Lesson 1

Daily Materials
- ❑ *Behavior Expectations Card*
- ❑ Timer
- ❑ *Checkbook*
- ❑ *Student Bank*
- ❑ *Brain Boost Adventures*
- ❑ Prizes
- ❑ Cover Sheet

Additional Materials
- ❑ Fraction Tiles (unit bar, all unit tiles)
- ❑ *Greater Gator Cards*

Behavior

Each day we are together, you must do 3 things *(show three fingers)***. The first thing you must do is <u>listen</u>** *(point to card).* **This means listening when others speak** *(point)***. When others are talking your voice is off** *(point)* **and your eyes are on the speaker** *(point)***.**

The second thing you must do is <u>try your best</u> *(point to card).* **You can do this by thinking about each question before you answer** *(point)***. If you know the answer, show me or tell me** *(point)***. If you don't know the answer, you can ask for help** *(point)***. Think carefully about the math concepts while waiting your turn to talk.**

The third thing you must do is <u>be respectful</u> *(point to card).* **You can do this by treating others how you would like to be treated** *(point)***, keeping hands to yourself** *(point)***, and sitting when working** *(point)***.**

What 3 things must you do? Listen. Try your best. Be respectful.

Display timer & Checkbook.

During the lesson, my timer *(show timer)* **will help remind me to check if each of you are doing those 3 things. Every time my timer beeps, I check to make sure you're doing those 3 things.**

If you're doing those 3 things, you will earn pretend "money" to put in your bank *(point to Checkbook)***. If you're not doing one of those things, we'll set a goal to do better next time. At the end of the lesson, you'll "deposit" your earned money into the bank and you can decide if you want to buy something or save your earned money for a bigger prize. You'll need to use your math skills to figure out how much money you have in the bank.**

Listen. Try your best. Be respectful. Work hard to earn money.

Throughout lesson, teachers should deliver <u>4</u> praise statements per every reprimand, e.g., "I like how you followed the steps on the card to solve the problem. Way to use your brain power!" Praise statements should be specific and positive. Reprimands should be specific and include a directive, e.g., "You're not listening. Eyes and ears on me."

Use Checkbook to track individual student behavior at each time interval. If a student is doing all 3 things when the timer beeps, he/she earns $1 (circle $1 in Checkbook). If a student is <u>not</u> doing all 3 things, he/she earns $0 (circle $0 in Checkbook).

Circle the behavior the student is not doing (i.e., Listen, Try Your Best, or Be Respectful) and make a specific goal for student to improve behavior for the next interval, e.g., "Let's work on listening for the next timer. To listen means your voice is off and your eyes are on me. Let's practice." When the next timer beeps, make sure to praise student for achieving goal (or restate the goal as needed). Tailor behavioral goals to individual student's needs.

At the end of the lesson, count the number of dollars earned and deposit money into Student Bank. Display available prizes and ask students if they want to buy or save for a bigger prize.

Brain Boost

Open to Lesson 1 in the comic book.

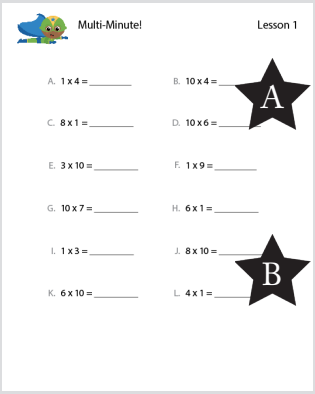
We are going to start our lessons with our *Super Solvers* comic book "*Brain Boost Adventures*". Let's read the comic together.

Teacher/student(s) take turns to read aloud "A Tale of Two Brains."

Why do you think this comic is titled "*A Tale of Two Brains*"? Student(s) respond.

Some people, like Doug, believe the brain *can't* change. These people think that if you don't do well in school now, you'll never do well. Some people, like JJ, believe the brain *can* change. They know that when you work hard, your brain power *can* grow. Brain power is not about how smart you are or how much you already know. It is about how well you use your brain. If you work hard, your brain power gets stronger.

Multi-Minute



During *Multi-Minute* you'll work on multiplication of whole numbers.

Today, we'll work on our 1s and 10s facts. Read the problem *(point)***.** 1 times 4.

Multiplying by 1 is easy. Any number times 1 is the other number. So for 1 times 4 *(point)***, the answer is 4** *(write 4).*

Now let's multiply by 10. Read the problem *(point)***.** 10 times 4.

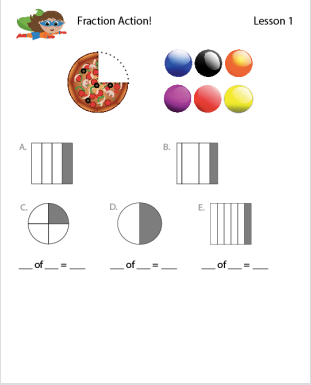
Any number times 10 is the other number with a 0 on the end. So 10 times 4 *(point)* **is 40** *(write 40)***.**

We can also skip count to find our answer. Let's skip count by 10 all the way up to 100. Count with me… 10, 20, 30, 40, 50, 60, 70, 80, 90, 100. Let me show you how we skip count to answer 10 times 4. What number are we multiplying by 10 in this *(point)* **problem?** 4.

We're multiplying 10 by 4, so let's put up 4 fingers to keep track of our skip counting *(demonstrate).* **Let's skip count together. Every time we count, put a finger down** *(demonstrate)* **and the last number we say is the answer. Ready? 10, 20, 30, 40. Do we get the same answer of 40?** Yes.

Let's solve a few more multiplication problems. *(Solve Problems C–L.)*

Fraction Action



During *Fraction Action* we'll work on fractions. Who can tell me what a fraction is? Student(s) respond.

A fraction is a number that tells us how many parts of a whole. We use fractions to tell us about a part of whole things. Can you give me an example of a fraction? Student(s) respond.

Look at this pizza *(point).* **See the slice missing? I ate it! I ate** $\frac{1}{4}$ **of a pizza** *(write* $\frac{1}{4}$ *in the blank).* **I ate a part of the whole pizza.** $\frac{1}{4}$ **tells me about the size of the slice of pizza that I ate.**

We use whole numbers like 1, 2, 3… to count whole things. Can you give me an example of a whole number? Student(s) respond.

Look at these marbles. We use whole numbers to count each marble. Count with me 1…2…3…4…5…6 marbles.

Let's learn some fraction vocabulary words. A fraction can be part of one whole thing. We call one whole thing a unit. What is the unit? The whole thing.

To make a fraction, the unit must be divided into equal parts. How does the unit need to be divided? Into equal parts.

A fraction tells exactly how many equal parts of the unit we have. Equal parts means that the parts are the same size.

Let's review. What do we call the whole thing? The unit.

To make a fraction, how do we divide the unit? Into equal parts.

To make a fraction, the unit must be divided into equal parts. Equal parts means that each part is the same size.

A

Look at this picture *(point to Problem A).* **The unit is a square** *(trace unit with finger).* **How many parts is this square divided into?** 4.

This square is divided into 4 parts. Are the parts equal? Yes.

The parts are equal. This means each part is the same size. Because the parts are equal, this picture shows us a fraction.

B

This unit *(point to Problem B)* **is also a square** *(trace unit with finger).* **How many parts is the square divided into?** 4.

The square is divided into 4 parts. Are the parts equal? No.

The parts are not the same size. This means they're not equal. Because the parts are not equal, this picture does not show us a fraction. Let's cross it out because it doesn't tell us about a fraction *(demonstrate).*

C-E

Each of these pictures shows a fraction less than 1 *(point to Problems C-E).* **We know**

they're less than 1 because the whole unit isn't shaded *(point to shaded part)*.

C

Listen as I name this fraction *(point to Problem C)*. **This unit is a circle** *(trace unit with finger)*. **The circle is divided into equal parts. I count 1…2…3…4 equal parts. One of these 4 equal parts** *(point)* **is shaded. This fraction is 1 of 4 equal parts** *(write in blanks)*. **I write the fraction like this** *(demonstrate; write 1 [fraction bar] 4 above line)*. **This fraction is** $\frac{1}{4}$.

Let's talk about what the 1 and the 4 mean in $\frac{1}{4}$ *(point to numbers as you say the following)*. **We call the bottom number, 4, the denominator. The denominator tells us how many equal parts the unit** *(trace unit)* **is divided into. What's the bottom number called?** Denominator.

What does the denominator tell us? How many equal parts the unit is divided into.

The unit is divided into 4 equal parts in this fraction *(point)*. **We call the top number the numerator. The numerator tells us the number of equal parts in the fraction. How many equal parts are in this fraction?** 1.

What do we call the top number? Numerator.

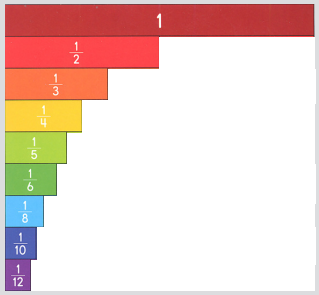
What does the numerator tell us? The number of equal parts in the fraction.

We won't always have a picture when we talk about fractions so you need to think about what the top number means. There's a special name for fractions with 1 in the numerator. We call these fractions unit fractions. We call them unit fractions because the 1 in the numerator tells us we have one part of a unit divided into equal parts. The 1 part tells us about the size of the parts. What does a unit fraction have in the numerator? 1.

D-E

Let's name other unit fractions from pictures. *Use the following guide for Problems D–E:*

- What's the unit?
- Are the parts equal?
- What's the denominator?
- What's the numerator?
- What's the unit fraction?



Display unit fractions under unit from greatest to least from students' perspective and point to fraction tiles.

These 3 fractions are unit fractions. They're unit fractions because they all have 1 in the numerator *(point)*. **These fractions are also all less than 1. All unit fractions are less than 1.**

A fraction is 1 number. The numerator and denominator work together to make 1 number. This is tricky because a fraction looks like 2 numbers (*point*). **But together, the numerator** *(point)* **and the denominator** (*point*) **make a fraction.**

Now look at these tiles with unit fractions *(point)*. **What's the numerator in these fractions?** One.

The numerator in every fraction is 1. When the numerator is 1, the fraction is a unit

fraction. Also, all of these fractions are less than 1 unit *(point to the 1 tile)*. **We know that because all of these fractions are smaller than the 1 unit tile** *(point to the 1 tile)*.

I know right away that these fractions are less than 1, because for each of these fractions *(point along tiles)*, **the number in the numerator is smaller than the number in the denominator.**

Each unit fraction tile is a different amount *(point to the different fractions)*.

The $\frac{1}{2}$ fraction tile shows the size of 1 equal part *(point to numerator)* **when the unit is divided into 2 equal parts** *(point to denominator)*.

The $\frac{1}{3}$ fraction tile shows the size of 1 equal part *(point to numerator)* **when the unit is divided into 3 equal parts** *(point to denominator)*.

What amount does the $\frac{1}{4}$ fraction tile show? The size of 1 equal part when the unit is divided into 4 equal parts.

What amount does the $\frac{a}{b}$ fraction tile show? The size of 1 equal part when the unit is divided into XX equal parts. *(Continue for $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$ and $\frac{1}{12}$.)*

These fractions are lined up from greatest *(point to $\frac{1}{2}$)* **to least** *(point to $\frac{1}{12}$)*. **Look at each unit fraction. Which unit fraction is the smallest?** $\frac{1}{12}$.

Which unit fraction is the biggest? $\frac{1}{2}$.

One-half is the biggest unit fraction. Then, the unit fractions get smaller *(point)*. **One-twelfth is the smallest unit fraction on the table. All unit fractions have 1 in the numerator.**

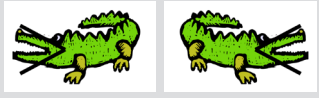
Isolate unit tile, $\frac{1}{2}$, and $\frac{1}{12}$ tile. Move all other tiles to the side to be used later in the lesson.

Let's think about this. Here is the unit, or the whole thing *(point to 1 unit tile)*. **Let's pretend this is a candy bar. You get this much** *(isolate the $\frac{1}{2}$)* **if 2 people each get an equal part of the candy bar** *(point to 2 in the denominator)*. **You get that much** *(isolate the $\frac{1}{12}$)* **if 12 people each get an equal part of the candy bar** *(point to 12 in the denominator)*. **If you want a bigger piece of the candy bar, would you rather share the candy bar between 2 people or among 12 people?** 2 people.

Why would you rather share the candy bar with 2 people? The piece is bigger.

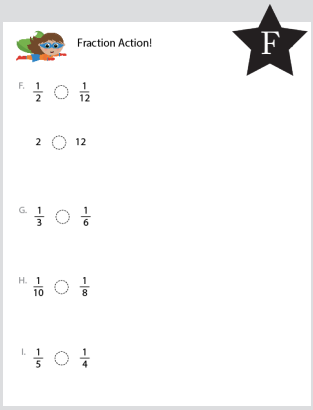
You get a bigger fraction of the candy bar if 2 people share. $\frac{1}{2}$ is bigger than $\frac{1}{12}$. When we divide the unit into more equal parts, the size of each part gets smaller. $\frac{1}{2}$ is greater than $\frac{1}{12}$.

Display both Greater Gator Cards on top of each other.



To compare the magnitude of fractions, we use the less than, equal to, or greater than signs. Look here *(point to less than and greater than Greater Gator Cards)*. **These are the greater than** *(point)* **and less than** *(point)* **signs. An easy way to think about the signs is to pretend the sign is an alligator. Alligators are hungry and want to eat the bigger amount, so their mouths open to the bigger number.**

Let me show you how to read the signs. I always read the sign from left to right, like when I read a sentence. *(Sweep your hand from left to right to demonstrate the direction of reading.)* **This is the greater than sign** *(point to greater than sign)*. **I read it as "greater than" because when I read from left to right, I see the open part first. The bigger number would come first in the number sentence.**



F

This is the less than sign *(point to less than sign)***. I read it as "less than" when I read from left to right because I see the small point first. The smaller number would come first in the number sentence.**

Let's write the greater than or less than sign between fractions. After looking at the fraction tiles, we said $\frac{1}{2}$ is greater than $\frac{1}{12}$ *(write > between fractions)***.**

Why? Because $\frac{1}{12}$ is divided into more equal parts. 1 of 12 equal parts is smaller than 1 of 2 equal parts. I looked at the tiles.

$\frac{1}{12}$ is smaller than $\frac{1}{2}$. That's because $\frac{1}{12}$ is divided into more equal parts, so each equal part is smaller. 1 of 12 equal parts is smaller than 1 of 2 equal parts. The denominator helps us think about the size of the equal parts. Which fraction is the alligator's mouth open to? $\frac{1}{2}$.

When the alligator's mouth is open to the first number, like this *(point)* **it's the greater than sign. When I read the number sentence, I say: "$\frac{1}{2}$ is greater than $\frac{1}{12}$." I read the first fraction** *(point)***, then I read the sign** *(point)***, then I read the second fraction** *(point)***. I read the signs from left to right, like I read a sentence.**

Comparing fractions is different from comparing whole numbers. Let's compare the whole numbers 2 and 12 *(show 2 and 12 on worksheet)***. Which whole number is bigger, 2 or 12?** 12.

So the alligator's mouth opens toward 12 *(write less than sign)***. Read the number sentence.** 2 is less than 12.

You read the first number, then the sign, then the second number. For this *(point)***, I say "less than" because when I read from left to right, I see the small point first.**

You have to think carefully when comparing fractions. You can't just look at the whole number 12 in the denominator and decide 12 is bigger than 2. You have to think about the numerator and the denominator together. The denominator tells us about the size of the parts. Twelfths are smaller than halves.

When you compare 2 unit fractions, think about sharing a candy bar. Think about how big your piece is when you share with more people or fewer people. If you divide a candy bar into more equal parts, the parts get smaller.

G

Let's compare $\frac{1}{3}$ and $\frac{1}{6}$. Which fraction is bigger? $\frac{1}{3}$.

How do you know? A unit divided into 6 parts has smaller pieces; a unit divided into 3 parts has bigger pieces. I looked at the tiles. I'd rather share a candy bar with 3 people than 6 people. *(Prompt students to give all the information contained in this response.)*

The denominator helps us think about the size of the equal parts.

Display $\frac{1}{6}$ and $\frac{1}{3}$ tiles under the one unit bar.

Let's check it with the tiles. How should I put the sign? The open part toward $\frac{1}{3}$.

I read this as "$\frac{1}{3}$ is greater than $\frac{1}{6}$" because the alligator's mouth is open to the first fraction. The alligator's mouth is open to the left. Let's read it together, "$\frac{1}{3}$ is greater than $\frac{1}{6}$."

HH

Use the following guide for Problems H-I:

- Which fraction is bigger?
- How do you know?
- Let's check with the tiles. *(Always line up both fractions underneath the 1 unit bar.)*
- How should I put the sign?
- Let's read it together.

Review the following terms:

Numerator: The number of equal parts in the fraction. Top number.

Denominator: How many equal parts the unit is divided into. Bottom number.

Unit: The whole thing.

Equal Parts: Parts are the same size. Equal parts make a fraction.

Unit Fraction: A fraction less than 1 with a 1 in the numerator.

The numerator and denominator work together to make 1 number.

At the end of each lesson, discuss and record earned $$$ and award prizes if time allows.