

LESSON 16: Concept of Fractions

[OBJECTIVE]

The student will build fraction kits and apply concepts of fractions through equivalency and comparisons.

[PREREQUISITE SKILLS] knowledge of comparing and ordering whole numbers

[MATERIALS]

Student pages **S150 – S158**

Transparencies **T467, T469, T470, T471, and T473**

Fraction strips – Kit 1 and Kit 2

Scissors

Overhead fraction strips

Plastic bag (1 per student)

Colored pencils

[ESSENTIAL QUESTIONS]

1. What is a fraction?
2. How can we compare fractions?
3. How can we identify equivalent fractions?

[WORDS FOR WORD WALL]

numerator, denominator, fractions, halves, fourths, eighths, thirds, sixths, equivalent, legal trade, whole unit

[GROUPING]

Cooperative Pairs (CP), Whole Group (WG), Individual (I)

*For Cooperative Pairs (CP) activities, assign the roles of Partner A and Partner B to students. This allows each student to be responsible for designated tasks within the lesson.

[LEVELS OF TEACHER SUPPORT]

Modeling (M), Guided Practice (GP), Independent Practice (IP)

[MULTIPLE REPRESENTATIONS]

SOLVE, Graphic Organizer, Verbal Description, Pictorial Representation, Concrete Representation

[*NOTE]

This lesson is designed to be taught in 2 days. On Day 1, you will create Kit 1 and will model fractions using Kit 1 from the concrete through the pictorial and on to the abstract. On Day 2, you will create Kit 2 and will model fractions from the concrete through the pictorial and on to the abstract.

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[WARM-UP] (5 minutes – IP, WG, I) S150 (Answers on T466.)

- Have students turn to S150 in their books to begin the Warm-Up. Students will compare and order whole numbers. Monitor students to see if any of them need help during the Warm-Up. Give students 3 minutes to complete the problems and then spend 2 minutes reviewing the answers as a class. **{Verbal Description, Pictorial Representation}**

[HOMEWORK] (5 minutes)

Take time to go over the homework from the previous night.

[LESSON] Day 1: (60 minutes – M, GP, IP, WG, CP) Day 2: (60 minutes – M, GP, IP, WG, CP)

----- **Day 1 Fraction Concepts** -----

SOLVE Problem**(3 minutes – GP, WG) T467, S151 (Answers on T468.)**

Have students turn to S151 in their books, and place T467 on the overhead. The first problem is a SOLVE problem. You are only going to complete the S step with students at this point. Tell students that during the lesson they will learn how to identify equivalent fractions. They will use this knowledge to complete this SOLVE problem at the end of the lesson. **{SOLVE, Graphic Organizer}**

Fractions**(8 minutes – M, GP, WG, CP) T467, S151 (Answers on T468.)**

8 minutes – M, GP, WG, CP: Have students turn to page S151, and place T467 on the overhead. Assign the roles of Partner A and Partner B. Use the following activity to introduce fractions. **{Graphic Organizer, Verbal Description, Pictorial Representation}**

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MODELING

Fractions

Step 1: Ask students what $\frac{1}{2}$ is? (**fraction**)

- Partner A, identify the top number in the fraction. (1)
- Partner B, identify the bottom number in the fraction. (2)
- What is the top number in any fraction called? (**numerator**) Record the term numerator by the 1 in the fraction.
- What is the bottom number in any fraction called? (**denominator**) Record the term denominator by the 2 in the fraction.
- Ask students what the fraction $\frac{1}{2}$ means. (one half of a whole) Record on the graphic organizer.

Step 2: Direct students' attention to the circle.

- How many parts are in the circle? (2) Record.
- How many parts are shaded? (1) Record.
- If $\frac{1}{2}$ of the fraction is shaded, what term can we use to describe the 2? (denominator) the 1? (numerator)
- Have Partner A and Partner B discuss a possible definition for denominator. (the number of parts in the whole)

Have students share their definitions and record the definition on S151.

- Have Partner A and Partner B discuss a possible definition for the numerator. (the number of parts that are counted)

Have students share their definitions and record the definition on S151.

Fraction Kit 1

(22 minutes – WG, M, GP)

22 minutes – M, GP, WG:

Use the following activity to help students create Fraction Kit 1. Have students clear their desks.
{Concrete Representation, Verbal Description}

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MODELING

Fraction Kit 1

Step 1: Pass out a blue fraction strip to each student. Explain to students that this strip will represent one **whole unit**.

- Have students label this strip "1 Whole Unit".
- Ask students, "What does this blue strip represent?" (one whole unit)
- Have students lay the strip near the top edge of their desks.

*Teacher Note - You may want to wear the unit by attaching it to your clothes with a paper clip, as you will be comparing the other strips to it throughout the lesson.

Step 2: Pass out a brown fraction strip to each student.

- Say, "Tell me something about this brown strip." (Students may give the color, shape, or size, but should focus on the idea that it is the same size as the blue strip.)
- Tell students that the brown strip is **equivalent** to 1 whole unit. (You may want to hold the brown unit up next to the blue unit to show this to students.)
- Model for students how to fold the brown strip end-to-end to form two equal parts.
- Ask students to describe the folded brown strip to their partners. (Students may give color, shape, or size.)

Explain to students that the folded strip is one-half of the blue strip.

- Ask students how they might prove that the folded strip is one-half of the whole unit. (Possible answers include: laying it next to the whole strip, putting it together with their partner's one-half and seeing that the two together equal one whole.)
- Have students unfold the brown strips and write " $\frac{1}{2}$ unit" on each of the **halves**.
- Tell students to cut the brown strip carefully on the fold.
- Ask students how many one-half units are equivalent to the one whole unit? (2)
- Have students lay the two one-half units below the blue one whole strip on their desks.

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Step 3: Pass out a yellow fraction strip to each student.

- Say, “Tell me something about this yellow strip.” (Students may give the color, shape, or size, but should focus on the idea that it is the same size as the blue strip.)
- Tell students that the yellow strip is equivalent to 1 whole unit. (You may want to hold the yellow unit next to the blue unit to show the equivalency to students.)
- Model for students how to fold the yellow strip end-to-end to form two equal parts.
- Have the students look at the fraction strips on their desks and ask students to describe the folded yellow strip to their partners. (Students may give color, shape, or size.)

Explain to students that the folded strip is now one-half of the blue strip.

- Ask students to keep the yellow strip folded and carefully fold it a second time - end to end. Have students lay the folded strip down below the one-half unit (brown) and the one whole unit strip (blue).
- Have students describe the yellow strip in relation to the other two strips.
- Explain to students that it takes 4 of the yellow strips to cover the unit strip. This means that the yellow strip is one-fourth of the whole unit.
- Ask students how they might prove that the folded strip is one-fourth of the whole unit? (Possible answers include: laying it next to the whole strip.)
- Have students unfold the yellow strip and write “ $\frac{1}{4}$ unit” on each of the **fourths**.
- Tell students to cut the yellow strip carefully on the folds.
- Ask students how many one-fourth units are equivalent to the one whole unit. (4)
- Have students lay the four one-fourth units below the brown one-half units on their desks.

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Step 4: Pass out a red fraction strip to each student.

- Say, “Tell me something about this red strip.” (Students may give the color, shape, or size, but should focus on the idea that it is the same size as the blue strip.)
- Tell students that the red is equivalent to 1 whole unit. (You may want to hold the red unit up next to the blue unit to show the equivalency to students.)
- Model for students how to fold the red strip end-to-end to form two equal parts.
- Have the students look at the fraction strips on their desks and ask students to describe the folded red strip to their partner. (Students may give color, shape, or size.)

Explain to students that the folded strip is now one-half of the blue strip.

- Ask students to keep the red strip folded and carefully fold it a second time - end to end.
- Ask students to describe the red strip. (It is now the same size as the yellow strip.)
- Ask students to carefully fold the red strip one last time end-to-end. Have students lay the folded red strip down below the yellow, brown and the one whole unit strips (blue).
- Have students describe the red strip in relation to the other three strips.
- Stress to students that it takes 8 of the red strips to cover the unit strip.

This means that the red strip is one-eighth of the whole unit.

- Ask students how they might prove that the folded strip is one-eighth of the whole unit. (Possible answers include: laying it next to the whole strip.)
- Have students unfold the red strip and write “ $\frac{1}{8}$ unit” on each of the **eighths**.
- Tell students to cut the red strip carefully on the folds.
- Ask students how many one-eighth units are equivalent to the one whole unit. (8)
- Have students lay the red one-eighth units below the yellow one-fourth units on their desks.

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Fraction Kit 1 Legal Trades

(15 minutes – WG, M, GP, CP)

5 minutes – M, GP, WG, CP: Use the following activity to model legal trades with Kit 1. Teachers will use overhead fraction kits, and students will use the fraction strips on their desks. Determine Partner A and Partner B for this activity. {Concrete Representation, Verbal Description}

MODELING

Fraction Kit 1 Legal Trades

Step 1: Use your overhead fraction strips. Line up the fraction strips with the unit strip (blue) at the top, the one-half strips (brown) below blue, the one-fourth strips (yellow) below brown, and the one-eighth strips (red) below yellow, as students set up the fraction kit on their desks.

1 whole unit							
$\frac{1}{2}$ unit				$\frac{1}{2}$ unit			
$\frac{1}{4}$ unit		$\frac{1}{4}$ unit		$\frac{1}{4}$ unit		$\frac{1}{4}$ unit	
$\frac{1}{8}$ unit	$\frac{1}{8}$ unit	$\frac{1}{8}$ unit	$\frac{1}{8}$ unit	$\frac{1}{8}$ unit	$\frac{1}{8}$ unit	$\frac{1}{8}$ unit	$\frac{1}{8}$ unit

Step 2: Tell students that they are going to make legal trades of fraction strips with their partners. Explain that to make a **legal trade**, the strip or strips that are traded must be the same length. As an example, model on the overhead how trading a 1-unit strip for two one-half strips would be a legal trade because, together, two one-half strips have the same length as one 1-unit strip. Ask students to talk with their partners about what they might legally trade for a one-half strip (two one-fourth strips). Tell students that they can check to see if a trade is legal by putting one trade above the other. Show them how to do this by using the proper vocabulary:

- “You give your partner a one-half strip. What can your partner trade that is equal to this?”
- “A legal trade is two one-fourth strips. This is a legal trade because a one-half strip equals two one-fourth strips.”

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7 minutes – IP, CP:

Have students work in partners to practice legal trading, with partners taking turns offering legal trades. Make sure students understand that they must “undo” one legal trade before making another. **{Verbal Description, Concrete Representation}**

3 minutes – WG:

As a class, have students discuss the legal trades they were able to make. Make sure students justify their answers by showing the trades and talking about the fractional units. **{Verbal Description, Concrete Representation}**

Examples of legal trades are shown below:

$$\frac{1}{2} \text{ and } \frac{1}{4} = \frac{3}{4}$$

$$\text{one unit and } \frac{1}{4} = \frac{1}{2} \text{ and } \frac{1}{2} \text{ and } \frac{1}{4}$$

$$\text{four red} = \text{one brown, or } \frac{4}{8} = \frac{1}{2}$$

$$\text{two yellow} = \text{four red, or } \frac{2}{4} = \frac{4}{8}$$

$$\text{one blue} = \text{eight red, or } 1 \text{ unit} = \frac{8}{8}$$

$$\text{one blue} = 4 \text{ yellow, or } 1 \text{ unit} = \frac{4}{4}$$

$$\text{one brown} = \text{one yellow and two red, or } \frac{1}{2} = \frac{1}{4} \text{ and } \frac{2}{8}$$

$$\text{one brown and two red} = \text{two yellow and two red, or } \frac{1}{2} \text{ and } \frac{2}{8} = \frac{2}{4} \text{ and } \frac{2}{8}$$

Recording Legal Trades - Kit 1

(12 minutes – M, GP, IP, CP, WG) T467, T469, S151, S152 (Answer on T468.)

5 minutes – M, GP, WG:

Have students organize all of the fraction parts from Kit 1 on their desks so that they are ready to practice legal trades and record the information. Have students turn to S151 in their books, and place T468 on the overhead. Use the following activity to model for students how to record legal trades. **{Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer}**

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MODELING

Recording Legal Trades – Kit 1

Step 1: Tell students that you have one one-half strip, or $\frac{1}{2}$, and you want to legally trade it for two one-fourth strips.

Step 2: Model for students how to draw a picture of the one-half strip in the I GAVE box and a picture of the two one-fourth strips in the PARTNER GAVE ME BACK box on T467 (S151). Have students write $\frac{1}{2}$ under the picture of the one-half strip and $\frac{1}{4} + \frac{1}{4}$ under the picture of the two one-fourth strips.

- Ask students what color to shade the $\frac{1}{2}$ unit. (brown)
- Ask students what color to shade the $\frac{1}{4}$ unit. (yellow)

Step 3: Have students write an equal sign (=) between $\frac{1}{2}$ and $\frac{1}{4} + \frac{1}{4}$ (or $\frac{1}{2} = \frac{2}{4}$) to show that the trade is legal. Explain to students that when they use the equal sign to show legal trades, they are showing equivalent fractional parts.

5 minutes – IP, CP: Have students complete S152 in partners. Have students record the legal trades they make, using colored pencils to shade the fraction strips in the appropriate color, in the remaining boxes on that page. {Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer}

2 minutes – WG: As a class, have students discuss the legal trades they were able to make. Make sure students justify their answers by showing the trades and talking about the fractional units. {Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer}

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----- Day 2 Fraction Concepts -----

Fraction Kit 2

(15 minutes – WG, M, GP)

15 minutes – M, GP, WG:

Use the following activity to help students create Fraction Kit 2. Have students clear their desks. Determine Partner A and Partner B for this activity. {Concrete Representation, Verbal Description}

MODELING

Fraction Kit 2

Step 1: Have students keep out the blue strip from Kit 1 and place it near the top of their desks.

- Ask students what the blue strip represents. (1 whole unit)

Step 2: Pass out a green fraction strip to each student.

- Say, "Tell me something about this green strip." (Students may give the color, shape, or size, but should focus on the idea that it is the same size as the blue strip.)
- Ask students, "How many sections is the green strip divided into?" (3)
- Have students place the green strip below the blue strip so that they can clearly see that it takes three-thirds to equal 1 whole unit.
- Have students write " $\frac{1}{3}$ unit" on each of the **thirds**.
- Have students cut the green strip on the dotted lines.
- Ask students how many one-third units are equivalent to the one whole unit. (3)
- Have students lay the three one-third units below the blue one whole strip on their desks.

Step 3: Pass out an orange fraction strip to each student.

- Say, "Tell me something about this orange strip." (Students may give the color, shape, or size, but should focus on the idea that it is the same size as the blue strip.)
- Have students place this strip beneath the one-third strips.
- What do you notice about this fraction strip when compared to the one-third (green) strips? (It takes 2 orange strips to make each green strip.)

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- How many parts make up the orange strip? (6)
- What is each section of the orange strip called? (one-sixth)
- Have students write " $\frac{1}{6}$ unit" on each of the **sixths**.
- Have students cut the orange strip on the dotted lines.
- Ask students how many one-sixth units are equivalent to the one whole unit? (6)
- Have students lay the six one-sixth units below the green one-third units on their desks.

Fraction Kit 2 Legal Trades**(10 minutes – WG, M, GP, CP)**

10 minutes – M, GP, WG, CP: Use the following activity to model legal trades with Kit 2. Teachers will use overhead fraction kits, and students will use the fraction strips on their desks. Determine Partner A and Partner B for this activity. {**Concrete Representation, Verbal Description**}

MODELING**Fraction Kit 2 Legal Trades**

Step 1: Tell students that they are going to make more legal trades of fraction strips with their partners using their new fraction strips. Remind students that to make a legal trade, the strip or strips that are traded must be the same length. As an example, model on the overhead how trading a 1-unit strip for three one-third strips would be a legal trade because together three one-third strips have the same length as one 1-unit strip. Ask students to talk with their partners about what they might legally trade for a one-third strip (one one-third, two one-sixths, and so on). Tell students that they can check to see if a trade is legal by putting one strip above the other. Show students how to do this by using the proper vocabulary:

- "You give your partner a one-third strip. What can your partner trade that is equal to this?"
- "A legal trade is two one-sixth strips. That is a legal trade because a one-third strip equals two one-sixth strips."

Encourage students to find as many legal trades as possible.

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Recording Legal Trades - Kit 2 (10 minutes – M, GP, IP, WG, CP) T470, S153

3 minutes – M, GP, WG: Have students organize all of the fraction strips from Kit 2 on their desks so that they are ready to make some legal trades and record the information. Have students turn to S153 in their books, and place T470 on the overhead. Use the following activity to model for students how to record legal trades. {Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer}

MODELING**Recording Legal Trades – Kit 2**

Step 1: Tell students that you will be showing them how to record a model for legal trades. For this example, the teacher will have the role of “I Gave”, and the students will have the role of “Partner Gave Me Back”.

Step 2: Place the one-third overhead fraction strip on the overhead and have students place a one-third strip in their work area.

- What color is the one-third strip? (green)
- Have students draw a picture of the one-third strip in the first “I Gave” box on S153, T470 and shade it green.
- Have students write the fraction $\frac{1}{3}$ in the square below the model.
- Ask students how they could use their sixths to make a legal trade.
- Have partners move the sixth strips to model the legal trade.

Step 3: Check the concrete model that students have in their work areas.

- How many sixths are a legal trade for one-third? (two sixths or two orange)
- Have students draw the two one-sixth units in the “Partner Gave Me Back” box and shade them orange.
- Have students write the fraction $\frac{1}{6} + \frac{1}{6}$ (or $\frac{2}{6}$) in the square below the model.

Step 4: Ask students what the sign (=) represents? (that two things are equal or the same)

- Have students write an equal sign (=) between $\frac{1}{3}$ and $\frac{2}{6}$ to show that the trade is legal. Explain to students that when they use the equal sign to show legal trades, they are showing equivalent fractions.

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5 minutes – IP, CP: Have students complete S153 in partners. Have students record 2 more legal trades in the boxes on that page. **{Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer}**

2 minutes – WG: As a class, have students discuss the legal trades they were able to make. Make sure students justify their answers by showing the trades and talking about the fractional units. **{Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer}**

Legal Trades with Kits 1 and 2

(8 minutes – M, GP, IP, WG, CP)
T471, S154

3 minutes – M, GP, WG: Use the following activity to help students record legal trades using the two kits. **{Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer}**

MODELING**Legal Trades with Kits 1 and 2**

Step 1: Have students take out both fraction kits. Model how to make the following legal trades, showing equivalency. Use the overhead fraction strips to model.

Step 2: Model the following legal trades.

$$\frac{1}{2} = \frac{4}{8} \qquad \frac{1}{2} = \frac{1}{6} + \frac{1}{3} \qquad \frac{1}{2} = \frac{3}{6} \qquad \frac{1}{2} = \frac{1}{4} + \frac{2}{8}$$

Model, similar to the following example for $\frac{1}{2} = \frac{4}{8}$:

Put $\frac{1}{2}$ on the overhead, using the overhead fraction strips. Ask the following questions:

- “Have many halves do I have?” (1)
- “How many eighths will equal $\frac{1}{2}$?” (4) Put them on the overhead.
- “How many eighths are equivalent to $\frac{1}{2}$?” (4)
- “What can you tell me about $\frac{1}{2}$ and $\frac{4}{8}$?” ($\frac{1}{2} = \frac{4}{8}$, and $\frac{1}{2}$ is equivalent to $\frac{4}{8}$)

Tell students that when they use the equal sign to show the legal trades, they are showing equivalent fractions.

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3 minutes – IP, CP:

Have students complete the legal trades on S154 with a partner and record by drawing and listing their legal trades. {**Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer**}

2 minutes – WG:

As a class, have students discuss the legal trades they were able to make. Make sure students justify their answers by showing the trades and talking about the fractional units. {**Verbal Description, Concrete Representation, Pictorial Representation, Graphic Organizer**}

Working with Equivalent Fractions

(10 minutes – WG, M, IP, GP, CP)
S155 (Answers on T472.)

3 minutes – M, CP, WG, GP: Use the overhead fraction kit to model and review the concept of equivalency with students. Students will need Fraction Kit 1 and Kit 2. Assign the roles of Partner A and Partner B. {**Concrete Representation, Pictorial Representation, Graphic Organizer, Verbal Description**}

MODELING**Working With Equivalent Fractions**

Step 1: Place the $\frac{1}{3}$ fraction strip on the overhead.

- Have Partner A place a $\frac{1}{3}$ fraction strip in the work area.
- Place two $\frac{1}{6}$ fraction strips on the overhead below the $\frac{1}{3}$.
- Have Partner B place two $\frac{1}{6}$ fraction strips below the $\frac{1}{3}$.
- Ask Partner A if these two fractions are equivalent. (Yes.)
- Have Partner B explain why they are equivalent. (They show the same amount.)

Step 2: Place the $\frac{1}{2}$ fraction strip on the overhead.

- Have Partner A place a $\frac{1}{2}$ fraction strip in the work area.
- Place two $\frac{1}{3}$ fraction strips on the overhead below the $\frac{1}{2}$.
- Have Partner B place two $\frac{1}{3}$ fraction strips below the $\frac{1}{2}$.
- Ask Partner B if these two fractions are equivalent. (No.)
- Have Partner A explain why they are not equivalent. (They do not show the same amount.)

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5 minutes – CP, IP: Have students work in partners to complete the 12 problems on S155. Students can use their fraction strips and draw a pictorial representation for each problem. {Concrete Representation, Pictorial Representation, Graphic Organizer, Verbal Description}

2 minutes – WG: Go over the problems on S155. Make sure students can justify their answers for equivalency. {Concrete Representation, Pictorial Representation, Graphic Organizer, Verbal Description}

SOLVE Problem (5 minutes – GP, WG) T473, S156 (Answers on T474.)

Remind students that the SOLVE problem is the same one from the beginning of the lesson. Complete the SOLVE problem with your students. Ask them for possible connections from the SOLVE problem to the lesson. (The solve problem relates to fraction equivalency.) {SOLVE, Verbal Description, Pictorial Representation, Graphic Organizer}

If time permits... (10 minutes – IP, CP) S157 (Answers on T475.)

Have students complete page S157 using both fraction kits.

[CLOSURE] (2 minutes)

To wrap up the lesson, go back to the essential questions and discuss them with students.

- What is a fraction? (*a part of a whole number*)
- How can we compare fractions? (*use fraction strips and pictures to compare*)
- How can we identify equivalent fractions? (*use fraction strips and pictures to make legal trades*)

[HOMEWORK] Assign S158 for homework. (Answers on T476.)

[QUIZ ANSWERS] T477–T478

1. **C** 2. **B** 3. **B** 4. **C** 5. **C** 6. **C** 7. **D** 8. **D** 9. **B** 10. **B**

The quiz can be used at any time as extra homework or to assess how students progress on understanding fractions and equivalent fractions.

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Here is the key to **S150**.

Warm-Up

Directions: Use the number line below to help you answer the questions.**1.** What number is located at Point A? **450****2.** Put the following numbers in order from least to greatest:

405	504	450	540
405	450	504	540

3. What number is located at Point S? **300****4.** Put the following numbers in order from greatest to least.

350	530	325	475
530	475	350	325

5. Compare the numbers by using the symbols $>$, $<$, or $=$.

357	$<$	375	525	$>$	255	425	$>$	395
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6. What number is located at the point between S and 400? **350**

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TRANSPARENCY MASTER for S151

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Elise is helping her grandmother plant a garden. They plant $\frac{1}{2}$ of the garden with tomato plants and $\frac{1}{3}$ of the garden with lettuce. Which vegetable takes up more space in the garden?

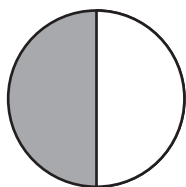
S Underline the question.

This problem is asking me to find _____
_____.

Directions: Complete this page with your teacher and partner.

$$\frac{\quad}{\quad} \quad \frac{1}{2} \quad \frac{\quad}{\quad}$$

What does the fraction $\frac{1}{2}$ mean? _____



The circle is divided into _____ equal parts.

How many parts are shaded? _____

The denominator tells _____

The numerator tells _____

Legal Trades for Kit 1

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

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Here is the key to **S151**.

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Elise is helping her grandmother plant a garden. They plant $\frac{1}{2}$ of the garden with tomato plants and $\frac{1}{3}$ of the garden with lettuce. Which vegetable takes up more space in the garden?

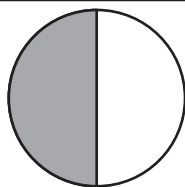
S Underline the question.

This problem is asking me to find **the vegetable that takes up more space in the garden.**

Directions: Complete this page with your teacher and partner.

Numerator $\frac{1}{2}$ Denominator

What does the fraction $\frac{1}{2}$ mean? **One-half of a whole**



The circle is divided into **2** equal parts.

How many parts are shaded? **1**

The denominator tells **the number of parts in the whole.**

The numerator tells **the number of parts that are counted.**

Legal Trades for Kit 1

I GAVE Picture $\frac{1}{2}$ unit Fraction $\frac{1}{2}$	PARTNER GAVE ME BACK Picture $\frac{1}{4}$ unit $\frac{1}{4}$ unit Fraction $\frac{1}{4} + \frac{1}{4}$
$\frac{1}{2} = \frac{1}{4} + \frac{1}{4}$	

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TRANSPARENCY MASTER for S152

Legal Trades for Kit 1

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

LESSON 16: Concept of Fractions

TRANSPARENCY MASTER for S153

Legal Trades for Kit 2

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

LESSON 16: Concept of Fractions

TRANSPARENCY MASTER for S154

Legal Trades for Kits 1 and 2

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

I GAVE Picture	PARTNER GAVE ME BACK Picture
Fraction	Fraction
=	

LESSON 16: Concept of Fractions

Here is the key to **S155**.

Equivalent Fractions

Which of the following are equivalent? Draw fraction strips to help you solve.

$\frac{1}{2} = \frac{2}{4}$	$\frac{2}{3} = \frac{3}{4}$	$\frac{2}{8} = \frac{1}{3}$
Equivalent? yes	Equivalent? no	Equivalent? no
$\frac{6}{8} = \frac{3}{4}$	$\frac{1}{2} = \frac{3}{6}$	$\frac{3}{8} = \frac{1}{4}$
Equivalent? yes	Equivalent? yes	Equivalent? no

Draw equivalent fractions for each of the following.

$\frac{4}{8} =$	$\frac{2}{6} =$	$\frac{2}{3} =$
Answers may vary.	Answers may vary.	Answers may vary.
$\frac{2}{8} =$	$\frac{6}{8} =$	$\frac{1}{2} =$
Answers may vary.	Answers may vary.	Answers may vary.

LESSON 16: Concept of Fractions

TRANSPARENCY MASTER for S156

Directions: Complete the following SOLVE problem with your teacher.

Elise is helping her grandmother plant a garden. They plant $\frac{1}{2}$ of the garden with tomato plants and $\frac{1}{3}$ of the garden with lettuce. Which vegetable takes up more space in the garden?

S Underline the question.

This problem is asking me to find _____
_____.

O Identify the facts.

Eliminate the unnecessary facts.

List the necessary facts.

L Choose an operation or operations.

Write in words what your plan of action will be.

V Estimate your answer.

Carry out your plan.

E Does your answer make sense? (Compare your answer to the question.)

Is your answer reasonable? (Compare your answer to the estimate.)

Is your answer accurate? (Check your work.)

Write your answer in a complete sentence.

LESSON 16: Concept of Fractions

Here is the key to **S156**.

Directions: Complete the following SOLVE problem with your teacher.

~~Elise is helping her grandmother plant a garden.~~ | They plant $\frac{1}{2}$ of the garden with tomato plants | and $\frac{1}{3}$ of the garden with lettuce. | Which vegetable takes up more space in the garden?

S Underline the question.

This problem is asking me to find **the vegetable that takes up more space in the garden.**

O Identify the facts.

Eliminate the unnecessary facts.

List the necessary facts. **Tomato plants $\frac{1}{2}$ of the garden,**
lettuce plants $\frac{1}{3}$ of the garden

L Choose an operation or operations. **N/A**

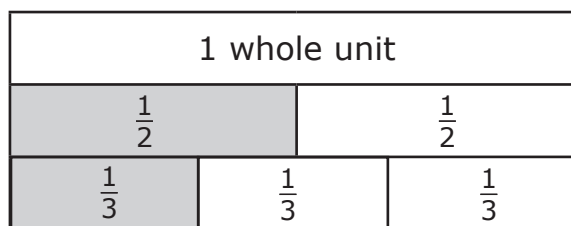
Write in words what your plan of action will be. **Draw a picture of each of the fractional parts and determine which is larger.**

V Estimate your answer. **Tomato**

Carry out your plan.

Tomato

Lettuce



The tomato plants takes up more space.

E Does your answer make sense? (Compare your answer to the question.) **Yes, because we are looking for which vegetable takes up more space.**

Is your answer reasonable? (Compare your answer to the estimate.) **Yes, because it matches our estimate of tomato plants.**

Is your answer accurate? (Check your work.) **Yes.**

Write your answer in a complete sentence. **The tomato plants take up more space in the garden.**

LESSON 16: Concept of Fractions

Here is the key to **S157**.

Directions: Work with a partner and record legal trades below. Find as many as you can in the time your teacher allows.

I GAVE Picture Answers will vary.	PARTNER GAVE ME BACK Picture Answers will vary.
Fraction	Fraction
=	

Which of the following fractions are equivalent? Use fraction strips and draw pictures to help you solve.

$\frac{4}{8} = \frac{3}{6}$	$\frac{5}{6} = \frac{2}{3}$	$\frac{4}{8} = \frac{2}{4}$
Equivalent? yes	Equivalent? no	Equivalent? yes

Draw equivalent fractions for each of the following.

$\frac{1}{3} =$	$\frac{2}{4} =$	$\frac{4}{6} =$
Answers may vary.	Answers may vary.	Answers may vary.

LESSON 16: Concept of Fractions

Here is the key to **S158**.**Homework**.....
Name _____ **Date** _____**Directions:** Answer the following questions.

Which of the following are equivalent? Draw fraction strips to help you solve.

$\frac{1}{2} = \frac{6}{8}$	$\frac{3}{4} = \frac{2}{3}$
Equivalent? no	Equivalent? no
$\frac{2}{8} = \frac{1}{4}$	$\frac{2}{4} = \frac{1}{3}$
Equivalent? yes	Equivalent? no

Draw equivalent fractions for each of the following.

$\frac{1}{3} =$	$\frac{2}{4} =$
Answers may vary.	Answers may vary.
$\frac{4}{6} =$	$\frac{3}{3} =$
Answers may vary.	Answers may vary.

LESSON 16: Concept of Fractions

Name _____

Date _____

Quiz

Draw pictures to help you solve.

1. $\frac{4}{8}$ is equivalent to

- A. $\frac{1}{4}$
- B. $\frac{1}{3}$
- C. $\frac{1}{2}$
- D. $\frac{3}{4}$

2. $\frac{2}{3}$ is equivalent to

- A. $\frac{1}{2}$
- B. $\frac{4}{6}$
- C. $\frac{3}{4}$
- D. $\frac{6}{6}$

3. $\frac{1}{3}$ is equivalent to

- A. $\frac{1}{4}$
- B. $\frac{2}{6}$
- C. $\frac{1}{2}$
- D. $\frac{3}{6}$

4. $\frac{2}{2}$ is equivalent to

- A. $\frac{1}{3}$
- B. $\frac{2}{3}$
- C. $\frac{6}{6}$
- D. $\frac{6}{8}$

5. $\frac{2}{4}$ is equivalent to

- A. $\frac{2}{6}$
- B. $\frac{1}{3}$
- C. $\frac{1}{2}$
- D. $\frac{3}{4}$

6. $\frac{6}{8}$ is equivalent to

- A. $\frac{1}{2}$
- B. $\frac{2}{3}$
- C. $\frac{3}{4}$
- D. $\frac{2}{2}$

LESSON 16: Concept of Fractions

7. $\frac{5}{6}$ is equivalent to

A. $\frac{1}{2}$

B. $\frac{2}{3} + \frac{3}{3}$

C. $\frac{3}{6} + \frac{1}{6}$

D. $\frac{3}{6} + \frac{2}{6}$

8. $\frac{3}{4}$ is equivalent to

A. $\frac{1}{4} + \frac{1}{6}$

B. $\frac{1}{4} + \frac{2}{8}$

C. $\frac{1}{4} + \frac{1}{4}$

D. $\frac{1}{2} + \frac{1}{4}$

9. $\frac{4}{6}$ is equivalent to

A. $\frac{1}{3}$

B. $\frac{1}{3} + \frac{1}{3}$

C. $\frac{2}{3} + \frac{1}{3}$

D. $\frac{6}{6}$

10. $\frac{7}{8}$ is equivalent to

A. $\frac{1}{2} + \frac{1}{4}$

B. $\frac{3}{4} + \frac{1}{8}$

C. $\frac{3}{4} + \frac{1}{4}$

D. $\frac{4}{4}$
