Teacher Guide to Clarification

3.NF.3

Develop understanding of fractions as numbers

3.NF.3 a,b,c,d Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
b. Recognize and generate simple equivalent fractions, (e.g., ½ = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
c. Express whole numbers as fraction, and recognize fractions are equivalent to whole numbers. Examples: express 3 in the form 3 = 3/1; recognize 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.
d. Compare two fractions with the same numerator of the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusion, e.g., by using a visual fraction model.

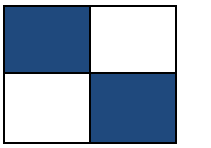
Explain Equivalence of Fractions

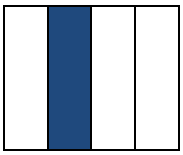
3.NF.3

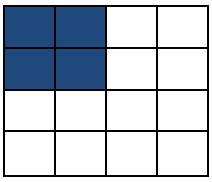
This standard is asking students to explain their thinking of fractions and reason about their size. During class time teachers will need to provide opportunity for this reasoning to take place. Multiple representations of visual models will need to be utilized. Facilitation of student discussion will also help students to reason through and explain their thinking of fractions and equivalence.

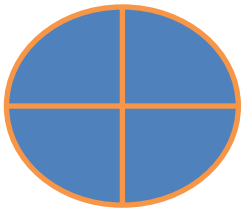
3.NF.3a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. (not limited to the samples below)

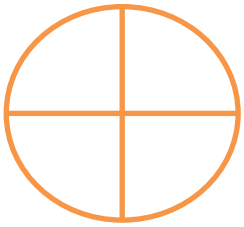
1. Which fraction models represents ¼? Explain why.

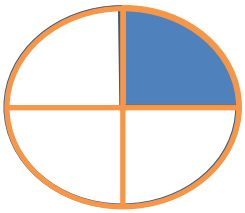






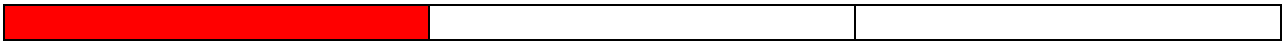


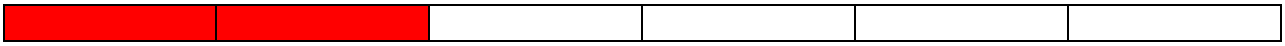




3.NF.3b Recognize and generate simple equivalent fractions, (e.g., ½ = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.

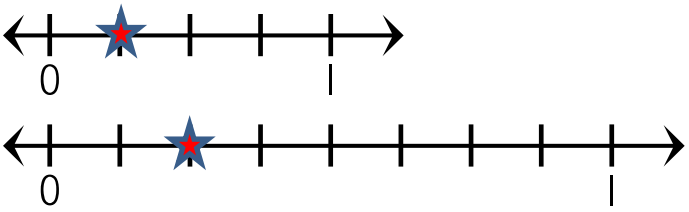
1. Provide a picture that show 1/3 and 2/6 as equal amounts.



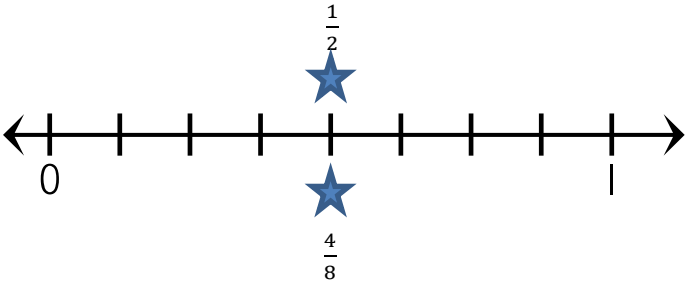


Both are equal amounts, one model is split up into more pieces

2. Using the number lines below, mark the fraction equivalent to ¼.



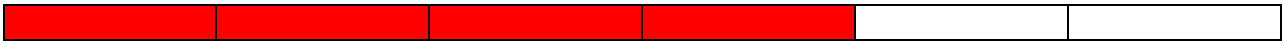
3. On the same number line mark 1/2 & 4/8. What can you say about these points?



4. Brad split up a mile into 6 sections and ran 4/6 of those sections. Carl split up a mile into 3 sections. How many sections would Carl have to run in order to go the same distance as Brad?

Draw a picture to prove your answer.

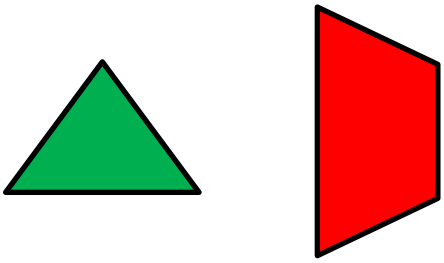
Brad



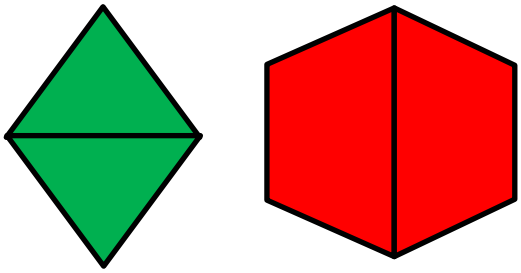
Carl

3.NF.3d Compare two fractions with the same numerator of the same denominator by reasoning about their size.

2. How can both of these shapes represent ½?



Define the whole



Coherence and Connections: Need to Know

Below Grade Level	At Grade Level	Above Grade Level
2MD.2 2.MD.6 2.G.3	**3.NF.3** 3.NF.1 3.NF.2	4.NF.1

PARCC Evidence Tables

Evidence Statement Key	Evidence Statement Text	Clarifications	MP
3.NF.3a-1 PBA/MYA	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size.	i) Tasks do not involve the number line. ii) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) iii) The explanation aspect of 3.NF.3 is not assessed here;).	5
3.NF.3a-2	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same point on a number line.	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) ii) The explanation aspect of 3.NF.3 is not assessed here;).	
3.NF.3b1	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size b. Recognize and generate simple equivalent fractions (e.g., 1/2 = 2/4, 4/6 = 2/3).	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) ii) The explanation aspect of 3.NF.3 is not assessed here;).	MP.7
3.NF.3c	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram*.	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) ii) The explanation aspect of 3.NF.3 is not assessed here;	-
3.NF.3a-1 EOY	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size.	i) Tasks do not involve the number line. ii) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) iii) The explanation aspect of 3.NF.3 is not assessed here; for that aspect of the standard see Grade 3 PBA Part 2.	MP.5

3.NF.3a-2	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same point on a number line.	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) ii) The explanation aspect of 3.NF.3 is not assessed here; for that aspect of the standard see Grade 3 PBA Part 2.	MP.5
3.NF.3b-1	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3).	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) ii) The explanation aspect of 3.NF.3 is not assessed here; for that aspect of the standard see Grade 3 PBA Part 2.	MP.7
3.NF.3c	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram*.	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p 24) ii) The explanation aspect of 3.NF.3 is not assessed here; for that aspect of the standard see Grade 3 PBA Part 2.	MP.3, MP.7
3.NF.3d	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	i) Tasks are limited to fractions with denominators 2, 3, 4, 6, and 8. (See footnote, CCSSM p. 24) ii) Justifying is not assessed here; for this aspect of standard 3.NF.3d, see Grade 3 PBA Part 2. iii) Prompts do not provide visual fraction models; students may at their discretion draw visual fraction models as a strategy.	MP.7
3.NF.A.Int.1	In a contextual situation involving a whole number and two fractions not equal to a whole number, represent all three numbers on a number line diagram, then choose the fraction closest in value to the whole number.	i) Whole numbers are limited to 0, 1, 2, 3, 4, 5. Fraction denominators are limited to 2, 3, 4.	MP.2, MP.4, MP.5.

Explanations and Examples:
3.NF.3a and **3.NF.3b** These standards call for students to use visual fraction models (area models) and number lines to explore the idea of equivalent fractions. *Students should only explore equivalent fractions using models, rather than using algorithms or procedures.*

	Important: Now is not the time to teach equivalent fractions with multiplying the numerators and denominators	

This standard includes writing whole numbers as fractions. The concept relates to fractions as division problems, where the fraction 3/1 is 3 wholes divided into one group. This standard is the building block for later work where students divide a set of objects into a specific number of groups. Students must understand the meaning of a/1

Kansas Association of Teachers of Mathematics (KATM) Flipbooks. Questions or to send feedback: melisa@ksu.edu. Retrieved from: http://katm.org/wp/wp-content/uploads/flipbooks/3FlipBookedited.pdf

Equivalent fractions Grade 3 students do some preliminary reasoning about equivalent fractions, in preparation for work in Grade 4. As students experiment on number line diagrams they discover that many fractions label the same point on the number line, and are therefore equal; that is, they are *equivalent fractions*. For example, the fraction 1/2 is equal to 2/4 and also to 3/6. Students can also use fraction strips to see fraction equivalence.3.NF.3ab.

Common Core Standards Writing Team. (2013, September 19). *Progressions for the Common Core State Standards in Mathematics(draft). 3-5 Number and Operations - Fractions.* Tucson, AZ: Institute for Mathematics and Educations, University of Arizona.

Fraction equivalence is an important theme within the standards that begins in grade 3. In grade 4, students extend their understanding of fraction equivalence to the general case, $a/b = (n \times a)/(n \times b)$ (3.NF.3 moving to 4.NF.1).[11] They apply this understanding to compare fractions in the general case (3.NF.3d moving to 4.NF.2).

PARCC Model Content Frameworks: Mathematics Grades 3-11 (version 3). (2012, November 1). Retrieved June 3, 2014, from http://parcconline.org/sites/parcc/files/PARCCMCFMathematicsNovember2012V3_FINAL_0.pdf

Classroom Resource

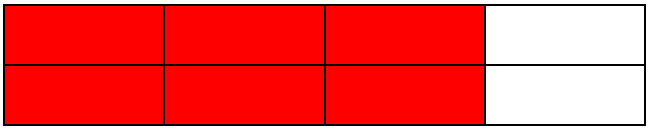
PPT

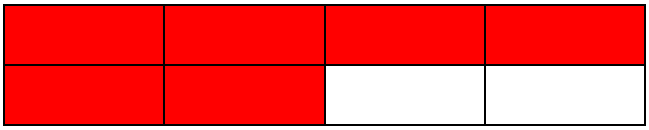
Wrong power point

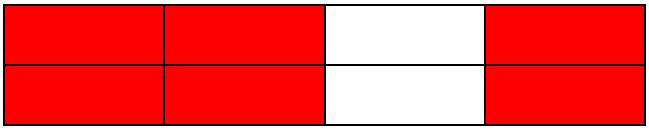
HOT Questions

1. Shade ¾ of the rectangle in two different ways

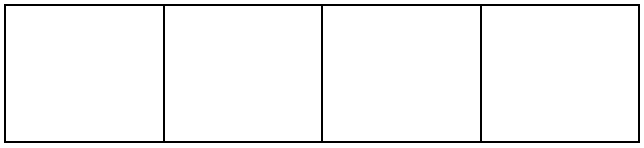
Answers will vary

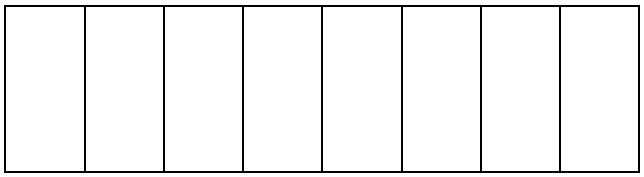




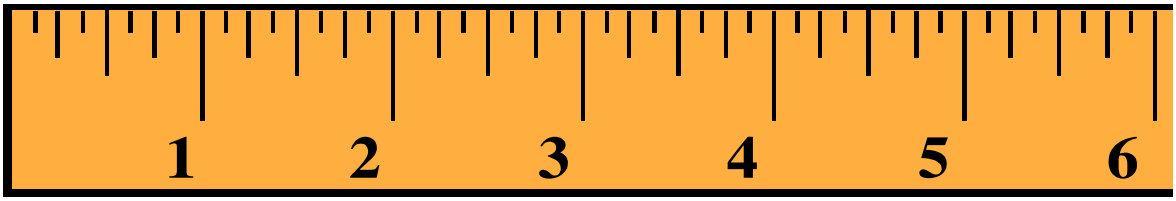


2. Cheryl says that ¾ and 6/8 are equivalent. Shade the 2 rectangles to prove she is right.





3. I caught a spider that measured 5/8 on my ruler. Mark the length of the spider on the ruler.



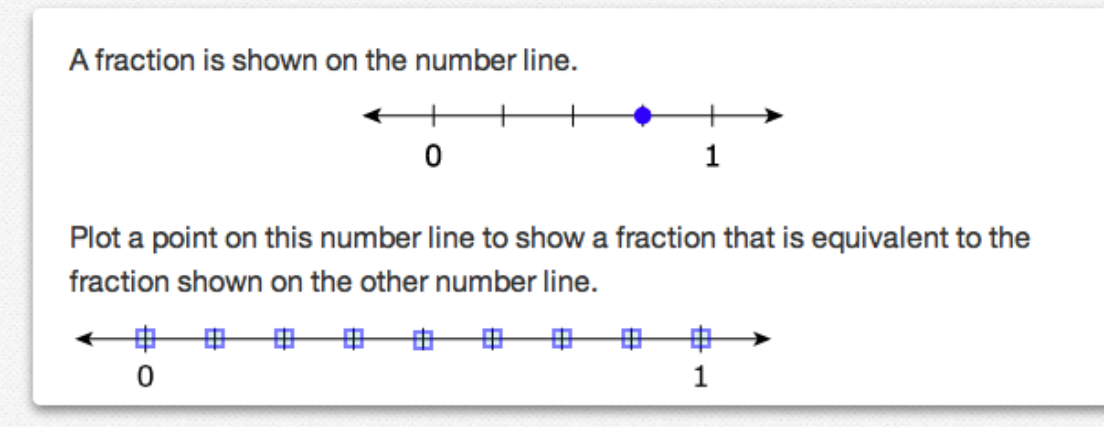
Additional Resources

PARCC EOY # 3 and 28

$\frac{2}{6} < \square$

Select the **three** fractions that make this comparison true.

- A. $\frac{3}{6}$
- B. $\frac{2}{8}$
- C. $\frac{2}{4}$
- D. $\frac{2}{3}$
- E. $\frac{1}{6}$



3.NF.3
https://www.illustrativemathematics.org/illustrations/1453

3.NF.3a
https://www.illustrativemathematics.org/illustrations/871

K-5 Teaching resource

http://www.k-5mathteachingresources.com/support-files/pizza-for-dinner-3nf3a.pdf

http://www.k-5mathteachingresources.com/support-files/buildahexag.pdf - center game

3.NF.3b
https://www.illustrativemathematics.org/illustrations/1502

http://www.k-5mathteachingresources.com/support-files/exploring-equivalent-fractions.pdf

Differentiation

1 - Enrichment Activity

http://www.k-5mathteachingresources.com/support-files/creatingequivalentfractions.pdf

2 - Additional Practice with equivalence activity- concrete/visual

http://www.k-5mathteachingresources.com/support-files/cuiseniare-equivalent-fractions.pdf

3.NF.3c. Homework Activity

http://www.k-5mathteachingresources.com/support-files/make-one.pdf

3.NF.3d

Comparing fractions with different wholes

http://www.k-5mathteachingresources.com/support-files/who-ate-more-3nf3d.pdf

Compare and Order – additional practice

http://www.k-5mathteachingresources.com/support-files/compare-and-order.pdf

Inside Mathematics

Problem of the Month

http://www.insidemathematics.org/assets/problems-of-the-month/fractured%20numbers.pdf

Performance Based Assessment

http://www.insidemathematics.org/assets/common-core-math-tasks/leapfrog%20fractions.pdf