

ASSESSMENT RESOURCES

# Understanding Equivalent Fractions



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# Pre-Test/Post-Test Administration

## test administration

For the pre-test, let students know that this test will help you determine what they already know. Explain that the module will help them learn how to solve problems that seem difficult now.

For the post-test, remind students that this test will help you determine what they have learned about understanding equivalent fractions.

### Online Testing

Once your testing window has started, you can begin testing.

- Seat students individually in front of a computer.
- Give each student a piece of scratch paper.
- Make sure that students have pencils.
- Have students use their access codes to log in to the pre-test.
- Before each student begins the test, confirm that he or she is taking the correct test.

Tell students that:

- Each question will be displayed on the computer screen. Students should select the answer they think is best by clicking on the option choice and then clicking to confirm the choice.
- After students answer a question, the next question will appear on the computer screen.
- Students may choose to skip a question and flag it to come back to before ending the test.

During the test:

- Observe students as they work to make sure that they are actively engaged in the testing process.
- Support any students who seem to find the material challenging. Encourage them to make a good estimate for any problem they find difficult. You may wish to provide manipulatives.

Once students have answered all the questions, they should follow the online prompts to conclude the test.

 After the pre-test if some students finish early, pair each of them with another student. Give each student a Student Book. Tell the students to read the instructions on page 1 of the Student Book and start working.



### english language learners

Be aware that some English language learners (ELLs) may have difficulty with the language on the test. Make note of any students who appear to be having difficulty with vocabulary. These students may need additional help when new terminology is introduced in the module.



### Paper-and-Pencil Test

- Print copies of the test and answer sheets for each student from ARO.
- Seat students individually.
- Distribute tests, answer sheets, and scratch paper.
- Make sure that students have #2 pencils.
- Instruct students to fill in the answers on their answer sheets.

During the test:

- Observe students as they work to make sure that they are actively engaged in the testing process.
- Support any students who seem to find the material challenging. Encourage them to make a good estimate for any problem they find difficult. You may wish to provide manipulatives.

After students finish, collect their tests, answer sheets, and scratch paper. You will need to upload students' answers to the ARO system so you can analyze the results.



After the pre-test if some students finish early, pair each of them with another student. Give each student a Student Book. Tell the students to read the instructions on page 1 of the Student Book and start working.



### analyzing results

Irrespective of the method (online or paper-and-pencil) that you chose to administer the test, your students must be enrolled in the ARO system in order for you to obtain computer-generated reports.

These reports:

- Offer rich, instructionally-relevant information to teachers and administrators at the individual student, class, grade, school, and district levels.
- Include total test score performance information and item-level analysis for each student and for all students combined.
- Are important references in helping you to assess the misconceptions your students are struggling with and decide what concepts to focus on during the module.

For results:

- **Online Testing:** ARO will automatically generate performance reports.
- **Paper-and-Pencil Test:** Upload students' data to ARO. Once you have uploaded the data, ARO will generate performance reports.

Additional information about the online test reporting can be found on ARO.

Remember to give a copy of the reports to the students' regular mathematics teachers to help them in planning subsequent instruction.

### reflection

 When students have finished working on their pre- or post-tests, ask them to open the Student Book to page 1 for the pre-test and page 68 for the post-test and write a response to the reflection prompt.



#### **english language learners**

It is important to point out to ELLs the progress they have made over the course of the module. Help them look back to where they were when they started so they can see how much they have progressed with both the language and the mathematics.

# Checkpoint 1

# 7



## preparation

- Make a copy of the Checkpoint 1 lesson and answer sheet for each student.
- Seat students individually and distribute the checkpoint lesson and the answer sheet to each student.
- Ask students to put their names on their answer sheets.



## setting the direction

This lesson is the first checkpoint lesson of the module. Tell students that today's lesson is a checkpoint lesson; it will help them see how well they understand the concepts they have recently learned.

Tell students to read the checkpoint problems to themselves. They should complete the problems by doing the work and circling or writing the answers in the checkpoint lesson. Then they should fill in the answers on the answer sheet.

At the end of the lesson, collect the completed answer sheets. Enter the data from each checkpoint into ARO. Open-ended questions should be included in the summation and entered either as correct or incorrect. The report generated by ARO will help you assess whether students are on track and making sufficient progress.



## checkpoint



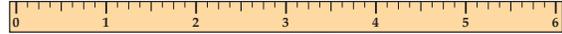
Give students 6–10 minutes to complete the problems.

Tell students to complete problems 1–4. Ask students to be sure they have circled their answers in their checkpoint lessons before you collect the answer sheets.

### checkpoint

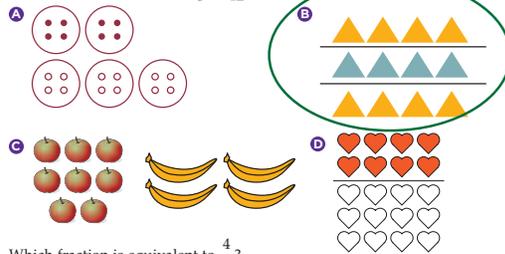
Solve each problem below. Write or circle your answer on the answer sheet. Circle or write each answer in the checkpoint lesson, too.

1. Circle the answer that names a fraction equivalent to  $\frac{7}{4}$ . Use the ruler below to help.



- A  $\frac{11}{8}$       B  $\frac{4}{7}$       C  $\frac{14}{8}$       D  $\frac{3}{2}$

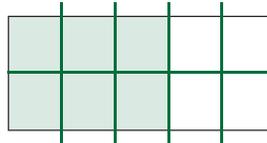
2. Which diagram shows that  $\frac{2}{3} = \frac{8}{12}$ ?



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

- A  $\frac{6}{10}$       B  $\frac{2}{1}$       C  $\frac{2}{4}$       D  $\frac{8}{4}$

4. Use this rectangle to show that  $\frac{6}{10} = \frac{3}{5}$



## learning from the checkpoint

 Explain to the group that when students choose the wrong answer, it is usually because they have a misconception or have made a common mistake. Ask students to write a sentence or two explaining the misconception or mistake that makes the answer a common wrong answer.

### Learning from Problem 1

The correct answer is **C**.

Students can locate the fractions  $\frac{28}{16}$  and  $\frac{14}{8}$  on the ruler and see that they are positioned in the same location as  $\frac{7}{4}$ .

#### learning from the checkpoint

##### Problem 1

The correct answer to problem 1 is **C**.  
What error would cause a student to choose answer **A**?

*A student might choose A if he thinks that you generate equivalent fractions by adding the same amount to both the numerator and the denominator.*

Assessment Resources, page 12



Answer choice **A**:

Possible misconception: A student might choose **A** if he thinks that you generate equivalent fractions by adding the same amount to both the numerator and the denominator.

### Learning from Problem 2

The correct answer is **B**.

Looking at the array, you can see that 2 out of every 3 items are shaded and that 8 of the 12 items are shaded.

##### Problem 2

The correct answer to problem 2 is **B**.  
What error would cause a student to choose answer **D**?

*A student might choose D if she thinks that fractions are part to part instead of part to whole or if she looks at the array and sees 2 over 3 (interprets the representation as the symbolic form of the fraction).*

Assessment Resources, page 12



Answer choice **D**:

Possible misconception: A student might choose **D** if she thinks that fractions are part to part instead of part to whole or if she looks at the array and sees 2 over 3 (interprets the representation as the symbolic form of the fraction.)

## Learning from Problem 3

The correct answer is **C**.

Students can draw a visual representation or use a ruler to reason about this problem.

They might also just know that any fraction

where the numerator is half of the denominator is equivalent to  $\frac{1}{2}$ .

### Problem 3

The correct answer to problem 1 is **C**.

What error would cause a student to choose answer **D**?

A student might choose **D** if he thinks that inverse fractions are equivalent.

Assessment Resources, page 12



Answer choice **D**:

Possible misconception: A student might choose **D** if he thinks that inverse fractions are equivalent.



## reflection



When you have about 2 minutes left, stop the discussion, even if they are not finished. Have students respond to the reflection prompt in the Student Book.



## preparation

- Make a copy of the Checkpoint 2 lesson and answer sheet for each student.
- Seat students individually and distribute the checkpoint lesson and the answer sheet to each student.
- Ask students to put their names on their answer sheets.



## setting the direction



This lesson is a checkpoint lesson. Use the ritual for checkpoints to conduct the lesson.

Seat students individually and ask them to put their names on their answer sheets.



### scaffolding for success

Remind students to circle key information in the problems to help them understand how to solve it.



### english language learners

Some ELLs may be intimidated by the testing situation. Be sure to check for comprehension and provide assistance with the language in the problems as needed.

At the end of the lesson, collect the completed answer sheets. Enter the data from each checkpoint into ARO. Open-ended questions should be entered either as correct or incorrect. The report generated by ARO will help you assess whether students are on track and making sufficient progress.



## checkpoint



Give students 6–10 minutes to complete the problems.

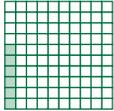
Tell students to complete problems 1–2. Ask students to be sure they have put down answers in their checkpoint lessons before you collect the answer sheets.

## Checkpoint 2 13

**checkpoint**

Solve each problem below. Write your answer on the answer sheet. Write each answer in the checkpoint lesson, too.

- On a math quiz, Amir wrote that  $\frac{6}{10}$  was equivalent to  $\frac{6}{100}$ . His answer is incorrect.
  - Why was Amir's answer incorrect?  
He changed the denominator but kept the numerator the same.
  - How would you help Amir correct his thinking?  
Use area models for both fractions:


≠


Remember that larger denominator means smaller pieces.

- Tamika was playing a different version of the Matching Fractions and Decimals game (Lesson 11 on page 37). She turned up the cards below and said, "These cards match because it's like money. A nickel is worth 5¢. That's 5 out of 100 pennies in a dollar or \$0.5." She is not correct.
 

$$\frac{5}{100}$$

$$0.5$$

  - Why do the cards not match?  
The cards do not match because  $0.5 = \frac{5}{10}$ , which is not the same as  $\frac{5}{100}$ .
  - How would you help Tamika correct her thinking?  

$$\frac{5}{100} = 0.05 = \text{five hundredths}$$

$$\frac{5}{10} = 0.5 = \text{five tenths}$$
 A nickel is \$0.05, not \$0.5.


≠


## learning from the checkpoint



Explain to the group that when students choose the wrong answer, it is usually because they have a misconception or have made a common mistake. Then select one of the wrong answers and identify it as a “common wrong answer.” Ask students to write a sentence or two explaining the misconception or mistake that makes the answer a common wrong answer.

### Learning from Problem 1

The correct answer is 2.80.

### learning from the checkpoint

#### Problem 1

The problem below is a lot like the problem that Amir answered incorrectly.

“Write 2.8 as a decimal that shows hundredths.”

- Pretend you are a test writer and you want to use this as a multiple-choice question.
  - Make up four answer choices for this question.
    - One answer should be correct.
    - At least one answer should be the result of a common mistake.
    - The other choices can be any answers that are not correct.
  - Circle the correct answer.
  - Underline an answer that you think would be a common mistake.

Possible answers:

- |               |               |
|---------------|---------------|
| <b>A</b> 2.08 | <b>B</b> 2.80 |
| <b>C</b> 0.28 | <b>D</b> 280  |

- What is the common mistake you used?

*Someone confuses place value in the decimal part of the number.*

- Write why you think someone else might make that mistake.

*Someone could mistakenly think that 2.8 is equal to 2.08 because 08 is the same as 8.*

Assessment Resources, page 17



Incorrect answer choice: 2.08, 0.28, 280

Possible responses that contain common error include:

2.08 (Confuses place values in decimal part of the number)

0.28 (Does not understand decimals or does not understand equivalence)

280 (Confuses hundredths with hundreds or does not understand decimals)

## reflection



When you have about 2 minutes left, stop the discussion, even if they are not finished. Have students respond to the reflection prompt in the Student Book.

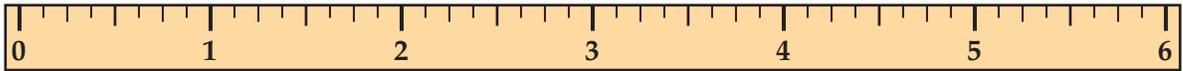
# Checkpoint 1



## checkpoint

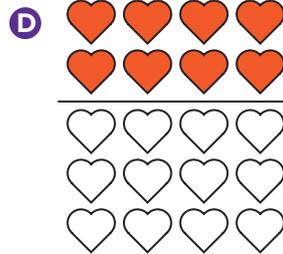
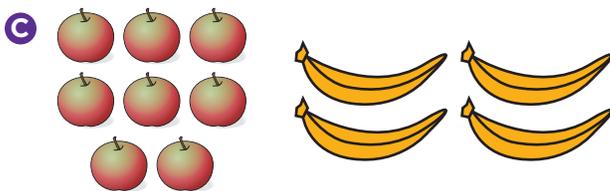
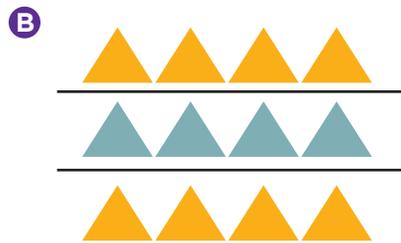
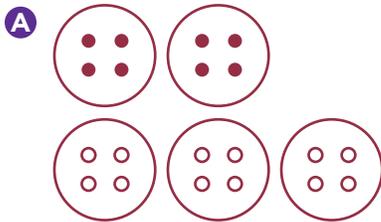
Solve each problem below. Write or circle your answer on the answer sheet.  
Circle or write each answer in the checkpoint lesson, too.

1. Circle the answer that names a fraction equivalent to  $\frac{7}{4}$ . Use the ruler below to help.



- A  $\frac{11}{8}$      
  B  $\frac{4}{7}$      
  C  $\frac{14}{8}$      
  D  $\frac{3}{2}$

2. Which diagram shows that  $\frac{2}{3} = \frac{8}{12}$ ?



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

- A  $\frac{6}{10}$      
  B  $\frac{2}{1}$      
  C  $\frac{2}{4}$      
  D  $\frac{8}{4}$

4. Use this rectangle to show that  $\frac{6}{10} = \frac{3}{5}$



 **learning from the checkpoint**

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**Problem 1**

The correct answer to problem 1 is **C**.

What error would cause a student to choose answer **A**?

**Problem 2**

The correct answer to problem 2 is **B**.

What error would cause a student to choose answer **D**?

**Problem 3**

The correct answer to problem 3 is **C**.

What error would cause a student to choose answer **D**?

## Class Information

School \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Teacher (mathematics class) \_\_\_\_\_

## Student Information

Grade \_\_\_\_\_

First name \_\_\_\_\_

Last name \_\_\_\_\_

Date of birth \_\_\_\_\_ (month) \_\_\_\_\_ (day) \_\_\_\_\_ (year)

Male  Female

How many years have you been at this school? \_\_\_\_\_ years

Do you usually speak English at home? Yes  No

Does anyone in your home usually speak a language other than English?

Yes  No

Name \_\_\_\_\_

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>1.</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>2.</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>3.</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Problem 4.**

Write a complete solution below to this problem.

## Checkpoint 2

# 13

### checkpoint

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Solve each problem below. Write your answer on the answer sheet.  
Write each answer in the checkpoint lesson, too.

1. On a math quiz, Amir wrote that  $\frac{6}{10}$  was equivalent to  $\frac{6}{100}$ . His answer is incorrect.
  - a. Why was Amir's answer incorrect?

- b. How would you help Amir correct his thinking?

2. Tamika was playing a different version of the Matching Fractions and Decimals game (Lesson 11 on page 37). She turned up the cards below and said,

*“These cards match because it’s like money. A nickel is worth 5¢. That’s 5 out of 100 pennies in a dollar or \$0.5.”*

She is not correct.

$\frac{5}{100}$	$0.5$
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- a. Why do the cards not match?
- b. How would you help Tamika correct her thinking?

## learning from the checkpoint

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### Problem 1

The problem below is a lot like the problem that Amir answered incorrectly.

“Write 2.8 as a decimal that shows hundredths.”

- a. Pretend you are a test writer and you want to use this as a multiple-choice question.
- Make up four answer choices for this question.
    - One answer should be correct.
    - At least one answer should be the result of a common mistake.
    - The other choices can be any answers that are not correct.
  - Circle the correct answer.
  - Underline an answer that you think would be a common mistake.

**A**

**B**

**C**

**D**

- b. What is the common mistake you used?
- c. Write why you think someone else might make that mistake.

**Class Information**

School \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Teacher (mathematics class) \_\_\_\_\_

**Student Information**

Grade \_\_\_\_\_

First name \_\_\_\_\_

Last name \_\_\_\_\_

Date of birth \_\_\_\_\_ (month) \_\_\_\_\_ (day) \_\_\_\_\_(year)

Male  Female 

Have you attended a Navigator course since the beginning of the school year?

Yes  No 

How many years have you been at this school? \_\_\_\_\_ years

Do you usually speak English at home? Yes  No 

Does anyone in your home usually speak a language other than English?

Yes  No

Name \_\_\_\_\_

Problem **1a.**

Write a complete solution below to this problem.

Problem **1b.**

Write a complete solution below to this problem.

Problem **2a.**

Write a complete solution below to this problem.

Problem **2b.**

Write a complete solution below to this problem.