11}{9} \div \frac{8}{9}$	
7.	$\frac{5}{13} \div \frac{10}{13}$	
8.	$\frac{7}{8} \div \frac{13}{16}$	
9.	$\frac{3}{5} \div \frac{7}{10}$	
10.	$\frac{9}{30} \div \frac{3}{5}$	
11.	$\frac{1}{3} \div \frac{4}{5}$	
12.	$\frac{2}{5} \div \frac{3}{4}$	
13.	$\frac{3}{4} \div \frac{5}{9}$	
14.	$\frac{4}{5} \div \frac{7}{12}$	
15.	$\frac{3}{8} \div \frac{5}{2}$	

16.	$3\frac{1}{8} \div \frac{2}{3}$	
17.	$1\frac{5}{6} \div \frac{1}{2}$	
18.	$\frac{5}{8} \div 2\frac{3}{4}$	
19.	$\frac{1}{3} \div 1\frac{4}{5}$	
20.	$\frac{3}{4} \div 2\frac{3}{10}$	
21.	$2\frac{1}{5} \div 1\frac{1}{6}$	
22.	$2\frac{4}{9} \div 1\frac{3}{5}$	
23.	$1\frac{2}{9} \div 3\frac{2}{5}$	
24.	$2\frac{2}{3} \div 3$	
25.	$1\frac{3}{4} \div 2\frac{2}{5}$	
26.	$4 \div 1\frac{2}{9}$	
27.	$3\frac{1}{5} \div 6$	
28.	$2\frac{5}{6} \div 1\frac{1}{3}$	
29.	$10\frac{2}{3} \div 8$	
30.	$15 \div 2\frac{3}{5}$	

Division of Fractions II—Round 1 [KEY]

Directions: Determine the quotient of the fractions.

1.	$\frac{4}{10} \div \frac{2}{10}$	$\frac{4}{2} = 2$	16.	$3\frac{1}{8} \div \frac{2}{3}$	$\frac{75}{16} = 4\frac{11}{16}$
2.	$\frac{9}{12} \div \frac{3}{12}$	$\frac{9}{3} = 3$	17.	$1\frac{5}{6} \div \frac{1}{2}$	$\frac{22}{6} = \frac{11}{3} = 3\frac{2}{3}$
3.	$\frac{6}{10} \div \frac{4}{10}$	$\frac{6}{4} = \frac{3}{2} = 1\frac{1}{2}$	18.	$\frac{5}{8} \div 2\frac{3}{4}$	$\frac{20}{88} = \frac{5}{22}$
4.	$\frac{2}{8} \div \frac{3}{8}$	$\frac{2}{3}$	19.	$\frac{1}{3} \div 1\frac{4}{5}$	$\frac{5}{27}$
5.	$\frac{2}{7} \div \frac{6}{7}$	$\frac{2}{6} = \frac{1}{3}$	20.	$\frac{3}{4} \div 2\frac{3}{10}$	$\frac{30}{92} = \frac{15}{46}$
6.	$\frac{11}{9} \div \frac{8}{9}$	$\frac{11}{8} = 1\frac{3}{8}$	21.	$2\frac{1}{5} \div 1\frac{1}{6}$	$\frac{66}{35} = 1\frac{31}{35}$
7.	$\frac{5}{13} \div \frac{10}{13}$	$\frac{5}{10} = \frac{1}{2}$	22.	$2\frac{4}{9} \div 1\frac{3}{5}$	$\frac{110}{72} = \frac{55}{36} = 1\frac{19}{36}$
8.	$\frac{7}{8} \div \frac{13}{16}$	$\frac{14}{13} = 1\frac{1}{13}$	23.	$1\frac{2}{9} \div 3\frac{2}{5}$	$\frac{55}{153}$
9.	$\frac{3}{5} \div \frac{7}{10}$	$\frac{6}{7}$	24.	$2\frac{2}{3} \div 3$	$\frac{8}{9}$
10.	$\frac{9}{30} \div \frac{3}{5}$	$\frac{9}{18} = \frac{1}{2}$	25.	$1\frac{3}{4} \div 2\frac{2}{5}$	$\frac{35}{48}$
11.	$\frac{1}{3} \div \frac{4}{5}$	$\frac{5}{12}$	26.	$4 \div 1\frac{2}{9}$	$\frac{36}{11} = 3\frac{3}{11}$
12.	$\frac{2}{5} \div \frac{3}{4}$	$\frac{8}{15}$	27.	$3\frac{1}{5} \div 6$	$\frac{16}{30} = \frac{8}{15}$
13.	$\frac{3}{4} \div \frac{5}{9}$	$\frac{27}{20} = 1\frac{7}{20}$	28.	$2\frac{5}{6} \div 1\frac{1}{3}$	$\frac{51}{24} = 2\frac{3}{24} = 2\frac{1}{8}$
14.	$\frac{4}{5} \div \frac{7}{12}$	$\frac{48}{35} = 1\frac{13}{35}$	29.	$10\frac{2}{3} \div 8$	$\frac{32}{24} = \frac{4}{3} = 1\frac{1}{3}$
15.	$\frac{3}{8} \div \frac{5}{2}$	$\frac{6}{40} = \frac{3}{20}$	30.	$15 \div 2\frac{3}{5}$	$\frac{195}{5} = 39$

Number Correct: _____

Improvement: _____

Division of Fractions II—Round 2

Directions: Determine the quotient of the fractions.

1.	$\frac{10}{2} \div \frac{5}{2}$	
2.	$\frac{6}{5} \div \frac{3}{5}$	
3.	$\frac{10}{7} \div \frac{2}{7}$	
4.	$\frac{3}{8} \div \frac{5}{8}$	
5.	$\frac{1}{4} \div \frac{3}{12}$	
6.	$\frac{7}{5} \div \frac{3}{10}$	
7.	$\frac{8}{15} \div \frac{4}{5}$	
8.	$\frac{5}{6} \div \frac{5}{12}$	
9.	$\frac{3}{5} \div \frac{7}{9}$	
10.	$\frac{3}{10} \div \frac{3}{9}$	
11.	$\frac{3}{4} \div \frac{7}{9}$	
12.	$\frac{7}{10} \div \frac{3}{8}$	
13.	$4 \div \frac{4}{9}$	
14.	$\frac{5}{8} \div 7$	
15.	$9 \div \frac{2}{3}$	

16.	$\frac{5}{8} \div 1\frac{3}{4}$	
17.	$\frac{1}{4} \div 2\frac{2}{5}$	
18.	$2\frac{3}{5} \div \frac{3}{8}$	
19.	$1\frac{3}{5} \div \frac{2}{9}$	
20.	$4 \div 2\frac{3}{8}$	
21.	$1\frac{1}{2} \div 5$	
22.	$3\frac{1}{3} \div 1\frac{3}{4}$	
23.	$2\frac{2}{5} \div 1\frac{1}{4}$	
24.	$3\frac{1}{2} \div 2\frac{2}{3}$	
25.	$1\frac{4}{5} \div 2\frac{3}{4}$	
26.	$3\frac{1}{6} \div 1\frac{3}{5}$	
27.	$3\frac{3}{5} \div 2\frac{1}{8}$	
28.	$5 \div 1\frac{1}{6}$	
29.	$3\frac{3}{4} \div 5\frac{1}{2}$	
30.	$4\frac{2}{3} \div 5\frac{1}{4}$	

Division of Fractions II—Round 2 [KEY]

Directions: Determine the quotient of the fractions.

1.	$\frac{10}{2} \div \frac{5}{2}$	$\frac{10}{5} = 2$
2.	$\frac{6}{5} \div \frac{3}{5}$	$\frac{6}{3} = 2$
3.	$\frac{10}{7} \div \frac{2}{7}$	$\frac{10}{2} = 5$
4.	$\frac{3}{8} \div \frac{5}{8}$	$\frac{3}{5}$
5.	$\frac{1}{4} \div \frac{3}{12}$	$\frac{3}{3} = 1$
6.	$\frac{7}{5} \div \frac{3}{10}$	$\frac{14}{3} = 4\frac{2}{3}$
7.	$\frac{8}{15} \div \frac{4}{5}$	$\frac{8}{12} = \frac{2}{3}$
8.	$\frac{5}{6} \div \frac{5}{12}$	$\frac{10}{5} = 2$
9.	$\frac{3}{5} \div \frac{7}{9}$	$\frac{27}{35}$
10.	$\frac{3}{10} \div \frac{3}{9}$	$\frac{27}{30} = \frac{9}{10}$
11.	$\frac{3}{4} \div \frac{7}{9}$	$\frac{27}{28}$
12.	$\frac{7}{10} \div \frac{3}{8}$	$\frac{56}{30} = \frac{28}{15} = 1\frac{13}{15}$
13.	$4 \div \frac{4}{9}$	$\frac{16}{9} = 1\frac{7}{9}$
14.	$\frac{5}{8} \div 7$	$\frac{5}{56}$
15.	$9 \div \frac{2}{3}$	$\frac{18}{3} = 6$

16.	$\frac{5}{8} \div 1\frac{3}{4}$	$\frac{20}{56} = \frac{5}{14}$
17.	$\frac{1}{4} \div 2\frac{2}{5}$	$\frac{5}{48}$
18.	$2\frac{3}{5} \div \frac{3}{8}$	$\frac{104}{15} = 6\frac{14}{15}$
19.	$1\frac{3}{5} \div \frac{2}{9}$	$\frac{72}{10} = 7\frac{2}{10} = 7\frac{1}{5}$
20.	$4 \div 2\frac{3}{8}$	$\frac{32}{19} = 1\frac{6}{19}$
21.	$1\frac{1}{2} \div 5$	$\frac{3}{10}$
22.	$3\frac{1}{3} \div 1\frac{3}{4}$	$\frac{40}{21} = 1\frac{19}{21}$
23.	$2\frac{2}{5} \div 1\frac{1}{4}$	$\frac{48}{25} = 1\frac{23}{25}$
24.	$3\frac{1}{2} \div 2\frac{2}{3}$	$\frac{21}{16} = 1\frac{5}{16}$
25.	$1\frac{4}{5} \div 2\frac{3}{4}$	$\frac{36}{55}$
26.	$3\frac{1}{6} \div 1\frac{3}{5}$	$\frac{95}{48} = 1\frac{47}{48}$
27.	$3\frac{3}{5} \div 2\frac{1}{8}$	$\frac{144}{85} = 1\frac{59}{85}$
28.	$5 \div 1\frac{1}{6}$	$\frac{30}{7} = 4\frac{2}{7}$
29.	$3\frac{3}{4} \div 5\frac{1}{2}$	$\frac{30}{44} = \frac{15}{22}$
30.	$4\frac{2}{3} \div 5\frac{1}{4}$	$\frac{56}{63} = \frac{8}{9}$

Long Division Algorithm**Progression of Exercises**

1. $3,282 \div 6$

547

2. $2,712 \div 3$

904

3. $15,036 \div 7$

2,148

4. $1,788 \div 8$

223.5

5. $5,736 \div 12$

478

6. $35,472 \div 16$

2,217

7. $13,384 \div 28$

478

8. $31,317 \div 39$

803

9. $1,113 \div 42$

26.5

10. $4,082 \div 52$

78.5

Addition of Decimals I**Progression of Exercises**

1. $1.3 + 2.1$

3.4

2. $14.3 + 12.6$

26.9

3. $56.56 + 12.12$

68.68

4. $24.5 + 42.9$

67.4

5. $365.8 + 127.4$

493.2

6. $76.67 + 40.33$

117

7. $872.78 + 135.86$

1,008.64

8. $549.2 + 678.09$

1,227.29

9. $821.3 + 106.87$

928.17

10. $108.97 + 268.03$

377

Addition of Decimals II**Progression of Exercises**

1. $4.2 + 3.5$

7.7

2. $452. + 53.7$

98.9

3. $32.45 + 24.77$

57.22

4. $16.87 + 17.3$

34.17

5. $78.04 + 8.29$

86.33

6. $247.12 + 356.78$

603.9

7. $74.54 + 0.97$

75.51

8. $154 + 85.3$

239.3

9. $438.21 + 195.7$

633.91

10. $0.648 + 3.08$

3.728

Number Correct: _____

Addition of Decimals – Round 1

Directions: Evaluate each expression.

1.	$5.1 + 6$	
2.	$5.1 + 0.6$	
3.	$5.1 + 0.06$	
4.	$5.1 + 0.006$	
5.	$5.1 + 0.0006$	
6.	$3 + 2.4$	
7.	$0.3 + 2.4$	
8.	$0.03 + 2.4$	
9.	$0.003 + 2.4$	
10.	$0.0003 + 2.4$	
11.	$24 + 0.3$	
12.	$2 + 0.3$	
13.	$0.2 + 0.03$	
14.	$0.02 + 0.3$	
15.	$0.2 + 3$	
16.	$2 + 0.03$	
17.	$5 + 0.4$	
18.	$0.5 + 0.04$	
19.	$0.05 + 0.4$	
20.	$0.5 + 4$	
21.	$5 + 0.04$	
22.	$0.5 + 0.4$	

23.	$3.6 + 2.1$	
24.	$3.6 + 0.21$	
25.	$3.6 + 0.021$	
26.	$0.36 + 0.021$	
27.	$0.036 + 0.021$	
28.	$1.4 + 42$	
29.	$1.4 + 4.2$	
30.	$1.4 + 0.42$	
31.	$1.4 + 0.042$	
32.	$0.14 + 0.042$	
33.	$0.014 + 0.042$	
34.	$0.8 + 2$	
35.	$0.8 + 0.2$	
36.	$0.08 + 0.02$	
37.	$0.008 + 0.002$	
38.	$6 + 0.4$	
39.	$0.6 + 0.4$	
40.	$0.06 + 0.04$	
41.	$0.006 + 0.004$	
42.	$0.1 + 9$	
43.	$0.1 + 0.9$	
44.	$0.01 + 0.09$	

Addition of Decimals – Round 1 [KEY]

Directions: Evaluate each expression.

1.	$5.1 + 6$	11.1
2.	$5.1 + 0.6$	5.7
3.	$5.1 + 0.06$	5.16
4.	$5.1 + 0.006$	5.106
5.	$5.1 + 0.0006$	5.1006
6.	$3 + 2.4$	5.4
7.	$0.3 + 2.4$	2.7
8.	$0.03 + 2.4$	2.43
9.	$0.003 + 2.4$	2.403
10.	$0.0003 + 2.4$	2.4003
11.	$24 + 0.3$	24.3
12.	$2 + 0.3$	2.3
13.	$0.2 + 0.03$	0.23
14.	$0.02 + 0.3$	0.32
15.	$0.2 + 3$	3.2
16.	$2 + 0.03$	2.03
17.	$5 + 0.4$	5.4
18.	$0.5 + 0.04$	0.54
19.	$0.05 + 0.4$	0.45
20.	$0.5 + 4$	4.5
21.	$5 + 0.04$	5.04
22.	$0.5 + 0.4$	0.9

23.	$3.6 + 2.1$	5.7
24.	$3.6 + 0.21$	3.81
25.	$3.6 + 0.021$	3.621
26.	$0.36 + 0.021$	0.381
27.	$0.036 + 0.021$	0.057
28.	$1.4 + 42$	43.4
29.	$1.4 + 4.2$	5.6
30.	$1.4 + 0.42$	1.82
31.	$1.4 + 0.042$	1.442
32.	$0.14 + 0.042$	0.182
33.	$0.014 + 0.042$	0.056
34.	$0.8 + 2$	2.8
35.	$0.8 + 0.2$	1
36.	$0.08 + 0.02$	0.1
37.	$0.008 + 0.002$	0.01
38.	$6 + 0.4$	6.4
39.	$0.6 + 0.4$	1
40.	$0.06 + 0.04$	0.1
41.	$0.006 + 0.004$	0.01
42.	$0.1 + 9$	9.1
43.	$0.1 + 0.9$	1
44.	$0.01 + 0.09$	0.1

Number Correct: _____

Improvement: _____

Addition of Decimals – Round 2

Directions: Evaluate each expression.

1.	$3.2 + 5$	
2.	$3.2 + 0.5$	
3.	$3.2 + 0.05$	
4.	$3.2 + 0.005$	
5.	$3.2 + 0.0005$	
6.	$4 + 5.3$	
7.	$0.4 + 5.3$	
8.	$0.04 + 5.3$	
9.	$0.004 + 5.3$	
10.	$0.0004 + 5.3$	
11.	$4 + 0.53$	
12.	$6 + 0.2$	
13.	$0.6 + 0.02$	
14.	$0.06 + 0.2$	
15.	$0.6 + 2$	
16.	$2 + 0.06$	
17.	$1 + 0.7$	
18.	$0.1 + 0.07$	
19.	$0.01 + 0.7$	
20.	$0.1 + 7$	
21.	$1 + 0.07$	
22.	$0.1 + 0.7$	

23.	$4.2 + 5.5$	
24.	$4.2 + 0.55$	
25.	$4.2 + 0.055$	
26.	$0.42 + 0.055$	
27.	$0.042 + 0.055$	
28.	$2.7 + 12$	
29.	$2.7 + 1.2$	
30.	$2.7 + 0.12$	
31.	$2.7 + 0.012$	
32.	$0.27 + 0.012$	
33.	$0.027 + 0.012$	
34.	$0.7 + 3$	
35.	$0.7 + 0.3$	
36.	$0.07 + 0.03$	
37.	$0.007 + 0.003$	
38.	$5 + 0.5$	
39.	$0.5 + 0.5$	
40.	$0.05 + 0.05$	
41.	$0.005 + 0.005$	
42.	$0.2 + 8$	
43.	$0.2 + 0.8$	
44.	$0.02 + 0.08$	

Addition of Decimals – Round 2 [KEY]

Directions: Evaluate each expression.

1.	$3.2 + 5$	8.2
2.	$3.2 + 0.5$	3.7
3.	$3.2 + 0.05$	3.25
4.	$3.2 + 0.005$	3.205
5.	$3.2 + 0.0005$	3.2005
6.	$4 + 5.3$	9.3
7.	$0.4 + 5.3$	5.7
8.	$0.04 + 5.3$	5.34
9.	$0.004 + 5.3$	5.304
10.	$0.0004 + 5.3$	5.3004
11.	$4 + 0.53$	4.53
12.	$6 + 0.2$	6.2
13.	$0.6 + 0.02$	0.62
14.	$0.06 + 0.2$	0.26
15.	$0.6 + 2$	2.6
16.	$2 + 0.06$	2.06
17.	$1 + 0.7$	1.7
18.	$0.1 + 0.07$	0.17
19.	$0.01 + 0.7$	0.71
20.	$0.1 + 7$	7.1
21.	$1 + 0.07$	1.07
22.	$0.1 + 0.7$	0.8

23.	$4.2 + 5.5$	9.7
24.	$4.2 + 0.55$	4.75
25.	$4.2 + 0.055$	4.255
26.	$0.42 + 0.055$	0.475
27.	$0.042 + 0.055$	0.097
28.	$2.7 + 12$	14.7
29.	$2.7 + 1.2$	3.9
30.	$2.7 + 0.12$	2.82
31.	$2.7 + 0.012$	2.712
32.	$0.27 + 0.012$	0.282
33.	$0.027 + 0.012$	0.039
34.	$0.7 + 3$	3.7
35.	$0.7 + 0.3$	1
36.	$0.07 + 0.03$	0.1
37.	$0.007 + 0.003$	0.01
38.	$5 + 0.5$	5.5
39.	$0.5 + 0.5$	1
40.	$0.05 + 0.05$	0.1
41.	$0.005 + 0.005$	0.01
42.	$0.2 + 8$	8.2
43.	$0.2 + 0.8$	1
44.	$0.02 + 0.08$	0.1

Number Correct: _____

Addition of Decimals II – Round 1

Directions: Evaluate each expression.

1.	$2.5 + 4$	
2.	$2.5 + 0.4$	
3.	$2.5 + 0.04$	
4.	$2.5 + 0.004$	
5.	$2.5 + 0.0004$	
6.	$6 + 1.3$	
7.	$0.6 + 1.3$	
8.	$0.06 + 1.3$	
9.	$0.006 + 1.3$	
10.	$0.0006 + 1.3$	
11.	$0.6 + 13$	
12.	$7 + 0.2$	
13.	$0.7 + 0.02$	
14.	$0.07 + 0.2$	
15.	$0.7 + 2$	
16.	$7 + 0.02$	
17.	$6 + 0.3$	
18.	$0.6 + 0.03$	
19.	$0.06 + 0.3$	
20.	$0.6 + 3$	
21.	$6 + 0.03$	
22.	$0.6 + 0.3$	

23.	$4.5 + 3.1$	
24.	$4.5 + 0.31$	
25.	$4.5 + 0.031$	
26.	$0.45 + 0.031$	
27.	$0.045 + 0.031$	
28.	$12 + 0.36$	
29.	$1.2 + 3.6$	
30.	$1.2 + 0.36$	
31.	$1.2 + 0.036$	
32.	$0.12 + 0.036$	
33.	$0.012 + 0.036$	
34.	$0.7 + 3$	
35.	$0.7 + 0.3$	
36.	$0.07 + 0.03$	
37.	$0.007 + 0.003$	
38.	$5 + 0.5$	
39.	$0.5 + 0.5$	
40.	$0.05 + 0.05$	
41.	$0.005 + 0.005$	
42.	$0.11 + 19$	
43.	$1.1 + 1.9$	
44.	$0.11 + 0.19$	

Addition of Decimals II – Round 1 [KEY]

Directions: Evaluate each expression.

1.	$2.5 + 4$	6.5
2.	$2.5 + 0.4$	2.9
3.	$2.5 + 0.04$	2.54
4.	$2.5 + 0.004$	2.504
5.	$2.5 + 0.0004$	2.5004
6.	$6 + 1.3$	7.3
7.	$0.6 + 1.3$	1.9
8.	$0.06 + 1.3$	1.36
9.	$0.006 + 1.3$	1.306
10.	$0.0006 + 1.3$	1.3006
11.	$0.6 + 13$	13.6
12.	$7 + 0.2$	7.2
13.	$0.7 + 0.02$	0.72
14.	$0.07 + 0.2$	0.27
15.	$0.7 + 2$	2.7
16.	$7 + 0.02$	7.02
17.	$6 + 0.3$	6.3
18.	$0.6 + 0.03$	0.63
19.	$0.06 + 0.3$	0.36
20.	$0.6 + 3$	3.6
21.	$6 + 0.03$	6.03
22.	$0.6 + 0.3$	0.9

23.	$4.5 + 3.1$	7.6
24.	$4.5 + 0.31$	4.81
25.	$4.5 + 0.031$	4.531
26.	$0.45 + 0.031$	0.481
27.	$0.045 + 0.031$	0.076
28.	$12 + 0.36$	12.36
29.	$1.2 + 3.6$	4.8
30.	$1.2 + 0.36$	1.56
31.	$1.2 + 0.036$	1.236
32.	$0.12 + 0.036$	0.156
33.	$0.012 + 0.036$	0.038
34.	$0.7 + 3$	3.7
35.	$0.7 + 0.3$	1
36.	$0.07 + 0.03$	0.1
37.	$0.007 + 0.003$	0.01
38.	$5 + 0.5$	5.5
39.	$0.5 + 0.5$	1
40.	$0.05 + 0.05$	0.1
41.	$0.005 + 0.005$	0.01
42.	$0.11 + 19$	19.11
43.	$1.1 + 1.9$	3
44.	$0.11 + 0.19$	0.3

Number Correct: _____

Improvement: _____

Addition of Decimals II – Round 2

Directions: Evaluate each expression.

1.	$7.4 + 3$	
2.	$7.4 + 0.3$	
3.	$7.4 + 0.03$	
4.	$7.4 + 0.003$	
5.	$7.4 + 0.0003$	
6.	$6 + 2.2$	
7.	$0.6 + 2.2$	
8.	$0.06 + 2.2$	
9.	$0.006 + 2.2$	
10.	$0.0006 + 2.2$	
11.	$0.6 + 22$	
12.	$7 + 0.8$	
13.	$0.7 + 0.08$	
14.	$0.07 + 0.8$	
15.	$0.7 + 8$	
16.	$7 + 0.08$	
17.	$5 + 0.4$	
18.	$0.5 + 0.04$	
19.	$0.05 + 0.4$	
20.	$0.5 + 4$	
21.	$5 + 0.04$	
22.	$5 + 0.4$	

23.	$3.6 + 2.3$	
24.	$3.6 + 0.23$	
25.	$3.6 + 0.023$	
26.	$0.36 + 0.023$	
27.	$0.036 + 0.023$	
28.	$0.13 + 56$	
29.	$1.3 + 5.6$	
30.	$1.3 + 0.56$	
31.	$1.3 + 0.056$	
32.	$0.13 + 0.056$	
33.	$0.013 + 0.056$	
34.	$2 + 0.8$	
35.	$0.2 + 0.8$	
36.	$0.02 + 0.08$	
37.	$0.002 + 0.008$	
38.	$0.16 + 14$	
39.	$1.6 + 1.4$	
40.	$0.16 + 0.14$	
41.	$0.016 + 0.014$	
42.	$15 + 0.15$	
43.	$1.5 + 1.5$	
44.	$0.15 + 0.15$	

Addition of Decimals II – Round 2 [KEY]

Directions: Evaluate each expression.

1.	$7.4 + 3$	10.4
2.	$7.4 + 0.3$	7.7
3.	$7.4 + 0.03$	7.43
4.	$7.4 + 0.003$	7.403
5.	$7.4 + 0.0003$	7.4003
6.	$6 + 2.2$	8.2
7.	$0.6 + 2.2$	2.8
8.	$0.06 + 2.2$	2.26
9.	$0.006 + 2.2$	2.206
10.	$0.0006 + 2.2$	2.2006
11.	$0.6 + 22$	22.6
12.	$7 + 0.8$	7.8
13.	$0.7 + 0.08$	0.78
14.	$0.07 + 0.8$	0.87
15.	$0.7 + 8$	8.7
16.	$7 + 0.08$	7.08
17.	$5 + 0.4$	5.4
18.	$0.5 + 0.04$	0.54
19.	$0.05 + 0.4$	0.45
20.	$0.5 + 4$	4.5
21.	$5 + 0.04$	5.04
22.	$5 + 0.4$	5.4

23.	$3.6 + 2.3$	5.9
24.	$3.6 + 0.23$	3.83
25.	$3.6 + 0.023$	3.623
26.	$0.36 + 0.023$	0.383
27.	$0.036 + 0.023$	0.059
28.	$0.13 + 56$	56.13
29.	$1.3 + 5.6$	6.9
30.	$1.3 + 0.56$	1.86
31.	$1.3 + 0.056$	1.356
32.	$0.13 + 0.056$	0.186
33.	$0.013 + 0.056$	0.069
34.	$2 + 0.8$	2.8
35.	$0.2 + 0.8$	1
36.	$0.02 + 0.08$	0.1
37.	$0.002 + 0.008$	0.01
38.	$0.16 + 14$	14.16
39.	$1.6 + 1.4$	3
40.	$0.16 + 0.14$	0.3
41.	$0.016 + 0.014$	0.03
42.	$15 + 0.15$	15.15
43.	$1.5 + 1.5$	3
44.	$0.15 + 0.15$	0.3

Subtraction of Decimals**Progression of Exercises**

1. $49.5 - 32.1 =$

17.4

2. $7.48 - 2.26 =$

5.22

3. $116.32 - 42.07 =$

74.25

4. $128.43 - 87.3 =$

41.13

5. $239.5 - 102.37 =$

137.13

6. $448.9 - 329.18 =$

119.72

7. $134.25 - 103.17 =$

31.08

8. $187.49 - 21 =$

166.49

9. $336.91 - 243.38 =$

93.53

10. $323.2 - 38.74 =$

284.46

Number Correct: _____

Subtraction of Decimals – Round 1

Directions: Evaluate each expression.

1.	$55 - 50$	
2.	$55 - 5$	
3.	$5.5 - 5$	
4.	$5.5 - 0.5$	
5.	$88 - 80$	
6.	$88 - 8$	
7.	$8.8 - 8$	
8.	$8.8 - 0.8$	
9.	$33 - 30$	
10.	$33 - 3$	
11.	$3.3 - 3$	
12.	$1 - 0.3$	
13.	$1 - 0.03$	
14.	$1 - 0.003$	
15.	$0.1 - 0.03$	
16.	$4 - 0.8$	
17.	$4 - 0.08$	
18.	$4 - 0.008$	
19.	$0.4 - 0.08$	
20.	$9 - 0.4$	
21.	$9 - 0.04$	
22.	$9 - 0.004$	

23.	$9.9 - 5$	
24.	$9.9 - 0.5$	
25.	$0.99 - 0.5$	
26.	$0.99 - 0.05$	
27.	$4.7 - 2$	
28.	$4.7 - 0.2$	
29.	$0.47 - 0.2$	
30.	$0.47 - 0.02$	
31.	$8.4 - 1$	
32.	$8.4 - 0.1$	
33.	$0.84 - 0.1$	
34.	$7.2 - 5$	
35.	$7.2 - 0.5$	
36.	$0.72 - 0.5$	
37.	$0.72 - 0.05$	
38.	$8.6 - 7$	
39.	$8.6 - 0.7$	
40.	$0.86 - 0.7$	
41.	$0.86 - 0.07$	
42.	$5.1 - 4$	
43.	$5.1 - 0.4$	
44.	$0.51 - 0.4$	

Subtraction of Decimals – Round 1 [KEY]

Directions: Evaluate each expression.

1.	$55 - 50$	5
2.	$55 - 5$	50
3.	$5.5 - 5$	0.5
4.	$5.5 - 0.5$	5
5.	$88 - 80$	8
6.	$88 - 8$	80
7.	$8.8 - 8$	0.8
8.	$8.8 - 0.8$	8
9.	$33 - 30$	3
10.	$33 - 3$	30
11.	$3.3 - 3$	0.3
12.	$1 - 0.3$	0.7
13.	$1 - 0.03$	0.97
14.	$1 - 0.003$	0.997
15.	$0.1 - 0.03$	0.07
16.	$4 - 0.8$	3.2
17.	$4 - 0.08$	3.92
18.	$4 - 0.008$	3.992
19.	$0.4 - 0.08$	0.32
20.	$9 - 0.4$	8.6
21.	$9 - 0.04$	8.96
22.	$9 - 0.004$	8.996

23.	$9.9 - 5$	4.9
24.	$9.9 - 0.5$	9.4
25.	$0.99 - 0.5$	0.49
26.	$0.99 - 0.05$	0.94
27.	$4.7 - 2$	2.7
28.	$4.7 - 0.2$	4.5
29.	$0.47 - 0.2$	0.27
30.	$0.47 - 0.02$	0.45
31.	$8.4 - 1$	7.4
32.	$8.4 - 0.1$	8.3
33.	$0.84 - 0.1$	0.74
34.	$7.2 - 5$	2.2
35.	$7.2 - 0.5$	6.7
36.	$0.72 - 0.5$	0.22
37.	$0.72 - 0.05$	0.67
38.	$8.6 - 7$	1.6
39.	$8.6 - 0.7$	7.9
40.	$0.86 - 0.7$	0.16
41.	$0.86 - 0.07$	0.79
42.	$5.1 - 4$	4.1
43.	$5.1 - 0.4$	4.7
44.	$0.51 - 0.4$	0.41

Number Correct: _____

Improvement: _____

Subtraction of Decimals – Round 2

Directions: Evaluate each expression.

1.	$66 - 60$	
2.	$66 - 6$	
3.	$6.6 - 6$	
4.	$6.6 - 0.6$	
5.	$99 - 90$	
6.	$99 - 9$	
7.	$9.9 - 9$	
8.	$9.9 - 0.9$	
9.	$22 - 20$	
10.	$22 - 2$	
11.	$2.2 - 2$	
12.	$3 - 0.4$	
13.	$3 - 0.04$	
14.	$3 - 0.004$	
15.	$0.3 - 0.04$	
16.	$8 - 0.2$	
17.	$8 - 0.02$	
18.	$8 - 0.002$	
19.	$0.8 - 0.02$	
20.	$5 - 0.1$	
21.	$5 - 0.01$	
22.	$5 - 0.001$	

23.	$6.8 - 4$	
24.	$6.8 - 0.4$	
25.	$0.68 - 0.4$	
26.	$0.68 - 0.04$	
27.	$7.3 - 1$	
28.	$7.3 - 0.1$	
29.	$0.73 - 0.1$	
30.	$0.73 - 0.01$	
31.	$9.5 - 2$	
32.	$9.5 - 0.2$	
33.	$0.95 - 0.2$	
34.	$8.3 - 5$	
35.	$8.3 - 0.5$	
36.	$0.83 - 0.5$	
37.	$0.83 - 0.05$	
38.	$7.2 - 4$	
39.	$7.2 - 0.4$	
40.	$0.72 - 0.4$	
41.	$0.72 - 0.04$	
42.	$9.3 - 7$	
43.	$9.3 - 0.7$	
44.	$0.93 - 0.7$	

Subtraction of Decimals – Round 2 [KEY]

Directions: Evaluate each expression.

1.	$66 - 60$	6
2.	$66 - 6$	60
3.	$6.6 - 6$	0.6
4.	$6.6 - 0.6$	6
5.	$99 - 90$	9
6.	$99 - 9$	90
7.	$9.9 - 9$	0.9
8.	$9.9 - 0.9$	9
9.	$22 - 20$	2
10.	$22 - 2$	20
11.	$2.2 - 2$	0.2
12.	$3 - 0.4$	2.6
13.	$3 - 0.04$	2.96
14.	$3 - 0.004$	2.996
15.	$0.3 - 0.04$	0.26
16.	$8 - 0.2$	7.8
17.	$8 - 0.02$	7.98
18.	$8 - 0.002$	7.998
19.	$0.8 - 0.02$	0.78
20.	$5 - 0.1$	4.9
21.	$5 - 0.01$	4.99
22.	$5 - 0.001$	4.999

23.	$6.8 - 4$	2.8
24.	$6.8 - 0.4$	6.4
25.	$0.68 - 0.4$	0.28
26.	$0.68 - 0.04$	0.64
27.	$7.3 - 1$	6.3
28.	$7.3 - 0.1$	7.2
29.	$0.73 - 0.1$	0.63
30.	$0.73 - 0.01$	0.72
31.	$9.5 - 2$	7.5
32.	$9.5 - 0.2$	9.3
33.	$0.95 - 0.2$	0.75
34.	$8.3 - 5$	3.3
35.	$8.3 - 0.5$	7.8
36.	$0.83 - 0.5$	0.33
37.	$0.83 - 0.05$	0.78
38.	$7.2 - 4$	3.2
39.	$7.2 - 0.4$	6.8
40.	$0.72 - 0.4$	0.32
41.	$0.72 - 0.04$	0.68
42.	$9.3 - 7$	2.3
43.	$9.3 - 0.7$	8.6
44.	$0.93 - 0.7$	0.23

Multiplication of Decimals**Progression of Exercises**

1. $0.5 \times 0.5 =$

0.25

2. $0.6 \times 0.6 =$

0.36

3. $0.7 \times 0.7 =$

0.49

4. $0.5 \times 0.6 =$

0.3

5. $1.5 \times 1.5 =$

2.25

6. $2.5 \times 2.5 =$

6.25

7. $0.25 \times 0.25 =$

0.0625

8. $0.1 \times 0.1 =$

0.01

9. $0.1 \times 123.4 =$

12.34

10. $0.01 \times 123.4 =$

1.234

Number Correct: _____

Multiplication of Decimals – Round 1

Directions: Evaluate each expression.

1.	5×1	
2.	5×0.1	
3.	5×0.01	
4.	5×0.001	
5.	4×2	
6.	4×0.2	
7.	4×0.02	
8.	4×0.002	
9.	3×3	
10.	3×0.3	
11.	3×0.03	
12.	0.1×0.8	
13.	0.01×0.8	
14.	0.1×0.08	
15.	0.01×0.08	
16.	0.3×0.2	
17.	0.03×0.2	
18.	0.3×0.02	
19.	0.03×0.02	
20.	0.2×0.2	
21.	0.02×0.2	
22.	0.2×0.02	

23.	5×3	
24.	5×0.3	
25.	0.5×3	
26.	0.5×0.3	
27.	9×2	
28.	9×0.2	
29.	0.9×2	
30.	0.9×0.2	
31.	4×4	
32.	4×0.4	
33.	0.4×0.4	
34.	0.8×0.6	
35.	0.8×0.06	
36.	0.8×0.006	
37.	0.08×0.006	
38.	0.7×0.9	
39.	0.07×0.9	
40.	0.007×0.9	
41.	0.007×0.09	
42.	1.2×0.3	
43.	1.2×0.03	
44.	1.2×0.003	

Multiplication of Decimals – Round 1 [KEY]

Directions: Evaluate each expression.

1.	5×1	5
2.	5×0.1	0.5
3.	5×0.01	0.05
4.	5×0.001	0.005
5.	4×2	8
6.	4×0.2	0.8
7.	4×0.02	0.08
8.	4×0.002	0.008
9.	3×3	9
10.	3×0.3	0.9
11.	3×0.03	0.09
12.	0.1×0.8	0.08
13.	0.01×0.8	0.008
14.	0.1×0.08	0.008
15.	0.01×0.08	0.0008
16.	0.3×0.2	0.06
17.	0.03×0.2	0.006
18.	0.3×0.02	0.006
19.	0.03×0.02	0.0006
20.	0.2×0.2	0.04
21.	0.02×0.2	0.004
22.	0.2×0.02	0.004

23.	5×3	15
24.	5×0.3	1.5
25.	0.5×3	1.5
26.	0.5×0.3	0.15
27.	9×2	18
28.	9×0.2	1.8
29.	0.9×2	1.8
30.	0.9×0.2	0.18
31.	4×4	16
32.	4×0.4	1.6
33.	0.4×0.4	0.16
34.	0.8×0.6	0.48
35.	0.8×0.06	0.048
36.	0.8×0.006	0.0048
37.	0.08×0.006	0.00048
38.	0.7×0.9	0.63
39.	0.07×0.9	0.063
40.	0.007×0.9	0.0063
41.	0.007×0.09	0.00063
42.	1.2×0.3	0.36
43.	1.2×0.03	0.036
44.	1.2×0.003	0.0036

Number Correct: _____

Improvement: _____

Multiplication of Decimals – Round 2

Directions: Evaluate each expression.

1.	9×1	
2.	0.9×1	
3.	0.09×1	
4.	0.009×1	
5.	2×2	
6.	2×0.2	
7.	2×0.02	
8.	2×0.002	
9.	3×2	
10.	0.3×2	
11.	0.03×2	
12.	0.7×0.1	
13.	0.07×0.1	
14.	0.7×0.01	
15.	0.07×0.01	
16.	0.2×0.4	
17.	0.02×0.4	
18.	0.2×0.04	
19.	0.02×0.04	
20.	0.1×0.1	
21.	0.01×0.1	
22.	0.1×0.01	

23.	3×4	
24.	3×0.4	
25.	0.3×4	
26.	0.3×0.4	
27.	7×7	
28.	7×0.7	
29.	0.7×7	
30.	0.7×0.7	
31.	2×8	
32.	2×0.8	
33.	0.2×0.8	
34.	0.6×0.5	
35.	0.6×0.05	
36.	0.6×0.005	
37.	0.06×0.005	
38.	0.9×0.9	
39.	0.09×0.9	
40.	0.009×0.9	
41.	0.009×0.09	
42.	1.1×0.5	
43.	1.1×0.05	
44.	1.1×0.005	

Multiplication of Decimals – Round 2 [KEY]

Directions: Evaluate each expression.

1.	9×1	9
2.	0.9×1	0.9
3.	0.09×1	0.09
4.	0.009×1	0.009
5.	2×2	4
6.	2×0.2	0.4
7.	2×0.02	0.04
8.	2×0.002	0.004
9.	3×2	6
10.	0.3×2	0.6
11.	0.03×2	0.06
12.	0.7×0.1	0.07
13.	0.07×0.1	0.007
14.	0.7×0.01	0.007
15.	0.07×0.01	0.0007
16.	0.2×0.4	0.08
17.	0.02×0.4	0.008
18.	0.2×0.04	0.008
19.	0.02×0.04	0.0008
20.	0.1×0.1	0.01
21.	0.01×0.1	0.001
22.	0.1×0.01	0.001

23.	3×4	12
24.	3×0.4	1.2
25.	0.3×4	1.2
26.	0.3×0.4	0.12
27.	7×7	49
28.	7×0.7	4.9
29.	0.7×7	4.9
30.	0.7×0.7	0.49
31.	2×8	16
32.	2×0.8	1.6
33.	0.2×0.8	0.16
34.	0.6×0.5	0.3
35.	0.6×0.05	0.03
36.	0.6×0.005	0.003
37.	0.06×0.005	0.0003
38.	0.9×0.9	0.81
39.	0.09×0.9	0.81
40.	0.009×0.9	0.0081
41.	0.009×0.09	0.00081
42.	1.1×0.5	0.55
43.	1.1×0.05	0.055
44.	1.1×0.005	0.0055

Number Correct: _____

Multiplication of Decimals II—Round 1**Directions:** Determine the products of the decimals.

1.	4.5×3	
2.	7.2×8	
3.	9.4×6	
4.	10.2×7	
5.	8.3×4	
6.	5.8×2	
7.	7.1×9	
8.	5.9×10	
9.	3.4×3	
10.	3.2×4	
11.	6×2.8	
12.	9.7×3	
13.	8×10.2	
14.	4×8.9	
15.	3.9×7	
16.	6×5.5	
17.	1.8×8	
18.	9×2.3	

19.	3.5×4.1	
20.	9.3×1.7	
21.	10.4×7.6	
22.	2.7×8.3	
23.	1.8×7.8	
24.	7.5×10.1	
25.	7.2×6.3	
26.	1.9×8.3	
27.	9.8×5.1	
28.	18.2×12	
29.	13.4×22	
30.	92.3×45	
31.	86.1×16	
32.	29.7×8.2	
33.	56.8×9.5	
34.	110.3×20.2	
35.	256.6×54.9	
36.	312.8×16.5	

Multiplication of Decimals II—Round 1 [KEY]

Directions: Determine the products of the decimals.

1.	4.5×3	13.5
2.	7.2×8	57.6
3.	9.4×6	56.4
4.	10.2×7	71.4
5.	8.3×4	33.2
6.	5.8×2	11.6
7.	7.1×9	63.9
8.	5.9×10	59
9.	3.4×3	10.2
10.	3.2×4	12.8
11.	6×2.8	16.8
12.	9.7×3	29.1
13.	8×10.2	81.6
14.	4×8.9	35.6
15.	3.9×7	27.3
16.	6×5.5	33.0
17.	1.8×8	14.4
18.	9×2.3	20.7

19.	3.5×4.1	14.35
20.	9.3×1.7	15.81
21.	10.4×7.6	79.04
22.	2.7×8.3	22.41
23.	1.8×7.8	14.04
24.	7.5×10.1	75.75
25.	7.2×6.3	45.36
26.	1.9×8.3	15.77
27.	9.8×5.1	49.98
28.	18.2×12	218.4
29.	13.4×22	294.8
30.	92.3×45	4153.5
31.	86.1×16	1377.6
32.	29.7×8.2	243.54
33.	56.8×9.5	539.6
34.	110.3×20.2	2228.06
35.	256.6×54.9	14087.34
36.	312.8×16.5	5161.2

Number Correct: _____

Improvement: _____

Multiplication of Decimals II—Round 2

Directions: Determine the products of the decimals.

1.	3.7×8	
2.	9.2×10	
3.	2.1×3	
4.	4.8×9	
5.	3.3×5	
6.	7.4×4	
7.	8.1×9	
8.	1.9×2	
9.	5.6×7	
10.	3.6×8	
11.	4×9.8	
12.	5×8.7	
13.	1.4×7	
14.	3×10.2	
15.	2.8×6	
16.	3.9×9	
17.	8.2×6	
18.	4.5×9	

19.	4.6×5.2	
20.	6.8×1.9	
21.	7.8×10.4	
22.	3.8×3.9	
23.	9.3×4.2	
24.	1.4×9.5	
25.	9.4×2.7	
26.	5.6×4.2	
27.	8.6×3.1	
28.	14.5×19	
29.	33×10.2	
30.	51×32.4	
31.	45×17.6	
32.	15.2×6.7	
33.	39.5×8.4	
34.	96.8×31.7	
35.	189.1×72.9	
36.	302.4×13.1	

Multiplication of Decimals II—Round 2 [KEY]

Directions: Determine the products of the decimals.

1.	3.7×8	29.6
2.	9.2×10	92
3.	2.1×3	6.3
4.	4.8×9	43.2
5.	3.3×5	16.5
6.	7.4×4	29.6
7.	8.1×9	72.9
8.	1.9×2	3.8
9.	5.6×7	39.2
10.	3.6×8	28.8
11.	4×9.8	39.2
12.	5×8.7	43.5
13.	1.4×7	9.8
14.	3×10.2	30.6
15.	2.8×6	16.8
16.	3.9×9	35.1
17.	8.2×6	49.2
18.	4.5×9	40.5

19.	4.6×5.2	23.92
20.	6.8×1.9	12.92
21.	7.8×10.4	81.12
22.	3.8×3.9	14.82
23.	9.4×4.2	39.48
24.	1.4×9.5	13.3
25.	9.4×2.7	25.38
26.	5.6×4.2	23.52
27.	8.6×3.1	26.66
28.	14.5×19	275.5
29.	33×10.2	336.6
30.	51×32.4	1652.4
31.	45×17.6	792.0
32.	15.2×6.7	101.84
33.	39.5×8.4	331.8
34.	96.8×31.7	3068.56
35.	189.1×72.9	13785.39
36.	302.4×13.1	3961.44

Number Correct: _____

Greatest Common Factor—Round 1

Directions: Determine the greatest common factor of each pair of numbers.

1.	GCF of 10 and 50	
2.	GCF of 5 and 35	
3.	GCF of 3 and 12	
4.	GCF of 8 and 20	
5.	GCF of 15 and 35	
6.	GCF of 10 and 75	
7.	GCF of 9 and 30	
8.	GCF of 15 and 33	
9.	GCF of 12 and 28	
10.	GCF of 16 and 40	
11.	GCF of 24 and 32	
12.	GCF of 35 and 49	
13.	GCF of 45 and 60	
14.	GCF of 48 and 72	
15.	GCF of 50 and 42	

16.	GCF of 45 and 72	
17.	GCF of 28 and 48	
18.	GCF of 44 and 77	
19.	GCF of 39 and 66	
20.	GCF of 64 and 88	
21.	GCF of 42 and 56	
22.	GCF of 28 and 42	
23.	GCF of 13 and 91	
24.	GCF of 16 and 84	
25.	GCF of 36 and 99	
26.	GCF of 39 and 65	
27.	GCF of 27 and 87	
28.	GCF of 28 and 70	
29.	GCF of 26 and 91	
30.	GCF of 34 and 51	

Greatest Common Factor—Round 1 **[KEY]**

Directions: Determine the greatest common factor of each pair of numbers.

1.	GCF of 10 and 50	10
2.	GCF of 5 and 35	5
3.	GCF of 3 and 12	3
4.	GCF of 8 and 20	4
5.	GCF of 15 and 35	5
6.	GCF of 10 and 75	5
7.	GCF of 9 and 30	3
8.	GCF of 15 and 33	3
9.	GCF of 12 and 28	4
10.	GCF of 16 and 40	8
11.	GCF of 24 and 32	8
12.	GCF of 35 and 49	7
13.	GCF of 45 and 60	15
14.	GCF of 48 and 72	24
15.	GCF of 50 and 42	2

16.	GCF of 45 and 72	9
17.	GCF of 28 and 48	4
18.	GCF of 44 and 77	11
19.	GCF of 39 and 66	3
20.	GCF of 64 and 88	8
21.	GCF of 42 and 56	14
22.	GCF of 28 and 42	14
23.	GCF of 13 and 91	13
24.	GCF of 16 and 84	4
25.	GCF of 36 and 99	9
26.	GCF of 39 and 65	13
27.	GCF of 27 and 87	3
28.	GCF of 28 and 70	14
29.	GCF of 26 and 91	13
30.	GCF of 34 and 51	17

Number Correct: _____

Improvement: _____

Greatest Common Factor—Round 2

Directions: Determine the greatest common factor of each pair of numbers.

1.	GCF of 20 and 80	
2.	GCF of 10 and 70	
3.	GCF of 9 and 36	
4.	GCF of 12 and 24	
5.	GCF of 15 and 45	
6.	GCF of 10 and 95	
7.	GCF of 9 and 45	
8.	GCF of 18 and 33	
9.	GCF of 12 and 32	
10.	GCF of 16 and 56	
11.	GCF of 40 and 72	
12.	GCF of 35 and 63	
13.	GCF of 30 and 75	
14.	GCF of 42 and 72	
15.	GCF of 30 and 28	

16.	GCF of 33 and 99	
17.	GCF of 38 and 76	
18.	GCF of 26 and 65	
19.	GCF of 39 and 48	
20.	GCF of 72 and 88	
21.	GCF of 21 and 56	
22.	GCF of 28 and 52	
23.	GCF of 51 and 68	
24.	GCF of 48 and 84	
25.	GCF of 21 and 63	
26.	GCF of 64 and 80	
27.	GCF of 36 and 90	
28.	GCF of 28 and 98	
29.	GCF of 39 and 91	
30.	GCF of 38 and 95	

Greatest Common Factor—Round 2 **[KEY]**

Directions: Determine the greatest common factor of each pair of numbers.

1.	GCF of 20 and 80	20
2.	GCF of 10 and 70	10
3.	GCF of 9 and 36	9
4.	GCF of 12 and 24	12
5.	GCF of 15 and 45	15
6.	GCF of 10 and 95	5
7.	GCF of 9 and 45	9
8.	GCF of 18 and 33	3
9.	GCF of 12 and 32	4
10.	GCF of 16 and 56	8
11.	GCF of 40 and 72	8
12.	GCF of 35 and 63	7
13.	GCF of 30 and 75	15
14.	GCF of 42 and 72	6
15.	GCF of 30 and 28	2

16.	GCF of 33 and 99	33
17.	GCF of 38 and 76	38
18.	GCF of 26 and 65	13
19.	GCF of 39 and 48	3
20.	GCF of 72 and 88	8
21.	GCF of 21 and 56	7
22.	GCF of 28 and 52	4
23.	GCF of 51 and 68	17
24.	GCF of 48 and 84	12
25.	GCF of 21 and 63	21
26.	GCF of 64 and 80	16
27.	GCF of 36 and 90	18
28.	GCF of 28 and 98	14
29.	GCF of 39 and 91	13
30.	GCF of 38 and 95	19

Number Correct: _____

Rational Numbers: Inequality Statements—Round 1

Directions: Work in numerical order to answer Problems 1–33. Arrange each set of numbers in order according to the inequality symbols.

1. $\square < \square < \square$ 1, -1, 0	12. $\square > \square > \square$ 7, -6, 6	23. $\square > \square > \square$ 25, $\frac{3}{4}$, $-\frac{3}{4}$
2. $\square > \square > \square$ 1, -1, 0	13. $\square > \square > \square$ 17, 4, 16	24. $\square < \square < \square$ 25, $\frac{3}{4}$, $-\frac{3}{4}$
3. $\square < \square < \square$ $3\frac{1}{2}$, $-3\frac{1}{2}$, 0	14. $\square < \square < \square$ 17, 4, 16	25. $\square > \square > \square$ 2.2, 2.3, 2.4
4. $\square > \square > \square$ $3\frac{1}{2}$, $-3\frac{1}{2}$, 0	15. $\square < \square < \square$ 0, 12, -11	26. $\square > \square > \square$ 1.2, 1.3, 1.4
5. $\square > \square > \square$ 1, $-\frac{1}{2}$, $\frac{1}{2}$	16. $\square > \square > \square$ 0, 12, -11	27. $\square > \square > \square$ 0.2, 0.3, 0.4
6. $\square < \square < \square$ 1, $-\frac{1}{2}$, $\frac{1}{2}$	17. $\square > \square > \square$ 1, $\frac{1}{4}$, $\frac{1}{2}$	28. $\square > \square > \square$ -0.5, -1, -0.6
7. $\square < \square < \square$ -3, -4, -5	18. $\square < \square < \square$ 1, $\frac{1}{4}$, $\frac{1}{2}$	29. $\square < \square < \square$ -0.5, -1, -0.6
8. $\square < \square < \square$ -13, -14, -15	19. $\square < \square < \square$ $-\frac{1}{2}$, $\frac{1}{2}$, 0	30. $\square < \square < \square$ -8, -9, 8
9. $\square > \square > \square$ -13, -14, -15	20. $\square > \square > \square$ $-\frac{1}{2}$, $\frac{1}{2}$, 0	31. $\square < \square < \square$ -18, -19, -2
10. $\square < \square < \square$ $-\frac{1}{4}$, -1, 0	21. $\square < \square < \square$ 50, -10, 0	32. $\square > \square > \square$ -2, -3, 1
11. $\square > \square > \square$ $-\frac{1}{4}$, -1, 0	22. $\square < \square < \square$ -50, 10, 0	33. $\square < \square < \square$ -2, -3, 1

Rational Numbers: Inequality Statements—Round 1 [KEY]

Directions: Work in numerical order to answer Problems 1–33. Arrange each set of numbers in order according to the inequality symbols.

1. $-1 < 0 < 1$ 1, -1, 0	12. $7 > 6 > -6$ 7, -6, 6	23. $25 > \frac{3}{4} > -\frac{3}{4}$ 25, $\frac{3}{4}$, $-\frac{3}{4}$
2. $1 > 0 > -1$ 1, -1, 0	13. $17 > 16 > 4$ 17, 4, 16	24. $-\frac{3}{4} < \frac{3}{4} < 25$ 25, $\frac{3}{4}$, $-\frac{3}{4}$
3. $-3\frac{1}{2} < 0 < 3\frac{1}{2}$ $3\frac{1}{2}$, $-3\frac{1}{2}$, 0	14. $4 < 16 < 17$ 17, 4, 16	25. $2.4 > 2.3 > 2.2$ 2.2, 2.3, 2.4
4. $3\frac{1}{2} > 0 > -3\frac{1}{2}$ $3\frac{1}{2}$, $-3\frac{1}{2}$, 0	15. $-11 < 0 < -12$ 0, 12, -11	26. $1.4 > 1.3 > 1.2$ 1.2, 1.3, 1.4
5. $1 > \frac{1}{2} > -\frac{1}{2}$ 1, $-\frac{1}{2}$, $\frac{1}{2}$	16. $12 > 0 > -11$ 0, 12, -11	27. $0.4 > 0.3 > 0.2$ 0.2, 0.3, 0.4
6. $-\frac{1}{2} < \frac{1}{2} < 1$ 1, $-\frac{1}{2}$, $\frac{1}{2}$	17. $1 > \frac{1}{2} > \frac{1}{4}$ 1, $\frac{1}{4}$, $\frac{1}{2}$	28. $-0.5 > -0.6 > -1$ -0.5 , -1, -0.6
7. $-5 < -4 < -3$ -3 , -4, -5	18. $\frac{1}{4} < \frac{1}{2} < 1$ 1, $\frac{1}{4}$, $\frac{1}{2}$	29. $-1 < -0.6 < -0.5$ -0.5 , -1, -0.6
8. $-15 < -14 < -13$ -13 , -14, -15	19. $-\frac{1}{2} < 0 < \frac{1}{2}$ $-\frac{1}{2}$, $\frac{1}{2}$, 0	30. $-9 < -8 < 8$ -8 , -9, 8
9. $-13 > -14 > -15$ -13 , -14, -15	20. $\frac{1}{2} > 0 > -\frac{1}{2}$ $-\frac{1}{2}$, $\frac{1}{2}$, 0	31. $-19 < -18 < -2$ -18 , -19, -2
10. $-1 < -\frac{1}{4} < 0$ $-\frac{1}{4}$, -1, 0	21. $-10 < 0 < 50$ 50, -10, 0	32. $1 > -2 > -3$ -2, -3, 1
11. $0 > -\frac{1}{4} > -1$ $-\frac{1}{4}$, -1, 0	22. $-50 < 0 < 10$ -50 , 10, 0	33. $-3 < -2 < 1$ -2, -3, 1

Number Correct: _____

Improvement: _____

Rational Numbers: Inequality Statements—Round 2

Directions: Work in numerical order to answer Problems 1–33. Arrange each set of numbers in order according to the inequality symbols.

1. $\square < \square < \square$ $1/7, -1/7, 0$	12. $\square > \square > \square$ $1\frac{1}{4}, 1, 1\frac{1}{2}$	23. $\square > \square > \square$ $1, 1\frac{3}{4}, -1\frac{3}{4}$
2. $\square > \square > \square$ $1/7, -1/7, 0$	13. $\square > \square > \square$ $11\frac{1}{4}, 11, 11\frac{1}{2}$	24. $\square < \square < \square$ $1, 1\frac{3}{4}, -1\frac{3}{4}$
3. $\square < \square < \square$ $3/7, 2/7, -1/7$	14. $\square < \square < \square$ $11\frac{1}{4}, 11, 11\frac{1}{2}$	25. $\square > \square > \square$ $-82, -93, -104$
4. $\square > \square > \square$ $3/7, 2/7, -1/7$	15. $\square < \square < \square$ $0, 0.2, -0.1$	26. $\square < \square < \square$ $-82, -93, -104$
5. $\square > \square > \square$ $-4/5, 1/5, -1/5$	16. $\square > \square > \square$ $0, 0.2, -0.1$	27. $\square > \square > \square$ $0.5, 1, 0.6$
6. $\square < \square < \square$ $-4/5, 1/5, -1/5$	17. $\square > \square > \square$ $1, 0.7, 1/10$	28. $\square > \square > \square$ $-0.5, -1, -0.6$
7. $\square < \square < \square$ $-8/9, 5/9, 1/9$	18. $\square < \square < \square$ $1, 0.7, 1/10$	29. $\square < \square < \square$ $-0.5, -1, -0.6$
8. $\square > \square > \square$ $-8/9, 5/9, 1/9$	19. $\square < \square < \square$ $0, -12, -12\frac{1}{2}$	30. $\square < \square < \square$ $1, 8, 9$
9. $\square > \square > \square$ $-30, -10, -50$	20. $\square > \square > \square$ $0, -12, -12\frac{1}{2}$	31. $\square < \square < \square$ $-1, -8, -9$
10. $\square < \square < \square$ $-30, -10, -50$	21. $\square < \square < \square$ $5, -1, 0$	32. $\square > \square > \square$ $-2, -3, -5$
11. $\square > \square > \square$ $-40, -20, -60$	22. $\square < \square < \square$ $-5, 1, 0$	33. $\square > \square > \square$ $2, 3, 5$

Rational Numbers: Inequality Statements—Round 2 [KEY]

Directions: Work in numerical order to answer Problems 1–33. Arrange each set of numbers in order according to the inequality symbols.

1. $\frac{-1}{7} < 0 < \frac{1}{7}$ 1/7, -1/7, 0	12. $1\frac{1}{2} > 1\frac{1}{4} > 1$ $1\frac{1}{4}, 1, 1\frac{1}{2}$	23. $1\frac{3}{4} > 1 > -1\frac{3}{4}$ 1, $1\frac{3}{4}$, $-1\frac{3}{4}$
2. $\frac{1}{7} > 0 > \frac{-1}{7}$ 1/7, -1/7, 0	13. $11\frac{1}{2} > 11\frac{1}{4} > 11$ $11\frac{1}{4}, 11, 11\frac{1}{2}$	24. $-1\frac{3}{4} < 1 < 1\frac{3}{4}$ 1, $1\frac{3}{4}$, $-1\frac{3}{4}$
3. $\frac{-1}{7} < \frac{2}{7} < \frac{3}{7}$ $\frac{3}{7}, \frac{2}{7}, \frac{-1}{7}$	14. $11 < 11\frac{1}{4} < 11\frac{1}{2}$ $11\frac{1}{4}, 11, 11\frac{1}{2}$	25. $-82 > -93 > -104$ -82, -93, -104
4. $\frac{3}{7} > \frac{2}{7} > \frac{-1}{7}$ $\frac{3}{7}, \frac{2}{7}, \frac{-1}{7}$	15. $-0.1 < 0 < 0.2$ 0, 0.2, -0.1	26. $-104 < -93 < -82$ -82, -93, -104
5. $\frac{1}{5} > \frac{-1}{5} > \frac{-4}{5}$ -4/5, 1/5, -1/5	16. $0.2 > 0 > -0.1$ 0, 0.2, -0.1	27. $1 > 0.6 > 0.5$ 0.5, 1, 0.6
6. $\frac{-4}{5} < \frac{-1}{5} < \frac{1}{5}$ -4/5, 1/5, -1/5	17. $1 > \frac{1}{10} > 0.7$ 1, 0.7, 1/10	28. $-0.5 > -0.6 > -1$ -0.5, -1, -0.6
7. $\frac{-8}{9} < \frac{1}{9} < \frac{5}{9}$ -8/9, 5/9, 1/9	18. $0.7 < \frac{1}{10} < 1$ 1, 0.7, 1/10	29. $-1 < -0.6 < -0.5$ -0.5, -1, -0.6
8. $\frac{5}{9} > \frac{1}{9} > \frac{-8}{9}$ -8/9, 5/9, 1/9	19. $-12\frac{1}{2} < -12 < 0$ 0, -12, $-12\frac{1}{2}$	30. $1 < 8 < 9$ 1, 8, 9
9. $-10 > -30 > -50$ -30, -10, -50	20. $0 > -12 > -12\frac{1}{2}$ 0, -12, $-12\frac{1}{2}$	31. $-9 < -8 < -1$ -1, -8, -9
10. $-50 < -30 < -10$ -30, -10, -50	21. $-1 < 0 < 5$ 5, -1, 0	32. $-2 > -3 > -5$ -2, -3, -5
11. $-20 > -40 > -60$ -40, -20, -60	22. $-5 < 0 < 1$ -5, 1, 0	33. $5 > 3 > 2$ 2, 3, 5

Number Correct: _____

Addition and Subtraction Equations—Round 1

Directions: Find the value of m in each equation.

1.	$m + 4 = 11$	
2.	$m + 2 = 5$	
3.	$m + 5 = 8$	
4.	$m - 7 = 10$	
5.	$m - 8 = 1$	
6.	$m - 4 = 2$	
7.	$m + 12 = 34$	
8.	$m + 25 = 45$	
9.	$m + 43 = 89$	
10.	$m - 20 = 31$	
11.	$m - 13 = 34$	
12.	$m - 45 = 68$	
13.	$m + 34 = 41$	
14.	$m + 29 = 52$	
15.	$m + 37 = 61$	
16.	$m - 43 = 63$	
17.	$m - 21 = 40$	

18.	$m - 54 = 37$	
19.	$4 + m = 9$	
20.	$6 + m = 13$	
21.	$2 + m = 31$	
22.	$15 = m + 11$	
23.	$24 = m + 13$	
24.	$32 = m + 28$	
25.	$4 = m - 7$	
26.	$3 = m - 5$	
27.	$12 = m - 14$	
28.	$23.6 = m - 7.1$	
29.	$14.2 = m - 33.8$	
30.	$2.5 = m - 41.8$	
31.	$64.9 = m + 23.4$	
32.	$72.2 = m + 38.7$	
33.	$1.81 = m - 15.13$	
34.	$24.68 = m - 56.82$	

Addition and Subtraction Equations—Round 1 [KEY]

Directions: Find the value of m in each equation.

1.	$m + 4 = 11$	$m = 7$
2.	$m + 2 = 5$	$m = 3$
3.	$m + 5 = 8$	$m = 3$
4.	$m - 7 = 10$	$m = 17$
5.	$m - 8 = 1$	$m = 9$
6.	$m - 4 = 2$	$m = 6$
7.	$m + 12 = 34$	$m = 22$
8.	$m + 25 = 45$	$m = 20$
9.	$m + 43 = 89$	$m = 46$
10.	$m - 20 = 31$	$m = 51$
11.	$m - 13 = 34$	$m = 47$
12.	$m - 45 = 68$	$m = 113$
13.	$m + 34 = 41$	$m = 7$
14.	$m + 29 = 52$	$m = 23$
15.	$m + 37 = 61$	$m = 24$
16.	$m - 43 = 63$	$m = 106$
17.	$m - 21 = 40$	$m = 61$

18.	$m - 54 = 37$	$m = 91$
19.	$4 + m = 9$	$m = 5$
20.	$6 + m = 13$	$m = 7$
21.	$2 + m = 31$	$m = 29$
22.	$15 = m + 11$	$m = 4$
23.	$24 = m + 13$	$m = 11$
24.	$32 = m + 28$	$m = 4$
25.	$4 = m - 7$	$m = 11$
26.	$3 = m - 5$	$m = 8$
27.	$12 = m - 14$	$m = 26$
28.	$23.6 = m - 7.1$	$m = 30.7$
29.	$14.2 = m - 33.8$	$m = 48$
30.	$2.5 = m - 41.8$	$m = 44.3$
31.	$64.9 = m + 23.4$	$m = 41.5$
32.	$72.2 = m + 38.7$	$m = 33.5$
33.	$1.81 = m - 15.13$	$m = 16.94$
34.	$24.68 = m - 56.82$	$m = 81.5$

Number Correct: _____

Improvement: _____

Addition and Subtraction Equations—Round 2

Directions: Find the value of m in each equation.

1.	$m + 2 = 7$	
2.	$m + 4 = 10$	
3.	$m + 8 = 15$	
4.	$m + 7 = 23$	
5.	$m + 12 = 16$	
6.	$m - 5 = 2$	
7.	$m - 3 = 8$	
8.	$m - 4 = 12$	
9.	$m - 14 = 45$	
10.	$m + 23 = 40$	
11.	$m + 13 = 31$	
12.	$m + 23 = 48$	
13.	$m + 38 = 52$	
14.	$m - 14 = 27$	
15.	$m - 23 = 35$	
16.	$m - 17 = 18$	
17.	$m - 64 = 1$	

18.	$6 = m + 3$	
19.	$12 = m + 7$	
20.	$24 = m + 16$	
21.	$13 = m + 9$	
22.	$32 = m - 3$	
23.	$22 = m - 12$	
24.	$34 = m - 10$	
25.	$48 = m + 29$	
26.	$21 = m + 17$	
27.	$52 = m + 37$	
28.	$\frac{6}{7} = m + \frac{4}{7}$	
29.	$\frac{2}{3} = m - \frac{5}{3}$	
30.	$\frac{1}{4} = m - \frac{8}{3}$	
31.	$\frac{5}{6} = m - \frac{7}{12}$	
32.	$\frac{7}{8} = m - \frac{5}{12}$	
33.	$\frac{7}{6} + m = \frac{16}{3}$	
34.	$\frac{1}{3} + m = \frac{13}{15}$	

Addition and Subtraction Equations—Round 2 [KEY]

Directions: Find the value of m in each equation.

1.	$m + 2 = 7$	$m = 5$
2.	$m + 4 = 10$	$m = 6$
3.	$m + 8 = 15$	$m = 7$
4.	$m + 7 = 23$	$m = 16$
5.	$m + 12 = 16$	$m = 4$
6.	$m - 5 = 2$	$m = 7$
7.	$m - 3 = 8$	$m = 11$
8.	$m - 4 = 12$	$m = 16$
9.	$m - 14 = 45$	$m = 59$
10.	$m + 23 = 40$	$m = 17$
11.	$m + 13 = 31$	$m = 18$
12.	$m + 23 = 48$	$m = 25$
13.	$m + 38 = 52$	$m = 14$
14.	$m - 14 = 27$	$m = 41$
15.	$m - 23 = 35$	$m = 58$
16.	$m - 17 = 18$	$m = 35$
17.	$m - 64 = 1$	$m = 65$

18.	$6 = m + 3$	$m = 3$
19.	$12 = m + 7$	$m = 5$
20.	$24 = m + 16$	$m = 8$
21.	$13 = m + 9$	$m = 4$
22.	$32 = m - 3$	$m = 35$
23.	$22 = m - 12$	$m = 34$
24.	$34 = m - 10$	$m = 44$
25.	$48 = m + 29$	$m = 19$
26.	$21 = m + 17$	$m = 4$
27.	$52 = m + 37$	$m = 15$
28.	$\frac{6}{7} = m + \frac{4}{7}$	$m = \frac{2}{7}$
29.	$\frac{2}{3} = m - \frac{5}{3}$	$m = \frac{7}{3}$
30.	$\frac{1}{4} = m - \frac{8}{3}$	$m = \frac{35}{12}$
31.	$\frac{5}{6} = m - \frac{7}{12}$	$m = \frac{17}{12}$
32.	$\frac{7}{8} = m - \frac{5}{12}$	$m = \frac{31}{24}$
33.	$\frac{7}{6} + m = \frac{16}{3}$	$m = \frac{25}{6}$
34.	$\frac{1}{3} + m = \frac{13}{15}$	$m = \frac{8}{15}$

Multiplication and Division Equations with Fractions

Progression of Exercises

1. $5y = 35$

$y = 7$

2. $3m = 135$

$m = 45$

3. $12k = 156$

$k = 13$

4. $\frac{f}{3} = 24$

$f = 72$

5. $\frac{x}{7} = 42$

$x = 294$

6. $\frac{c}{13} = 18$

$c = 234$

7. $\frac{2}{3}g = 6$

$g = 9$

8. $\frac{3}{5}k = 9$

$k = 15$

9. $\frac{3}{4}y = 10$

$y = \frac{40}{3} = 13\frac{1}{3}$

10. $\frac{5}{8}j = 9$

$$j = \frac{72}{5} = 14\frac{2}{5}$$

11. $\frac{3}{7}h = 13$

$$h = \frac{91}{3} = 30\frac{1}{3}$$

12. $\frac{m}{4} = \frac{3}{5}$

$$m = \frac{12}{5} = 2\frac{2}{5}$$

13. $\frac{f}{3} = \frac{2}{7}$

$$f = \frac{6}{7}$$

14. $\frac{2}{5}p = \frac{3}{7}$

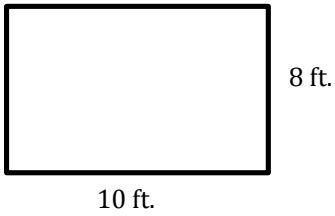
$$p = \frac{15}{14} = 1\frac{1}{14}$$

15. $\frac{3}{4}k = \frac{5}{8}$

$$k = \frac{20}{24} = \frac{5}{6}$$

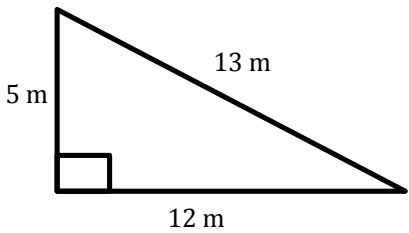
Area of Shapes

1.



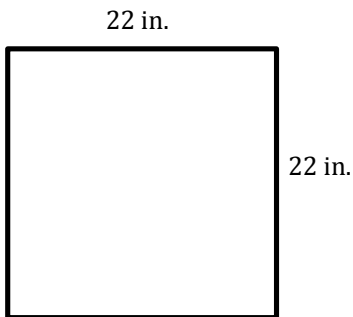
$A = 80 \text{ ft}^2$

2.



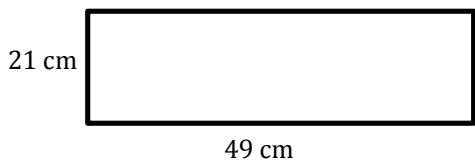
$A = 30 \text{ m}^2$

3.



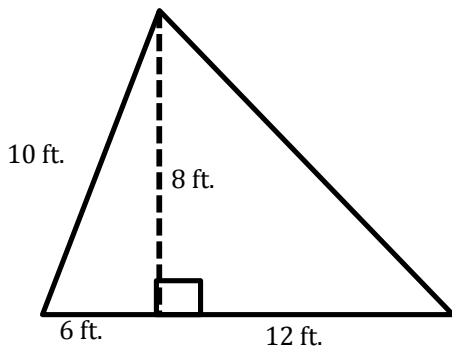
$A = 484 \text{ in}^2$

4.



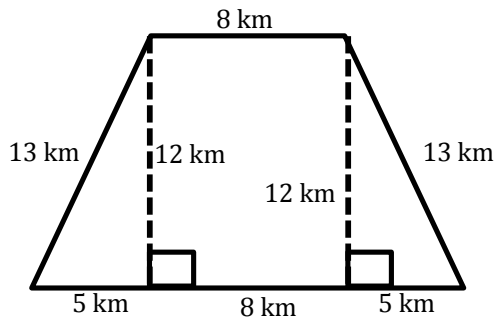
$A = 1,029 \text{ cm}^2$

5.



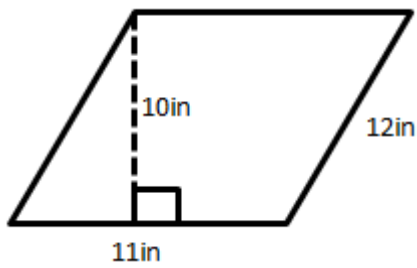
$A = 72 \text{ ft}^2$

6.



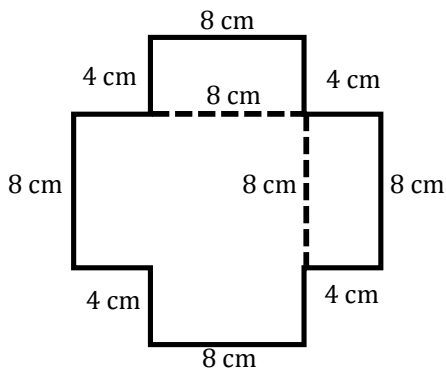
$A = 156 \text{ km}^2$

7.



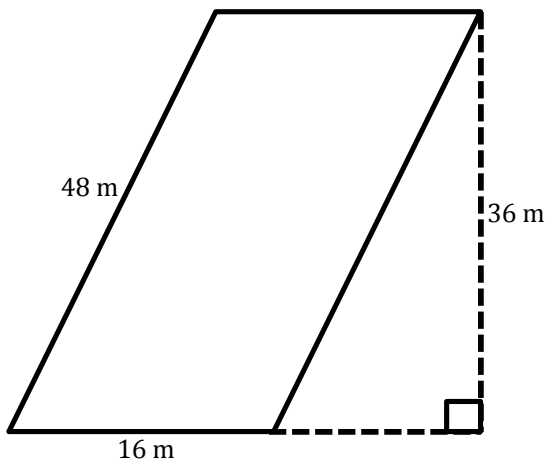
$A = 110 \text{ in}^2$

8.



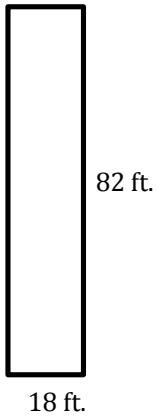
$A = 192 \text{ cm}^2$

9.



$A = 576 \text{ m}^2$

10.



$$A = 1,476 \text{ ft}^2$$

Number Correct: _____

Integer Addition—Round 1

Directions: Determine the sum of the integers, and write it in the column to the right.

1.	$8 + (-5)$	
2.	$10 + (-3)$	
3.	$2 + (-7)$	
4.	$4 + (-11)$	
5.	$-3 + (-9)$	
6.	$-12 + (-7)$	
7.	$-13 + 5$	
8.	$-4 + 9$	
9.	$7 + (-7)$	
10.	$-13 + 13$	
11.	$14 + (-20)$	
12.	$6 + (-4)$	
13.	$10 + (-7)$	
14.	$-16 + 9$	
15.	$-10 + 34$	
16.	$-20 + (-5)$	
17.	$-18 + 15$	

18.	$-38 + 25$	
19.	$-19 + (-11)$	
20.	$2 + (-7)$	
21.	$-23 + (-23)$	
22.	$45 + (-32)$	
23.	$16 + (-24)$	
24.	$-28 + 13$	
25.	$-15 + 15$	
26.	$12 + (-19)$	
27.	$-24 + (-32)$	
28.	$-18 + (-18)$	
29.	$14 + (-26)$	
30.	$-7 + 8 + (-3)$	
31.	$2 + (-15) + 4$	
32.	$-8 + (-19) + (-11)$	
33.	$15 + (-12) + 7$	
34.	$-28 + 7 + (-7)$	

Integer Addition—Round 1 [KEY]

Directions: Determine the sum of the integers, and write it in the column to the right.

1.	$8 + (-5)$	3
2.	$10 + (-3)$	7
3.	$2 + (-7)$	-5
4.	$4 + (-11)$	-7
5.	$-3 + (-9)$	-12
6.	$-12 + (-7)$	-19
7.	$-13 + 5$	-8
8.	$-4 + 9$	5
9.	$7 + (-7)$	0
10.	$-13 + 13$	0
11.	$14 + (-20)$	-6
12.	$6 + (-4)$	2
13.	$10 + (-7)$	3
14.	$-16 + 9$	-7
15.	$-10 + 34$	24
16.	$-20 + (-5)$	-25
17.	$-18 + 15$	-3

18.	$-38 + 25$	-13
19.	$-19 + (-11)$	-30
20.	$2 + (-7)$	-5
21.	$-23 + (-23)$	-46
22.	$45 + (-32)$	13
23.	$16 + (-24)$	-8
24.	$-28 + 13$	-15
25.	$-15 + 15$	0
26.	$12 + (-19)$	-7
27.	$-24 + (-32)$	-56
28.	$-18 + (-18)$	-36
29.	$14 + (-26)$	-12
30.	$-7 + 8 + (-3)$	-2
31.	$2 + (-15) + 4$	-9
32.	$-8 + (-19) + (-11)$	-38
33.	$15 + (-12) + 7$	10
34.	$-28 + 7 + (-7)$	-28

Number Correct: _____

Improvement: _____

Integer Addition—Round 2

Directions: Determine the sum of the integers, and write it in the column to the right.

1.	$5 + (-12)$	
2.	$10 + (-6)$	
3.	$-9 + (-13)$	
4.	$-12 + 17$	
5.	$-15 + 15$	
6.	$16 + (-25)$	
7.	$-12 + (-8)$	
8.	$-25 + (-29)$	
9.	$28 + (-12)$	
10.	$-19 + (-19)$	
11.	$-17 + 20$	
12.	$8 + (-18)$	
13.	$13 + (-15)$	
14.	$-10 + (-16)$	
15.	$35 + (-35)$	
16.	$9 + (-14)$	
17.	$-34 + (-27)$	

18.	$23 + (-31)$	
19.	$-26 + (-19)$	
20.	$16 + (-37)$	
21.	$-21 + 14$	
22.	$33 + (-8)$	
23.	$-31 + (-13)$	
24.	$-16 + 16$	
25.	$30 + (-43)$	
26.	$-22 + (-18)$	
27.	$-43 + 27$	
28.	$38 + (-19)$	
29.	$-13 + (-13)$	
30.	$5 + (-8) + (-3)$	
31.	$6 + (-11) + 14$	
32.	$-17 + 5 + 19$	
33.	$-16 + (-4) + (-7)$	
34.	$8 + (-24) + 12$	

Integer Addition—Round 2 [KEY]

Directions: Determine the sum of the integers, and write it in the column to the right.

1.	$5 + (-12)$	-7
2.	$10 + (-6)$	4
3.	$-9 + (-13)$	-22
4.	$-12 + 17$	5
5.	$-15 + 15$	0
6.	$16 + (-25)$	-9
7.	$-12 + (-8)$	-20
8.	$-25 + (-29)$	-54
9.	$28 + (-12)$	16
10.	$-19 + (-19)$	-38
11.	$-17 + 20$	3
12.	$8 + (-18)$	-10
13.	$13 + (-15)$	-2
14.	$-10 + (-16)$	-26
15.	$35 + (-35)$	0
16.	$9 + (-14)$	-5
17.	$-34 + (-27)$	-61

18.	$23 + (-31)$	-8
19.	$-26 + (-19)$	-45
20.	$16 + (-37)$	-21
21.	$-21 + 14$	-7
22.	$33 + (-8)$	25
23.	$-31 + (-13)$	-44
24.	$-16 + 16$	0
25.	$30 + (-43)$	-13
26.	$-22 + (-18)$	-40
27.	$-43 + 27$	-16
28.	$38 + (-19)$	19
29.	$-13 + (-13)$	-26
30.	$5 + (-8) + (-3)$	-6
31.	$6 + (-11) + 14$	9
32.	$-17 + 5 + 19$	7
33.	$-16 + (-4) + (-7)$	-27
34.	$8 + (-24) + 12$	-4

Number Correct: _____

Integer Subtraction—Round 1

Directions: Determine the difference of the integers, and write it in the column to the right.

1.	$4 - 2$	
2.	$4 - 3$	
3.	$4 - 4$	
4.	$4 - 5$	
5.	$4 - 6$	
6.	$4 - 9$	
7.	$4 - 10$	
8.	$4 - 20$	
9.	$4 - 80$	
10.	$4 - 100$	
11.	$4 - (-1)$	
12.	$4 - (-2)$	
13.	$4 - (-3)$	
14.	$4 - (-7)$	
15.	$4 - (-17)$	
16.	$4 - (-27)$	
17.	$4 - (-127)$	
18.	$14 - (-6)$	
19.	$23 - (-8)$	
20.	$8 - (-23)$	
21.	$51 - (-3)$	
22.	$48 - (-5)$	

23.	$(-6) - 5$	
24.	$(-6) - 7$	
25.	$(-6) - 9$	
26.	$(-14) - 9$	
27.	$(-25) - 9$	
28.	$(-12) - 12$	
29.	$(-26) - 26$	
30.	$(-13) - 21$	
31.	$(-25) - 75$	
32.	$(-411) - 811$	
33.	$(-234) - 543$	
34.	$(-3) - (-1)$	
35.	$(-3) - (-2)$	
36.	$(-3) - (-3)$	
37.	$(-3) - (-4)$	
38.	$(-3) - (-8)$	
39.	$(-30) - (-45)$	
40.	$(-27) - (-13)$	
41.	$(-13) - (-27)$	
42.	$(-4) - (-3)$	
43.	$(-3) - (-4)$	
44.	$(-1,066) - (-34)$	

Integer Subtraction—Round 1 [KEY]

Directions: Determine the difference of the integers, and write it in the column to the right.

1.	$4 - 2$	2
2.	$4 - 3$	1
3.	$4 - 4$	0
4.	$4 - 5$	-1
5.	$4 - 6$	-2
6.	$4 - 9$	-5
7.	$4 - 10$	-6
8.	$4 - 20$	-16
9.	$4 - 80$	-76
10.	$4 - 100$	-96
11.	$4 - (-1)$	5
12.	$4 - (-2)$	6
13.	$4 - (-3)$	7
14.	$4 - (-7)$	11
15.	$4 - (-17)$	21
16.	$4 - (-27)$	31
17.	$4 - (-127)$	131
18.	$14 - (-6)$	20
19.	$23 - (-8)$	31
20.	$8 - (-23)$	31
21.	$51 - (-3)$	54
22.	$48 - (-5)$	53

23.	$(-6) - 5$	-11
24.	$(-6) - 7$	-13
25.	$(-6) - 9$	-15
26.	$(-14) - 9$	-23
27.	$(-25) - 9$	-34
28.	$(-12) - 12$	-24
29.	$(-26) - 26$	-52
30.	$(-13) - 21$	-34
31.	$(-25) - 75$	-100
32.	$(-411) - 811$	-1,222
33.	$(-234) - 543$	-777
34.	$(-3) - (-1)$	-2
35.	$(-3) - (-2)$	-1
36.	$(-3) - (-3)$	0
37.	$(-3) - (-4)$	1
38.	$(-3) - (-8)$	5
39.	$(-30) - (-45)$	15
40.	$(-27) - (-13)$	-14
41.	$(-13) - (-27)$	14
42.	$(-4) - (-3)$	-1
43.	$(-3) - (-4)$	1
44.	$(-1,066) - (-34)$	-1,032

Number Correct: _____

Improvement: _____

Integer Subtraction—Round 2

Directions: Determine the difference of the integers, and write it in the column to the right.

1.	$3 - 2$	
2.	$3 - 3$	
3.	$3 - 4$	
4.	$3 - 5$	
5.	$3 - 6$	
6.	$3 - 9$	
7.	$3 - 10$	
8.	$3 - 20$	
9.	$3 - 80$	
10.	$3 - 100$	
11.	$3 - (-1)$	
12.	$3 - (-2)$	
13.	$3 - (-3)$	
14.	$3 - (-7)$	
15.	$3 - (-17)$	
16.	$3 - (-27)$	
17.	$3 - (-127)$	
18.	$13 - (-6)$	
19.	$24 - (-8)$	
20.	$5 - (-23)$	
21.	$61 - (-3)$	
22.	$58 - (-5)$	

23.	$(-8) - 5$	
24.	$(-8) - 7$	
25.	$(-8) - 9$	
26.	$(-15) - 9$	
27.	$(-35) - 9$	
28.	$(-22) - 22$	
29.	$(-27) - 27$	
30.	$(-14) - 21$	
31.	$(-22) - 72$	
32.	$(-311) - 611$	
33.	$(-345) - 654$	
34.	$(-2) - (-1)$	
35.	$(-2) - (-2)$	
36.	$(-2) - (-3)$	
37.	$(-2) - (-4)$	
38.	$(-2) - (-8)$	
39.	$(-20) - (-45)$	
40.	$(-24) - (-13)$	
41.	$(-13) - (-24)$	
42.	$(-5) - (-3)$	
43.	$(-3) - (-5)$	
44.	$(-1,034) - (-31)$	

Integer Subtraction—Round 2 [KEY]

Directions: Determine the difference of the integers, and write it in the column to the right.

1.	$3 - 2$	1
2.	$3 - 3$	0
3.	$3 - 4$	-1
4.	$3 - 5$	-2
5.	$3 - 6$	-3
6.	$3 - 9$	-6
7.	$3 - 10$	-7
8.	$3 - 20$	-17
9.	$3 - 80$	-77
10.	$3 - 100$	-97
11.	$3 - (-1)$	4
12.	$3 - (-2)$	5
13.	$3 - (-3)$	6
14.	$3 - (-7)$	10
15.	$3 - (-17)$	20
16.	$3 - (-27)$	30
17.	$3 - (-127)$	130
18.	$13 - (-6)$	19
19.	$24 - (-8)$	32
20.	$5 - (-23)$	28
21.	$61 - (-3)$	64
22.	$58 - (-5)$	63

23.	$(-8) - 5$	-13
24.	$(-8) - 7$	-15
25.	$(-8) - 9$	-17
26.	$(-15) - 9$	-24
27.	$(-35) - 9$	-44
28.	$(-22) - 22$	-44
29.	$(-27) - 27$	-54
30.	$(-14) - 21$	-35
31.	$(-22) - 72$	-94
32.	$(-311) - 611$	-922
33.	$(-345) - 654$	-999
34.	$(-2) - (-1)$	-1
35.	$(-2) - (-2)$	0
36.	$(-2) - (-3)$	1
37.	$(-2) - (-4)$	2
38.	$(-2) - (-8)$	6
39.	$(-20) - (-45)$	25
40.	$(-24) - (-13)$	-11
41.	$(-13) - (-24)$	11
42.	$(-5) - (-3)$	-2
43.	$(-3) - (-5)$	2
44.	$(-1,034) - (-31)$	-1,003

Number Correct: _____

Integer Multiplication—Round 1

Directions: Determine the product of the integers, and write it in the column to the right.

1.	$-2 \bullet -8$	
2.	$-4 \bullet 3$	
3.	$5 \bullet -7$	
4.	$1 \bullet -1$	
5.	$-6 \bullet 9$	
6.	$-2 \bullet -7$	
7.	$8 \bullet -3$	
8.	$0 \bullet -9$	
9.	$12 \bullet -5$	
10.	$-4 \bullet 2$	
11.	$-1 \bullet -6$	
12.	$10 \bullet -4$	
13.	$14 \bullet -3$	
14.	$-5 \bullet -13$	
15.	$-16 \bullet -8$	
16.	$18 \bullet -2$	
17.	$-15 \bullet 7$	
18.	$-19 \bullet 1$	
19.	$12 \bullet 12$	
20.	$9 \bullet -17$	
21.	$-8 \bullet -14$	
22.	$-7 \bullet 13$	

23.	$-14 \bullet -12$	
24.	$15 \bullet -13$	
25.	$16 \bullet -18$	
26.	$24 \bullet -17$	
27.	$-32 \bullet -21$	
28.	$19 \bullet -27$	
29.	$-39 \bullet 10$	
30.	$43 \bullet 22$	
31.	$11 \bullet -33$	
32.	$-29 \bullet -45$	
33.	$37 \bullet -44$	
34.	$-87 \bullet -100$	
35.	$92 \bullet -232$	
36.	$456 \bullet 87$	
37.	$-143 \bullet 76$	
38.	$439 \bullet -871$	
39.	$-286 \bullet -412$	
40.	$-971 \bullet 342$	
41.	$-773 \bullet -407$	
42.	$-820 \bullet 638$	
43.	$591 \bullet -734$	
44.	$491 \bullet -197$	

Integer Multiplication—Round 1 [KEY]

Directions: Determine the product of the integers, and write it in the column to the right.

1.	$-2 \bullet -8$	16
2.	$-4 \bullet 3$	-12
3.	$5 \bullet -7$	-35
4.	$1 \bullet -1$	-1
5.	$-6 \bullet 9$	-54
6.	$-2 \bullet -7$	14
7.	$8 \bullet -3$	-24
8.	$0 \bullet -9$	0
9.	$12 \bullet -5$	-60
10.	$-4 \bullet 2$	-8
11.	$-1 \bullet -6$	6
12.	$10 \bullet -4$	-40
13.	$14 \bullet -3$	-42
14.	$-5 \bullet -13$	65
15.	$-16 \bullet -8$	128
16.	$18 \bullet -2$	-36
17.	$-15 \bullet 7$	-105
18.	$-19 \bullet 1$	-19
19.	$12 \bullet 12$	144
20.	$9 \bullet -17$	-153
21.	$-8 \bullet -14$	112
22.	$-7 \bullet 13$	-91

23.	$-14 \bullet -12$	168
24.	$15 \bullet -13$	-195
25.	$16 \bullet -18$	-288
26.	$24 \bullet -17$	-408
27.	$-32 \bullet -21$	672
28.	$19 \bullet -27$	-513
29.	$-39 \bullet 10$	-390
30.	$43 \bullet 22$	946
31.	$11 \bullet -33$	-363
32.	$-29 \bullet -45$	1,305
33.	$37 \bullet -44$	-1,628
34.	$-87 \bullet -100$	8,700
35.	$92 \bullet -232$	-21,344
36.	$456 \bullet 87$	39,672
37.	$-143 \bullet 76$	-10,868
38.	$439 \bullet -871$	-382,369
39.	$-286 \bullet -412$	117,832
40.	$-971 \bullet 342$	-332,082
41.	$-773 \bullet -407$	314,611
42.	$-820 \bullet 638$	-523,160
43.	$591 \bullet -734$	-433,794
44.	$491 \bullet -197$	-96,727

Number Correct: _____

Improvement: _____

Integer Multiplication—Round 2

Directions: Determine the product of the integers, and write it in the column to the right.

1.	$-9 \bullet -7$	
2.	$0 \bullet -4$	
3.	$3 \bullet -5$	
4.	$6 \bullet -8$	
5.	$-2 \bullet 1$	
6.	$-6 \bullet 5$	
7.	$-10 \bullet -12$	
8.	$11 \bullet -4$	
9.	$3 \bullet 8$	
10.	$12 \bullet -7$	
11.	$-1 \bullet 8$	
12.	$5 \bullet -10$	
13.	$3 \bullet -13$	
14.	$15 \bullet -8$	
15.	$-9 \bullet 14$	
16.	$-17 \bullet 5$	
17.	$16 \bullet 2$	
18.	$19 \bullet -7$	
19.	$-6 \bullet 13$	
20.	$1 \bullet -18$	
21.	$-14 \bullet -3$	
22.	$-10 \bullet -17$	

23.	$-22 \bullet 14$	
24.	$-18 \bullet -32$	
25.	$-24 \bullet 19$	
26.	$47 \bullet 21$	
27.	$17 \bullet -39$	
28.	$-16 \bullet -28$	
29.	$-67 \bullet -81$	
30.	$-36 \bullet 44$	
31.	$-50 \bullet 23$	
32.	$66 \bullet -71$	
33.	$82 \bullet -29$	
34.	$-32 \bullet 231$	
35.	$89 \bullet -744$	
36.	$623 \bullet -22$	
37.	$-870 \bullet -46$	
38.	$179 \bullet 329$	
39.	$-956 \bullet 723$	
40.	$874 \bullet -333$	
41.	$908 \bullet -471$	
42.	$-661 \bullet -403$	
43.	$-520 \bullet -614$	
44.	$-309 \bullet 911$	

Integer Multiplication—Round 2 [KEY]

Directions: Determine the product of the integers, and write it in the column to the right.

1.	$-9 \bullet -7$	63
2.	$0 \bullet -4$	0
3.	$3 \bullet -5$	-15
4.	$6 \bullet -8$	-48
5.	$-2 \bullet 1$	-2
6.	$-6 \bullet 5$	-30
7.	$-10 \bullet -12$	120
8.	$11 \bullet -4$	-44
9.	$3 \bullet 8$	24
10.	$12 \bullet -7$	-84
11.	$-1 \bullet 8$	-8
12.	$5 \bullet -10$	-50
13.	$3 \bullet -13$	-39
14.	$15 \bullet -8$	-120
15.	$-9 \bullet 14$	-126
16.	$-17 \bullet 5$	-85
17.	$16 \bullet 2$	32
18.	$19 \bullet -7$	-133
19.	$-6 \bullet 13$	-78
20.	$1 \bullet -18$	-18
21.	$-14 \bullet -3$	42
22.	$-10 \bullet -17$	170

23.	$-22 \bullet 14$	-308
24.	$-18 \bullet -32$	576
25.	$-24 \bullet 19$	-456
26.	$47 \bullet 21$	987
27.	$17 \bullet -39$	-663
28.	$-16 \bullet -28$	448
29.	$-67 \bullet -81$	5,427
30.	$-36 \bullet 44$	-1,584
31.	$-50 \bullet 23$	-1,150
32.	$66 \bullet -71$	-4,686
33.	$82 \bullet -29$	-2,378
34.	$-32 \bullet 231$	-7,392
35.	$89 \bullet -744$	66,216
36.	$623 \bullet -22$	-13,706
37.	$-870 \bullet -46$	40,020
38.	$179 \bullet 329$	58,891
39.	$-956 \bullet 723$	-691,188
40.	$874 \bullet -333$	-291,042
41.	$908 \bullet -471$	-427,668
42.	$-661 \bullet -403$	266,383
43.	$-520 \bullet -614$	319,280
44.	$-309 \bullet 911$	-281,499

Number Correct: _____

Integer Division—Round 1

Directions: Determine the quotient of the integers, and write it in the column to the right.

1.	$4 \div 1$	
2.	$4 \div (-1)$	
3.	$-4 \div (-1)$	
4.	$-4 \div 1$	
5.	$6 \div 2$	
6.	$-6 \div (-2)$	
7.	$-6 \div 2$	
8.	$6 \div -2$	
9.	$8 \div (-4)$	
10.	$-8 \div (-4)$	
11.	$-8 \div 4$	
12.	$8 \div 4$	
13.	$9 \div (-3)$	
14.	$-9 \div 3$	
15.	$-10 \div 5$	
16.	$10 \div (-2)$	
17.	$-10 \div (-2)$	
18.	$-10 \div (-5)$	
19.	$-14 \div 7$	
20.	$14 \div (-2)$	
21.	$-14 \div (-2)$	
22.	$-14 \div (-7)$	

23.	$-16 \div (-4)$	
24.	$16 \div (-2)$	
25.	$-16 \div 4$	
26.	$-20 \div 4$	
27.	$-20 \div (-4)$	
28.	$-28 \div 4$	
29.	$28 \div (-7)$	
30.	$-28 \div (-7)$	
31.	$-40 \div (-5)$	
32.	$56 \div (-7)$	
33.	$96 \div (-3)$	
34.	$-121 \div (-11)$	
35.	$169 \div (-13)$	
36.	$-175 \div 25$	
37.	$1 \div 4$	
38.	$-1 \div 4$	
39.	$-1 \div (-4)$	
40.	$-3 \div (-4)$	
41.	$-5 \div 20$	
42.	$6 \div (-18)$	
43.	$-24 \div 48$	
44.	$-16 \div 64$	

Integer Division—Round 1 [KEY]

Directions: Determine the quotient of the integers, and write it in the column to the right.

1.	$4 \div 1$	4
2.	$4 \div (-1)$	-4
3.	$-4 \div (-1)$	4
4.	$-4 \div 1$	-4
5.	$6 \div 2$	3
6.	$-6 \div (-2)$	3
7.	$-6 \div 2$	-3
8.	$6 \div -2$	-3
9.	$8 \div (-4)$	-2
10.	$-8 \div (-4)$	2
11.	$-8 \div 4$	-2
12.	$8 \div 4$	2
13.	$9 \div (-3)$	-3
14.	$-9 \div 3$	-3
15.	$-10 \div 5$	-2
16.	$10 \div (-2)$	-5
17.	$-10 \div (-2)$	5
18.	$-10 \div (-5)$	2
19.	$-14 \div 7$	-2
20.	$14 \div (-2)$	-7
21.	$-14 \div (-2)$	7
22.	$-14 \div (-7)$	2

23.	$-16 \div (-4)$	4
24.	$16 \div (-2)$	-8
25.	$-16 \div 4$	-4
26.	$-20 \div 4$	-5
27.	$-20 \div (-4)$	5
28.	$-28 \div 4$	-7
29.	$28 \div (-7)$	-4
30.	$-28 \div (-7)$	4
31.	$-40 \div (-5)$	8
32.	$56 \div (-7)$	-8
33.	$96 \div (-3)$	-32
34.	$-121 \div (-11)$	11
35.	$169 \div (-13)$	-13
36.	$-175 \div 25$	-7
37.	$1 \div 4$	$\frac{1}{4}$
38.	$-1 \div 4$	$-\frac{1}{4}$
39.	$-1 \div (-4)$	$\frac{1}{4}$
40.	$-3 \div (-4)$	$\frac{3}{4}$
41.	$-5 \div 20$	$-\frac{5}{20}$ or $-\frac{1}{4}$
42.	$6 \div (-18)$	$-\frac{6}{18}$ or $-\frac{1}{3}$
43.	$-24 \div 48$	-2
44.	$-16 \div 64$	$-\frac{16}{64}$ or $-\frac{1}{4}$

Number Correct: _____

Improvement: _____

Integer Division—Round 2

Directions: Determine the quotient of the integers, and write it in the column to the right.

1.	$5 \div 1$	
2.	$5 \div (-1)$	
3.	$-5 \div (-1)$	
4.	$-5 \div 1$	
5.	$6 \div 3$	
6.	$-6 \div (-3)$	
7.	$-6 \div 3$	
8.	$6 \div -3$	
9.	$8 \div (-2)$	
10.	$-8 \div (-2)$	
11.	$-8 \div 2$	
12.	$8 \div 2$	
13.	$-9 \div (-3)$	
14.	$9 \div 3$	
15.	$-12 \div 6$	
16.	$12 \div (-2)$	
17.	$-12 \div (-2)$	
18.	$-12 \div (-6)$	
19.	$-16 \div 8$	
20.	$16 \div (-2)$	
21.	$-16 \div (-2)$	
22.	$-16 \div (-8)$	

23.	$-18 \div (-9)$	
24.	$18 \div (-2)$	
25.	$-18 \div 9$	
26.	$-24 \div 4$	
27.	$-24 \div (-4)$	
28.	$-24 \div 6$	
29.	$30 \div (-6)$	
30.	$-30 \div (-5)$	
31.	$-48 \div (-6)$	
32.	$64 \div (-4)$	
33.	$105 \div (-7)$	
34.	$-144 \div (-12)$	
35.	$196 \div (-14)$	
36.	$-225 \div 25$	
37.	$2 \div 4$	
38.	$-2 \div 4$	
39.	$-2 \div (-4)$	
40.	$-4 \div (-8)$	
41.	$-5 \div 40$	
42.	$6 \div (-42)$	
43.	$-25 \div 75$	
44.	$-18 \div 108$	

Integer Division—Round 2 [KEY]

Directions: Determine the quotient of the integers, and write it in the column to the right.

1.	$5 \div 1$	5
2.	$5 \div (-1)$	-5
3.	$-5 \div (-1)$	5
4.	$-5 \div 1$	-5
5.	$6 \div 3$	2
6.	$-6 \div (-3)$	2
7.	$-6 \div 3$	-2
8.	$6 \div -3$	-2
9.	$8 \div (-2)$	-4
10.	$-8 \div (-2)$	4
11.	$-8 \div 2$	-4
12.	$8 \div 2$	4
13.	$-9 \div (-3)$	3
14.	$9 \div 3$	3
15.	$-12 \div 6$	-2
16.	$12 \div (-2)$	-6
17.	$-12 \div (-2)$	6
18.	$-12 \div (-6)$	2
19.	$-16 \div 8$	-2
20.	$16 \div (-2)$	-8
21.	$-16 \div (-2)$	8
22.	$-16 \div (-8)$	2

23.	$-18 \div (-9)$	2
24.	$18 \div (-2)$	-9
25.	$-18 \div 9$	-2
26.	$-24 \div 4$	-6
27.	$-24 \div (-4)$	6
28.	$-24 \div 6$	-4
29.	$30 \div (-6)$	-5
30.	$-30 \div (-5)$	6
31.	$-48 \div (-6)$	8
32.	$64 \div (-4)$	-16
33.	$105 \div (-7)$	-15
34.	$-144 \div (-12)$	12
35.	$196 \div (-14)$	-14
36.	$-225 \div 25$	-9
37.	$2 \div 4$	$\frac{2}{4}$ or $\frac{1}{2}$
38.	$-2 \div 4$	$-\frac{2}{4}$ or $-\frac{1}{2}$
39.	$-2 \div (-4)$	$\frac{2}{4}$ or $\frac{1}{2}$
40.	$-4 \div (-8)$	$\frac{4}{8}$ or $\frac{1}{2}$
41.	$-5 \div 40$	$-\frac{5}{40}$ or $-\frac{1}{8}$
42.	$6 \div (-42)$	$-\frac{6}{42}$ or $-\frac{1}{7}$
43.	$-25 \div 75$	$-\frac{25}{75}$ or $-\frac{1}{3}$
44.	$-18 \div 108$	$-\frac{18}{108}$ or $-\frac{1}{6}$

Number Correct: _____

Generating Equivalent Expressions—Round 1

Directions: Write each as an equivalent expression in standard form as quickly and accurately as possible within the allotted time.

1.	$1 + 1$	
2.	$1 + 1 + 1$	
3.	$(1 + 1) + 1$	
4.	$(1 + 1) + (1 + 1)$	
5.	$(1 + 1) + (1 + 1 + 1)$	
6.	$x + x$	
7.	$x + x + x$	
8.	$(x + x) + x$	
9.	$(x + x) + (x + x)$	
10.	$(x + x) + (x + x + x)$	
11.	$(x + x + x) + (x + x + x)$	
12.	$2x + x$	
13.	$3x + x$	
14.	$4x + x$	
15.	$7x + x$	
16.	$7x + 2x$	
17.	$7x + 3x$	
18.	$10x - x$	
19.	$10x - 5x$	
20.	$10x - 10x$	
21.	$10x - 11x$	
22.	$10x - 12x$	

23.	$4x + 6x - 12x$	
24.	$4x - 6x + 4x$	
25.	$7x - 2x + 3$	
26.	$(4x + 3) + x$	
27.	$(4x + 3) + 2x$	
28.	$(4x + 3) + 3x$	
29.	$(4x + 3) + 5x$	
30.	$(4x + 3) + 6x$	
31.	$(11x + 2) - 2$	
32.	$(11x + 2) - 3$	
33.	$(11x + 2) - 4$	
34.	$(11x + 2) - 7$	
35.	$(3x - 9) + (3x + 5)$	
36.	$(11 - 5x) + (4x + 2)$	
37.	$(2x + 3y) + (4x + y)$	
38.	$(5x + 1.3y) + (2.9x - 0.6y)$	
39.	$(2.6x - 4.8y) + (6.5x - 1.1y)$	
40.	$\left(\frac{3}{4}x - \frac{1}{2}y\right) + \left(-\frac{7}{4}x - \frac{5}{2}y\right)$	
41.	$\left(-\frac{2}{5}x - \frac{7}{9}y\right) + \left(-\frac{7}{10}x - \frac{2}{3}y\right)$	
42.	$\left(\frac{1}{2}x - \frac{1}{4}y\right) + \left(-\frac{3}{5}x + \frac{5}{6}x\right)$	
43.	$\left(1.2x - \frac{3}{4}y\right) - \left(-\frac{3}{5}x + 2.25x\right)$	
44.	$(3.375x - 8.9y) - \left(-7\frac{5}{8}x - 5\frac{2}{5}y\right)$	

Generating Equivalent Expressions—Round 1 [KEY]

Directions: Write each as an equivalent expression in standard form as quickly and accurately as possible within the allotted time.

1.	$1 + 1$	2
2.	$1 + 1 + 1$	3
3.	$(1 + 1) + 1$	3
4.	$(1 + 1) + (1 + 1)$	4
5.	$(1 + 1) + (1 + 1 + 1)$	5
6.	$x + x$	$2x$
7.	$x + x + x$	$3x$
8.	$(x + x) + x$	$3x$
9.	$(x + x) + (x + x)$	$4x$
10.	$(x + x) + (x + x + x)$	$5x$
11.	$(x + x + x) + (x + x + x)$	$6x$
12.	$2x + x$	$3x$
13.	$3x + x$	$4x$
14.	$4x + x$	$5x$
15.	$7x + x$	$8x$
16.	$7x + 2x$	$9x$
17.	$7x + 3x$	$10x$
18.	$10x - x$	$9x$
19.	$10x - 5x$	$5x$
20.	$10x - 10x$	0
21.	$10x - 11x$	$-1x$ or $-x$
22.	$10x - 12x$	$-2x$

23.	$4x + 6x - 12x$	$-2x$
24.	$4x - 6x + 4x$	$2x$
25.	$7x - 2x + 3$	$5x + 3$
26.	$(4x + 3) + x$	$5x + 3$
27.	$(4x + 3) + 2x$	$6x + 3$
28.	$(4x + 3) + 3x$	$7x + 3$
29.	$(4x + 3) + 5x$	$9x + 3$
30.	$(4x + 3) + 6x$	$10x + 3$
31.	$(11x + 2) - 2$	$11x$
32.	$(11x + 2) - 3$	$11x - 1$
33.	$(11x + 2) - 4$	$11x - 2$
34.	$(11x + 2) - 7$	$11x - 5$
35.	$(3x - 9) + (3x + 5)$	$6x - 4$
36.	$(11 - 5x) + (4x + 2)$	$13 - x$ or $-x + 13$
37.	$(2x + 3y) + (4x + y)$	$6x + 4y$
38.	$(5x + 1.3y) + (2.9x - 0.6y)$	$7.9x + 0.7y$
39.	$(2.6x - 4.8y) + (6.5x - 1.1y)$	$9.1x - 5.9y$
40.	$\left(\frac{3}{4}x - \frac{1}{2}y\right) + \left(-\frac{7}{4}x - \frac{5}{2}y\right)$	$-x - 3y$
41.	$\left(-\frac{2}{5}x - \frac{7}{9}y\right) + \left(-\frac{7}{10}x - \frac{2}{3}y\right)$	$-\frac{11}{10}x - \frac{13}{9}y$
42.	$\left(\frac{1}{2}x - \frac{1}{4}y\right) + \left(-\frac{3}{5}x + \frac{5}{6}y\right)$	$-\frac{1}{10}x + \frac{7}{12}y$
43.	$\left(1.2x - \frac{3}{4}y\right) - \left(-\frac{3}{5}x + 2.25x\right)$	$1\frac{4}{5}x + 1\frac{1}{2}y$
44.	$(3.375x - 8.9y) - \left(-7\frac{5}{8}x - 5\frac{2}{5}y\right)$	$11x - \frac{7}{2}y$

Number Correct: _____

Improvement: _____

Generating Equivalent Expressions—Round 2

Directions: Write each as an equivalent expression in standard form as quickly and accurately as possible within the allotted time.

1.	$1 + 1 + 1$	
2.	$1 + 1 + 1 + 1$	
3.	$(1 + 1 + 1) + 1$	
4.	$(1 + 1 + 1) + (1 + 1)$	
5.	$(1 + 1 + 1) + (1 + 1 + 1)$	
6.	$x + x + x$	
7.	$x + x + x + x$	
8.	$(x + x + x) + x$	
9.	$(x + x + x) + (x + x)$	
10.	$(x + x + x) + (x + x + x)$	
11.	$(x + x + x + x) + (x + x)$	
12.	$x + 2x$	
13.	$x + 4x$	
14.	$x + 6x$	
15.	$x + 8x$	
16.	$7x + x$	
17.	$8x + 2x$	
18.	$2x - x$	
19.	$2x - 2x$	
20.	$2x - 3x$	
21.	$2x - 4x$	
22.	$2x - 8x$	

23.	$3x + 5x - 4x$	
24.	$8x - 6x + 4x$	
25.	$7x - 4x + 5$	
26.	$(9x - 1) + x$	
27.	$(9x - 1) + 2x$	
28.	$(9x - 1) + 3x$	
29.	$(9x - 1) + 5x$	
30.	$(9x - 1) + 6x$	
31.	$(-3x + 3) - 2$	
32.	$(-3x + 3) - 3$	
33.	$(-3x + 3) - 4$	
34.	$(-3x + 3) - 5$	
35.	$(5x - 2) + (2x + 5)$	
36.	$(8 - x) + (3x + 2)$	
37.	$(5x + y) + (x + y)$	
38.	$\left(\frac{5}{2}x + \frac{3}{2}y\right) + \left(\frac{11}{2}x - \frac{3}{4}y\right)$	
39.	$\left(\frac{1}{6}x - \frac{3}{8}y\right) + \left(\frac{2}{3}x - \frac{7}{4}y\right)$	
40.	$(9.7x - 3.8y) + (-2.8x + 4.5y)$	
41.	$(1.65x - 2.73y) + (-1.35x + 3.76y)$	
42.	$(6.51x - 4.39y) + (-7.46x + 8.11x)$	
43.	$\left(0.7x - \frac{2}{9}y\right) - \left(-\frac{7}{5}x + 2\frac{1}{3}x\right)$	
44.	$(8.4x - 2.25y) - \left(-2\frac{1}{2}x - 4\frac{3}{8}y\right)$	

Generating Equivalent Expressions—Round 2 [KEY]

Directions: Write each as an equivalent expression in standard form as quickly and accurately as possible within the allotted time.

1.	$1 + 1 + 1$	3
2.	$1 + 1 + 1 + 1$	4
3.	$(1 + 1 + 1) + 1$	4
4.	$(1 + 1 + 1) + (1 + 1)$	5
5.	$(1 + 1 + 1) + (1 + 1 + 1)$	6
6.	$x + x + x$	$3x$
7.	$x + x + x + x$	$4x$
8.	$(x + x + x) + x$	$4x$
9.	$(x + x + x) + (x + x)$	$5x$
10.	$(x + x + x) + (x + x + x)$	$6x$
11.	$(x + x + x + x) + (x + x)$	$6x$
12.	$x + 2x$	$3x$
13.	$x + 4x$	$5x$
14.	$x + 6x$	$7x$
15.	$x + 8x$	$9x$
16.	$7x + x$	$8x$
17.	$8x + 2x$	$10x$
18.	$2x - x$	x or $1x$
19.	$2x - 2x$	0
20.	$2x - 3x$	$-x$ or $-1x$
21.	$2x - 4x$	$-2x$
22.	$2x - 8x$	$-6x$

23.	$3x + 5x - 4x$	$4x$
24.	$8x - 6x + 4x$	$6x$
25.	$7x - 4x + 5$	$3x + 5$
26.	$(9x - 1) + x$	$10x - 1$
27.	$(9x - 1) + 2x$	$11x - 1$
28.	$(9x - 1) + 3x$	$12x - 1$
29.	$(9x - 1) + 5x$	$14x - 1$
30.	$(9x - 1) + 6x$	$15x - 1$
31.	$(-3x + 3) - 2$	$-3x + 1$
32.	$(-3x + 3) - 3$	$-3x$
33.	$(-3x + 3) - 4$	$-3x - 1$
34.	$(-3x + 3) - 5$	$-3x - 2$
35.	$(5x - 2) + (2x + 5)$	$7x + 3$
36.	$(8 - x) + (3x + 2)$	$10 + 2x$
37.	$(5x + y) + (x + y)$	$6x + 2y$
38.	$\left(\frac{5}{2}x + \frac{3}{2}y\right) + \left(\frac{11}{2}x - \frac{3}{4}y\right)$	$8x + \frac{3}{4}y$
39.	$\left(\frac{1}{6}x - \frac{3}{8}y\right) + \left(\frac{2}{3}x - \frac{7}{4}y\right)$	$\frac{5}{6}x - \frac{17}{8}y$
40.	$(9.7x - 3.8y) + (-2.8x + 4.5y)$	$6.9x + 0.7y$
41.	$(1.65x - 2.73y) + (-1.35x + 3.76y)$	$0.3x + 1.03y$
42.	$(6.51x - 4.39y) + (-7.46x + 8.11x)$	$-0.95x + 3.72y$
43.	$\left(0.7x - \frac{2}{9}y\right) - \left(-\frac{7}{5}x + 2\frac{1}{3}x\right)$	$-\frac{21}{10}x - 2\frac{5}{9}y$
44.	$(8.4x - 2.25y) - \left(-2\frac{1}{2}x - 4\frac{3}{8}y\right)$	$10\frac{9}{10}x + 2\frac{1}{8}y$

Equations**Progression of Exercises**

Determine the value of the variable.

Set 1

1. $x + 1 = 5$

$x = 4$

2. $x + 3 = 5$

$x = 2$

3. $x + 6 = 5$

$x = -1$

4. $x - 5 = 2$

$x = 7$

5. $x - 5 = 8$

$x = 13$

Set 2

1. $3x = 15$

$x = 5$

2. $3x = 0$

$x = 0$

3. $3x = -3$

$x = -1$

4. $-9x = 18$

$x = -2$

5. $-x = 18$

$x = -18$

Set 3

1. $\frac{1}{7}x = 5$

$x = 35$

2. $\frac{2}{7}x = 10$

$x = 35$

3. $\frac{3}{7}x = 15$

$x = 35$

4. $\frac{4}{7}x = 20$

$x = 35$

5. $-\frac{5}{7}x = -25$

$x = 35$

Set 4

1. $2x + 4 = 12$

$x = 4$

2. $2x - 5 = 13$

$x = 9$

3. $2x + 6 = 14$

$x = 4$

4. $3x - 6 = 18$

$x = 8$

5. $-4x + 6 = 22$

$x = -4$

Set 5

1. $2x + 0.5 = 6.5$

$x = 3$

2. $3x - 0.5 = 8.5$

$x = 3$

3. $5x + 3 = 8.5$

$x = 1.1$

4. $5x - 4 = 1.5$

$x = 1.1$

5. $-7x + 1.5 = 5$

$x = -0.5$

Set 6

1. $2(x + 3) = 4$

$x = -1$

2. $5(x + 3) = 10$

$x = -1$

3. $5(x - 3) = 10$

$x = 5$

4. $-2(x - 3) = 8$

$x = -1$

5. $-3(x + 4) = 3$

$x = -5$

Inequalities**Progression of Exercises****Set 1**

1. $x + 1 > 8$

$x > 7$

2. $x + 3 > 8$

$x > 5$

3. $x + 10 > 8$

$x > -2$

4. $x - 2 > 3$

$x > 5$

5. $x - 4 > 3$

$x > 7$

Set 2

1. $3x \leq 15$

$x \leq 5$

2. $3x \leq 21$

$x \leq 7$

3. $-x \leq 4$

$x \geq -4$

4. $-2x \leq 4$

$x \geq -2$

5. $-x \leq -4$

$x \geq 4$

Set 3

1. $\frac{1}{2}x < 1$
 $x < 2$

2. $\frac{1}{2}x < 3$
 $x < 6$

3. $-\frac{1}{5}x < 2$
 $x > -10$

4. $-\frac{2}{5}x < 2$
 $x > -5$

5. $-\frac{3}{5}x < 3$
 $x > -5$

Set 4

1. $2x + 4 \geq 8$
 $x \geq 2$

2. $2x - 3 \geq 5$
 $x \geq 4$

3. $-2x + 1 \geq 7$
 $x \leq -3$

4. $-3x + 1 \geq -8$
 $x \leq 3$

5. $-3x - 5 \geq 10$
 $x \leq -5$

Set 5

1. $2x - 0.5 > 5.5$

$x > 3$

2. $3x + 1.5 > 4.5$

$x > 2$

3. $5x - 3 > 4.5$

$x > 1.5$

4. $-5x + 2 > 8.5$

$x < -1.3$

5. $-9x - 3.5 > 1$

$x < -0.5$

Set 6

1. $2(x + 3) \leq 4$

$x \leq -1$

2. $3(x + 3) \leq 6$

$x \leq -1$

3. $4(x + 3) \leq 8$

$x \leq -1$

4. $-5(x - 3) \leq -10$

$x \geq 5$

5. $-2(x + 3) \leq 8$

$x \geq -7$

Number Correct: _____

Fractions, Decimals, and Percents—Round 1

Directions: Write each number in the alternate form indicated.

1.	$\frac{20}{100}$ as a percent	
2.	$\frac{40}{100}$ as a percent	
3.	$\frac{80}{100}$ as a percent	
4.	$\frac{85}{100}$ as a percent	
5.	$\frac{95}{100}$ as a percent	
6.	$\frac{100}{100}$ as a percent	
7.	$\frac{10}{10}$ as a percent	
8.	$\frac{1}{1}$ as a percent	
9.	$\frac{1}{10}$ as a percent	
10.	$\frac{2}{10}$ as a percent	
11.	$\frac{4}{10}$ as a percent	
12.	75% as a decimal	
13.	25% as a decimal	
14.	15% as a decimal	
15.	10% as a decimal	
16.	5% as a decimal	
17.	30% as a fraction	
18.	60% as a fraction	
19.	90% as a fraction	
20.	50% as a fraction	
21.	25% as a fraction	
22.	20% as a fraction	

23.	$\frac{9}{10}$ as a percent	
24.	$\frac{9}{20}$ as a percent	
25.	$\frac{9}{25}$ as a percent	
26.	$\frac{9}{50}$ as a percent	
27.	$\frac{9}{75}$ as a percent	
28.	$\frac{18}{75}$ as a percent	
29.	$\frac{36}{75}$ as a percent	
30.	96% as a fraction	
31.	92% as a fraction	
32.	88% as a fraction	
33.	44% as a fraction	
34.	22% as a fraction	
35.	3% as a decimal	
36.	30% as a decimal	
37.	33% as a decimal	
38.	33.3% as a decimal	
39.	3.3% as a decimal	
40.	0.3% as a decimal	
41.	$\frac{1}{3}$ as a percent	
42.	$\frac{1}{9}$ as a percent	
43.	$\frac{2}{9}$ as a percent	
44.	$\frac{8}{9}$ as a percent	

Fractions, Decimals, and Percents—Round 1 [KEY]

Directions: Write each number in the alternate form indicated.

1.	$\frac{20}{100}$ as a percent	20%
2.	$\frac{40}{100}$ as a percent	40%
3.	$\frac{80}{100}$ as a percent	80%
4.	$\frac{85}{100}$ as a percent	85%
5.	$\frac{95}{100}$ as a percent	95%
6.	$\frac{100}{100}$ as a percent	100%
7.	$\frac{10}{10}$ as a percent	100%
8.	$\frac{1}{1}$ as a percent	100%
9.	$\frac{1}{10}$ as a percent	10%
10.	$\frac{2}{10}$ as a percent	20%
11.	$\frac{4}{10}$ as a percent	40%
12.	75% as a decimal	0.75
13.	25% as a decimal	0.25
14.	15% as a decimal	0.15
15.	10% as a decimal	0.1
16.	5% as a decimal	0.05
17.	30% as a fraction	$\frac{3}{10}$
18.	60% as a fraction	$\frac{3}{5}$
19.	90% as a fraction	$\frac{9}{10}$
20.	50% as a fraction	$\frac{1}{2}$
21.	25% as a fraction	$\frac{1}{4}$
22.	20% as a fraction	$\frac{1}{5}$

23.	$\frac{9}{10}$ as a percent	90%
24.	$\frac{9}{20}$ as a percent	45%
25.	$\frac{9}{25}$ as a percent	36%
26.	$\frac{9}{50}$ as a percent	18%
27.	$\frac{9}{75}$ as a percent	12%
28.	$\frac{18}{75}$ as a percent	24%
29.	$\frac{36}{75}$ as a percent	48%
30.	96% as a fraction	$\frac{72}{75}$ or $\frac{24}{25}$
31.	92% as a fraction	$\frac{23}{25}$
32.	88% as a fraction	$\frac{22}{25}$
33.	44% as a fraction	$\frac{11}{25}$
34.	22% as a fraction	$\frac{11}{50}$
35.	3% as a decimal	0.03
36.	30% as a decimal	0.3
37.	33% as a decimal	0.33
38.	33.3% as a decimal	0.333
39.	3.3% as a decimal	0.033
40.	0.3% as a decimal	0.003
41.	$\frac{1}{3}$ as a percent	$33\frac{1}{3}\%$
42.	$\frac{1}{9}$ as a percent	$11\frac{1}{9}\%$
43.	$\frac{2}{9}$ as a percent	$22\frac{2}{9}\%$
44.	$\frac{8}{9}$ as a percent	$88\frac{8}{9}\%$

Number Correct: _____

Improvement: _____

Fractions, Decimals, and Percents—Round 2

Directions: Write each number in the alternate form indicated.

1.	$\frac{30}{100}$ as a percent	
2.	$\frac{60}{100}$ as a percent	
3.	$\frac{70}{100}$ as a percent	
4.	$\frac{75}{100}$ as a percent	
5.	$\frac{90}{100}$ as a percent	
6.	$\frac{50}{100}$ as a percent	
7.	$\frac{5}{10}$ as a percent	
8.	$\frac{1}{2}$ as a percent	
9.	$\frac{1}{4}$ as a percent	
10.	$\frac{1}{8}$ as a percent	
11.	$\frac{3}{8}$ as a percent	
12.	60% as a decimal	
13.	45% as a decimal	
14.	30% as a decimal	
15.	6% as a decimal	
16.	3% as a decimal	
17.	3% as a fraction	
18.	6% as a fraction	
19.	60% as a fraction	
20.	30% as a fraction	
21.	45% as a fraction	
22.	15% as a fraction	

23.	$\frac{6}{10}$ as a percent	
24.	$\frac{6}{20}$ as a percent	
25.	$\frac{6}{25}$ as a percent	
26.	$\frac{6}{50}$ as a percent	
27.	$\frac{6}{75}$ as a percent	
28.	$\frac{12}{75}$ as a percent	
29.	$\frac{24}{75}$ as a percent	
30.	64% as a fraction	
31.	60% as a fraction	
32.	56% as a fraction	
33.	28% as a fraction	
34.	14% as a fraction	
35.	9% as a decimal	
36.	90% as a decimal	
37.	99% as a decimal	
38.	99.9% as a decimal	
39.	9.9% as a decimal	
40.	0.9% as a decimal	
41.	$\frac{4}{9}$ as a percent	
42.	$\frac{5}{9}$ as a percent	
43.	$\frac{2}{3}$ as a percent	
44.	$\frac{1}{6}$ as a percent	

Fractions, Decimals, and Percents—Round 2 [KEY]

Directions: Write each number in the alternate form indicated.

1.	$\frac{30}{100}$ as a percent	30%
2.	$\frac{60}{100}$ as a percent	60%
3.	$\frac{70}{100}$ as a percent	70%
4.	$\frac{75}{100}$ as a percent	75%
5.	$\frac{90}{100}$ as a percent	90%
6.	$\frac{50}{100}$ as a percent	50%
7.	$\frac{5}{10}$ as a percent	50%
8.	$\frac{1}{2}$ as a percent	50%
9.	$\frac{1}{4}$ as a percent	25%
10.	$\frac{1}{8}$ as a percent	12.5%
11.	$\frac{3}{8}$ as a percent	37.5%
12.	60% as a decimal	0.6
13.	45% as a decimal	0.45
14.	30% as a decimal	0.3
15.	6% as a decimal	0.06
16.	3% as a decimal	0.03
17.	3% as a fraction	$\frac{3}{100}$
18.	6% as a fraction	$\frac{3}{50}$
19.	60% as a fraction	$\frac{3}{5}$
20.	30% as a fraction	$\frac{3}{10}$
21.	45% as a fraction	$\frac{9}{20}$
22.	15% as a fraction	$\frac{3}{20}$

23.	$\frac{6}{10}$ as a percent	60%
24.	$\frac{6}{20}$ as a percent	30%
25.	$\frac{6}{25}$ as a percent	24%
26.	$\frac{6}{50}$ as a percent	12%
27.	$\frac{6}{75}$ as a percent	8%
28.	$\frac{12}{75}$ as a percent	16%
29.	$\frac{24}{75}$ as a percent	32%
30.	64% as a fraction	$\frac{48}{75}$ or $\frac{16}{25}$
31.	60% as a fraction	$\frac{15}{25}$ or $\frac{3}{5}$
32.	56% as a fraction	$\frac{14}{25}$
33.	28% as a fraction	$\frac{7}{25}$
34.	14% as a fraction	$\frac{7}{50}$
35.	9% as a decimal	0.09
36.	90% as a decimal	0.9
37.	99% as a decimal	0.99
38.	99.9% as a decimal	0.999
39.	9.9% as a decimal	0.099
40.	0.9% as a decimal	0.009
41.	$\frac{4}{9}$ as a percent	$44\frac{4}{9}\%$
42.	$\frac{5}{9}$ as a percent	$55\frac{5}{9}\%$
43.	$\frac{2}{3}$ as a percent	$66\frac{2}{3}\%$
44.	$\frac{1}{6}$ as a percent	$16\frac{2}{3}\%$

Number Correct: _____

Part, Whole, or Percent—Round 1

Directions: Find each missing value.

1.	1% of 100 is?	
2.	2% of 100 is?	
3.	3% of 100 is?	
4.	4% of 100 is?	
5.	5% of 100 is?	
6.	9% of 100 is?	
7.	10% of 100 is?	
8.	10% of 200 is?	
9.	10% of 300 is?	
10.	10% of 500 is?	
11.	10% of 550 is?	
12.	10% of 570 is?	
13.	10% of 470 is?	
14.	10% of 170 is?	
15.	10% of 70 is?	
16.	10% of 40 is?	
17.	10% of 20 is?	
18.	10% of 25 is?	
19.	10% of 35 is?	
20.	10% of 36 is?	
21.	10% of 37 is?	
22.	10% of 37.5 is?	

23.	10% of 22 is?	
24.	20% of 22 is?	
25.	30% of 22 is?	
26.	50% of 22 is?	
27.	25% of 22 is?	
28.	75% of 22 is?	
29.	80% of 22 is?	
30.	85% of 22 is?	
31.	90% of 22 is?	
32.	95% of 22 is?	
33.	5% of 22 is?	
34.	15% of 80 is?	
35.	15% of 60 is?	
36.	15% of 40 is?	
37.	30% of 40 is?	
38.	30% of 70 is?	
39.	30% of 60 is?	
40.	45% of 80 is?	
41.	45% of 120 is?	
42.	120% of 40 is?	
43.	120% of 50 is?	
44.	120% of 55 is?	

Part, Whole, or Percent—Round 1 [KEY]

Directions: Find each missing value.

1.	1% of 100 is?	1
2.	2% of 100 is?	2
3.	3% of 100 is?	3
4.	4% of 100 is?	4
5.	5% of 100 is?	5
6.	9% of 100 is?	9
7.	10% of 100 is?	10
8.	10% of 200 is?	20
9.	10% of 300 is?	30
10.	10% of 500 is?	50
11.	10% of 550 is?	55
12.	10% of 570 is?	57
13.	10% of 470 is?	47
14.	10% of 170 is?	17
15.	10% of 70 is?	7
16.	10% of 40 is?	4
17.	10% of 20 is?	2
18.	10% of 25 is?	2.5
19.	10% of 35 is?	3.5
20.	10% of 36 is?	3.6
21.	10% of 37 is?	3.7
22.	10% of 37.5 is?	3.75

23.	10% of 22 is?	2.2
24.	20% of 22 is?	4.4
25.	30% of 22 is?	6.6
26.	50% of 22 is?	11
27.	25% of 22 is?	5.5
28.	75% of 22 is?	16.5
29.	80% of 22 is?	17.6
30.	85% of 22 is?	18.7
31.	90% of 22 is?	19.8
32.	95% of 22 is?	20.9
33.	5% of 22 is?	1.1
34.	15% of 80 is?	12
35.	15% of 60 is?	9
36.	15% of 40 is?	6
37.	30% of 40 is?	12
38.	30% of 70 is?	21
39.	30% of 60 is?	18
40.	45% of 80 is?	36
41.	45% of 120 is?	54
42.	120% of 40 is?	48
43.	120% of 50 is?	60
44.	120% of 55 is?	66

Number Correct: _____

Improvement: _____

Part, Whole, or Percent—Round 2

Directions: Find each missing value.

1.	20% of 100 is?	
2.	21% of 100 is?	
3.	22% of 100 is?	
4.	23% of 100 is?	
5.	25% of 100 is?	
6.	25% of 200 is?	
7.	25% of 300 is?	
8.	25% of 400 is?	
9.	25% of 4000 is?	
10.	50% of 4000 is?	
11.	10% of 4000 is?	
12.	10% of 4700 is?	
13.	10% of 4600 is?	
14.	10% of 4630 is?	
15.	10% of 463 is?	
16.	10% of 46.3 is?	
17.	10% of 18 is?	
18.	10% of 24 is?	
19.	10% of 3.63 is?	
20.	10% of 0.336 is?	
21.	10% of 37 is?	
22.	10% of 37.5 is?	

23.	10% of 4 is?	
24.	20% of 4 is?	
25.	30% of 4 is?	
26.	50% of 4 is?	
27.	25% of 4 is?	
28.	75% of 4 is?	
29.	80% of 4 is?	
30.	85% of 4 is?	
31.	90% of 4 is?	
32.	95% of 4 is?	
33.	5% of 4 is?	
34.	15% of 40 is?	
35.	15% of 30 is?	
36.	15% of 20 is?	
37.	30% of 20 is?	
38.	30% of 50 is?	
39.	30% of 90 is?	
40.	45% of 90 is?	
41.	90% of 120 is?	
42.	125% of 40 is?	
43.	125% of 50 is?	
44.	120% of 60 is?	

Part, Whole, or Percent—Round 2 [KEY]

Directions: Find each missing value.

1.	20% of 100 is?	20
2.	21% of 100 is?	21
3.	22% of 100 is?	22
4.	23% of 100 is?	23
5.	25% of 100 is?	25
6.	25% of 200 is?	50
7.	25% of 300 is?	75
8.	25% of 400 is?	100
9.	25% of 4000 is?	1000
10.	50% of 4000 is?	2000
11.	10% of 4000 is?	400
12.	10% of 4700 is?	470
13.	10% of 4600 is?	460
14.	10% of 4630 is?	463
15.	10% of 463 is?	46.3
16.	10% of 46.3 is?	4.63
17.	10% of 18 is?	1.8
18.	10% of 24 is?	2.4
19.	10% of 3.63 is?	0.363
20.	10% of 0.336 is?	0.0363
21.	10% of 37 is?	3.7
22.	10% of 37.5 is?	3.75

23.	10% of 4 is?	0.4
24.	20% of 4 is?	0.8
25.	30% of 4 is?	1.2
26.	50% of 4 is?	2
27.	25% of 4 is?	1
28.	75% of 4 is?	3
29.	80% of 4 is?	3.2
30.	85% of 4 is?	3.4
31.	90% of 4 is?	3.6
32.	95% of 4 is?	3.8
33.	5% of 4 is?	0.2
34.	15% of 40 is?	6
35.	15% of 30 is?	4.5
36.	15% of 20 is?	3
37.	30% of 20 is?	6
38.	30% of 50 is?	15
39.	30% of 90 is?	27
40.	45% of 90 is?	40.5
41.	90% of 120 is?	108
42.	125% of 40 is?	50
43.	125% of 50 is?	62.5
44.	120% of 60 is?	72

Number Correct: _____

Percent More or Less—Round 1

Directions: Find each missing value.

1.	100% of 10 is ___?	
2.	10% of 10 is ___?	
3.	10% more than 10 is ___?	
4.	11 is ___% more than 10?	
5.	11 is ___% of 10?	
6.	11 is 10% more than ___?	
7.	110% of 10 is ___?	
8.	10% less than 10 is ___?	
9.	9 is ___% less than 10?	
10.	9 is ___% of 10?	
11.	9 is 10% less than ___?	
12.	10% of 50 is ___?	
13.	10% more than 50 is ___?	
14.	55 is ___% of 50?	
15.	55 is ___% more than 50?	
16.	55 is 10% more than ___?	
17.	110% of 50 is ___?	
18.	10% less than 50 is ___?	
19.	45 is ___% of 50?	
20.	45 is ___% less than 50?	
21.	45 is 10% less than ___?	
22.	40 is ___% less than 50?	

23.	15% of 80 is ___?	
24.	15% more than 80 is ___?	
25.	What is 115% of 80?	
26.	92 is 115% of ___?	
27.	92 is ___% more than 80?	
28.	115% of 80 is ___?	
29.	What is 15% less than 80?	
30.	What % of 80 is 68?	
31.	What % less than 80 is 68?	
32.	What % less than 80 is 56?	
33.	What % of 80 is 56?	
34.	What is 20% more than 50?	
35.	What is 30% more than 50?	
36.	What is 140% of 50?	
37.	What % of 50 is 85?	
38.	What % more than 50 is 85?	
39.	What % less than 50 is 35?	
40.	What % of 50 is 35?	
41.	1 is what % of 50?	
42.	6 is what % of 50?	
43.	24% of 50 is?	
44.	24% more than 50 is?	

Percent More or Less—Round 1 [KEY]

Directions: Find each missing value.

1.	100% of 10 is ___?	10
2.	10% of 10 is ___?	1
3.	10% more than 10 is ___?	11
4.	11 is ___% more than 10?	10
5.	11 is ___% of 10?	110
6.	11 is 10% more than ___?	10
7.	110% of 10 is ___?	11
8.	10% less than 10 is ___?	9
9.	9 is ___% less than 10?	10
10.	9 is ___% of 10?	90
11.	9 is 10% less than ___?	10
12.	10% of 50 is ___?	5
13.	10% more than 50 is ___?	55
14.	55 is ___% of 50?	110
15.	55 is ___% more than 50?	10
16.	55 is 10% more than ___?	50
17.	110% of 50 is ___?	55
18.	10% less than 50 is ___?	45
19.	45 is ___% of 50?	90
20.	45 is ___% less than 50?	10
21.	45 is 10% less than ___?	50
22.	40 is ___% less than 50?	20

23.	15% of 80 is ___?	12
24.	15% more than 80 is ___?	92
25.	What is 115% of 80?	92
26.	92 is 115% of ___?	80
27.	92 is ___% more than 80?	15
28.	115% of 80 is ___?	92
29.	What is 15% less than 80?	68
30.	What % of 80 is 68?	85
31.	What % less than 80 is 68?	15
32.	What % less than 80 is 56?	30
33.	What % of 80 is 56?	70
34.	What is 20% more than 50?	60
35.	What is 30% more than 50?	65
36.	What is 140% of 50?	70
37.	What % of 50 is 85?	170
38.	What % more than 50 is 85?	70
39.	What % less than 50 is 35?	30
40.	What % of 50 is 35?	70
41.	1 is what % of 50?	2
42.	6 is what % of 50?	12
43.	24% of 50 is?	12
44.	24% more than 50 is?	62

Number Correct: _____

Improvement: _____

Percent More or Less—Round 2

Directions: Find each missing value.

1.	100% of 20 is ___?	
2.	10% of 20 is ___?	
3.	10% more than 20 is ___?	
4.	22 is ___ % more than 20?	
5.	22 is ___% of 20?	
6.	22 is 10% more than ___ ?	
7.	110% of 20 is ___?	
8.	10% less than 20 is ___?	
9.	18 is ___% less than 20?	
10.	18 is ___% of 20?	
11.	18 is 10% less than ___?	
12.	10% of 200 is ___?	
13.	10% more than 200 is ___?	
14.	220 is ___% of 200?	
15.	220 is ___% more than 200?	
16.	220 is 10% more than ___?	
17.	110% of 200 is ___?	
18.	10% less than 200 is ___?	
19.	180 is ___% of 200?	
20.	180 is ___% less than 200?	
21.	180 is 10% less than ___?	
22.	160 is ___% less than 200?	

23.	15% of 60 is ___?	
24.	15% more than 60 is ___?	
25.	What is 115% of 60?	
26.	69 is 115% of ___?	
27.	69 is ___% more than 60?	
28.	115% of 60 is ___?	
29.	What is 15% less than 60?	
30.	What % of 60 is 51?	
31.	What % less than 60 is 51?	
32.	What % less than 60 is 42?	
33.	What % of 60 is 42?	
34.	What is 20% more than 80?	
35.	What is 30% more than 80?	
36.	What is 140% of 80?	
37.	What % of 80 is 104?	
38.	What % more than 80 is 104?	
39.	What % less than 80 is 56?	
40.	What % of 80 is 56?	
41.	1 is what % of 200?	
42.	6 is what % of 200?	
43.	24% of 200 is?	
44.	24% more than 200 is?	

Percent More or Less—Round 2 [KEY]

Directions: Find each missing value.

1.	100% of 20 is ___?	20
2.	10% of 20 is ___?	2
3.	10% more than 20 is ___?	22
4.	22 is ___ % more than 20?	10
5.	22 is ___% of 20?	110
6.	22 is 10% more than ___?	20
7.	110% of 20 is ___?	22
8.	10% less than 20 is ___?	18
9.	18 is ___% less than 20?	10
10.	18 is ___% of 20?	90
11.	18 is 10% less than ___?	20
12.	10% of 200 is ___?	20
13.	10% more than 200 is ___?	220
14.	220 is ___% of 200?	110
15.	220 is ___% more than 200?	10
16.	220 is 10% more than ___?	200
17.	110% of 200 is ___?	220
18.	10% less than 200 is ___?	180
19.	180 is ___% of 200?	90
20.	180 is ___% less than 200?	10
21.	180 is 10% less than ___?	200
22.	160 is ___% less than 200?	20

23.	15% of 60 is ___?	9
24.	15% more than 60 is ___?	69
25.	What is 115% of 60?	69
26.	69 is 115% of ___?	60
27.	69 is ___% more than 60?	15
28.	115% of 60 is ___?	69
29.	What is 15% less than 60?	51
30.	What % of 60 is 51?	85
31.	What % less than 60 is 51?	15
32.	What % less than 60 is 42?	30
33.	What % of 60 is 42?	70
34.	What is 20% more than 80?	96
35.	What is 30% more than 80?	104
36.	What is 140% of 80?	112
37.	What % of 80 is 104?	130
38.	What % more than 80 is 104?	30
39.	What % less than 80 is 56?	30
40.	What % of 80 is 56?	70
41.	1 is what % of 200?	$\frac{1}{2}$
42.	6 is what % of 200?	3
43.	24% of 200 is?	48
44.	24% more than 200 is?	248

Number Correct: _____

Fractional Percents—Round 1

Directions: Find the part that corresponds with each percent.

1.	1% of 100	
2.	1% of 200	
3.	1% of 400	
4.	1% of 800	
5.	1% of 1,600	
6.	1% of 3,200	
7.	1% of 5,000	
8.	1% of 10,000	
9.	1% of 20,000	
10.	1% of 40,000	
11.	1% of 80,000	
12.	$\frac{1}{2}$ % of 100	
13.	$\frac{1}{2}$ % of 200	
14.	$\frac{1}{2}$ % of 400	
15.	$\frac{1}{2}$ % of 800	
16.	$\frac{1}{2}$ % of 1,600	
17.	$\frac{1}{2}$ % of 3,200	
18.	$\frac{1}{2}$ % of 5,000	
19.	$\frac{1}{2}$ % of 10,000	
20.	$\frac{1}{2}$ % of 20,000	
21.	$\frac{1}{2}$ % of 40,000	
22.	$\frac{1}{2}$ % of 80,000	

23.	$\frac{1}{4}$ % of 100	
24.	$\frac{1}{4}$ % of 200	
25.	$\frac{1}{4}$ % of 400	
26.	$\frac{1}{4}$ % of 800	
27.	$\frac{1}{4}$ % of 1,600	
28.	$\frac{1}{4}$ % of 3,200	
29.	$\frac{1}{4}$ % of 5,000	
30.	$\frac{1}{4}$ % of 10,000	
31.	$\frac{1}{4}$ % of 20,000	
32.	$\frac{1}{4}$ % of 40,000	
33.	$\frac{1}{4}$ % of 80,000	
34.	1% of 1,000	
35.	$\frac{1}{2}$ % of 1,000	
36.	$\frac{1}{4}$ % of 1,000	
37.	1% of 4,000	
38.	$\frac{1}{2}$ % of 4,000	
39.	$\frac{1}{4}$ % of 4,000	
40.	1% of 2,000	
41.	$\frac{1}{2}$ % of 2,000	
42.	$\frac{1}{4}$ % of 2,000	
43.	$\frac{1}{2}$ % of 6,000	
44.	$\frac{1}{4}$ % of 6,000	

Fractional Percents—Round 1 [KEY]

Directions: Find the part that corresponds with each percent.

1.	1% of 100	1
2.	1% of 200	2
3.	1% of 400	4
4.	1% of 800	8
5.	1% of 1,600	16
6.	1% of 3,200	32
7.	1% of 5,000	50
8.	1% of 10,000	100
9.	1% of 20,000	200
10.	1% of 40,000	400
11.	1% of 80,000	800
12.	$\frac{1}{2}$ % of 100	$\frac{1}{2}$
13.	$\frac{1}{2}$ % of 200	1
14.	$\frac{1}{2}$ % of 400	2
15.	$\frac{1}{2}$ % of 800	4
16.	$\frac{1}{2}$ % of 1,600	8
17.	$\frac{1}{2}$ % of 3,200	16
18.	$\frac{1}{2}$ % of 5,000	25
19.	$\frac{1}{2}$ % of 10,000	50
20.	$\frac{1}{2}$ % of 20,000	100
21.	$\frac{1}{2}$ % of 40,000	200
22.	$\frac{1}{2}$ % of 80,000	400

23.	$\frac{1}{4}$ % of 100	$\frac{1}{4}$
24.	$\frac{1}{4}$ % of 200	$\frac{1}{2}$
25.	$\frac{1}{4}$ % of 400	1
26.	$\frac{1}{4}$ % of 800	2
27.	$\frac{1}{4}$ % of 1,600	4
28.	$\frac{1}{4}$ % of 3,200	8
29.	$\frac{1}{4}$ % of 5,000	$12\frac{1}{2}$
30.	$\frac{1}{4}$ % of 10,000	25
31.	$\frac{1}{4}$ % of 20,000	50
32.	$\frac{1}{4}$ % of 40,000	100
33.	$\frac{1}{4}$ % of 80,000	200
34.	1% of 1,000	10
35.	$\frac{1}{2}$ % of 1,000	5
36.	$\frac{1}{4}$ % of 1,000	2.5
37.	1% of 4,000	40
38.	$\frac{1}{2}$ % of 4,000	20
39.	$\frac{1}{4}$ % of 4,000	10
40.	1% of 2,000	20
41.	$\frac{1}{2}$ % of 2,000	10
42.	$\frac{1}{4}$ % of 2,000	5
43.	$\frac{1}{2}$ % of 6,000	30
44.	$\frac{1}{4}$ % of 6,000	15

Number Correct: _____

Improvement: _____

Fractional Percents—Round 2

Directions: Find the part that corresponds with each percent.

1.	10% of 30	
2.	10% of 60	
3.	10% of 90	
4.	10% of 120	
5.	10% of 150	
6.	10% of 180	
7.	10% of 210	
8.	20% of 30	
9.	20% of 60	
10.	20% of 90	
11.	20% of 120	
12.	5% of 50	
13.	5% of 100	
14.	5% of 200	
15.	5% of 400	
16.	5% of 800	
17.	5% of 1,600	
18.	5% of 3,200	
19.	5% of 6,400	
20.	5% of 600	
21.	10% of 600	
22.	20% of 600	

23.	$10\frac{1}{2}\%$ of 100	
24.	$10\frac{1}{2}\%$ of 200	
25.	$10\frac{1}{2}\%$ of 400	
26.	$10\frac{1}{2}\%$ of 800	
27.	$10\frac{1}{2}\%$ of 1,600	
28.	$10\frac{1}{2}\%$ of 3,200	
29.	$10\frac{1}{2}\%$ of 6,400	
30.	$10\frac{1}{4}\%$ of 400	
31.	$10\frac{1}{4}\%$ of 800	
32.	$10\frac{1}{4}\%$ of 1,600	
33.	$10\frac{1}{4}\%$ of 3,200	
34.	10% of 1,000	
35.	$10\frac{1}{2}\%$ of 1,000	
36.	$10\frac{1}{4}\%$ of 1,000	
37.	10% of 2,000	
38.	$10\frac{1}{2}\%$ of 2,000	
39.	$10\frac{1}{4}\%$ of 2,000	
40.	10% of 4,000	
41.	$10\frac{1}{2}\%$ of 4,000	
42.	$10\frac{1}{4}\%$ of 4,000	
43.	10% of 5,000	
44.	$10\frac{1}{2}\%$ of 5,000	

Fractional Percents—Round 2 [KEY]

Directions: Find the part that corresponds with each percent.

1.	10% of 30	3
2.	10% of 60	6
3.	10% of 90	9
4.	10% of 120	12
5.	10% of 150	15
6.	10% of 180	18
7.	10% of 210	21
8.	20% of 30	6
9.	20% of 60	12
10.	20% of 90	18
11.	20% of 120	24
12.	5% of 50	2.5
13.	5% of 100	5
14.	5% of 200	10
15.	5% of 400	20
16.	5% of 800	40
17.	5% of 1,600	80
18.	5% of 3,200	160
19.	5% of 6,400	320
20.	5% of 600	30
21.	10% of 600	60
22.	20% of 600	120

23.	$10\frac{1}{2}\%$ of 100	10.5
24.	$10\frac{1}{2}\%$ of 200	21
25.	$10\frac{1}{2}\%$ of 400	42
26.	$10\frac{1}{2}\%$ of 800	84
27.	$10\frac{1}{2}\%$ of 1,600	168
28.	$10\frac{1}{2}\%$ of 3,200	336
29.	$10\frac{1}{2}\%$ of 6,400	672
30.	$10\frac{1}{4}\%$ of 400	41
31.	$10\frac{1}{4}\%$ of 800	82
32.	$10\frac{1}{4}\%$ of 1,600	164
33.	$10\frac{1}{4}\%$ of 3,200	328
34.	10% of 1,000	100
35.	$10\frac{1}{2}\%$ of 1,000	105
36.	$10\frac{1}{4}\%$ of 1,000	102.5
37.	10% of 2,000	200
38.	$10\frac{1}{2}\%$ of 2,000	210
39.	$10\frac{1}{4}\%$ of 2,000	205
40.	10% of 4,000	400
41.	$10\frac{1}{2}\%$ of 4,000	420
42.	$10\frac{1}{4}\%$ of 4,000	410
43.	10% of 5,000	500
44.	$10\frac{1}{2}\%$ of 5,000	525

Number Correct: _____

Applying Properties of Exponents to Generate Equivalent Expressions I—Round 1

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. All letters denote numbers.

1.	$2^2 \cdot 2^3$	
2.	$2^2 \cdot 2^4$	
3.	$2^2 \cdot 2^5$	
4.	$3^7 \cdot 3^1$	
5.	$3^8 \cdot 3^1$	
6.	$3^9 \cdot 3^1$	
7.	$7^6 \cdot 7^2$	
8.	$7^6 \cdot 7^3$	
9.	$7^6 \cdot 7^4$	
10.	$11^{15} \cdot 11$	
11.	$11^{16} \cdot 11$	
12.	$2^{12} \cdot 2^2$	
13.	$2^{12} \cdot 2^4$	
14.	$2^{12} \cdot 2^6$	
15.	$99^5 \cdot 99^2$	
16.	$99^6 \cdot 99^3$	
17.	$99^7 \cdot 99^4$	
18.	$5^8 \cdot 5^2$	
19.	$6^8 \cdot 6^2$	
20.	$7^8 \cdot 7^2$	
21.	$r^8 \cdot r^2$	
22.	$s^8 \cdot s^2$	

23.	$6^3 \cdot 6^2$	
24.	$6^2 \cdot 6^3$	
25.	$(-8)^3 \cdot (-8)^7$	
26.	$(-8)^7 \cdot (-8)^3$	
27.	$(0.2)^3 \cdot (0.2)^7$	
28.	$(0.2)^7 \cdot (0.2)^3$	
29.	$(-2)^{12} \cdot (-2)^1$	
30.	$(-2.7)^{12} \cdot (-2.7)^1$	
31.	$1.1^6 \cdot 1.1^9$	
32.	$57^6 \cdot 57^9$	
33.	$x^6 \cdot x^9$	
34.	$2^7 \cdot 4$	
35.	$2^7 \cdot 4^2$	
36.	$2^7 \cdot 16$	
37.	$16 \cdot 4^3$	
38.	$3^2 \cdot 9$	
39.	$3^2 \cdot 27$	
40.	$3^2 \cdot 81$	
41.	$5^4 \cdot 25$	
42.	$5^4 \cdot 125$	
43.	$8 \cdot 2^9$	
44.	$16 \cdot 2^9$	

Applying Properties of Exponents to Generate Equivalent Expressions I—Round 1 [KEY]

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. All letters denote numbers.

1.	$2^2 \cdot 2^3$	2^5
2.	$2^2 \cdot 2^4$	2^6
3.	$2^2 \cdot 2^5$	2^7
4.	$3^7 \cdot 3^1$	3^8
5.	$3^8 \cdot 3^1$	3^9
6.	$3^9 \cdot 3^1$	3^{10}
7.	$7^6 \cdot 7^2$	7^8
8.	$7^6 \cdot 7^3$	7^9
9.	$7^6 \cdot 7^4$	7^{10}
10.	$11^{15} \cdot 11$	11^{16}
11.	$11^{16} \cdot 11$	11^{17}
12.	$2^{12} \cdot 2^2$	2^{14}
13.	$2^{12} \cdot 2^4$	2^{16}
14.	$2^{12} \cdot 2^6$	2^{18}
15.	$99^5 \cdot 99^2$	99^7
16.	$99^6 \cdot 99^3$	99^9
17.	$99^7 \cdot 99^4$	99^{11}
18.	$5^8 \cdot 5^2$	5^{10}
19.	$6^8 \cdot 6^2$	6^{10}
20.	$7^8 \cdot 7^2$	7^{10}
21.	$r^8 \cdot r^2$	r^{10}
22.	$s^8 \cdot s^2$	s^{10}

23.	$6^3 \cdot 6^2$	6^5
24.	$6^2 \cdot 6^3$	6^5
25.	$(-8)^3 \cdot (-8)^7$	$(-8)^{10}$
26.	$(-8)^7 \cdot (-8)^3$	$(-8)^{10}$
27.	$(0.2)^3 \cdot (0.2)^7$	$(0.2)^{10}$
28.	$(0.2)^7 \cdot (0.2)^3$	$(0.2)^{10}$
29.	$(-2)^{12} \cdot (-2)^1$	$(-2)^{13}$
30.	$(-2.7)^{12} \cdot (-2.7)^1$	$(-2.7)^{13}$
31.	$1.1^6 \cdot 1.1^9$	1.1^{15}
32.	$57^6 \cdot 57^9$	57^{15}
33.	$x^6 \cdot x^9$	x^{15}
34.	$2^7 \cdot 4$	2^9
35.	$2^7 \cdot 4^2$	2^{11}
36.	$2^7 \cdot 16$	2^{11}
37.	$16 \cdot 4^3$	4^5
38.	$3^2 \cdot 9$	3^4
39.	$3^2 \cdot 27$	3^5
40.	$3^2 \cdot 81$	3^6
41.	$5^4 \cdot 25$	5^6
42.	$5^4 \cdot 125$	5^7
43.	$8 \cdot 2^9$	2^{12}
44.	$16 \cdot 2^9$	2^{13}

Number Correct: _____

Improvement: _____

Applying Properties of Exponents to Generate Equivalent Expressions I—Round 2

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. All letters denote numbers.

1.	$5^2 \cdot 5^3$	
2.	$5^2 \cdot 5^4$	
3.	$5^2 \cdot 5^5$	
4.	$2^7 \cdot 2^1$	
5.	$2^8 \cdot 2^1$	
6.	$2^9 \cdot 2^1$	
7.	$3^6 \cdot 3^2$	
8.	$3^6 \cdot 3^3$	
9.	$3^6 \cdot 3^4$	
10.	$7^{15} \cdot 7$	
11.	$7^{16} \cdot 7$	
12.	$11^{12} \cdot 11^2$	
13.	$11^{12} \cdot 11^4$	
14.	$11^{12} \cdot 11^6$	
15.	$23^5 \cdot 23^2$	
16.	$23^6 \cdot 23^3$	
17.	$23^7 \cdot 23^4$	
18.	$13^7 \cdot 13^3$	
19.	$15^7 \cdot 15^3$	
20.	$17^7 \cdot 17^3$	
21.	$x^7 \cdot x^3$	
22.	$y^7 \cdot y^3$	

23.	$7^3 \cdot 7^2$	
24.	$7^2 \cdot 7^3$	
25.	$(-4)^3 \cdot (-4)^{11}$	
26.	$(-4)^{11} \cdot (-4)^3$	
27.	$(0.2)^3 \cdot (0.2)^{11}$	
28.	$(0.2)^{11} \cdot (0.2)^3$	
29.	$(-2)^9 \cdot (-2)^5$	
30.	$(-2.7)^5 \cdot (-2.7)^9$	
31.	$3.1^6 \cdot 3.1^6$	
32.	$57^6 \cdot 57^6$	
33.	$z^6 \cdot z^6$	
34.	$4 \cdot 2^9$	
35.	$4^2 \cdot 2^9$	
36.	$16 \cdot 2^9$	
37.	$16 \cdot 4^3$	
38.	$9 \cdot 3^5$	
39.	$3^5 \cdot 9$	
40.	$3^5 \cdot 27$	
41.	$5^7 \cdot 25$	
42.	$5^7 \cdot 125$	
43.	$2^{11} \cdot 4$	
44.	$2^{11} \cdot 16$	

Applying Properties of Exponents to Generate Equivalent Expressions I—Round 2 [KEY]

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. All letters denote numbers.

1.	$5^2 \cdot 5^3$	5^5
2.	$5^2 \cdot 5^4$	5^6
3.	$5^2 \cdot 5^5$	5^7
4.	$2^7 \cdot 2^1$	2^8
5.	$2^8 \cdot 2^1$	2^9
6.	$2^9 \cdot 2^1$	2^{10}
7.	$3^6 \cdot 3^2$	3^8
8.	$3^6 \cdot 3^3$	3^9
9.	$3^6 \cdot 3$	3^{10}
10.	$7^{15} \cdot 7$	7^{16}
11.	$7^{16} \cdot 7$	7^{17}
12.	$11^{12} \cdot 11^2$	11^{14}
13.	$11^{12} \cdot 11^4$	11^{16}
14.	$11^{12} \cdot 11^6$	11^{18}
15.	$23^5 \cdot 23^2$	23^7
16.	$23^6 \cdot 23^3$	23^9
17.	$23^7 \cdot 23^4$	23^{11}
18.	$13^7 \cdot 13^3$	13^{10}
19.	$15^7 \cdot 15^3$	15^{10}
20.	$17^7 \cdot 17^3$	17^{10}
21.	$x^7 \cdot x^3$	x^{10}
22.	$y^7 \cdot y^3$	y^{10}

23.	$7^3 \cdot 7^2$	7^5
24.	$7^2 \cdot 7^3$	7^5
25.	$(-4)^3 \cdot (-4)^{11}$	$(-4)^{14}$
26.	$(-4)^{11} \cdot (-4)^3$	$(-4)^{14}$
27.	$(0.2)^3 \cdot (0.2)^{11}$	$(0.2)^{14}$
28.	$(0.2)^{11} \cdot (0.2)^3$	$(0.2)^{14}$
29.	$(-2)^9 \cdot (-2)^5$	$(-2)^{14}$
30.	$(-2.7)^5 \cdot (-2.7)^9$	$(-2.7)^{14}$
31.	$3.1^6 \cdot 3.1^6$	3.1^{12}
32.	$57^6 \cdot 57^6$	57^{12}
33.	$z^6 \cdot z^6$	z^{12}
34.	$4 \cdot 2^9$	2^{11}
35.	$4^2 \cdot 2^9$	2^{13}
36.	$16 \cdot 2^9$	2^{13}
37.	$16 \cdot 4^3$	4^5
38.	$9 \cdot 3^5$	3^7
39.	$3^5 \cdot 9$	3^7
40.	$3^5 \cdot 27$	3^8
41.	$5^7 \cdot 25$	5^9
42.	$5^7 \cdot 125$	5^{10}
43.	$2^{11} \cdot 4$	2^{13}
44.	$2^{11} \cdot 16$	2^{15}

Number Correct: _____

Applying Properties of Exponents to Generate Equivalent Expressions II—Round 1

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. When appropriate, express answers without parentheses or as equal to 1. All letters denote numbers.

1.	$4^5 \cdot 4^{-4}$	
2.	$4^5 \cdot 4^{-3}$	
3.	$4^5 \cdot 4^{-2}$	
4.	$7^{-4} \cdot 7^{11}$	
5.	$7^{-4} \cdot 7^{10}$	
6.	$7^{-4} \cdot 7^9$	
7.	$9^{-4} \cdot 9^{-3}$	
8.	$9^{-4} \cdot 9^{-2}$	
9.	$9^{-4} \cdot 9^{-1}$	
10.	$9^{-4} \cdot 9^0$	
11.	$5^0 \cdot 5^1$	
12.	$5^0 \cdot 5^2$	
13.	$5^0 \cdot 5^3$	
14.	$(12^3)^9$	
15.	$(12^3)^{10}$	
16.	$(12^3)^{11}$	
17.	$(7^{-3})^{-8}$	
18.	$(7^{-3})^{-9}$	
19.	$(7^{-3})^{-10}$	
20.	$\left(\frac{1}{2}\right)^9$	
21.	$\left(\frac{1}{2}\right)^8$	
22.	$\left(\frac{1}{2}\right)^7$	

23.	$\left(\frac{1}{2}\right)^6$	
24.	$(3x)^5$	
25.	$(3x)^7$	
26.	$(3x)^9$	
27.	$(8^{-2})^3$	
28.	$(8^{-3})^3$	
29.	$(8^{-4})^3$	
30.	$(22^0)^{50}$	
31.	$(22^0)^{55}$	
32.	$(22^0)^{60}$	
33.	$\left(\frac{1}{11}\right)^{-5}$	
34.	$\left(\frac{1}{11}\right)^{-6}$	
35.	$\left(\frac{1}{11}\right)^{-7}$	
36.	$\frac{56^{-23}}{56^{-34}}$	
37.	$\frac{87^{-12}}{87^{-34}}$	
38.	$\frac{23^{-15}}{23^{-17}}$	
39.	$(-2)^{-12} \cdot (-2)^1$	
40.	$\frac{2y}{y^3}$	
41.	$\frac{5xy^7}{15x^7y}$	
42.	$\frac{16x^6y^9}{8x^{-5}y^{-11}}$	
43.	$(2^3 \cdot 4)^{-5}$	
44.	$(9^{-8})(27^{-2})$	

Applying Properties of Exponents to Generate Equivalent Expressions II—Round 1 [KEY]

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. When appropriate, express answers without parentheses or as equal to 1. All letters denote numbers.

1.	$4^5 \cdot 4^{-4}$	4^1
2.	$4^5 \cdot 4^{-3}$	4^2
3.	$4^5 \cdot 4^{-2}$	4^3
4.	$7^{-4} \cdot 7^{11}$	7^7
5.	$7^{-4} \cdot 7^{10}$	7^6
6.	$7^{-4} \cdot 7^9$	7^5
7.	$9^{-4} \cdot 9^{-3}$	$\frac{1}{9^7}$
8.	$9^{-4} \cdot 9^{-2}$	$\frac{1}{9^6}$
9.	$9^{-4} \cdot 9^{-1}$	$\frac{1}{9^5}$
10.	$9^{-4} \cdot 9^0$	$\frac{1}{9^4}$
11.	$5^0 \cdot 5^1$	5^1
12.	$5^0 \cdot 5^2$	5^2
13.	$5^0 \cdot 5^3$	5^3
14.	$(12^3)^9$	12^{27}
15.	$(12^3)^{10}$	12^{30}
16.	$(12^3)^{11}$	12^{33}
17.	$(7^{-3})^{-8}$	7^{24}
18.	$(7^{-3})^{-9}$	7^{27}
19.	$(7^{-3})^{-10}$	7^{30}
20.	$\left(\frac{1}{2}\right)^9$	$\frac{1}{2^9}$
21.	$\left(\frac{1}{2}\right)^8$	$\frac{1}{2^8}$
22.	$\left(\frac{1}{2}\right)^7$	$\frac{1}{2^7}$

23.	$\left(\frac{1}{2}\right)^6$	$\frac{1}{2^6}$
24.	$(3x)^5$	3^5x^5
25.	$(3x)^7$	3^7x^7
26.	$(3x)^9$	3^9x^9
27.	$(8^{-2})^3$	$\frac{1}{8^6}$
28.	$(8^{-3})^3$	$\frac{1}{8^9}$
29.	$(8^{-4})^3$	$\frac{1}{8^{12}}$
30.	$(22^0)^{50}$	1
31.	$(22^0)^{55}$	1
32.	$(22^0)^{60}$	1
33.	$\left(\frac{1}{11}\right)^{-5}$	11^5
34.	$\left(\frac{1}{11}\right)^{-6}$	11^6
35.	$\left(\frac{1}{11}\right)^{-7}$	11^7
36.	$\frac{56^{-23}}{56^{-34}}$	56^{11}
37.	$\frac{87^{-12}}{87^{-34}}$	87^{22}
38.	$\frac{23^{-15}}{23^{-17}}$	23^2
39.	$(-2)^{-12} \cdot (-2)^1$	$\frac{1}{(-2)^{11}}$
40.	$\frac{2y}{y^3}$	$\frac{2}{y^2}$
41.	$\frac{5xy^7}{15x^7y}$	$\frac{y^6}{3x^6}$
42.	$\frac{16x^6y^9}{8x^{-5}y^{-11}}$	$2x^{11}y^{20}$
43.	$(2^3 \cdot 4)^{-5}$	$\frac{1}{2^{25}}$
44.	$(9^{-8})(27^{-2})$	$\frac{1}{3^{22}}$

Number Correct: _____

Improvement: _____

Applying Properties of Exponents to Generate Equivalent Expressions II—Round 2

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. When appropriate, express answers without parentheses or as equal to 1. All letters denote numbers.

1.	$11^5 \cdot 11^{-4}$	
2.	$11^5 \cdot 11^{-3}$	
3.	$11^5 \cdot 11^{-2}$	
4.	$7^{-7} \cdot 7^9$	
5.	$7^{-8} \cdot 7^9$	
6.	$7^{-9} \cdot 7^9$	
7.	$(-6)^{-4} \cdot (-6)^{-3}$	
8.	$(-6)^{-4} \cdot (-6)^{-2}$	
9.	$(-6)^{-4} \cdot (-6)^{-1}$	
10.	$(-6)^{-4} \cdot (-6)^0$	
11.	$x^0 \cdot x^1$	
12.	$x^0 \cdot x^2$	
13.	$x^0 \cdot x^3$	
14.	$(12^5)^9$	
15.	$(12^6)^9$	
16.	$(12^7)^9$	
17.	$(7^{-3})^{-4}$	
18.	$(7^{-4})^{-4}$	
19.	$(7^{-5})^{-4}$	
20.	$\left(\frac{3}{7}\right)^8$	
21.	$\left(\frac{3}{7}\right)^7$	
22.	$\left(\frac{3}{7}\right)^6$	

23.	$\left(\frac{3}{7}\right)^5$	
24.	$(18xy)^5$	
25.	$(18xy)^7$	
26.	$(18xy)^9$	
27.	$(5.2^{-2})^3$	
28.	$(5.2^{-3})^3$	
29.	$(5.2^{-4})^3$	
30.	$(22^6)^0$	
31.	$(22^{12})^0$	
32.	$(22^{18})^0$	
33.	$\left(\frac{4}{5}\right)^{-5}$	
34.	$\left(\frac{4}{5}\right)^{-6}$	
35.	$\left(\frac{4}{5}\right)^{-7}$	
36.	$\left(\frac{6^{-2}}{7^5}\right)^{-11}$	
37.	$\left(\frac{6^{-2}}{7^5}\right)^{-12}$	
38.	$\left(\frac{6^{-2}}{7^5}\right)^{-13}$	
39.	$\left(\frac{6^{-2}}{7^5}\right)^{-15}$	
40.	$\frac{42ab^{10}}{14a^{-9}b}$	
41.	$\frac{5xy^7}{25x^7y}$	
42.	$\frac{22a^{15}b^{32}}{121ab^{-5}}$	
43.	$(7^{-8} \cdot 49)^{-5}$	
44.	$(36^9)(216^{-2})$	

Applying Properties of Exponents to Generate Equivalent Expressions II—Round 2 [KEY]

Directions: Simplify each expression using the laws of exponents. Use the least number of bases possible and only positive exponents. When appropriate, express answers without parentheses or as equal to 1. All letters denote numbers.

1.	$11^5 \cdot 11^{-4}$	11^1
2.	$11^5 \cdot 11^{-3}$	11^2
3.	$11^5 \cdot 11^{-2}$	11^3
4.	$7^{-7} \cdot 7^9$	7^2
5.	$7^{-8} \cdot 7^9$	7^1
6.	$7^{-9} \cdot 7^9$	1
7.	$(-6)^{-4} \cdot (-6)^{-3}$	$\frac{1}{(-6)^7}$
8.	$(-6)^{-4} \cdot (-6)^{-2}$	$\frac{1}{(-6)^6}$
9.	$(-6)^{-4} \cdot (-6)^{-1}$	$\frac{1}{(-6)^5}$
10.	$(-6)^{-4} \cdot (-6)^0$	$\frac{1}{(-6)^4}$
11.	$x^0 \cdot x^1$	x^1
12.	$x^0 \cdot x^2$	x^2
13.	$x^0 \cdot x^3$	x^3
14.	$(12^5)^9$	12^{45}
15.	$(12^6)^9$	12^{54}
16.	$(12^7)^9$	12^{63}
17.	$(7^{-3})^{-4}$	7^{12}
18.	$(7^{-4})^{-4}$	7^{16}
19.	$(7^{-5})^{-4}$	7^{20}
20.	$\left(\frac{3}{7}\right)^8$	$\frac{3^8}{7^8}$
21.	$\left(\frac{3}{7}\right)^7$	$\frac{3^7}{7^7}$
22.	$\left(\frac{3}{7}\right)^6$	$\frac{3^6}{7^6}$

23.	$\left(\frac{3}{7}\right)^5$	$\frac{3^5}{7^5}$
24.	$(18xy)^5$	$18^5 x^5 y^5$
25.	$(18xy)^7$	$18^7 x^7 y^7$
26.	$(18xy)^9$	$18^9 x^9 y^9$
27.	$(5.2^{-2})^3$	$\frac{1}{(5.2)^6}$
28.	$(5.2^{-3})^3$	$\frac{1}{(5.2)^9}$
29.	$(5.2^{-4})^3$	$\frac{1}{(5.2)^{12}}$
30.	$(22^6)^0$	1
31.	$(22^{12})^0$	1
32.	$(22^{18})^0$	1
33.	$\left(\frac{4}{5}\right)^{-5}$	$\frac{5^5}{4^5}$
34.	$\left(\frac{4}{5}\right)^{-6}$	$\frac{5^6}{4^6}$
35.	$\left(\frac{4}{5}\right)^{-7}$	$\frac{5^7}{4^7}$
36.	$\left(\frac{6^{-2}}{7^5}\right)^{-11}$	$6^{22} 7^{55}$
37.	$\left(\frac{6^{-2}}{7^5}\right)^{-12}$	$6^{24} 7^{60}$
38.	$\left(\frac{6^{-2}}{7^5}\right)^{-13}$	$6^{26} 7^{65}$
39.	$\left(\frac{6^{-2}}{7^5}\right)^{-15}$	$6^{30} 7^{75}$
40.	$\frac{42ab^{10}}{14a^{-9}b}$	$3a^{10}b^9$
41.	$\frac{5xy^7}{25x^7y}$	$\frac{y^6}{5x^6}$
42.	$\frac{22a^{15}b^{32}}{121ab^{-5}}$	$\frac{2a^{14}b^{37}}{11}$
43.	$(7^{-8} \cdot 49)^{-5}$	7^{30}
44.	$(36^9)(216^{-2})$	6^{12}

Operations with Numbers Expressed in Scientific Notation I

1. $(5 \times 10^4)^2$

2.5×10^9

2. $(2 \times 10^9)^4$

1.6×10^{37}

3.
$$\frac{(1.2 \times 10^4) + (2 \times 10^4) + (2.8 \times 10^4)}{3} =$$

2×10^4

4.
$$\frac{7 \times 10^{15}}{14 \times 10^9}$$

5×10^5

5.
$$\frac{4 \times 10^2}{2 \times 10^8}$$

2×10^{-6}

6.
$$\frac{(7 \times 10^9) + (6 \times 10^9)}{2}$$

6.5×10^9

7. $(9 \times 10^{-4})^2$

8.1×10^{-7}

8. $(9.3 \times 10^{10}) - (9 \times 10^{10})$

3×10^9

Operations With Numbers Expressed in Scientific Notation II

$$1. \frac{3 \times 10^8}{5 \times 10^4}$$
$$6 \times 10^3$$

$$2. (6 \times 10^{-5})(7 \times 10^{11})$$
$$4.2 \times 10^7$$

$$3. (3.2 \times 10^{-5}) + (6.7 \times 10^{-5}) + (5.1 \times 10^{-5})$$
$$1.5 \times 10^{-4}$$

$$4. (6 \times 10^{-3})^2$$
$$3.6 \times 10^{-5}$$

$$5. \frac{(6 \times 10^3) + (8 \times 10^3) + (2 \times 10^3)}{4}$$
$$4 \times 10^3$$

$$6. (6.1 \times 10^5) - (6 \times 10^5)$$
$$1 \times 10^4$$

$$7. \frac{9 \times 10^3}{4.5 \times 10^{15}}$$
$$2 \times 10^{12}$$

$$8. (4 \times 10^5)^3$$
$$6.4 \times 10^{16}$$

Multistep Equations I**Set 1:**

$$3x + 2 = 5x + 6$$

$$4(5x + 6) = 4(3x + 2)$$

$$\frac{3x + 2}{6} = \frac{5x + 6}{6}$$

Answer for each problem in this set is $x = -2$.

Set 2:

$$6 - 4x = 10x + 9$$

$$-2(-4x + 6) = -2(10x + 9)$$

$$\frac{10x + 9}{5} = \frac{6 - 4x}{5}$$

Answer for each problem in this set is $x = -\frac{3}{14}$.

Set 3:

$$5x + 2 = 9x - 18$$

$$8x + 2 - 3x = 7x - 18 + 2x$$

$$\frac{2 + 5x}{3} = \frac{7x - 18 + 2x}{3}$$

Answer for each problem in this set is $x = 5$.

Multistep Equations II

1. $2(x + 5) = 3(x + 6)$

$x = -8$

2. $3(x + 5) = 4(x + 6)$

$x = -9$

3. $4(x + 5) = 5(x + 6)$

$x = -10$

4. $-(4x + 1) = 3(2x - 1)$

$x = \frac{1}{5}$

5. $3(4x + 1) = -(2x - 1)$

$x = -\frac{1}{7}$

6. $-3(4x + 1) = 2x - 1$

$x = -\frac{1}{7}$

7. $15x - 12 = 9x - 6$

$x = 1$

8. $\frac{1}{3}(15x - 12) = 9x - 6$

$x = \frac{1}{2}$

9. $\frac{2}{3}(15x - 12) = 9x - 6$

$x = 2$

Multistep Equations III

1. $2.5x - 14.8 = 26.7$

$x = 16.6$

2. $\frac{3}{4}(8x - 12) = \frac{1}{5}(10x + 15)$

$x = 3$

3. $-\frac{1}{5}(2x - 3) = \frac{1}{2}(4 - 3x)$

$x = \frac{14}{11} = 1\frac{3}{11}$

4. $3.1(2x - 13.4) = 3.8x - 14.7 + 2.3x$

$x = 268.4$

5. $\frac{2}{3}x - \frac{4}{5} + \frac{1}{3}x = 3x - \frac{3}{5}$

$x = -\frac{1}{10}$

6. $4(2.4x - 4.6) = -(2.2 - 3.6x)$

$x = 2.7$

7. $4(5.9 + 0.8x) = 2(29.5 - 4.3x)$

$x = 3$

8. $\frac{1}{4}\left(\frac{2}{3}x + 4\right) = \frac{3}{4}\left(\frac{1}{3} - \frac{2}{3}x\right)$

$x = -\frac{9}{8} = -1\frac{1}{8}$

9. $6.5(2.6x + 7.8) = -5.2(-6.5 - 2.6x) + 3.9x$

$x = 32.5$

Area and Volume I

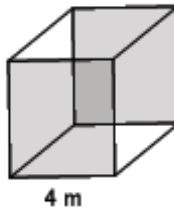
1. Find the area of the square shown below.

$$A = (4\text{ m})^2 = 16\text{ m}^2$$



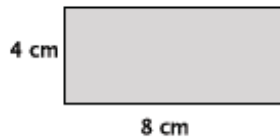
2. Find the volume of the cube shown below.

$$V = (4\text{ m})^3 = 64\text{ m}^3$$



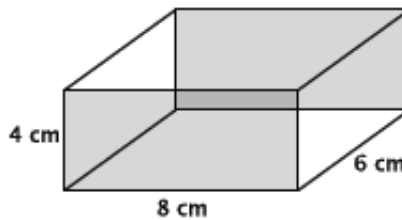
3. Find the area of the rectangle shown below.

$$A = (8\text{ cm})(4\text{ cm}) = 32\text{ cm}^2$$



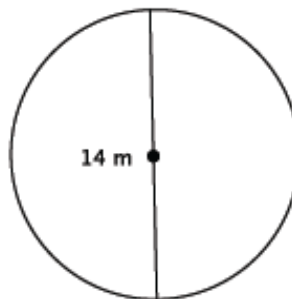
4. Find the volume of the rectangular prism shown below.

$$V = (32\text{ cm}^2)(6\text{ cm}) = 192\text{ cm}^3$$



5. Find the area of the circle shown below.

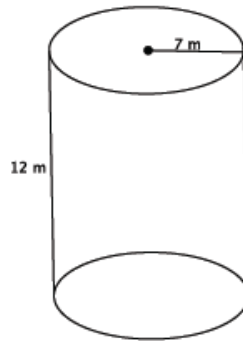
$$A = (7\text{ m})^2\pi = 49\pi\text{ m}^2$$



6. Find the volume of the cylinder shown below.

$$V = (49\pi \text{ m}^2)(12 \text{ m})$$

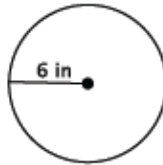
$$= 588\pi \text{ m}^3$$



7. Find the area of the circle shown below.

$$A = (6 \text{ in.})^2\pi$$

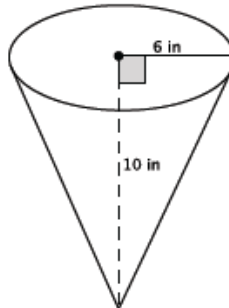
$$= 36\pi \text{ in}^2$$



8. Find the volume of the cone shown below.

$$V = \left(\frac{1}{3}\right) (36\pi \text{ in}^2)(10 \text{ in.})$$

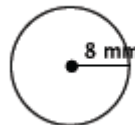
$$= 120\pi \text{ in}^3$$



9. Find the area of the circle shown below.

$$A = (8 \text{ mm})^2\pi$$

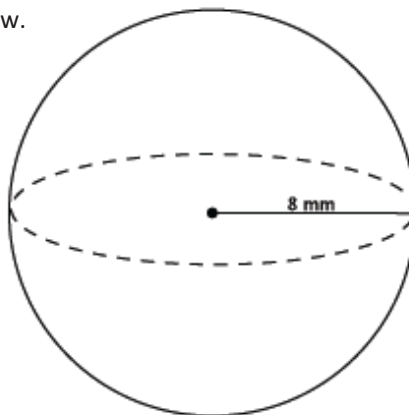
$$= 64\pi \text{ mm}^2$$



10. Find the volume of the sphere shown below.

$$V = \left(\frac{4}{3}\right) \pi (64 \text{ mm}^2)(8 \text{ mm})$$

$$= \frac{2048}{3} \pi \text{ mm}^3$$



Area and Volume II

1. Find the area of the square shown below.

$$A = (6 \text{ cm})^2$$

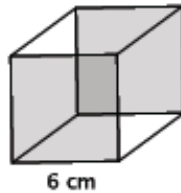
$$= 36 \text{ cm}^2$$



2. Find the volume of the cube shown below.

$$V = (6 \text{ cm})^3$$

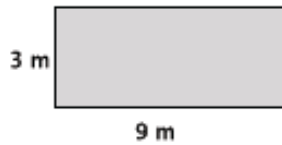
$$= 216 \text{ cm}^3$$



3. Find the area of the rectangle shown below.

$$A = (9 \text{ m})(3 \text{ m})$$

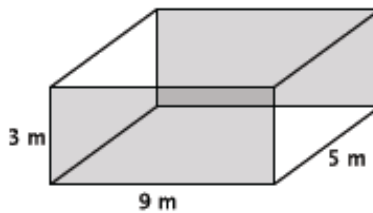
$$= 27 \text{ m}^2$$



4. Find the volume of the rectangular prism shown below.

$$V = (27 \text{ m}^2)(5 \text{ m})$$

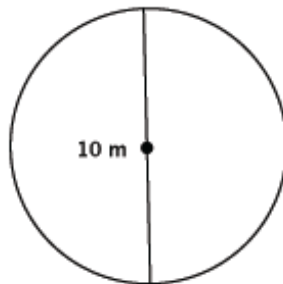
$$= 135 \text{ m}^3$$



5. Find the area of the circle shown below.

$$A = (5 \text{ m})^2\pi$$

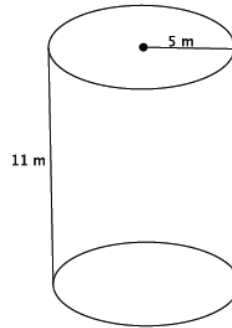
$$= 25\pi \text{ m}^2$$



6. Find the volume of the cylinder show below.

$$V = (25\pi m^2)(11 m)$$

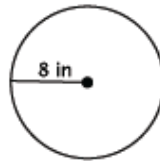
$$= 275\pi m^3$$



7. Find the area of the circle shown below.

$$A = (8 in.)^2\pi$$

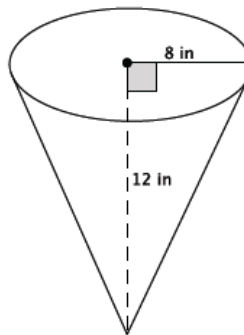
$$= 64\pi in^2$$



8. Find the volume of the cone show below.

$$V = \left(\frac{1}{3}\right)(64\pi in^2)(12 in.)$$

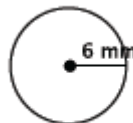
$$= 256\pi in^3$$



9. Find the area of the circle shown below.

$$A = (6 mm)^2\pi$$

$$= 36\pi mm^2$$



10. Find the volume of the sphere shown below.

$$V = \left(\frac{4}{3}\right)\pi(6 mm)^3$$

$$= \frac{864 mm}{3}\pi$$

$$= 288\pi mm^3$$

