

Grades 3–8

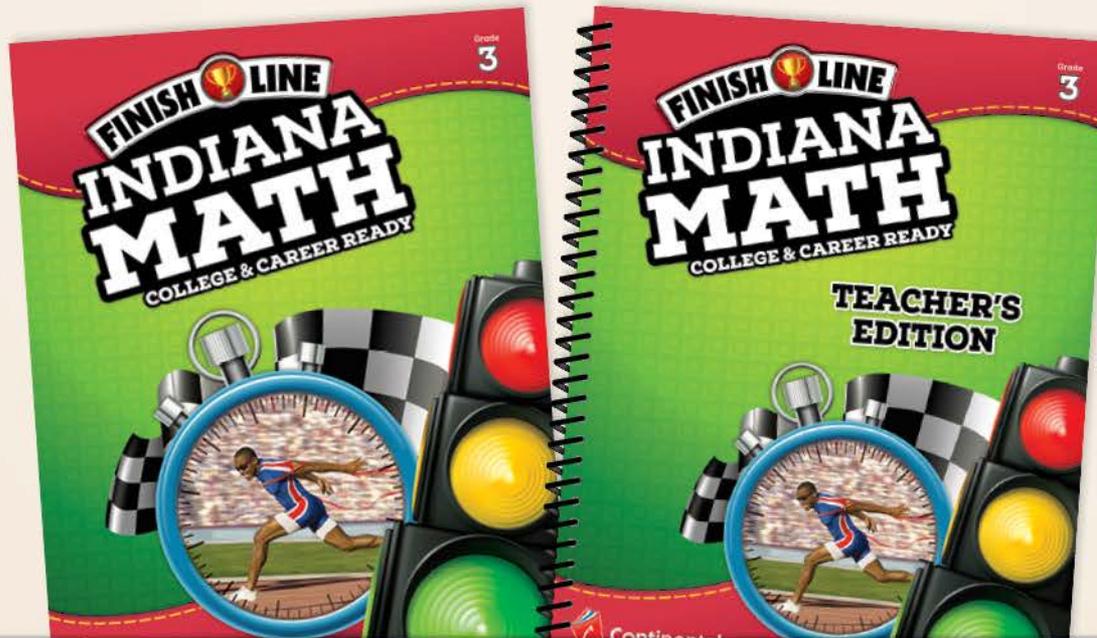
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What does this series do?

Finish Line Indiana Math, College & Career Ready provides instruction and practice to help students learn the Indiana Academic Standards and prepare for the ILEARN exam. Concise, simply-presented lessons keep students focused and on task. Components include student workbooks and annotated teacher's editions in print and eBook formats.



Grades 3–8

Standards Connection

Units parallel the domains of the college and career ready Indiana Academic Standards.

300+ pages of instruction and practice

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Get Ready to Learn

The first unit reviews big ideas from the previous grade with four-to-five topics that are key to new concepts in the current grade. This allows students to refresh their skills in these areas before building on them to learn new ideas.

Unit 1 Big Ideas from Grade 6

In grade 6, you learned about ratios and rates, dividing fractions, writing expressions and equations, and data and data displays. Now you will use what you know about expressions, ratios, and data to help you write and solve equations and to work with data tables and data displays.

LESSON 1 Ratios and Rates In this lesson, you will simplify and compare ratios, calculate rates and unit rates, and interpret data in a data table.

LESSON 2 Dividing Fractions In this lesson, you will identify the dividend, divisor, and reciprocal of the divisor as you divide fractions; describe and analyze fraction models; and reduce fractions to simplest terms.

LESSON 3 Algebraic Expressions In this lesson, you will write and interpret algebraic expressions, identify operations, and evaluate expressions.

LESSON 4 Writing and Solving Equations In this lesson, you will write equations in order to solve word problems, identify equations that represent problems, and solve for an unknown number using an inverse operation.

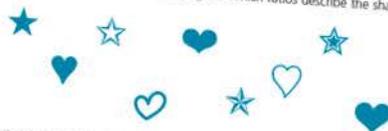
LESSON 5 Data Distributions and Displays In this lesson, you will find measures of center, including the mean, median, and mode, and the measure of variation, range, of sets of data. You will also interpret and create data displays such as dot plots, histograms, and box plots.

LESSON 1 Ratios and Rates

1 Introduction

A **ratio** is a comparison between two quantities. The ratio of boys to girls in a class is a ratio. Imagine a class in which there is 1 boy for every 2 girls. In that case you would say that the ratio of boys to girls is 1 to 2, or you can write the ratio as 1:2, or $\frac{1}{2}$.

Darla has several shapes in her stamping kit. Which ratios describe the shapes?



The ratio of stars to hearts is 4 to 5. The ratio of stars to the total number of shapes is 4 to 9. The ratio of hearts to stars is 5 to 4. The ratio of hearts to the total number of shapes is 5 to 9.

A **rate** is a ratio that compares two measurements with different units. Because of this, a rate must include units of measurement such as miles, hours, or number of objects.

LESSON 3 Algebraic Expressions

1 Introduction

LESSON 2 Dividing Fractions

1 Introduction

When you divide, you break an amount into equal parts. You saw this when you

create a

square on
ows the
ound

ces

into $\frac{1}{3}$ -meter
make from

the

or

A coefficient
is a number
that multiplies
a variable.

Remember to
use the order of
operations when
you evaluate an
expression.

The result in a
division problem
is the quotient.

Gradual Release Model

Part #1: Introduction

Each lesson begins with a brief explanation of the focus skill or concept with examples to illustrate. An open-ended *Think About It* question requires students to use critical thinking to work through an answer.

LESSON 20 Solving Problems with Inequalities 7.AE.3

1 Introduction

An **inequality** is a mathematical statement that compares two expressions. It uses inequality signs to express the relationships. For example, $x + 5 \geq 100$ means that the sum of an unknown number added to 5 is greater than or equal to 100.

Inequalities can represent real-life situations, and they are solved the same way that equations are solved. The solution, however, is a set of numbers.

Nine new members recently joined the bike club. The club now has at least 25 members. How many members did it have before the new members joined?

The inequality $m + 9 \geq 25$ represents this situation. Solve it like an equation.

$$\begin{aligned} m + 9 &\geq 25 \\ m + 9 - 9 &\geq 25 - 9 \\ m &\geq 16 \end{aligned}$$

The solution is a set of all numbers equal to or greater than 16. The club had at least 16 members to start, for example, 16, 17, 18, ...

You can graph the solution to an inequality on a number line. If the solution includes the number (\geq , \leq), use a closed circle on the number line. If the solution does **not** include the number ($>$, $<$), use an open circle.

Graph the solution to the bike club problem above.

The solution is all numbers greater than or equal to 16. Since 16 is included, draw a solid dot on 16. The solution is also numbers greater than 16, so extend the line to the right to include

$<$ means "is less than"
 $>$ means "is greater than"
 \leq means "is less than or equal to"
 \geq means "is greater than or equal to"

Solutions with $<$ or $>$ are represented with an open circle. Solutions with \leq or \geq are represented with a closed circle.

LESSON 25 Constructing Triangles 7.GM.1

1 Introduction

Geometric figures such as triangles are composed of angles and line segments. A ruler and a protractor are the only tools you need to draw these figures if you are given the measures of some sides and angles.

A triangle has an 80-degree angle that is made of sides that measure 3 centimeters and 4 centimeters. Draw the triangle.

First, draw one of the sides. Use a ruler to draw a side that is 4 centimeters.

Choose an endpoint of the side. Place the center mark of your protractor on the endpoint, and line up the 4-centimeter side with 0 degrees on your protractor. Draw a mark at 80 degrees. Then draw a line from the endpoint of the 4-centimeter line through the mark.

Read the outside scale from left to right.

A protractor is a tool used to measure the size of an angle.

You can start at either endpoint of the segment that you drew.

A protractor has two scales, read left to right and right to left. Be careful to choose the correct scale.

Measure 3 centimeters along the line drawn at an 80-degree angle. Erase the rest of the line. Connect the open endpoints of the 4-centimeter and 3-centimeter lines to complete the triangle.

Gradual Release Model

Part #2: Focused Instruction

Students are guided through two or more practice problems. Each problem includes a series of questions to help them work through the right answer. This practice helps develop critical thinking strategies as opposed to simple memorization of mathematical processes. Focused Instruction is ideal for collaborative learning.

Hints and reminders

Leading
questions

Lesson 20

2 Focused Instruction

Interpret the solutions to an inequality in terms of the context.

► Alana has \$320 in a savings account. She wants to have more than \$800 in the account and decides to add deposits of \$25 a week to it. How many weeks will it take Alana to reach her goal?

How much does Alana want to have in the account? _____

How much does Alana have saved already? _____

What variable could stand for the number of weeks? _____

How much does Alana decide to save each week? _____

What expression shows the amount Alana needs to add to the account?

Write and solve an inequality to find the number of weeks Alana must add deposits to her account to reach her goal.

Is the solution a whole number? If not, what does the answer mean?

Use what you know about inequalities to answer these questions.

1 Solve $-2x + 9 \geq -5$.

The number of weeks that Alana deposits money is represented by a whole number.

Lesson 25

2 Focused Instruction

Some sets of measurements result in unique triangles. Others can make more than one triangle. Work with a partner to answer these questions.

► Chase has three straws that are 3 inches, 4 inches, and 5 inches long. How many different triangles can he make using the straws?

What will be the perimeter of this triangle? _____

Cut a strip of paper equal in length to the perimeter. Then mark the length of each side on the strip and fold the paper at the marks.

3 in. 4 in. 5 in.

— Fold —

Tape the ends together and open the figure to make the triangle.

Use a protractor to measure the angles of the paper triangle.

What are the measures of the angles? _____

Cut another strip and lay out the sides in a different order. Fold it into a triangle and measure the sides. What are the measures of the angles on your new triangle? _____

How many triangles can Chase make with his straws? _____

If you are given three side lengths, how many triangles are possible?

Use what you know about drawing triangles to answer these questions.

1 Draw a triangle with angles that measure 50 degrees and 60 degrees, and a side that measures _____.

Perimeter is the distance around a figure.

Gradual Release Model

Part #3: Guided Practice

It's time to apply the strategies learned in part #2. In this section, open-ended problems require students to show their work, make a graph, draw a diagram, or do other mathematical tasks to answer questions.

Hints and reminders

3 Guided Practice Lesson 20

Solve the following problems.

1 Look at the inequality $\frac{1}{2}x - 6 > 2$.

Part A What is the solution to the inequality?

Answer _____

Part B Graph the solution on the number line.



An open circle shows the solution number is not included in the answer.

2 Patrick is a graphic designer. He charges clients \$35 per hour plus any fees. The fees for a recent project were \$55. Patrick charged the client no more than \$285.

Part A Write an inequality you can use to find the number of hours Patrick worked on the project.

Answer _____

Part B Explain your inequality.

3 Solve $-2(a - 3) > 8$ and explain what the solution means. Show your work.

Remember to _____

3 Guided Practice Lesson 25

Solve the following problems.

1 A triangle has angle measures of 115° and 25° , and a side that measures 8 centimeters.

Part A Draw the triangle using a ruler and protractor.

Draw the side first, and then use your protractor to make the angles.

Part B Is more than one triangle with these measurements possible? Explain.

2 How many unique triangles can be drawn with side lengths of 2.5 inches, 2.5 inches, and 2 inches?

Answer _____

Each side connects to both of the other sides, so the position does not matter.

3 How many triangles with measures of 90° , 60° , and 30° are possible? Explain.

Triangles with the same angle measures but _____

Gradual Release Model

Part #4: Independent Practice

Students are ready to answer questions on their own without any help or hints. They will encounter a variety of item types, including those on the ILEARN.

- Multiple-choice and short-answer questions
- Questions with one or more right answer
- Technology-enhanced questions modified for print
 - Perform computations
 - Plot points on a coordinate plane
 - Complete a table
 - Measure or draw a figure

4 Independent Practice

Solve the following problems.

1 Solve $0.50(x + 2) \leq 5$.

A $x \geq 8$
 B $x \leq 8$
 C $x \geq 2$
 D $x \geq 3.5$

2 Graph the solution to $-2x - 7 < 5$ on the number line.



3 Look at the inequality $4(x + 5) > 18$.

Part A Describe the steps you would use to solve it.

Part B What is the solution to $4(x + 5) > 18$?

4 Independent Practice Lesson 25

3 How many different triangles can be drawn with side lengths of 3 inches and 4 inches, and an angle measuring 90° —no triangle, one triangle, or more than one triangle? Explain how you know.

4 A triangle has a base of 4 centimeters. The angles at each end of this base measure 50° and 90° . Draw this triangle in the space below. Label the lengths of the sides and the measures of the angles.

5 Sort the descriptions into the table by the number of triangles that can be formed by each set of measurements.

A sides: 3 in., 6 in.; angle: 80°
 B sides: 5 cm, 8 cm, 12 cm
 C side: 9 cm, 10 cm; angle: 75°
 D side: 2 in.; angles: 35° and 50°

0 Triangles	1 Triangle	2 Triangles	More than 2 Triangles

Reviews

Each unit concludes with a review to test all skills covered in the unit. It includes a mix of item types similar to the Independent Practice section.

7.GM.1-7

Unit 5 REVIEW
Geometry and Measurement

Solve the following problems.

1 In the diagram below, $m\angle 1 = 74^\circ$.

Part A What is $m\angle 2$?

Answer _____°

Part B What is $m\angle 3$? Explain how you know.

2 A drawing of a rug has a scale that is 1 inch = 2.5 feet. The drawing measures 3 inches long by 5 inches wide.

Part A What are the actual dimensions of the rug?

_____ feet long by _____ feet wide

3 Angles R and S are complementary. The measure of $\angle R$ is 31° . Which equation can be used to find $\angle S$?

A $31^\circ + m\angle S = 90^\circ$
 B $m\angle S - 31^\circ = 90^\circ$
 C $31^\circ + m\angle S = 180^\circ$
 D $m\angle S - 31^\circ = 180^\circ$

4 A triangle has one 6-centimeter long side between a 70° angle and a 50° angle.

Part A Draw the triangle using a protractor and ruler. Label the lengths of the sides to the nearest tenth of a centimeter and the measures of the angles.

Part B Describe the steps you took to draw the triangle.

8 Damien made these two figures out of cardboard.

Part A Draw a net of the cylinder. Find the surface area of the cylinder. Show your work.

Answer _____ square inches

Part B Damien puts the two figures together to make a composite figure. What is the volume of the composite figure? Show your work.

Answer _____ cubic inches

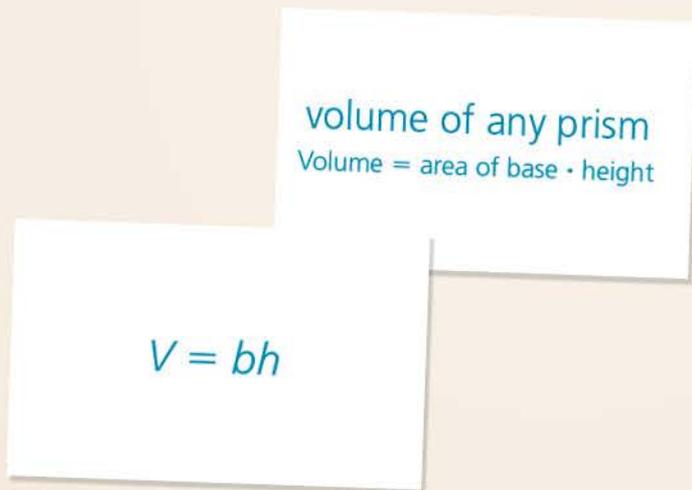
Resources

Glossary

A glossary includes words and terms that appear in boldface throughout the book, along with their definitions.

Flash Cards

Students can cut out the flash cards to practice important ideas, formulas, and symbols from the book. They can make their own using the blank cards provided.



GLOSSARY

- A** **absolute value:** the distance of a number from 0 on a number line
additive inverse: the opposite of a number; the number that when added to another number results in a sum of 0
adjacent angles: angles that are next to each other, sharing a common ray
algebraic expression: an expression that contains symbols, or letters, and numbers, and operations
area: the space inside a plane figure, measured in square units
- B** **base:** a number that is multiplied by itself a given number of times based on an exponent; for example, in 3^4 , 3 is the base
box plot: a data display that identifies five key measures of a data set: the minimum, the maximum, the median, and the points from the interquartile range; also called a box-and-whiskers plot
- C** **circumference:** the distance around a circle
coefficient: a number used to multiply a variable
commutative property: allows numbers to be added or multiplied in any order: $a + b = b + a$ and $a \times b = b \times a$
compatible numbers: numbers that are easy to compute with
complementary angles: two angles whose measures sum to 90°
complex fraction: a fraction that has a fraction in the numerator, the denominator, or both
composite figure: a shape made up of more than one plane or solid figure
composite number: a number with at least three factors
congruent: having equal lengths, measures, or shapes
constant: a number without a variable in an expression; a value that does not change
constant of proportionality: the ratio of y to x in a proportional relationship, symbolized by $\frac{y}{x} = k$; the unit rate

Teaching Support

- Depth of Knowledge (DOK) levels
- Answer rationales
- Hands-on extension activities

Highlights where students commonly make mistakes

LESSON 20 SOLVING PROBLEMS WITH INEQUALITIES PAGE 161

4 Independent Practice Answer Rationales

1 Solve the inequality by using the distributive property to eliminate the parentheses: $0.50x + 1 \leq 5$. Subtract 1 from each side: $0.50x \leq 4$. Divide each side by 0.50: $x \leq 8$. Choice B is correct. Choice A is incorrect; it shows an unnecessarily reversed inequality sign. Choice C is incorrect; it shows a reversed sign and multiplication by 0.5 rather than division. Choice D is incorrect; it shows subtraction of 0.5 rather than division by 0.5.

2 First, solve the inequality. Add 7 to each side: $-2x < 12$. Divide each side by -2 , keeping in mind that the direction of the inequality changes when multiplying or dividing by a negative number: $x > -6$. To graph the equation, place an open circle around -6 ; an open circle indicates that the number is not part of the solution. Since the solution is all numbers greater than -6 , draw a line extending to the right of -6 .

3 PARTS A AND B To solve the inequality, first use the distributive property to remove the parentheses: $4x + 20 > 5$. Subtract 20 from each side: $4x > -15$. Divide both sides by 4: $x > -3.75$. Note that the direction of the inequality does not change because divisor is a positive number.

Extension Activity

Give pairs of students one of the problems generated for the Extension Activity of Lesson 19. Direct them to rewrite the problem as an inequality four ways, to represent situations greater than, less than, greater than or equal to, and less than or equal to. Allow them to change numbers or which value is to be found.

Independent Practice

Solve the following problems.

1. Solve $3(x + 2) < 12$.

A. $x < 2$ DOK 2
B. $x < 4$ 7.A.F.3
C. $x > 2$
D. $x < 6$

2. Graph the solution to $2x + 1 < 7$ on the number line.

3. Look at the inequality $3x + 5 < 10$.

Part A: Circle the operation used to solve it. Use the distributive property on the left side of the inequality to remove the parentheses. Then, subtract 5 from both sides. Then divide both sides by 3.

Part B: What is the solution to $3x + 5 < 10$?

Answer: $x < 5$

94 UNIT 4

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eBooks

Continental's eBooks go where you and your students need to be, making them ideal for both distance and blended learning models. Our printed books are delivered online with features to help you personalize instruction and make the most of practice time.



Student Tools and Notifications

With the easy-to-use tools and notifications, students can:

- Add bookmarks, notes, and highlights as they're working through their lessons.
- See teacher notifications for homework and assessment assignments, blog posts, and feedback for their assignments.
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The screenshot shows an eBook interface. On the left is a sidebar with navigation tools: Contents, Bookmarks, Notes, Highlights, Settings, and Help. The main content area is titled 'Lesson 20' and 'Focused Instruction'. The problem asks to interpret solutions to an inequality in context. A callout box states: 'The number of weeks that Alana deposits money is represented by a whole number.' Below the problem are several blank lines for the student's answer. At the bottom, there is a section for solving an inequality: 'Use what you know about inequalities to answer these questions. 1 Solve $-2x + 9 \geq -5$.' Below this is a blank line for the solution.

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2 Focused Instruction

Lesson 20

Interpret the solutions to an inequality in terms of the context.

▶ Alana has \$320 in a savings account. She wants to have more than \$800 in the account and decides to add deposits of \$25 a week to it. How many weeks will it take Alana to reach her goal?

How much does Alana want to have in the account? _____

How much does Alana have saved already? _____

What variable could stand for the number of weeks? _____

How much does Alana decide to save each week? _____

What expression shows the amount Alana needs to add to the account?

Write and solve an inequality to find the number of weeks Alana must add deposits to her account to reach her goal.

Is the solution a whole number? If not, what does the answer mean?

The number of weeks that Alana deposits money is represented by a whole number.

Use what you know about inequalities to answer these questions.

1 Solve $-2x + 9 \geq -5$.

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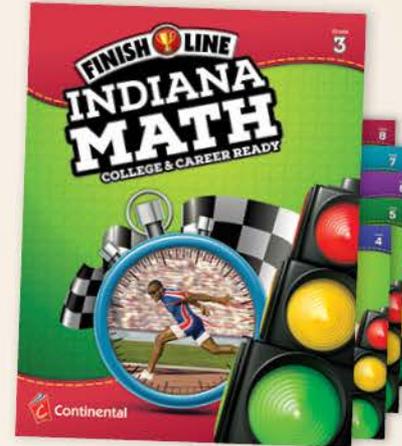
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