

# KICKSTART

## Fractions

Program Sampler

Math Intervention for Grades 3–5 Skills





## Welcome to your sampler!

- Read the research behind the ***Kickstart: Fractions*** math intervention program.
- Discover how ***Kickstart: Fractions*** advances students to grade-level proficiency in proportional reasoning skills for grades 3–5.
- See how the ***Kickstart: Fractions*** approach engages students mentally, physically, and emotionally.
- Browse sample ***Kickstart: Fractions*** lessons to see how explicit, systematic instruction supports deep conceptual understanding and procedural fluency.





# Confidence With Fractions!

*Kickstart: Fractions* is a systematic, engaging small-group intervention program that provides students with strategies and supports to build conceptual understanding and procedural fluency with fractions. Instruction follows a developmental progression—from concrete to representational to abstract—helping students see fractions as proportional relationships connected to what they already know about numbers and number relationships.

Designed for students in grades 3+, *Kickstart: Fractions* offers meaningful hands-on practice with manipulatives, visual models, and real-world problems and stories. An embedded motivational structure increases engagement, curiosity, and interest, helping to replace negative associations about math learning. Partner talk and cooperative games encourage students to practice math vocabulary and foster confidence and community while advancing toward grade-level skills.

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# Research, Efficacy, and Positive Outcomes

Fractions are widely recognized as a foundational math concept that serves as a bridge to advanced math learning and long-term achievement. Timely intervention is critical to support access to core math curricula in the intermediate grades and beyond.

## Choose With Confidence

**Kickstart: Fractions** is built on evidence-based strategies to make mathematics intervention effective. A clear and accessible logic model maps the program's design to its impact on student learning.

### Logic Model for *Kickstart: Fractions*

Problem Statement		
<p>Due to disrupted learning and instructional gaps exacerbated by the pandemic, many students in grades 3–5 lack critical foundational skills and confidence in fractions, part-whole relationships, and proportional reasoning. Core math curricula alone do not adequately address these gaps, and schools often lack the resources, staffing, or structured intervention programs necessary to provide targeted support. Without this foundational knowledge and fluency, students struggle to engage with more advanced mathematical concepts, leading to persistent difficulty in math achievement, diminished academic confidence, and negative self-perceptions as math learners.</p>		
Purpose		
<p><i>Kickstart: Fractions</i> is a targeted, engaging small-group intervention product that deepens students' conceptual understanding and procedural skills with fractions. The program is designed for easy and effective implementation, making it accessible for instructors at any comfort level with teaching fractions. It bolsters grade-level proficiency, promotes positive mathematical mindsets, and nurtures a classroom culture of community, curiosity, and confidence in mathematics.</p>		
Resources	Strategies and Activities	Outputs
<p><i>What resources are or could be available?</i></p> <ul style="list-style-type: none"><li>• Dedicated time for small-group intervention</li><li>• A provided model for responsive instruction placement and intervention</li><li>• <i>Kickstart</i> student-facing learning content and materials for building fraction understanding (reproducible resources, activity cards, kit of hands-on manipulatives)</li><li>• <i>Kickstart</i> instructor guides with explicit teaching support so that any adult can lead an intervention (three books targeting fundamentals and fraction operations)</li><li>• Online portal with digital access to instructor guides and student-facing instructional videos and resources</li><li>• Placement Checkpoints that can be readministered to provide pre- and post-test data for each stage.</li><li>• Daily progress monitoring sheets which offer a clear view of each student's growth throughout the program.</li></ul>	<p><i>What will the activities, events, and such be?</i></p> <ul style="list-style-type: none"><li>• Structured, sequential fraction intervention in the form of 20-minute lessons</li><li>• Explicit, systematic instruction targeting foundational fraction skills and operations essential for grade-level math success</li><li>• Developmental learning progression that moves from concrete to representational to abstract, meeting students where they are and accelerating learning</li><li>• Math discussions with partners and small groups to build ownership and academic vocabulary</li><li>• Multimodal and game-based learning experiences provide variety and active engagement</li><li>• Math stories integrate relevant, real-life math applications and model perseverance, resilience, and collaboration</li><li>• Skills build on prior knowledge and targets priority grade-level standards</li><li>• Practice questions and immediate feedback to aid in learning</li><li>• Regular formative assessments and integrated placement checkpoints to monitor student progress and personalize instruction</li></ul>	<p><i>What are the initial products of these activities?</i></p> <ul style="list-style-type: none"><li>• Instructors present more collaborative lessons</li><li>• Instructors use placement checkpoints and progress monitoring opportunities to make data-informed decisions</li><li>• Students engage actively with math learning</li><li>• Students receive immediate feedback during learning, enabling the instructor to offer more differentiation</li><li>• Students learn strategies and tools to support fraction understanding, engaging in fraction operations, and ownership in math learning</li><li>• Students recognize part-whole and proportional relationships</li><li>• Students talk about fractions more frequently and use fraction-related math vocabulary accurately and confidently</li></ul>

## Realize Real Results

Research details how *Kickstart: Fractions* meets ESSA-level criteria. The program is based on the proven-effective *Kickstart* approach shown to boost grade-level proficiency across multiple years.



Read the Research



## Sustain the Success

Students benefit from learning with *Kickstart: Fractions* in both the short and long term.

### Short-Term Wins

*Kickstart: Fractions* engages students physically, mentally, and emotionally to build conceptual understanding of proportional relationships, advance to proficiency, and develop positive math identities.

#### Engagement

Students actively participate in collaborative lessons with hands-on materials, partner talk, and cooperative games—building math vocabulary as well as confidence and curiosity for math learning.

#### Conceptual Understanding

Students develop deep conceptual understanding of proportional relationships through meaningful practice with manipulatives, visual models, and real-world problems and stories—connecting fractions to what they already know about numbers.

#### Grade-Level Proficiency

Students advance to grade-level proficiency with intentionally sequenced practice that follows a concrete–representational–abstract approach. Embedded progress monitoring tools help document what students have learned and where they struggled during lessons.

#### Positive Math Identities

Students grow confident and see themselves as mathematicians, taking ownership of their math learning and celebrating mistakes as a valuable part of learning.

### Long-Term Gains

A solid foundation in proportional reasoning prepares students for success in advanced mathematics and fosters community, curiosity, and confidence in the classroom.

#### Community

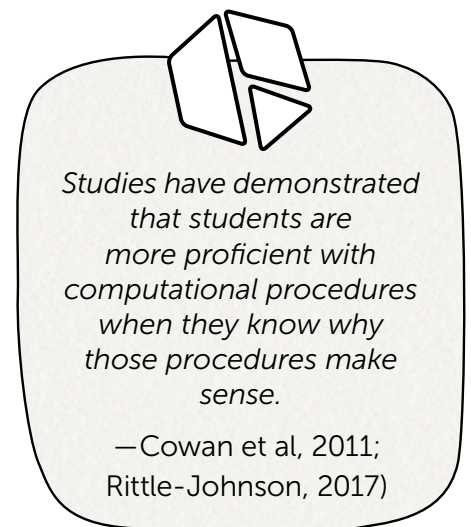
Students expand math vocabulary and skills to communicate and collaborate effectively.

#### Curiosity

Students develop curiosity about numbers and math, increasing their willingness to tackle difficult math problems and make connections within—and beyond—math.

#### Confidence

Students grow confident in their ability to succeed in grade-level math, replacing negative perceptions of math learning.



# The Kickstart Approach

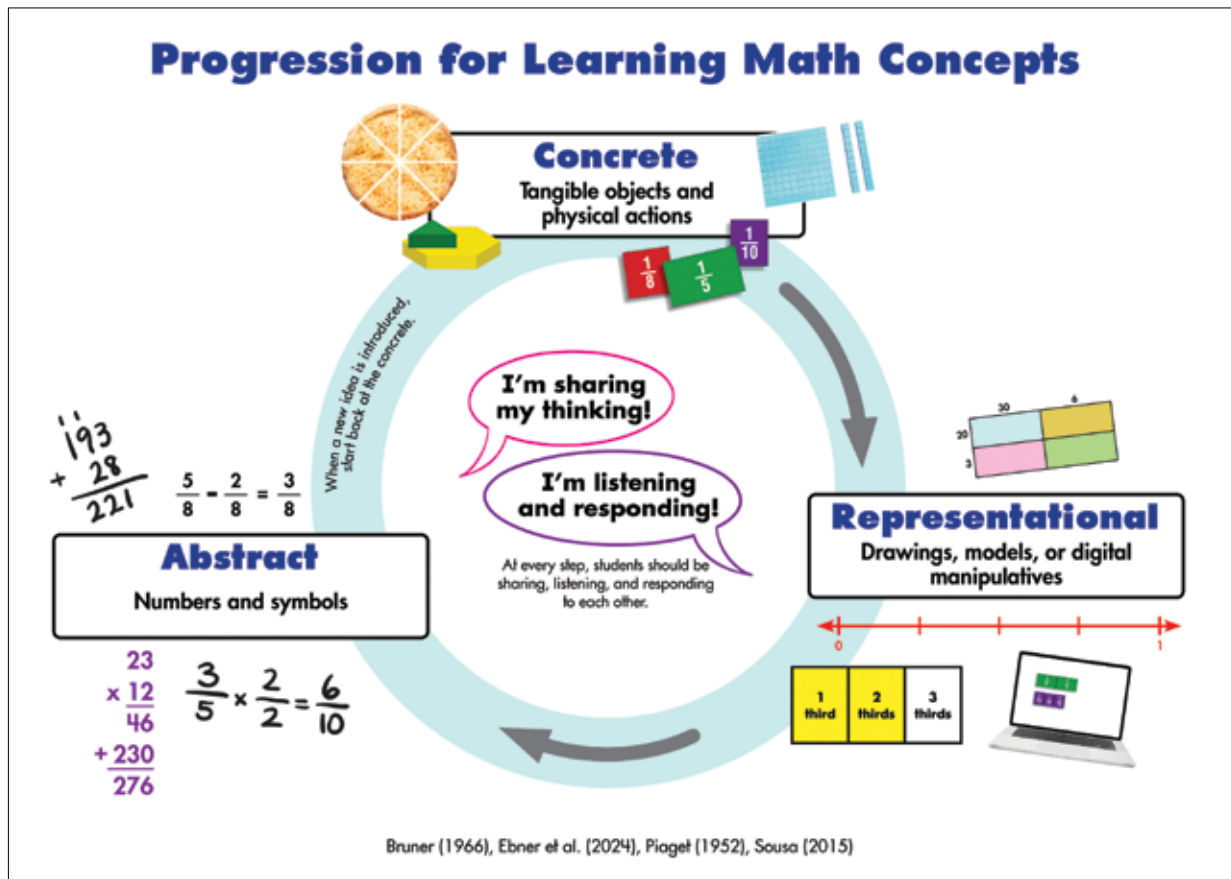
**Kickstart: Fractions** leverages a concrete–representational–abstract progression, evidence-based teaching strategies, and an embedded motivational structure to advance students to grade-level proficiency and build positive associations with math. It is intentionally designed for any adult facilitator to use, regardless of prior knowledge or teaching experience.

- ✓ 60 days to advance to grade-level proficiency
- ✓ 20-minute lessons for push-in or pull-out groups
- ✓ 6 students per small group

## Concrete–Representational–Abstract Progression

**Kickstart** lessons engage students in math concepts through concrete practice with manipulatives before inviting students to apply those concepts representationally and—after more practice—abstractly. Along the way, small-group discussions give students opportunities to process concepts through language, engaging areas of the brain essential to math learning.

Spiraled instruction with intentionally spaced and interleaved practice allows students to retain and deeply ingrain conceptual understanding. If, by the end of a stage, students are still struggling to perform the abstract, instructors can repeat activities from earlier lessons that were modeled in the concrete and representational.



Excerpt of **Kickstart: Fractions** Foundations (Book 1), page viii shown

# Motivational Strategies

Because intermediate students may come to an intervention group with preconceived negative ideas about themselves as mathematicians, **Kickstart: Fractions** has been specifically designed to motivate and engage them.

A **Warm-Up** activity at the start of each lesson stimulates students' prefrontal cortex to facilitate learning, builds group cohesiveness to help students feel comfortable sharing their ideas, and develops or rehabilitates students' math identities to bolster confidence.

**Cory Coins** earned each day reward teams for participation, cooperation, sharing, perseverance, recognizing and fixing mistakes, and more. Coins are fractional pieces of one hundred, providing an opportunity to practice place value and the decimal and fraction systems in real-life application.



Intermittent **Dice Rolls** add or subtract Cory Coins to the team's total, adding an element of excitement to the intervention group.



**CRANE-ium Competition** occurs every five lessons. Students work together to choose and solve a math task that assesses their understanding of concepts. See page 18 to view a sample CRANE-ium Competition.

# Ready-to-Use Lessons

**Kickstart: Fractions** arrives ready to use with all required materials for grades 3–5 skills intervention. Any adult can facilitate a small group with minimal prep time—regardless of their subject matter expertise or teaching experience.

- Every lesson is scripted with explicit instructions.
- Clear materials list accompanies each lesson.
- Professional learning is embedded in lessons.
- Progress monitoring tools inform differentiation opportunities and signal grade-level readiness.



# Program Components

Ready-to-use *Kickstart: Fractions* and *Kickstart: Fractions en español* Full Intervention Kits contain all print and hands-on materials needed for grades 3–5 skills intervention in small groups of six students.

- Foundations (Book 1) Teacher Pack
- Addition and Subtraction (Book 2) Teacher Pack
- Multiplication and Division (Book 3) Teacher Pack
- Student Materials Pack
- MyZBPortal.com Licenses



*Kickstart: Fractions* © 2026 Full Intervention Kit

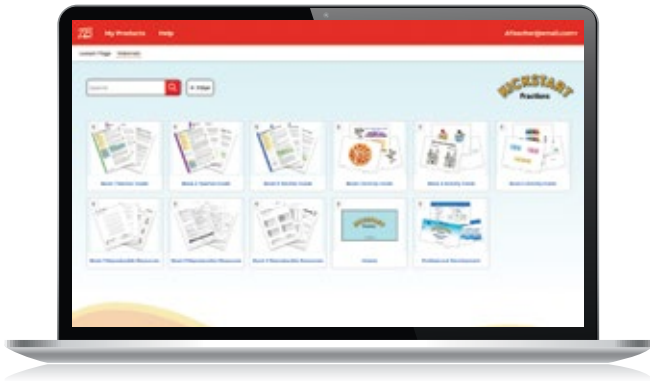
**Teacher Packs** feature all print materials needed to lead small groups, including Teacher Guides, Reproducible Resources, and Activity Cards.



Pictured: Foundations (Book 1) Teacher Pack

The **Full Student Materials Pack** includes all hands-on manipulatives needed for each book and stage.

**⚠ WARNING:** CHOKING HAZARD — Small parts.  
Not for children under 3 yrs.



**MyZBPortal.com** licenses provide an additional convenient way to access lessons, reproducible resources, activity cards, progress monitoring forms, assessments, and professional learning videos.



## Additional Foundational Skills Intervention

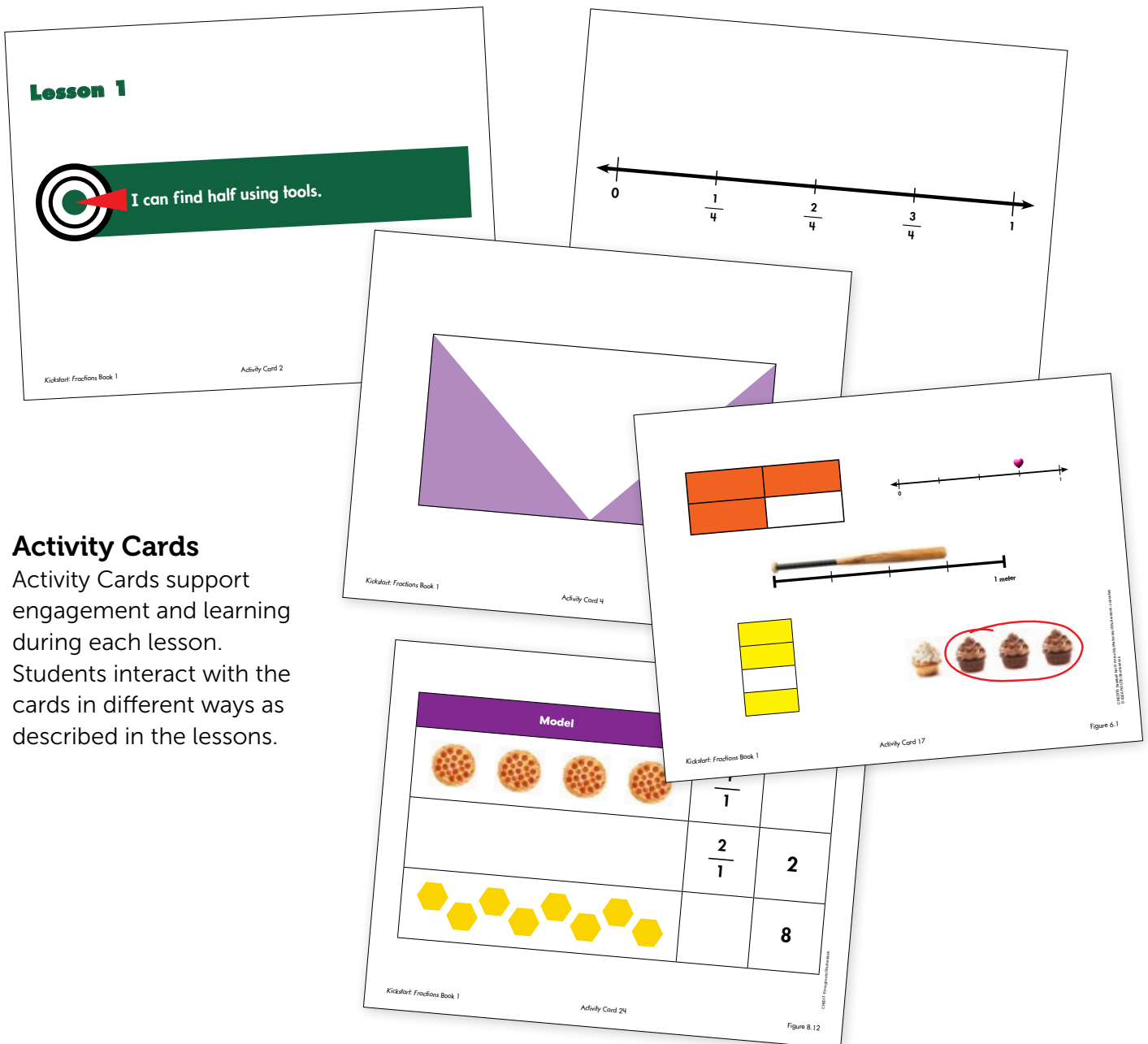
**Kickstart: Fractions** is part of Zaner-Bloser's line of **Kickstart** intervention solutions. Ask your sales consultant how targeted intervention in number sense, proportional reasoning, and operations helps students succeed in K–5 and advanced mathematics.

# Instructional Elements

Talk is a critical component of **Kickstart** instruction. Students talk with partners to make sense of the work in front of them through their own words.

At the same time, students need a functional vocabulary of accurate math terms to deeply encode their learning. Instructor language is scripted using precise math terms, and students are encouraged to use math terminology when talking with their partners.

Additionally, students using **Kickstart: Fractions** pair motions with math terms like numerator and denominator so they are using multiple neuropathways, a strategy for better long-term memory.



## Activity Cards

Activity Cards support engagement and learning during each lesson. Students interact with the cards in different ways as described in the lessons.



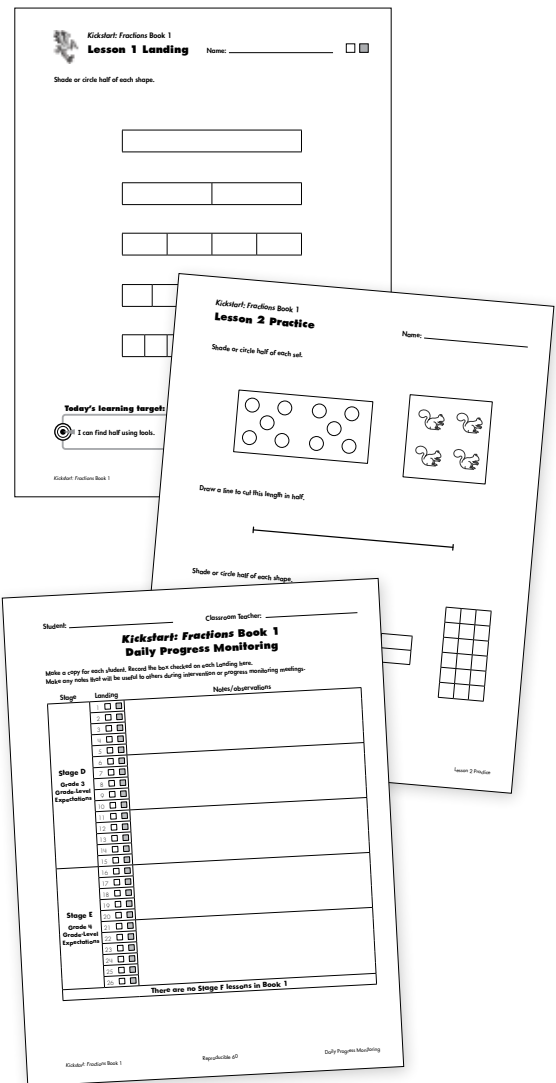
## Hands-On Student Materials

Pattern Blocks, Fraction Bars, and Fraction Bar and Number Line Cards support conceptual understanding throughout all books and stages of the **Kickstart: Fractions** program.

## Reproducible Resources

The Reproducible Resources book contains a variety of materials that support lesson activities. When needed, these items appear in the lesson's materials list.

- **Practice pages** may be placed in sheet protectors or used as pencil-and-paper activities. Explicit instructions are provided in the lesson.
- Optional **Skills Practice pages** provide additional repetition that may be needed to encode learning into long-term storage.
- Each lesson has its own **Landing page**, a paper exit ticket.
- One **Daily Progress Monitoring page** per student can track Landing results and teacher notes to support planning at data, progress, or qualification meetings.
- **Caregiver Connection pages** are designed to help adults outside of school understand the scope of work their student is practicing in each stage of **Kickstart: Fractions**.



# How to Place Students

Placement checkpoints in *Kickstart: Fractions* are designed to establish a tailored learning journey. They provide valuable insights that allow educators to place students at the most suitable starting point within the program, ensuring that students are neither overwhelmed by material that is too advanced nor disengaged by content that is too basic.

## Flowchart for Placement Checkpoints

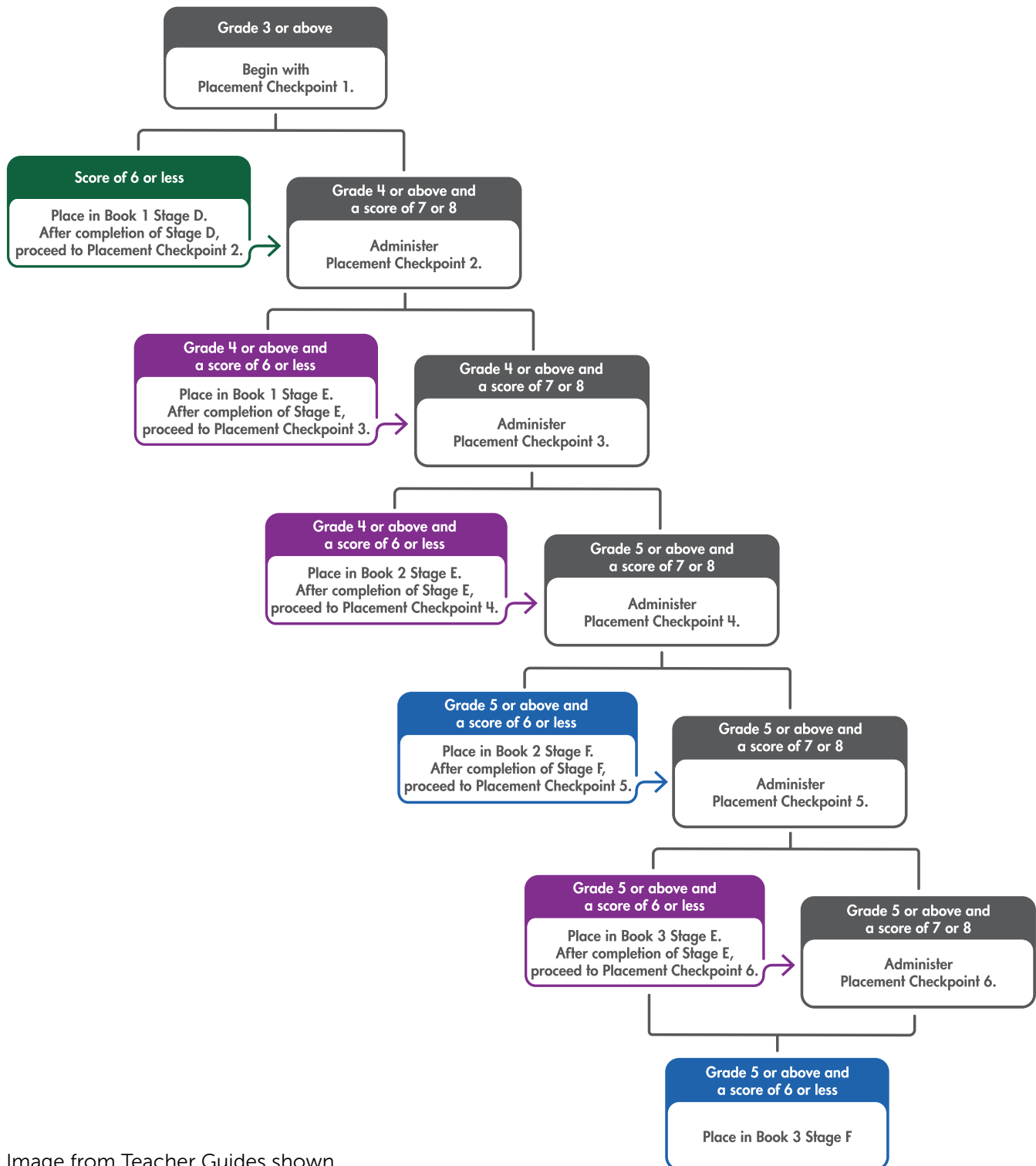


Image from Teacher Guides shown

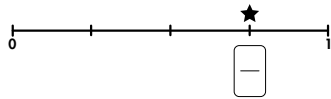
# Placement Checkpoints

**Kickstart: Fractions** checkpoints are unique because they are conducted in a 1:1 setting, reducing test anxiety and allowing students to confidently demonstrate what they know.


**Student Work Page**  
**Placement Checkpoint 1**

Student: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_  
 Classroom Teacher: \_\_\_\_\_ Placement Evaluator: \_\_\_\_\_

**Question 2**




**Question 3**



**Question 4**

**Question 5**

Write the correct symbol (<, >, or =) between the two fractions. Then tell or draw how you chose your answer.




$\frac{4}{6}$    $\frac{2}{6}$

**Question 6**

Look at this true fraction comparison. Tell, draw, or show with fraction bars how you know.

Kickstart: Fractions

Teacher Record  
**Placement Checkpoint 1** (Page 2 of 2)

Instructions	Scoring guide	Score
4. If the student correctly partitioned the circle from Question 3, say: <b>Shade in one half of your circle. Then write or say another fraction shown that is equal to one half.</b>  If the student did not correctly partition the circle from Question 3, draw a circle on the paper for them and partition it into equal fourths, then say: <b>Shade in one half of this circle. Then write or say another fraction shown that is equal to one half.</b> 	Give one point for writing $\frac{2}{4}$ or saying, "two-fourths."   or  (any 2 of 4 pieces shaded)	_____ out of 1
5. Point to Question 5 on the student sheet.  Say: <b>Write the correct symbol between the two fractions. Then tell or draw how you chose your answer.</b>	Give one point if the student makes a correct comparison and provides a reasonable explanation, demonstrating understanding that four is more than two of the same size part.  $\frac{4}{6} > \frac{2}{6}$  Give zero points if they are unable to explain or choose an incorrect symbol.	_____ out of 1
6. Point to Question 6 on the student sheet.  Say: <b>Look at this true fraction comparison. Tell, draw, or show with fraction bars how you know.</b>	Give one point for proving the reason with words or models.  Give one more point if their reasoning clearly contains the idea that two larger pieces are more than two smaller pieces from the same-sized whole.	_____ out of 2
<b>STUDENT POINTS AND PROCEED ACCORDINGLY:</b>		
1 Stage D.	Score of 7 or 8 and student is grade 4 or higher:  Give Kickstart: Fractions Placement Checkpoint 2.	_____ out of 8

P2 Placement Checkpoint 1 (Page 2 of 2)

Teacher Record  
**Placement Checkpoint 1** (Page 1 of 2)





Student: \_\_\_\_\_ Grade: \_\_\_\_\_ Date: \_\_\_\_\_  
 Classroom Teacher: \_\_\_\_\_ Placement Evaluator: \_\_\_\_\_

**Copy in advance, 1 per student:**

- Placement Checkpoint 1 Teacher Record (P1, P2)
- Placement Checkpoint 1 Student Work Page (P3)

**Additional materials:**

- 1 Stage D fraction bar bag
- Sheet protector
- Dry erase pen
- 2 Pencils

Instructions	Scoring guide	Score
1. Place 4 one-fourth fraction bars number side down on top of the sheet protector. Spread them out in a single row:    Say: <b>Using your dry erase pen, circle three-fourths of the bars.</b>	Give one point for circling three bars either individually or as a group of three.	_____ out of 1
2. Point to the Question 2 number line on the student sheet.  Point to the star and say: <b>Write the fraction that would go here and say that fraction out loud.</b>	Give one point for writing $\frac{3}{4}$ in number form.  Give one more point for saying, "three-fourths."	_____ out of 2
3. Point to the Question 3 circle on the student sheet.  Say: <b>Partition this shape into fourths.</b>	Give one point if the student's work shows reasonably equal parts:    Give zero points if the student divides the circle into all columns or all rows:   	_____ out of 1

P1 Placement Checkpoint 1 (Page 1 of 2)

Kickstart: Fractions

# Kickstart: Fractions Foundations (Book 1)

*Kickstart: Fractions* Foundations (Book 1) addresses foundational fractions skills prerequisite for grade 3 (Stage D) and grade 4 (Stage E) core curriculum.

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## Student Placement

This chart is to help define the scope of the stages in *Kickstart: Fractions*:

### Book 1 Stage D

Is for students who	but cannot
<ul style="list-style-type: none"><li>• have completed third-grade classroom core fraction instruction</li></ul>	<ul style="list-style-type: none"><li>• perform at third-grade level</li></ul>

### Book 1 Stage E

Is for students, fourth grade and above, who	but struggle with
<ul style="list-style-type: none"><li>• have conceptual understanding of fractions</li><li>• can reason about a fraction's size</li><li>• can read, write, and compare decimals up to hundredths</li><li>• understand that fractions are made from unit fractions</li><li>• understand that whole numbers can be written as fractions</li></ul>	<ul style="list-style-type: none"><li>• generating a new fraction to compare either same numerator or same denominator</li><li>• creating equivalent decimal fractions between tenths and hundredths</li><li>• fluently converting mixed numbers to fractions greater than one and vice versa</li></ul>

## KICKSTART: FRACTIONS PLACEMENT CHECKPOINTS

To support effective instruction and meet each student's unique learning needs, placement checkpoints play a critical role in *Kickstart: Fractions*. These placement checkpoints provide valuable insights that allow educators to place students in the most suitable starting point within the program. This ensures that students are neither overwhelmed by material that is too advanced nor disengaged by content that is too basic. *Kickstart's* placement checkpoints are designed to set students up for a tailored learning journey, giving teachers a framework to make informed decisions about where to begin and how to structure subsequent instruction.

For optimal results, only students in third grade and above should complete the placement checkpoints. All students should begin with *Kickstart: Fractions* Placement Checkpoint 1, with placement decisions informed by the guidelines provided on the following page. These guidelines will help ensure students begin at the stage that best matches their current understanding and learning needs, maximizing their chances for success. Though *Kickstart* suggests these guidelines, each educator's professional judgment is essential. Teachers know their students best and are empowered to adjust student placement based on what they observe.

While primarily designed for initial and ongoing placement within *Kickstart: Fractions*, these placement checkpoints can also serve as helpful tools for data collection and progress monitoring throughout the learning process.

The final checkpoint in *Kickstart: Fractions* is the Attitude Checkpoint given to each student before they begin a new stage. This is important for progress monitoring student attitudes toward math and supporting students in building a positive math identity.

# Foundations (Book 1) Sample Lesson

The Materials list enables teachers to quickly gather everything needed for a lesson, including reproducible pages, Activity Cards, and manipulatives.

STAGE E

## Lesson 26: Creating Fractions Greater Than One

### MATERIALS

#### Copy in advance:

- Lesson 26 Practice (R52, 1 per student)
- Lesson 26 CRANE-ium Competition (R53, 1 for the group)

#### For the teacher:

- Team Coin Tracker (ongoing)
- Activity Cards 77 and 78
- Screen for video viewing
- Pattern Blocks
  - 4 hexagons
  - 7 trapezoids
  - 2 rhombuses
  - 15 triangles
- 3 Stage E fraction bar bags
- Sheet protector
- Dry erase pen

#### Per Partnership:

- Stages E & F Fraction Bar Card
- Sheet protector
- Dry erase pen

#### Per student:

- Sheet protector
- Dry erase pen
- Pencil

#### For the CRANE-ium Competition:

- Make available pattern blocks, fractions bars, workmats, sheet protectors, and dry erase pens.

### WARM-UP

**T:** Today is a vote. Stand up and get ready to vote with your arms but don't move until I say "Ready? Vote." The vote today is a statement and you decide if it's true or false for you. *I think I could teach fractions to my family or friends.* Here's how to vote: arms all the way up if you think you could teach fractions to your family or friends. Arms all the way out to your side if you are still learning. Ready? Vote. .

*The goal of this activity is to give students a chance to reflect on how much they have learned and know about fractions. Some may describe themselves as having more confidence with fractions, some may realize they know more than their siblings (or their parents!). Building confidence in what they know helps spur more learning.*

### TAKEOFF

Hand out a sheet protector and dry erase pen to each student.

**T:** You'll use your fingers to tell me how many wholes inside the fraction I name. For example, how many wholes in 2 halves? To help you, think of 2 halves of a cake. How many whole cakes is that? Your fingers should show me one. One whole is 2 halves. Show me with your fingers how many wholes in 4 halves. *Pause.* That sounds like two cakes, each cut into half, so you should be holding up two fingers.

I have a question I'd like you to consider in your head. In a moment you'll talk with your partner. How many wholes in five-halves and what fraction is left over? On your sheet protector, draw a number bond and write  $\frac{5}{2}$  in the top circle. See Figure 26.1

After students have had a chance to consider this, let them discuss in partners.

**T:** I would like a volunteer to explain their reasoning to the group. What answer did you get and how did you come to that answer?

Let a few volunteers share their approaches. If all students are stumped, get out five trapezoid pieces to show in the number bond. Students should eventually voice that  $\frac{5}{2}$  is two and one-half.

**T:** I have another question I'd like you to consider in your head. In a moment you'll talk with your partner. How many wholes in fifteen-sixths and what fraction is left over?

On your sheet protector, draw a number bond and write  $\frac{15}{6}$  in the circle. If students need to use triangles they may. Some students may still be at the concrete stage with this idea. Those students need more practice with pattern block manipulatives. Others may be ready to pull out a whole and think of fractional pieces left over. If students in your group are mostly the latter, continue this type of practice without the pattern blocks and with the fractions  $\frac{8}{3}$ ,  $\frac{7}{2}$ , and  $\frac{9}{4}$ .

A quick Warm-Up activity begins each lesson. It is designed to transition students from an emotional state into a thinking state.

The Takeoff is a review and/or preview that helps instructors repeat specific fraction ideas and provide opportunities for students to take information from one skill and apply it to another.

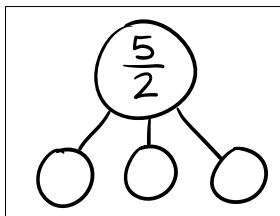


Figure 26.1

Example

Each Lesson is focused on one Learning Target and gives students an opportunity to interact with that goal through a mix of concrete, representational, and abstract activities.

Some lessons include a short student-facing instructional video that reviews or previews concepts. QR codes enable teachers to easily access and share videos with the small group from a phone or tablet.

Daily, the teacher reads the Learning Target aloud to the group, and the group repeats the Learning Target back. Research underscores the value of this step.

## Lesson 26: Creating Fractions Greater Than One



### Learning Target

I can create fractions greater than one from mixed numbers.

Show Activity Card 77 with today's learning target. Read it to the students and then ask them to read it back to you together.

### LESSON

Put three hexagons and one trapezoid on the table in front of you where students can see them. See Figure 26.2

**T:** How many halves would it take to make this? Take a moment to think to yourself. Pause. Keep those ideas in your head as we watch this video.



Show Video 3: Creating Fractions Greater Than One From Mixed Numbers.

<https://zanerbloser.wistia.com/medias/a0ip4gg35n>

You may pause the video as needed to support instruction and student understanding.



**T:** As you saw in the video, we can think of the wholes as being made up of smaller pieces and that helps us turn a mixed number into a fraction greater than one. Let's try one together.

Put three hexagons and two rhombuses on the table. See Figure 26.3

**T:** When we have this arrangement of pattern blocks, we can think of each hexagon as three-thirds. Count those with me.

Point to each hexagon as you count aloud.

**T:** Three-thirds, six-thirds, nine-thirds, and two more thirds. Think to yourself how many thirds I have if I add nine-thirds and two-thirds. Limes, share with your Lemons.

Listen for students to say eleven-thirds.

**T:** Yes. Three and two-thirds is equivalent to eleven-thirds. Today we're using pattern blocks and fractions bars as tools to show mixed numbers and fractions greater than one. I'll put away the pattern blocks. Let's try with the fraction bars.

Make a number bond on your sheet protector and place two whole fraction bars and a one-half fraction bar in the circle at the top. Write  $2\frac{1}{2}$  in the available space to the side. See Figure 26.4

**T:** Today we'll break apart this mixed number to figure out its equivalent fraction greater than one. You've already done this a number of times in the last few lessons, so you are ready for this next level. I have two and one-half here in my circle. I need to break this up into halves so I know how many halves are in two and one-half. Watch me break this up.

Replace each whole fraction bar with two half fraction bars. See Figure 26.5  
(Lesson continues next page)

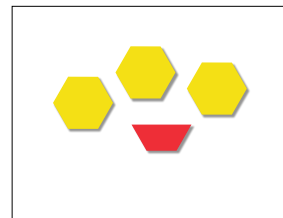


Figure 26.2

Example

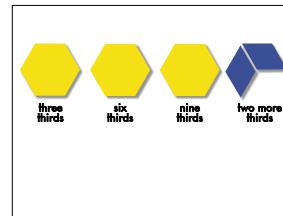


Figure 26.3

Example

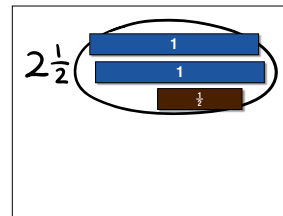


Figure 26.4

Example

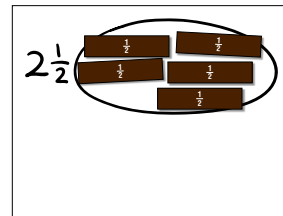


Figure 26.5

Example

### Lesson 26: Creating Fractions Greater Than One

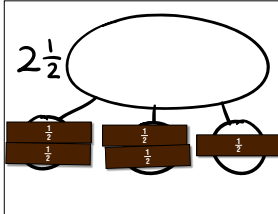


Figure 26.6 Example

Drag 2 halves down below the circle and connect them with a line using your dry erase pen. Repeat that step again and then bring down the final one-half. See Figure 26.6

Point while you count these for students.

**T:** You see that I have 2 halves here, and 2 halves here, and 1 half here. Lemons, tell your Limes how many halves I have.

Write the fractions  $\frac{2}{2}$ ,  $\frac{2}{2}$ , and  $\frac{1}{2}$  near the circles. Listen to see if students now can see the 5 halves. See Figure 26.7

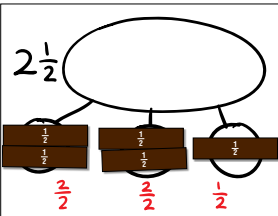


Figure 26.7 Example

**T:** This is five-halves.

Write  $2\frac{1}{2} = \frac{5}{2}$ .

**T:** Five-halves is equal to two and one-half. It's your turn to try on your page. Try the first one with your partner.

Hand out Lesson 26 Practice page (R52) and a pencil to each student. See Figure 26.8 The Stages E & F Fraction Bar Card can be made available as a tool if needed.

**T:** Notice that the first number bond has a denominator of fourths. You and your partner could start thinking about how many fourths equal a whole, and how many wholes there are in two and three-fourths.

Make sure they try the first one as partners (each student working on their own page) and the second one by themselves. Ensure that students understand what denominator to use, how to pull out the wholes as fractions, and watch for errors. Now is the time to correct and supplement with fraction bars or pattern blocks if necessary. For answers, see Figure 26.9.

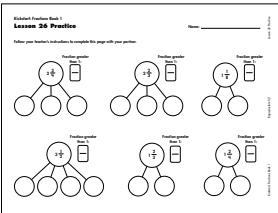


Figure 26.8 Lesson 26 Practice (R52)

**No Landing today. Proceed to the CRANE-ium Competition on page 140.**

### Lesson 26: Creating Fractions Greater Than One

#### LESSON 26 PAGE ANSWERS

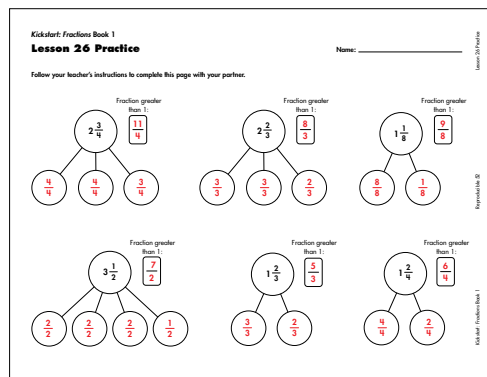


Figure 26.9

Lesson 26 Practice (R52)

After several lessons (typically five), students participate in a CRANE-ium Competition as a team. The word competition here refers to a way for students to collaborate in an engaging, game-like activity that fosters their motivation to participate and persevere.

STAGE E

## CRANE-ium Competition!



Every few lessons, instead of completing their individual Landings, the group will compete in a CRANE-ium Competition if they have earned enough Cory Coins as a team. For this day's competition, the team needs to have the combined Cory Coins as outlined below.

*It is the instructor's job to ensure that students DO have enough Cory Coins to compete every five days.*

Once students have their final Cory Coin total for the five-day period, let them know if they have enough coins to compete.

**T:** Students, today's CRANE-ium Competition requires \_\_\_ Cory Coins for you to enter the competition. Our team has \_\_\_ Cory Coins! (*More Cory Coins than required.*)

**T:** This is your last CRANE-ium Competition! You have learned so much about fractions in these last few months. Are you ready for your final challenge? You will need to correctly solve the task you've chosen. If you do not correctly solve the task you've chosen everyone on the team has one more opportunity to solve the second task. If your team chooses, you may cash in all your Cory coins to ask for hint before you start on the second task. You should work together to complete the task. I will only check your answer when the group agrees on a final answer together. You may use any of the tools we have used up to this point to solve, including the fraction bars, pattern blocks and sheet protectors. Here are the tasks you may choose from.

If there are this many group members who regularly attend:	This many Cory Coins are needed to compete:
6 students	90 Cory Coins
5 students	75 Cory Coins
4 students	60 Cory Coins
3 students	45 Cory Coins

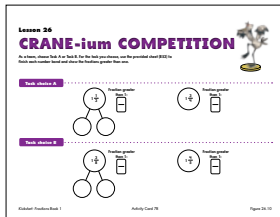


Figure 26.10 Activity Card 78

Show Activity Card 78. See Figure 26.10 and give the team time to decide which of the two tasks they want to complete. They should work together to complete the task on the Lesson 26 CRANE-ium Competition page. (R53, see Figure 26.11) If incorrect on the task they choose, they may try the second one with or without a hint found in the purple box. A hint can be bought with all their Cory Coins.

**HINT:**  
How many pieces in the whole?  
Draw a fraction bar to help visualize!

### Lesson 26 CRANE-ium COMPETITION

Team members: \_\_\_\_\_

As a team, choose Task A or Task B. For the task you choose, finish each number bond and show the fractions greater than one.

**Task choice A**

Fraction greater than 1:

Fraction greater than 1:

**Task choice B**

Fraction greater than 1:

Fraction greater than 1:

Kickstart: Fractions Book 1      Reproducible 53      Lesson 26 CRANE-ium Competition

Figure 26.11 Lesson 26 CRANE-ium Competition (R53)

### CRANE-ium Competition!

Kickstart: Fractions Book 1  
Lessons 21–26 Skills Practice Name: \_\_\_\_\_

1. For each mixed number below, write the fraction greater than one. (Lesson 21)

a. $2\frac{1}{4}$ is _____	b. $2\frac{2}{3}$ is _____
c. $1\frac{2}{5}$ is _____	d. $2\frac{3}{8}$ is _____
e. $3\frac{1}{2}$ is _____	f. $1\frac{9}{10}$ is _____

2. For each number bond below, put in the whole and write the mixed number in the box provided. (Lesson 26)

Kickstart: Fractions Book 1      Reproducible 58      Lesson 26 Skills Practice

Lessons 21–26 Skills Practice (R58)

### SKILLS PRACTICE

**Kickstart:** Fractions lessons move rapidly through ideas that are foundational to conceptual understanding. Sometimes students require more time to practice each skill. Taking an extra day to practice is a great way to cement students' learning. Optional skills practice for Lessons 21–26 is available as R58 and answers can be found on page 143 at the end of this book.

### PROGRAM NOTE

**NEXT STEPS**

When finishing this stage, it is optional to re-administer Placement Checkpoint 2 (P6) and compare it to the original in order to demonstrate growth that has happened throughout the stage.

Students finishing this stage may be ready to work at grade level or may need additional practice in skills from this book. Use the placement checkpoints, observation of student work, and/or consultation with the classroom teacher to make that decision. A flowchart of placement decisions can be found on page ix of this book.

Also consider administering the Attitude Checkpoint (P19) to each student at the end of this stage. It is an important tool for understanding how students see themselves in relation to math. Research has shown this has an impact on math success. (Shanley et al., 2019; Liu et al., 2024).

Placement Checkpoints are re-administered as assessments throughout the program. Successful completion can signal that students are ready for their grade-level curriculum.

# Kickstart: Fractions Addition and Subtraction (Book 2)

*Kickstart: Fractions* Addition and Subtraction (Book 2) addresses fractions operations skills prerequisite for grade 4 (Stage E) and grade 5 (Stage F) core curriculum.

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# Student Placement

This chart is to help define the scope of the stages in *Kickstart: Fractions*:

## Book 2 Stage E

Is for students, fourth grade and above, who can	but struggle with
<ul style="list-style-type: none"><li>• generate a new fraction to compare either same numerator or same denominator</li><li>• create equivalent decimal fractions between tenths and hundredths</li><li>• fluently converting mixed numbers to fractions greater than one and vice versa</li></ul>	<ul style="list-style-type: none"><li>• adding fractions with like denominators</li><li>• subtracting fractions with like denominators</li><li>• adding mixed numbers with like denominators</li><li>• subtracting mixed numbers with like denominators</li></ul>

## Book 2 Stage F

Is for students, fifth grade and above, who can	but struggle with
<ul style="list-style-type: none"><li>• add fractions with like denominators</li><li>• subtract fractions with like denominators</li><li>• add mixed numbers with like denominators</li><li>• subtract mixed numbers with like denominators</li></ul>	<ul style="list-style-type: none"><li>• adding fractions with unlike denominators</li><li>• subtracting fractions with unlike denominators</li><li>• adding mixed numbers with unlike denominators</li><li>• subtracting mixed numbers with unlike denominators</li><li>• finding common denominators</li><li>• finding a least common multiple</li></ul>

## KICKSTART: FRACTIONS PLACEMENT CHECKPOINTS

To support effective instruction and meet each student's unique learning needs, placement checkpoints play a critical role in *Kickstart: Fractions*. These placement checkpoints provide valuable insights that allow educators to place students in the most suitable starting point within the program. This ensures that students are neither overwhelmed by material that is too advanced nor disengaged by content that is too basic. *Kickstart's* placement checkpoints are designed to set students up for a tailored learning journey, giving teachers a framework to make informed decisions about where to begin and how to structure subsequent instruction.

For optimal results, only students in third grade and above should complete the placement checkpoints. All students should begin with *Kickstart: Fractions* Placement Checkpoint 1, with placement decisions informed by the guidelines provided on the following page. These guidelines will help ensure students begin at the stage that best matches their current understanding and learning needs, maximizing their chances for success. Though *Kickstart* suggests these guidelines, each educator's professional judgment is essential. Teachers know their students best and are empowered to adjust student placement based on what they observe.

While primarily designed for initial and ongoing placement within *Kickstart: Fractions*, these placement checkpoints can also serve as helpful tools for data collection and progress monitoring throughout the learning process.

The final checkpoint in *Kickstart: Fractions* is the Attitude Checkpoint given to each student before they begin a new stage. This is important for progress monitoring student attitudes toward math and supporting students in building a positive math identity.

### XX Fractions Book 2

# Addition and Subtraction (Book 2) Sample Lesson

A quick Warm-Up activity begins each lesson. It is designed to transition students from an emotional state into a thinking state.

STAGE E

## Lesson 7: Subtracting Fractions Using Tools

### MATERIALS

#### Copy in advance:

- Lesson 7 Matching Game Cards (R16, 1 per partnership, cut into decks)
- Fractions: Spinner F (R17, 1 for the group)
- Fractions: Spinner G (R18, 1 for the group)
- Landing (R19, 1 per student)

#### For the teacher:

- Team Coin Tracker (ongoing)
- Activity Cards 13 and 14
- 1 Stage E fraction bar bag
- 2 Spinners
- Sheet protector
- Dry erase pen

#### Per student:

- Sheet protector
- Dry erase pen
- Pencil

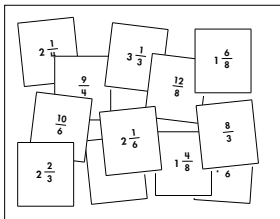


Figure 7.1  
Lesson 7 Matching Game Cards (R16)

### WARM-UP ←

**T:** Today is a vote. Stand up and get ready to vote with your arms but don't move until I say "Ready? Vote." The question today is would you rather be known as someone who is hopeful about how things will turn out, or as someone who is determined to make things happen? Here's how to vote: arms all the way up if you'd rather be known as someone hopeful. Arms all the way out to your side if you'd rather be known as someone determined to make things happen. This is a chance to share your opinion. Ready? Vote.

*Students may be seated after the vote and share their ideas if they'd like. This may look like a would-you-rather activity. In fact, stretching their arms signals to their brains that it is safe enough to think and learn.*

### TAKEOFF ←

Shuffle and give each partnership a set of Lesson 7 Matching Game Cards. (R16, see Figure 7.1) Have student partnerships spread out their cards in front of them.

**T:** Today you'll work with your partner to find all the pairs that match. This isn't a guessing game. Coins will be awarded for students who are using their math skills to attempt to find the answers.



*Let students discuss and work together. If you notice one student taking over in a particular partnership, you can ask that the Lemon choose a pair, have their partner confirm it as correct, then have them switch roles. Partnerships should find the following matching pairs:*

$$\begin{array}{ll} 2\frac{1}{4} = \frac{9}{4} & 1\frac{4}{8} = \frac{12}{8} \\ 3\frac{1}{3} = \frac{10}{3} & 2\frac{2}{3} = \frac{8}{3} \\ 1\frac{3}{4} = \frac{7}{4} & 1\frac{4}{6} = \frac{10}{6} \\ 1\frac{6}{8} = \frac{14}{8} & 2\frac{1}{6} = \frac{13}{6} \end{array}$$



### Learning Target ←

**I can subtract fractions from fractions using tools.**

*Show Activity Card 13 with today's learning target. Read it to the students and then ask them to read it back to you together.*

The Takeoff is a review and/or preview that helps instructors repeat specific fraction ideas and provide opportunities for students to take information from one skill and apply it to another.

Daily, the teacher reads the Learning Target aloud to the group, and the group repeats the Learning Target back. Research underscores the value of this step.

Activity Cards and Reproducibles used in the lesson are pictured alongside the appropriate activity—often with completed examples for teacher reference.

## Lesson 7: Subtracting Fractions Using Tools

### LESSON

Place *Fractions: Spinner F* (R17) inside a sheet protector. See *Figure 7.2*

Pass out a sheet protector, dry erase pen, and a row of fraction bars equalling one whole to each student, blank side up. Use thirds, fourths, fifths, sixths, eighths, and tenths. Show Activity Card 14. See *Figure 7.3*

**T:** Look at our Menu for Funny Fractions. Pick one of these to be your food for the day. Write that food at the top of your sheet protector. Line up your fraction bars in a row underneath that word.

Write each student's choice in one of the six sections of the spinner. See *Figure 7.4* for the teacher example and *Figure 7.5* below for a student example using fourths and cherries.

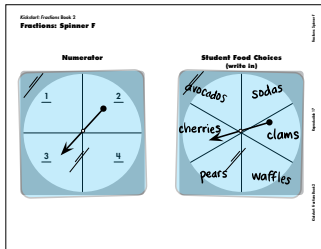


Figure 7.4 Teacher Example

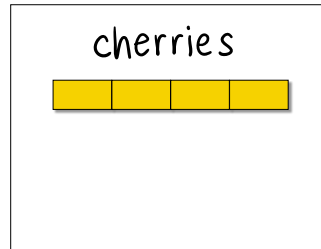


Figure 7.5 Student Example

**T:** Today we're playing a subtraction game with your fraction bars. I will spin both spinners. The first spinner will be the numerator. If I spin your food on the second spinner, that becomes the denominator and is how many you will need to subtract. Then I'll spin again. The winner is the first person to subtract all their bars. For example, if I spin the number three and cherries, and the person who chose cherries is using the yellow fourths bars, that person will say, "Four cherries minus three cherries is one cherry," and will remove three bars and stack those next to their sheet protector. See *Figure 7.6* They will have just one bar left and the only way that person can win is if I spin one and cherry. Each time you remove fraction bars you need to say the subtraction equation. If you don't, you'll need to add one bar back.

Play until the first student is out of fraction bars. Ensure that students are saying correct subtraction equations. When the first person runs out of bars, have students put all their fraction bars back on their sheet protector with the number side up. Prepare to play again with *Fractions: Spinner G*. (R18, see *Figure 7.7*)

**T:** Erase your food name and write the denominator of fractions you have. This time I'll spin both spinners, and if it is your denominator, you will remove that many and say the subtraction equation. For example, if I spin three on the numerator spinner and fourths on the denominator spinner, the person with the fourths would say

(Lesson continues next page)

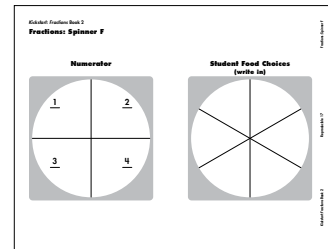


Figure 7.2 Spinner F (R17)

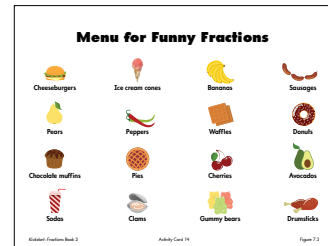


Figure 7.3 Activity Card 14

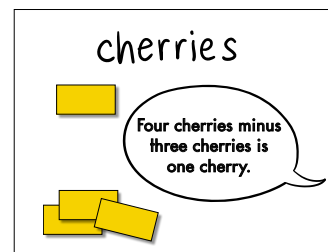


Figure 7.6 Example

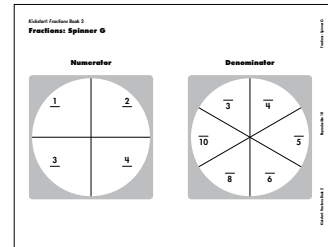


Figure 7.7 Spinner G (R18)

The Landing is a paper exit ticket that provides the teacher with helpful insights about student understanding and encourages students to self-reflect on their progress toward the day's Learning Target.

### Lesson 7: Subtracting Fractions Using Tools

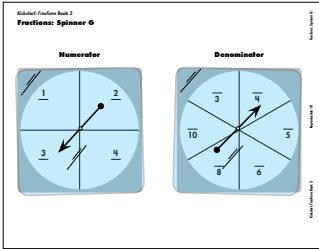


Figure 7.8 Teacher Example

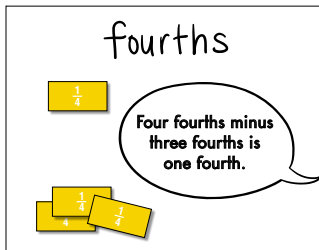


Figure 7.9 Student Example

four-fourths minus three-fourths equals one-fourth. See Figure 7.8 for the teacher example and Figure 7.9 for the student example.

The game ends when the first student is out of fraction bars. Play again if time allows.

### LANDING

Hand out Lesson 7 Landing (R19) to each student. Read the prompts aloud and give students time to work independently. At the bottom of the page, students have the opportunity to reflect on their own learning. Encourage them to be thoughtful about their response.

Do not score this page in front of students or ask them to correct any mistakes. See Figure 7.10 for answers. Check the clear box if the concept is clear to the student, or the gray box if the concept is still cloudy for the student. Record scores and any notes on each student's Progress Monitoring page. Keep each student's Landing in a folder for evidence of current progress.

Kickstart: Fractions Book 2  
**Lesson 7 Landing** Name: \_\_\_\_\_

For each problem below, cross out fraction bar units to show the subtraction, then write your answer.

$\frac{4}{4} - \frac{1}{4} = \frac{3}{4}$

<del><math>\frac{1}{4}</math></del>	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$
-------------------------------------	---------------	---------------	---------------

$\frac{5}{6} - \frac{2}{6} = \frac{3}{6}$

<del><math>\frac{1}{6}</math></del>	<del><math>\frac{1}{6}</math></del>	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$
-------------------------------------	-------------------------------------	---------------	---------------	---------------

$\frac{5}{8} - \frac{3}{8} = \frac{2}{8}$

<del><math>\frac{1}{8}</math></del>	<del><math>\frac{1}{8}</math></del>	<del><math>\frac{1}{8}</math></del>	$\frac{1}{8}$	$\frac{1}{8}$
-------------------------------------	-------------------------------------	-------------------------------------	---------------	---------------

**Today's learning target:**

I can subtract fractions from fractions using tools.

**Self-Reflection:**

I can teach this to another student.  
 I can do this on my own.  
 I can do this with some more practice.

Kickstart: Fractions Book 2      Reproducible 19      Lesson 7 Landing

Figure 7.10

Lesson 7 Landing (R19)

# Kickstart: Fractions Multiplication and Division (Book 3)

*Kickstart: Fractions* Multiplication and Division (Book 3) addresses fractions operations skills prerequisite for grade 4 (Stage E) and grade 5 (Stage F) core curriculum.

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# Student Placement

This chart is to help define the scope of the stages in *Kickstart: Fractions*:

## Book 3 Stage E

Is for students, fourth grade and above, who	but struggle with
<ul style="list-style-type: none"><li>• add fractions with common denominators</li><li>• convert between mixed numbers and fractions greater than one</li><li>• translate between problem context and numbers to multiply two whole numbers</li></ul>	<ul style="list-style-type: none"><li>• multiplying common fractions or fractions greater than one by a whole number</li><li>• translating between problem context and numbers to multiply fractions by a whole number</li></ul>

## Book 3 Stage F

Is for students, fifth grade and above, who	but struggle with
<ul style="list-style-type: none"><li>• multiply common fractions or fractions greater than one by a whole number</li><li>• translate between problem context and numbers to multiply fractions by a whole number</li><li>• perform single-digit division with whole numbers</li></ul>	<ul style="list-style-type: none"><li>• multiplying a fraction by another fraction</li><li>• translating between problem context and numbers to multiply fractions by fractions</li><li>• dividing a whole number by a fraction</li><li>• dividing a unit fraction by a whole number</li></ul>

## KICKSTART: FRACTIONS PLACEMENT CHECKPOINTS

To support effective instruction and meet each student's unique learning needs, placement checkpoints play a critical role in *Kickstart: Fractions*. These placement checkpoints provide valuable insights that allow educators to place students in the most suitable starting point within the program. This ensures that students are neither overwhelmed by material that is too advanced nor disengaged by content that is too basic. *Kickstart's* placement checkpoints are designed to set students up for a tailored learning journey, giving teachers a framework to make informed decisions about where to begin and how to structure subsequent instruction.

For optimal results, only students in third grade and above should complete the placement checkpoints. All students should begin with *Kickstart: Fractions* Placement Checkpoint 1, with placement decisions informed by the guidelines provided on the following page. These guidelines will help ensure students begin at the stage that best matches their current understanding and learning needs, maximizing their chances for success. Though *Kickstart* suggests these guidelines, each educator's professional judgment is essential. Teachers know their students best and are empowered to adjust student placement based on what they observe.

While primarily designed for initial and ongoing placement within *Kickstart: Fractions*, these placement checkpoints can also serve as helpful tools for data collection and progress monitoring throughout the learning process.

The final checkpoint in *Kickstart: Fractions* is the Attitude Checkpoint given to each student before they begin a new stage. This is important for progress monitoring student attitudes toward math and supporting students in building a positive math identity.

# Multiplication and Division (Book 3) Sample Lesson

The Materials list enables teachers to quickly gather everything needed for a lesson, including reproducible pages, Activity Cards, and manipulatives.

STAGE F

## Lesson 17: Dividing a Whole Number by a Unit Fraction Using an Algorithm

### MATERIALS

- Copy in advance:**
- Dividing by a Fraction (R33, 1 for the teacher)
  - Lesson 17 Practice (R34, 1 per partnership)
  - Lesson 17 Landing (R35, 1 per student)
- For the teacher:**
- Team Coin Tracker (ongoing)
  - Activity Cards 53–55
  - Screen for video viewing
- Per student:**
- Sheet protector
  - Dry erase pen
  - Pencil

### WARM-UP

**T:** Here's the story, pretend you are at home or school and get stuck on a project for school. Who do you like to go to for help in a moment like that?

*Besides letting students share, this is a wonderful opportunity to get to know support systems for the students in your group.*

### TAKEOFF

*Show Activity Card 53. See Figure 17.1*

**T:** After you have a moment to examine this picture, you will work with your partner to come up with the equation to match. I'll give you one hint, it involves division.

*While students are thinking, hand out a dry erase pen and sheet protector to each partnership. Then ask Lemons to share their idea first while Limes write the idea. Together they can revise if the Lime disagrees with the Lemon. See Figure 17.2*

The Takeoff is a review and/or preview that helps instructors repeat specific fraction ideas and provide opportunities for students to take information from one skill and apply it to another.

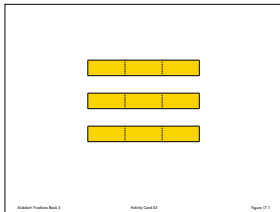


Figure 17.1 Activity Card 53



### Learning Target

I can explain the algorithm for dividing a whole number by a unit fraction.

**Example:**  $3 \div \frac{1}{4} = \frac{3}{1} \div \frac{1}{4} = \frac{3}{1} \times \frac{4}{1}$

*Show Activity Card 54 with today's learning target. Read it to the students and then ask them to read it back to you together. Award the team Cory Coins for participation.*



Daily, the teacher reads the Learning Target aloud to the group, and the group repeats the Learning Target back. Research underscores the value of this step.

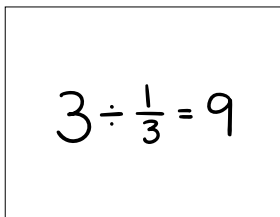


Figure 17.2 Example

### PROGRAM NOTE

Even though many states and provinces do not require knowing the algorithm for dividing unit fractions by whole numbers or whole numbers by unit fractions until grade 6, the authors of *Kickstart: Fractions* recognize that many students may have already been shown the algorithm as a strategy, or even as a “trick.” It is our intention to give students every chance to understand how the math they're doing in the classroom can be explained and better understood.

The algorithm we spend time investigating and explaining for dividing with fractions in *Kickstart: Fractions* is the strategy of “flip and multiply” because it ultimately requires fewer steps than the alternative. However, some students may have been taught to rename the whole number as an equivalent fraction greater than one with a denominator that is the same as the divisor's denominator. Here is an example.

If this is a strategy that is familiar to your students, give them permission and ample opportunity to explore how and why it also works, and ultimately let them choose the strategy that is most efficient and effective for them to use.

$$\begin{array}{r} 3 \div \frac{1}{4} = \frac{3}{1} \div \frac{1}{4} \\ \downarrow \quad \downarrow \\ \frac{12}{4} \div \frac{1}{4} = 12 \end{array}$$

Partner talk is key to understanding and applying math concepts. Students are simply paired with the person next to them. One serves as the “Lemon” and the other as “Lime.”

## Lesson 17: Dividing a Whole Number by a Unit Fraction Using an Algorithm

### LESSON

Put *Dividing by a Fraction* (R33, see Figure 17.3), in a sheet protector and have a dry erase pen handy.

**T:** Look at the first line of this page. One divided by one-tenth. Luckily there is a picture to go with it so we can see what one whole is when it is divided into one-tenths. How many tenths are in one whole? Whisper to your partner.

**S:** Ten.

**T:** Sure, one whole divided by one-tenth is ten. I’ll write that in as the answer. See Figure 17.4 Let’s try it with two. What is two wholes divided by one-tenth? How many tenths are in two wholes?

On the second line, write  $2 \div \frac{1}{10}$ . See Figure 17.5

Whole number:	How many copies of the unit fraction are in the whole number above?
1	$1 \div \frac{1}{10} = 10$
2	
3	
4	
5	

Figure 17.3  
*Dividing by a Fraction* (R33)

Whole number:	How many copies of the unit fraction are in the whole number above?
1	$1 \div \frac{1}{10} = 10$
2	
3	
4	
5	

Figure 17.4 Example

Whole number:	How many copies of the unit fraction are in the whole number above?
1	$1 \div \frac{1}{10} = 10$
2	$2 \div \frac{1}{10} = 20$
3	
4	
5	

Figure 17.5 Example

Whole number:	How many copies of the unit fraction are in the whole number above?
1	$1 \div \frac{1}{10} = 10$
2	$2 \div \frac{1}{10} = 20$
3	$3 \div \frac{1}{10} = 30$
4	
5	

Figure 17.6 Example

**T:** Limes, explain to your partner what the answer is and how you know.

Listen in as students explain the answer is 20, whether because the number of bars is doubled so the answer will be double, because two times ten equals twenty, or for another reason they can justify.

**T:** There are 10 tenths in one whole, so that means there are 20 tenths in two wholes.

Write 20 as the answer on the second line. Write  $3 \div \frac{1}{10}$  on the next line. See Figure 17.6

**T:** Lemons, your turn. Explain to your partner the answer to three divided by one-tenth and how you know.

*(Lesson continues next page)*

Instructor language is scripted using precise math terms like “denominator” rather than “bottom number.” Students are encouraged to use math terminology when talking to their partners, too, providing opportunities to practice the vocabulary.

**Lesson 17: Dividing a Whole Number by a Unit Fraction Using an Algorithm**

Student Fraction Book 3  
Lesson 17 Dividing by a Fraction

Unit fraction:  $\frac{1}{10}$

Whole number	How many copies of the unit fraction are in the whole number above?
1	$1 \div \frac{1}{10} = 10$ <input type="text"/>
2	$2 \div \frac{1}{10} = 20$
3	$3 \div \frac{1}{10} = 30$
4	$4 \div \frac{1}{10} = 40$
5	$5 \div \frac{1}{10} = 50$

Figure 17.7 Example

Student Fraction Book 3  
Lesson 17 Dividing by a Fraction

Unit fraction:  $\frac{1}{10}$

Whole number	How many copies of the unit fraction are in the whole number above?
1	$1 \div \frac{1}{10} = 10$ <input type="text"/>
2	$2 \div \frac{1}{10} = 20$
3	$3 \div \frac{1}{10} = 30$
4	$4 \div \frac{1}{10} = 40$
5	$5 \div \frac{1}{10} = 50$

Figure 17.8 Example

Student Fraction Book 3  
Lesson 17 Practice

Unit fraction:  $\frac{1}{10}$

Whole number	How many copies of the unit fraction are in the whole number above?
1	<input type="text"/>
2	<input type="text"/>
3	<input type="text"/>
4	<input type="text"/>
5	<input type="text"/>

Figure 17.9 Lesson 17 Practice (R34)

Again, listen in. This time, ask students who have a reasonable way of finding out to share their idea with the group. Write 30 as the answer on the third line, then write  $4 \div \frac{1}{10}$  on the next line and  $5 \div \frac{1}{10}$  on the last line. See Figure 17.7

**T:** Give me a thumbs up when you think you can predict the next two answers. Pause. How many of you are using a pattern to figure it out? How many of you are using what you already know to figure out what you don't know? Both of those are things that mathematicians do all the time. You are doing them too! Don't forget to go home and tell someone you are a mathematician, because you are!

Finish the chart as seen in Figure 17.8

**T:** You will now try this with your partner but with a fraction different than one-tenth. I will hand out a page to you and assign you a fraction that you will write in the box at the top. If you and your partner need to draw a picture to check your work, go ahead! One more rule: the person holding the pencil can't make any decisions (such as what to write) and the person not holding the pencil needs to use words to direct the writer. You switch jobs after each line is finished.

Hand out one pencil and a Lesson 17 Practice (R34, see Figure 17.9), to each partnership. Assign partnerships each one of these fractions:  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ . For answers, see below:

Unit fraction: $\frac{1}{3}$		Unit fraction: $\frac{1}{4}$		Unit fraction: $\frac{1}{5}$	
1	$1 \div \frac{1}{3} = 3$	1	$1 \div \frac{1}{4} = 4$	1	$1 \div \frac{1}{5} = 5$
2	$2 \div \frac{1}{3} = 6$	2	$2 \div \frac{1}{4} = 8$	2	$2 \div \frac{1}{5} = 10$
3	$3 \div \frac{1}{3} = 9$	3	$3 \div \frac{1}{4} = 12$	3	$3 \div \frac{1}{5} = 15$
4	$4 \div \frac{1}{3} = 12$	4	$4 \div \frac{1}{4} = 16$	4	$4 \div \frac{1}{5} = 20$
5	$5 \div \frac{1}{3} = 15$	5	$5 \div \frac{1}{4} = 20$	5	$5 \div \frac{1}{5} = 25$

**T:** There seems to be some connection between the denominator of your fraction and how many parts there are in one whole. Do you agree? What is that connection?

If a student can articulate this, that is fantastic. If no one is able to make a connection, ask if someone could use addition, subtraction, or multiplication to make a connection between the whole number and the denominator in each of their lines. The goal is for students to start seeing that there is a relationship between the two.

Professional learning is embedded in lessons. Program Notes provide insight about *Kickstart: Fractions* content and often include references to specific research that informs the program design.

### Lesson 17: Dividing a Whole Number by a Unit Fraction Using an Algorithm

**T:** Check out the division expressions on this activity card.

Show the first box of Activity Card 55 (see Figure 17.10) while hiding the other three boxes.

**T:** Three divided by one-half is the same as (reveal the second box) three-wholes divided by one-half because of that undercover hidden one.

Reveal the third box.

**T:** This is the same as three wholes times the number of parts in one whole. In this case that was two. Two parts in one whole, and three wholes. Two times three is six. Three divided by one-half equals six.

Reveal the last box.

**T:** Look back at our Dividing by a Fraction page.

See Figure 17.11, the finished version of the first page of the day. Point to the first line.

**T:** There were ten parts in one whole, so there were two times ten parts in two wholes. Who can explain how many there were in three wholes?

Call on a student who could say that there were three times ten parts in three wholes. Repeat with different students for the last two: four times ten parts in four wholes and five times ten parts in five wholes.

**T:** Now look back at your own practice page. Lemons, tell your Limes how many parts in one whole.

Lemons should answer with their denominator.

**T:** Limes, tell your Lemons how many parts in two times that many parts.

Limes should answer double their denominator.

**T:** Lemons, tell your limes how many parts in three wholes. Use the phrase, "There are three times \_\_\_ parts in three wholes."

Repeat for three, four, and five. Then collect each partnership's practice page.



Show Video 10: Dividing Whole Numbers by Unit Fractions.

<https://zanerbloser.wistia.com/medias/n3swuy489n>

You may pause the video as needed to support instruction and student understanding.



**T:** Think about what part of that video made the most sense to you. Pause. Lemons, tell your Limes your observation and then listen for theirs.

(Lesson continues next page)

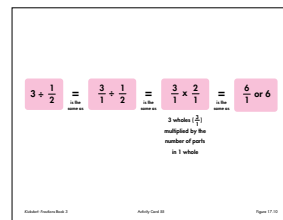


Figure 17.10 Activity Card 55

Whole number	How many parts of the unit fraction are in the whole number divided?
1	$1 \div \frac{1}{10} = 10$
2	$2 \div \frac{1}{10} = 20$
3	$3 \div \frac{1}{10} = 30$
4	$4 \div \frac{1}{10} = 40$
5	$5 \div \frac{1}{10} = 50$

Figure 17.11 Example

#### PROGRAM NOTE

Students may have been taught tricks and shortcuts for how to divide with fractions using a flip and multiply strategy, also known as the “butterfly method.” Though this works, it is frequently taught without connection to why it works, and therefore has no meaning for students other than another procedure to memorize. For students to be able to recognize unreasonable answers or to remember how and when to apply this algorithm in an authentic situation, they need deep conceptual understanding. This is what *Kickstart: Fractions* works hard to develop before revealing a shortcut strategy.

Some lessons include a short student-facing instructional video that reviews or previews concepts. QR codes enable teachers to easily access and share videos with the small group from a phone or tablet.

## Lesson 17: Dividing a Whole Number by a Unit Fraction Using an Algorithm

### LANDING

Hand out Lesson 17 Landing (R35) to each student. Read the prompts aloud and give students time to work independently. At the bottom of the page, students have the opportunity to reflect on their own learning. Encourage them to be thoughtful about their response.

Do not score this page in front of students or ask them to correct any mistakes. See Figure 17.12 for answers. Check the clear box if the concept is clear to the student, or the gray box if the concept is still cloudy for the student. Record scores and any notes on each student's Progress Monitoring page. Keep each student's Landing in a folder for evidence of current progress.

Kickstart: Fractions Book 3  
**Lesson 17 Landing** Name: \_\_\_\_\_

Cory's work below correctly demonstrates  $2 \div \frac{1}{6}$ .  
 Using words, describe why Cory changes from dividing by  $\frac{1}{6}$  to multiplying by  $\frac{6}{1}$ .

$$2 \div \frac{1}{6}$$

$$\downarrow$$

$$\frac{2}{1} \div \frac{1}{6}$$

$$\downarrow$$

$$\frac{2}{1} \times \frac{6}{1} = \frac{12}{1} \text{ or } 12$$

Responses will vary. Look for an attempt to describe that six copies of  $\frac{1}{6}$  are in one whole, so twelve copies are in two wholes because  $2 \times 6 = 12$ .

Another way students might think of it is:  $2$  (wholes)  $\times 6$  (parts each) =  $12$  (parts)

**Today's learning target:**  
 I can explain the algorithm for dividing a whole number by a unit fraction.

**Self-Reflection:**  
 I can teach this to another student.  
 I can do this on my own.  
 I can do this with some more practice.

Kickstart: Fractions Book 3      Reproducible 35      Lesson 17 Landing

Figure 17.12

Lesson 17 Landing (R35)

The Landing is a paper exit ticket that provides the teacher with helpful insights about student understanding and encourages students to self-reflect on their progress toward the day's Learning Target.

Optional Skills Practice pages in the Reproducibles book provide extra practice when needed. Prompts throughout the Teacher Guides remind teachers to assess the need for extra practice and signal appropriate times to use each page.

## SKILLS PRACTICE OPPORTUNITY

Kickstart: Fractions Book 3

### Lesson 17 Skills Practice

Name: \_\_\_\_\_

Use the algorithm to solve each equation. The first one is done for you.

$$3 \div \frac{1}{2} = \frac{3}{1} \div \frac{1}{2} = \frac{3}{1} \times \frac{2}{1} = \frac{6}{1} \text{ or } 6$$

$$4 \div \frac{1}{2} =$$

$$7 \div \frac{1}{3} =$$

$$5 \div \frac{1}{6} =$$

$$9 \div \frac{1}{2} =$$

$$10 \div \frac{1}{4} =$$

$$2 \div \frac{1}{12} =$$

$$10 \div \frac{1}{5} =$$

Kickstart: Fractions Book 3

Reproducible 45

Lesson 17 Skills Practice

*Lesson 17 Skills Practice (R45)*

### SKILLS PRACTICE

**Kickstart:** Fractions lessons move rapidly through ideas that are foundational to conceptual understanding. Sometimes students require more time to practice each skill. Taking an extra day to practice is a great way to cement students' learning. Optional skills practice for Lesson 17 is available as R45 and answers can be found on page 130 at the end of this book.


STAGE F


Answers for Skills Practice pages appear at the end of each Teachers Guide.

## SKILLS PRACTICE PAGE ANSWERS

Kickstart: Fractions Book 3  
**Lessons 3–5 Skills Practice** Name: \_\_\_\_\_

1. Write the equation that the shaded parts of the fraction models show. (Lesson 3)

A.   
 $3 \times \frac{3}{9} = \frac{9}{9}$  or  $2 \times \frac{1}{9}$

B.   
 $4 \times \frac{3}{9} = \frac{12}{9}$  or  $\frac{4}{3}$  or  $4 \times \frac{1}{3} = \frac{4}{3}$  or  $\frac{4}{3}$

(For items 2 and 3 below, students may write either version of the algorithm, separating each factor or writing the multiplication expressions as the numerator and denominator.)

2. Write the algorithm used for solving next to each equation, but don't solve them even if you want to. The first one has been done for you. (Lesson 9)

$4 \times \frac{1}{5} = \frac{4}{1} \times \frac{1}{5} = \frac{4 \times 1}{1 \times 5}$	$5 \times \frac{3}{8} = \frac{5}{1} \times \frac{3}{8} = \frac{5 \times 3}{1 \times 8}$	$2 \times \frac{9}{10} = \frac{2}{1} \times \frac{9}{10} = \frac{2 \times 9}{1 \times 10}$
$8 \times \frac{7}{12} = \frac{8}{1} \times \frac{7}{12} = \frac{8 \times 7}{1 \times 12}$	$9 \times \frac{3}{4} = \frac{9}{1} \times \frac{3}{4} = \frac{9 \times 3}{1 \times 4}$	$7 \times \frac{1}{3} = \frac{7}{1} \times \frac{1}{3} = \frac{7 \times 1}{1 \times 3}$

3. Use the algorithm to solve each equation. You may write your final answer as a fraction greater than one, a mixed number, or both. (Lesson 5)

$3 \times \frac{2}{5} = \frac{3 \times 2}{1 \times 5} = \frac{6}{5}$ or $1 \frac{1}{5}$	$5 \times \frac{3}{8} = \frac{5 \times 3}{1 \times 8} = \frac{15}{8}$ or $1 \frac{7}{8}$	$6 \times \frac{3}{5} = \frac{6 \times 3}{1 \times 5} = \frac{18}{5}$ or $3 \frac{3}{5}$
$6 \times \frac{4}{5} = \frac{6 \times 4}{1 \times 5} = \frac{24}{5}$ or $4 \frac{4}{5}$	$7 \times \frac{3}{4} = \frac{7 \times 3}{1 \times 4} = \frac{21}{4}$ or $5 \frac{1}{4}$	$3 \times \frac{7}{8} = \frac{3 \times 7}{1 \times 8} = \frac{21}{8}$ or $2 \frac{5}{8}$

Kickstart: Fractions Book 3      Reproducible 91      Lessons 3–5 Skills Practice

R41, see page 34

Kickstart: Fractions Book 3  
**Lessons 6–10 Skills Practice** Name: \_\_\_\_\_

1. Three breadsticks were shared by four friends. What amount of breadstick did each friend get? Draw a picture if it is helpful. (Lesson 6)

Each friend got  $\frac{3}{4}$  of a breadstick.

2. Five birdseed muffins were shared by four friends. What amount of birdseed muffin did each friend get? Draw a picture if it is helpful. (Lesson 6)

Each friend got  $\frac{5}{4}$  or  $1 \frac{1}{4}$  birdseed muffins.

3. For each item below, write the algorithm, solve, and circle your answer. (Lesson 8)

$\frac{1}{5} \times 10 = \frac{1 \times 10}{5 \times 1} = \frac{10}{5}$ or 2	$\frac{1}{4} \times 16 = \frac{1 \times 16}{4 \times 1} = \frac{16}{4}$ or 4	$\frac{1}{3} \times 9 = \frac{1 \times 9}{3 \times 1} = \frac{9}{3}$ or 3
$\frac{1}{3} \times 15 = \frac{1 \times 15}{3 \times 1} = \frac{15}{3}$ or 5	$\frac{1}{5} \times 20 = \frac{1 \times 20}{5 \times 1} = \frac{20}{5}$ or 4	$\frac{1}{4} \times 40 = \frac{1 \times 40}{4 \times 1} = \frac{40}{4}$ or 10

4. For each item below, write the algorithm, solve, and circle your answer. (Lesson 10)

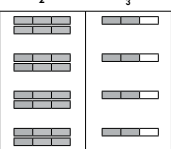
$\frac{1}{4} \times 9 = \frac{1 \times 9}{4 \times 1} = \frac{9}{4}$ or $2 \frac{1}{4}$	$\frac{2}{3} \times 6 = \frac{2 \times 6}{3 \times 1} = \frac{12}{3}$ or 4	$\frac{4}{5} \times 10 = \frac{4 \times 10}{5 \times 1} = \frac{40}{5}$ or 8
$\frac{3}{5} \times 6 = \frac{3 \times 6}{5 \times 1} = \frac{18}{5}$ or $3 \frac{3}{5}$	$\frac{1}{5} \times 9 = \frac{1 \times 9}{5 \times 1} = \frac{9}{5}$ or $1 \frac{4}{5}$	$\frac{2}{5} \times 3 = \frac{2 \times 3}{5 \times 1} = \frac{6}{5}$ or $1 \frac{1}{5}$
$\frac{5}{8} \times 2 = \frac{5 \times 2}{8 \times 1} = \frac{10}{8}$ or $1 \frac{2}{8}$	$\frac{2}{3} \times 4 = \frac{2 \times 4}{3 \times 1} = \frac{8}{3}$ or $2 \frac{2}{3}$	$\frac{4}{12} \times 5 = \frac{4 \times 5}{12 \times 1} = \frac{20}{12}$ or $1 \frac{8}{12}$

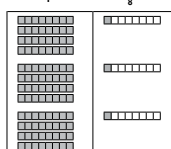
Kickstart: Fractions Book 3      Reproducible 92      Lessons 6–10 Skills Practice

R42, see page 64

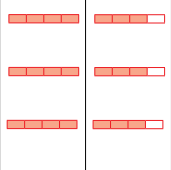
Kickstart: Fractions Book 3  
**Lesson 14 Skills Practice** Name: \_\_\_\_\_

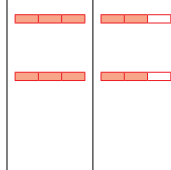
Write the equation represented by each model, then solve.

4.   
 Equation:  $4 \times \frac{2}{3} = \frac{4 \times 2}{1 \times 3} = \frac{8}{3}$

3.   
 Equation:  $3 \times \frac{4}{8} = \frac{3 \times 4}{1 \times 8} = \frac{12}{8}$

Draw a model to represent each equation, then solve.

3.   
 $3 \times \frac{1}{4} = \frac{3}{4}$

2.   
 $2 \times \frac{1}{3} = \frac{2}{3}$

Kickstart: Fractions Book 3      Reproducible 94      Lesson 14 Skills Practice

R44, see page 94

Kickstart: Fractions Book 3  
**Lesson 17 Skills Practice** Name: \_\_\_\_\_

Use the algorithm to solve each equation. The first one is done for you.

$3 \div \frac{1}{2} = \frac{3}{1} \div \frac{1}{2} = \frac{3}{1} \times \frac{2}{1} = \frac{6}{1}$  or 6

$4 \div \frac{1}{2} = \frac{4}{1} \div \frac{1}{2} = \frac{4}{1} \times \frac{2}{1} = \frac{8}{1}$  or 8

$7 \div \frac{1}{3} = \frac{7}{1} \div \frac{1}{3} = \frac{7}{1} \times \frac{3}{1} = \frac{21}{1}$  or 21

$5 \div \frac{1}{6} = \frac{5}{1} \div \frac{1}{6} = \frac{5}{1} \times \frac{6}{1} = \frac{30}{1}$  or 30

$9 \div \frac{1}{2} = \frac{9}{1} \div \frac{1}{2} = \frac{9}{1} \times \frac{2}{1} = \frac{18}{1}$  or 18

$10 \div \frac{1}{4} = \frac{10}{1} \div \frac{1}{4} = \frac{10}{1} \times \frac{4}{1} = \frac{40}{1}$  or 40

$2 \div \frac{1}{12} = \frac{2}{1} \div \frac{1}{12} = \frac{2}{1} \times \frac{12}{1} = \frac{24}{1}$  or 24

$10 \div \frac{1}{5} = \frac{10}{1} \div \frac{1}{5} = \frac{10}{1} \times \frac{5}{1} = \frac{50}{1}$  or 50

Kickstart: Fractions Book 3      Reproducible 95      Lesson 17 Skills Practice

R45, see page 113

# Grade-Level Ready!

Teachers can maintain a record of student growth using the built-in Daily Progress Monitoring pages. Placement checkpoints—used first to identify where a student should begin the **Kickstart: Fractions** program—also signal when the student is ready for their grade-level core curriculum.

Student: Liam Classroom Teacher: Miss Hicks


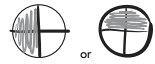
**Kickstart: Fractions Book 2**  
**Daily Progress Monitoring**

Make a copy for each student. Record the box checked on each Landing here.  
Make any notes that will be useful to others during intervention or progress monitoring meetings.

Stage	Landing	Notes/observations
Stage E	1 <input type="checkbox"/>	First impulse is to add denominators. Corrects when prompted.
	2 <input checked="" type="checkbox"/>	
	3 <input checked="" type="checkbox"/>	
	4 <input checked="" type="checkbox"/>	
	5 <input type="checkbox"/>	
	6 <input checked="" type="checkbox"/>	
Grade 4 Grade-Level Expectations	7 <input checked="" type="checkbox"/>	Had difficulty with visualizing fractions greater than one on a number line.
	8 <input type="checkbox"/>	
	9 <input checked="" type="checkbox"/>	
	10 <input type="checkbox"/>	
	11 <input checked="" type="checkbox"/>	
	12 <input checked="" type="checkbox"/>	
Stage F	13 <input checked="" type="checkbox"/>	First impulse to add whole numbers and fractions separately before finding a common denominator. Corrects when prompted, but will need skills practice.
	14 <input checked="" type="checkbox"/>	
	15 <input type="checkbox"/>	
	16 <input checked="" type="checkbox"/>	
	17 <input checked="" type="checkbox"/>	
	18 <input checked="" type="checkbox"/>	
	19 <input type="checkbox"/>	
	20 <input type="checkbox"/>	
Grade 5	21 <input type="checkbox"/>	Working with mixed numbers more confidently. Will continue to assign skills practice through this stage.
	22 <input type="checkbox"/>	
	23 <input type="checkbox"/>	
	24 <input type="checkbox"/>	
	25 <input type="checkbox"/>	

Teacher Record

**Placement Checkpoint 1** (Page 2 of 2)

Instructions	Scoring guide	Score
<p>4. If the student <u>correctly</u> partitioned the circle from Question 3, say: <b>Shade in one half of your circle. Then write or say another fraction shown that is equal to one half.</b></p> <p>If the student <u>did not correctly</u> partition the circle from Question 3, draw a circle on the paper for them and partition it into equal fourths, then say: <b>Shade in one half of this circle. Then write or say another fraction shown that is equal to one half.</b></p> 	<p>Give <b>one point</b> for writing <math>\frac{2}{4}</math> or saying, "two-fourths."</p>  <p>(any 2 of 4 pieces shaded)</p>	<u>1</u> out of 1
<p>5. Point to Question 5 on the student sheet.</p> <p>Say: <b>Write the correct symbol between the two fractions. Then tell or draw how you chose your answer.</b></p> <p>Fatima used whole number understanding to answer this question, will need to make sure they know four is more than two of the same size part.</p>	<p>Give <b>one point</b> if the student makes a correct comparison <u>and</u> provides a reasonable explanation, demonstrating understanding that four is more than two of the same size part.</p> $\frac{4}{6} > \frac{2}{6}$ <p>Give <b>zero points</b> if they are unable to explain or choose an incorrect symbol.</p>	<u>1</u> out of 1
<p>6. Point to Question 6 on the student sheet.</p> <p>Say: <b>Look at this true fraction comparison. Tell, draw, or show with fraction bars how you can prove it is true.</b></p>	<p>Give <b>one point</b> for proving the reason with words or models.</p> <p>Give <b>one more point</b> if their reasoning clearly contains the idea that two larger pieces are more than two smaller pieces from the same-sized whole.</p>	<u>0</u> out of 2
<b>ADD UP STUDENT POINTS AND PROCEED ACCORDINGLY:</b>		
<p>Score of 6 or lower: Place in <u>Kickstart: Fractions Book 1 Stage D.</u></p>	<p>Score of 7 or 8 and student is grade 4 or higher: Give <u>Kickstart: Fractions Placement Checkpoint 2.</u></p>	<u>5</u> out of 8

Kickstart: Fractions P2 Placement Checkpoint 1 (Page 2 of 2)

Teacher Record

**Placement Checkpoint 1** (Page 1 of 2)

Student: Fatima Grade: 4 Date: 10-12-25




Classroom Teacher: Mrs. Campbell Placement Evaluator: Mr. Jones

**Copy in advance, 1 per student:**

- Placement Checkpoint 1 Teacher Record (P1, P2)
- Placement Checkpoint 1 Student Work Page (P3)

**Additional materials:**

- 1 Stage D fraction bar bag
- Sheet protector
- Dry erase pen
- 2 Pencils

Instructions	Scoring guide	Score
<p>1. Place 4 one-fourth fraction bars number side down on top of the sheet protector. Spread them out in a single row:</p>  <p>Say: <b>Using your dry erase pen, circle three-fourths of the bars.</b></p>	<p>Give <b>one point</b> for circling three bars either individually or as a group of three.</p>	<u>1</u> out of 1
<p>2. Point to the Question 2 number line on the student sheet.</p> <p>Point to the star and say: <b>Write the fraction that would go here and say that fraction out loud.</b></p>	<p>Give <b>one point</b> for writing <math>\frac{3}{4}</math> in number form.</p> <p>Give <b>one more point</b> for saying, "three-fourths."</p>	<u>2</u> out of 2
<p>3. Point to the Question 3 circle on the student sheet.</p> <p>Say: <b>Partition this shape into fourths.</b></p> <p>Fatima broke into 4 parts, but not equal parts.</p>	<p>Give <b>one point</b> if the student's work shows reasonably equal parts:</p>  <p>Give <b>zero points</b> if the student divides the circle into all columns or all rows:</p> 	<u>0</u> out of 1

Kickstart: Fractions P1 Placement Checkpoint 1 (Page 1 of 2)

# Positive Math Identity

The Attitude Checkpoint, administered at the beginning and end of each stage of **Kickstart: Fractions** intervention, is an important gauge for understanding how a student sees themselves in relation to math. **Kickstart** solutions not only advance students to grade-level proficiency but also help them grow confident, take ownership of their math learning, and celebrate mistakes as a valuable part of learning.

## Student Work Page Attitude Checkpoint

Note to instructors:  
Administer before beginning Kickstart with a student, and again as the student finishes their time using Kickstart.

Student: Julian Grade: 3 Date: 9-14-25  
Classroom Teacher: Ms. Williams Placement Evaluator: Ms. Williams

Circle the answer that is closest to what is real for you.

This is how I feel about math most of the time: 

TRUE  FALSE I am getting better at math every day.

TRUE  FALSE If I have a hard math problem, I can give up easily.

TRUE  FALSE When I make a mistake in math, I feel bad.

TRUE  FALSE When doing math, I feel like I belong.

### Notes:

I've observed Julian's confidence in math growing, but we are still working on how to embrace math mistakes as a part of learning.



# KICKSTART

## Fractions

Learn more about *Kickstart: Fractions*

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