Inspect
CCR Performance Tasks

Math Grade 3: Understand and Use Fractions

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- shows the relationship between specific skills and higher-order thinking
- includes authentic, permissioned texts of appropriate complexity
- and documents student progress using DOK and learning progressions

NATIVE CCR & NGSS

STUDENT LEARNING

SCOPE & SEQUENCE

EMBEDDED PD

INSTRUCTIONAL SHIFTS

Content that addresses your scope and sequence so that your assessments do not waste valuable instruction time

Help for teachers addressing the instructional shifts with content that elicits evidence of learning from each response

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CCR Performance Tasks

Math Grade 3: Understand and Use Fractions

Student Test Booklet

Name:

Student Rubric

This problem tests if you can:
• Write fractions to describe parts of a whole;
• Draw a shape and divide it into parts to represent fractions;
• Answer a question about fractions and explain your thinking.

Your teacher will give your answer a 4, 3, 2, 1, or 0.

This is how you get a 4:
Your answer is correct and complete.
• You write fractions that correctly describe parts of a flag;
• You draw a picture that correctly represents some fractions;
• You correctly answer a question about fractions and explain your thinking.

This is how you get a 3:
Your answer is mostly correct but you do not explain your thinking.
• You write fractions that correctly describe parts of a flag;
• You draw a picture that correctly represents some fractions;
• You correctly answer a question about fractions, but you do not explain your thinking or your explanation is not complete.

This is how you get a 2:
You do not answer one part or you make some mistakes.
• You write fractions that describe parts of a flag but some of the fractions are not correct, or you leave some parts blank;
• You draw a picture that correctly represents some fractions;
• You don't answer the last part or your answer is not correct.

This is how you get a 1:
You do not answer two parts or you make mistakes in all the parts.
• You write fractions that do not correctly describe the parts of a flag;
• You draw a picture that does not correctly represent some fractions or you do not draw anything;
• You don't answer the last part or your answer is not correct.

This is how you get a 0:
You do not answer the question or your teacher cannot understand your answer.

Complete all the tasks in the test booklet.

1 **Flags of countries around the world look different. Many of the flags have colored stripes. Look at the flags shown below.**

A. For each flag, write the number of stripes. For each color, write the fraction of the stripes that are that color. For example, if a flag has red stripes and white stripes, write the fraction of the stripes that are red and the fraction of the stripes that are white.
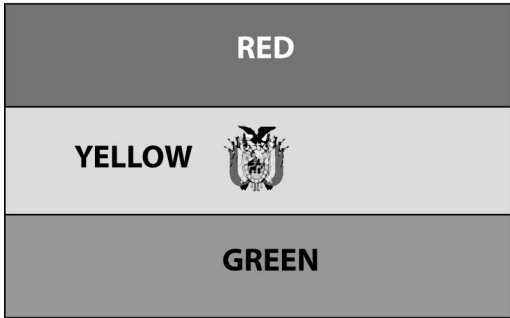
WHITE	
RED	

Poland

Number of stripes:_____

Fraction of stripes that are red:_____

Fraction of stripes that are white:_____

RED
YELLOW
GREEN

Bolivia

Number of stripes:_____

Fraction of stripes that are red:_____

Fraction of stripes that are yellow:_____

Fraction of stripes that are green:_____

Go On

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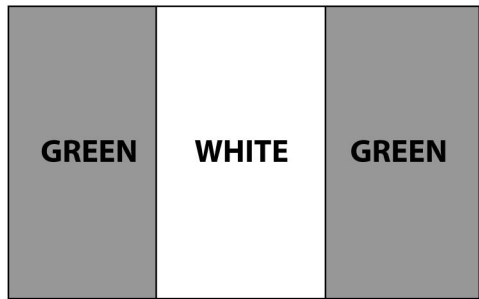| RED |
|---|
| BLUE |
| YELLOW |
| GREEN |

Mauritius

Number of stripes:_____

Fraction of stripes that are red:_____

Fraction of stripes that are blue:_____

Fraction of stripes that are yellow:_____
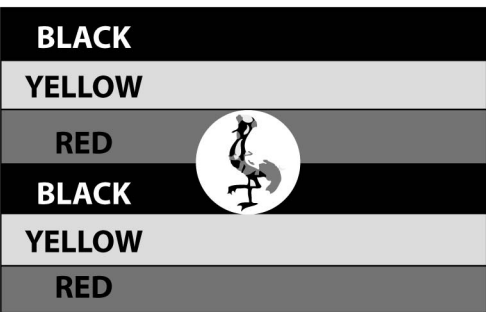
Fraction of stripes that are green:_____

GREEN	WHITE	GREEN

Nigeria

Number of stripes:_____

Fraction of stripes that are green:_____

Fraction of stripes that are white:_____

BLACK
YELLOW
RED
BLACK
YELLOW
RED

Uganda

Number of stripes:_____

Fraction of stripes that are black:_____

Fraction of stripes that are yellow:_____
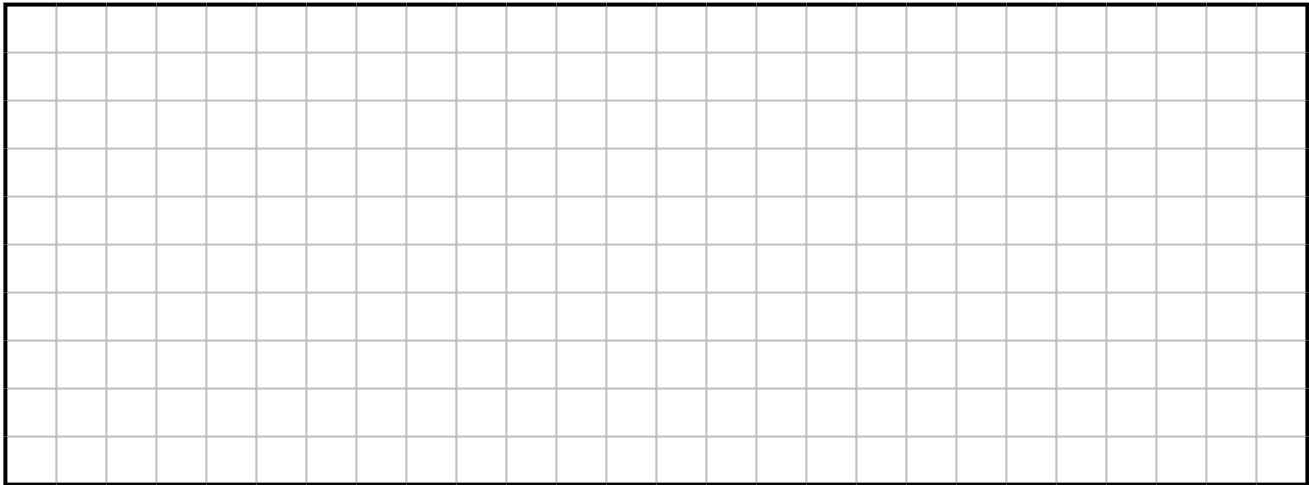
Fraction of stripes that are red:_____

Go On

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B. Draw a flag that matches the description below.

The flag has 8 stripes. The flag is $\frac{1}{4}$ green, $\frac{1}{2}$ red, and $\frac{2}{8}$ yellow.

C. Do any of these fractions represent the same amount? Explain your answer.

$$\frac{1}{4}, \quad \frac{1}{2}, \quad \frac{2}{8}$$

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CCR Performance Tasks

Math Grade 3: Understand and Use Fractions

Teacher Guide

About the Teacher Guide

This document contains support materials for "Grade 3: Understand and Use Fractions."
This includes:

   (a) The task
   (b) The standards and depth of knowledge level of the task
   (c) The scoring rubric
   (d) Discussion questions
   (e) Extension activities

These specifications have been included to help you connect the task to the Common Core content standards and the standards for mathematical practice. The rubric is designed to help you look for the development of mathematical practices in student work. It is also here to help you look for consistencies in student content errors that can help guide intervention and re-teach strategies.

Test Definition File

Item #	Correct Answer	Practice Standard	Content Standards
1	See Scoring Rubric	Mathematical Practice 2	3.NF.1, 3.NF.3

SBAC Claims	PARCC Sub-Claims
1 and 3	A and D

Special Instructions

Give students red, green, and yellow crayons or colored pencils to complete part B.

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Performance Task

Flags of countries around the world look different. Many of the flags have colored stripes. Look at the flags shown below.

A. For each flag, write the number of stripes. For each color, write the fraction of the stripes that are that color. For example, if a flag has red stripes and white stripes, write the fraction of the stripes that are red and the fraction of the stripes that are white.

WHITE	
RED	

Poland
Number of stripes: _____

Fraction of stripes that are red: _____

Fraction of stripes that are white: _____

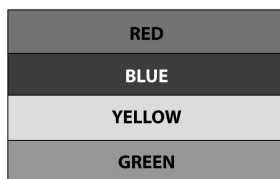| |
|---|
| RED |
| YELLOW |
| GREEN |

Bolivia
Number of stripes: _____

Fraction of stripes that are red: _____

Fraction of stripes that are yellow: _____

Fraction of stripes that are green: _____

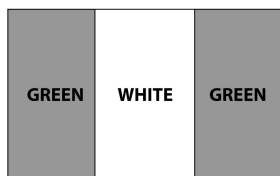| |
|---|
| RED |
| BLUE |
| YELLOW |
| GREEN |

Mauritius
Number of stripes: _____

Fraction of stripes that are red: _____

Fraction of stripes that are blue: _____

Fraction of stripes that are yellow: _____

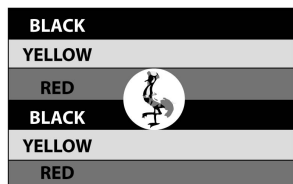Fraction of stripes that are green: _____

GREEN	WHITE	GREEN

Nigeria
Number of stripes: _____

Fraction of stripes that are green: _____

Fraction of stripes that are white: _____

BLACK
YELLOW
RED
BLACK
YELLOW
RED

Uganda
Number of stripes: _____

Fraction of stripes that are black: _____

Fraction of stripes that are yellow: _____

Fraction of stripes that are red: _____

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B. Draw a flag that matches the description below.

The flag has 8 stripes. The flag is $\frac{1}{4}$ green, $\frac{1}{2}$ red, and $\frac{2}{8}$ yellow.

C. Do any of these fractions represent the same amount? Explain your answer.

$$\frac{1}{4}, \quad \frac{1}{2}, \quad \frac{2}{8}$$

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Standards Alignment

Practice Standards

MP2 > DOK 3

Reason abstractly and quantitatively. -- Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

Content Standards

3.NF.1

Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

3.NF.3

Explain equivalence of fractions in special cases, and compare fractions by reasoning about their sizes.

SBAC Claims

Mathematics Claim #1:

Concepts and Procedures. Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency."

Mathematics Claim #3:

Communicating Reasoning. Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

PARCC Sub-Claims

Sub-Claim A:

Major Content with Connections to Practices. The student solves problems involving the major content for the grade/course with connections to the Standards for Mathematical Practice.

Sub-Claim D:

Highlighted Practice MP.4 with Connections to Content: Modeling/Application. The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or, for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the modeling practice, and, where helpful, making sense of problems and persevering to solve them (MP.1), reasoning abstractly and quantitatively (MP.2), using appropriate tools strategically (MP.5), looking for and making use of structure (MP.7), and/or looking for and expressing regularity in repeated reasoning (MP.8).

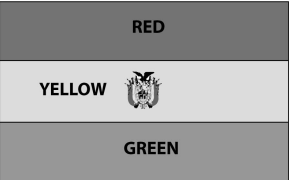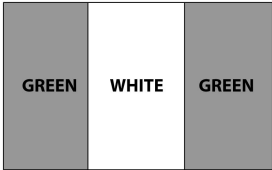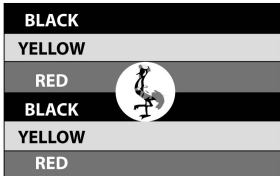# Scoring Rubric

4 Point Response:
The student response demonstrates:

- The ability to use numerical fractions to represent parts of a whole;
- The ability to draw a picture to represent numerical fractions as parts of a whole;
- The ability to reason about and explain fraction equivalence.

The response demonstrates a high level of understanding. A level 4 response is characterized by:

- In part A, the correct number of stripes and fractions for each color;
- In part B, an accurate picture of a flag that matches the given description. The stripes should be of approximately the same area and accurately represent the given description;
- In part C, a correct and complete explanation of why $\frac{2}{8}$ is equivalent to $\frac{1}{4}$.

Sample response for part A:

RED
BLUE
YELLOW
GREEN

Mauritius

Number of stripes:	4
Fraction of stripes that are red:	$\frac{1}{4}$
Fraction of stripes that are blue:	$\frac{1}{4}$
Fraction of stripes that are yellow:	$\frac{1}{4}$
Fraction of stripes that are green:	$\frac{1}{4}$

WHITE
RED

Poland

Number of stripes:	2
Fraction of stripes that are red:	$\frac{1}{2}$
Fraction of stripes that are white:	$\frac{1}{2}$

GREEN	WHITE	GREEN

Nigeria

Number of stripes:	3
Fraction of stripes that are green:	$\frac{2}{3}$
Fraction of stripes that are white:	$\frac{1}{3}$

RED
YELLOW
GREEN

Bolivia

Number of stripes:	3
Fraction of stripes that are red:	$\frac{1}{3}$
Fraction of stripes that are yellow:	$\frac{1}{3}$
Fraction of stripes that are green:	$\frac{1}{3}$

BLACK
YELLOW
RED
BLACK
YELLOW
RED

Uganda

Number of stripes:	6	
Fraction of stripes that are black:	$\frac{1}{3}$ or	$\frac{2}{6}$
Fraction of stripes that are yellow:	$\frac{1}{3}$ or	$\frac{2}{6}$
Fraction of stripes that are red:	$\frac{1}{3}$ or	$\frac{2}{6}$

For part B, accept any design that has 8 equal-sized sections with 2 green sections, 4 red sections, and 2 yellow sections.

GREEN	RED	RED	YELLOW	YELLOW	RED	RED	GREEN

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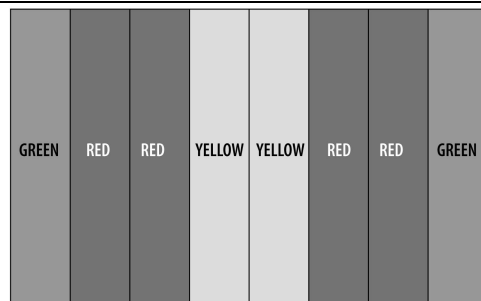
Sample response for part C: $\frac{2}{8}$ is the same as $\frac{1}{4}$. You can see this from the drawing in part B. If you divide the rectangle into 4 sections that are all the same size, then each section is $\frac{1}{4}$. To make eighths, divide each fourth in half. If you shade in two of the eighths, it is the same as filling one of the fourths.

3 Point Response:

The response demonstrates a strong understanding, but the work contains minor errors or omissions. A level 3 response is characterized by:

- The ability to use numerical fractions to represent parts of a whole;
- The ability to draw a model to represent numerical fractions as parts of a whole;
- Some understanding of fraction equivalence but a weak ability to explain why two fractions are equivalent.

Note: Level 3 responses likely include correct answers for parts A and B but part C is incomplete or contains errors.

2 Point Response:

The response demonstrates a basic understanding of fractions. A level 2 response is characterized by:

- The ability to use numerical fractions to represent parts of a whole, although answers in part A may contain some errors or be incomplete;
- The ability to draw a model to represent numerical fractions as parts of a whole;
- A weak ability to reason about and explain fraction equivalence. Part C may be blank or incorrect.

1 Point Response:

The response demonstrates minimal understanding. A level 1 response is characterized by:

- A weak ability to use numerical fractions to represent parts of a whole. Answers in part A contain many errors;
- A weak ability to draw a model to represent numerical fractions as parts of a whole. The drawing in part B may be divided into unequal parts or be incorrect in other ways;
- A weak ability to reason about and explain fraction equivalence. Part C may be blank or incorrect.
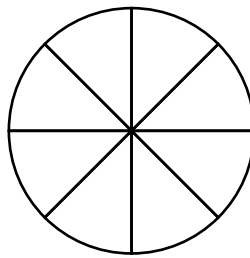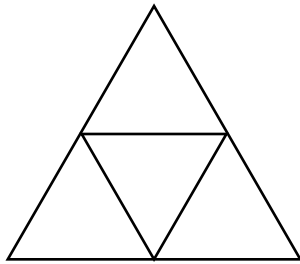
0 Point Response:

There is no response, or the response is off topic.

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Discussion Questions

Use the following questions to help students struggling to access the problem:

1. (Draw on the board a triangle divided into 4 equal shapes, as shown. Shade 1 of the 4 parts. Draw a circle divided into 8 equal shapes, as shown. Shade 3 of the 8 parts.)


Look at the figures I have drawn on the board. Tell the number of equal parts in the whole. Say the fraction that names the shaded part.

Possible Response: *The triangle has 4 equal parts. The shaded part is $\frac{1}{4}$. The circle has 8 equal parts; $\frac{3}{8}$ is shaded.*

2. (Draw two rectangles on the board that are the same size.) How can we divide the rectangles into thirds in two different ways?

Possible Response:
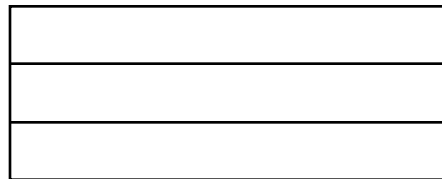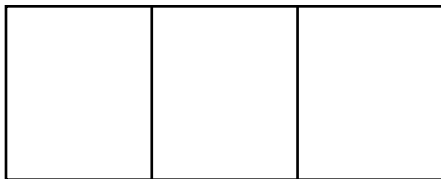
3. Is the fraction $\frac{1}{2}$ bigger, smaller, or the same as $\frac{3}{6}$? How do you know? (Students can draw pictures to help explain how they know.)

Possible response: *They are the same because if you divide a rectangle into 6 equal parts and shade in three of the parts, that is $\frac{3}{6}$; you can see that half of the rectangle is shaded. The only difference is that the half has been divided into three parts, but the same amount is shaded.*

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Extension Activities

1. Have students create their own flags using markers or crayons. Instruct students to write descriptions of their flags using at least 2 fractions.

2. Have students exchange the flag descriptions with a partner. Students can draw a flag based on the description, then compare flags that match the same description. Discuss how the drawings are the same and how they are different. Do both drawings match the description?

3. Use grid paper or a geoboard. Have students draw or make several 4 by 4 squares. Have students find as many ways as they can to divide the squares into 4 equal parts, each with a different shape.

Sample: These are equal parts because each part includes a total of 4 squares.