

Counter Fraction Quest

Use sets of counters to show fractions and mixed numbers.

GRADE 3 • 3.NS.3.a.iii

3.NS.3.a.iii "Represent, name, and write a given fraction (proper or improper) or mixed number with denominators of 2, 3, 4, 5, 6, 8, and 10 using: set models (e.g., chips, counters, cubes)."

NAME _____

DATE _____

COUNT THE SETS

A full set is one whole, and every counter in a set has the same value. Count the counters in one full set for the denominator, then count all selected counters for the numerator. When selected counters fill more than one set, you can write an improper fraction and a mixed number.

WORKED EXAMPLE

Each bracket is one whole set of 10 counters. Filled counters are selected. Write the improper fraction and mixed number. [●●●●●●●●●●] [●●●●●●●●●●]

1. There are 10 counters in each whole set, so the denominator is 10.
2. There are 19 selected counters altogether.
3. Write $19/10$.
4. Ten tenths make 1 whole, with $9/10$ left.

Answer: $19/10 = 1 \frac{9}{10}$

PRACTICE 6 problems

- 1** 1. Filled counters are selected. Write the fraction in numbers and words. [●●●●○]

ANSWER _____

- 2** 2. Each bracket is one whole set. Write the improper fraction and mixed number. [●●●●●][●●●○]

ANSWER _____

- 3** 3. Circle 4 counters. Then write the fraction you made. [○ ○ ○ ○ ○]

ANSWER _____

- 4** 4. Circle counters to model $5/3$. Then write the mixed number. [○ ○ ○][○ ○ ○]

ANSWER _____

- 5** 5. Each bracket is one whole set. Write the improper fraction and mixed number. [●●●●●][●●●●●][●○ ○ ○ ○]

ANSWER _____

- 6** 6. Circle counters to model $2 \frac{1}{2}$. Then write the improper fraction. [○ ○][○ ○][○ ○]

ANSWER _____

APPLY IT Show your work

- 1** 1. At the school game booth, one prize strip holds 4 stickers. Leo fills one strip and puts 3 stickers on another strip. Circle the stickers he has, then write the improper fraction and mixed number. [$\circ \circ \circ \circ$]
[$\circ \circ \circ \circ$]

WORK SPACE

ANSWER _____

- 2** 2. In robotics club, each parts tray holds 6 batteries. Nia fills 2 trays and puts 2 batteries in a third tray. Circle the batteries she packed, then write the improper fraction and mixed number. [$\circ \circ \circ \circ \circ \circ$]
[$\circ \circ \circ \circ \circ \circ$]

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Jamal says this model is $2\frac{1}{8}$. Sam says it is $2\frac{5}{8}$. Are both students correct? Explain how the model proves your answer. [$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$][$\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$][$\bullet \bullet \bullet \bullet \circ \circ \circ$]

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	1. Filled counters are selected. Write the fraction in numbers and words. [● ● ● ○ ○]	3/5, three fifths
2	2. Each bracket is one whole set. Write the improper fraction and mixed number. [● ● ● ●][● ● ○ ○]	6/4 = 1 2/4
3	3. Circle 4 counters. Then write the fraction you made. [○ ○ ○ ○ ○ ○]	4/6, with any 4 counters circled
4	4. Circle counters to model 5/3. Then write the mixed number. [○ ○ ○ ○ ○ ○]	[● ● ●][● ● ○], 5/3 = 1 2/3
5	5. Each bracket is one whole set. Write the improper fraction and mixed number. [● ● ● ● ●][● ● ● ● ●][○ ○ ○ ○ ○]	11/5 = 2 1/5
6	6. Circle counters to model 2 1/2. Then write the improper fraction. [○ ○ ○][○ ○ ○][○ ○ ○]	[● ●][● ●][● ●], 5/2

PART 2 • APPLY IT

1. [● ● ● ●][● ● ● ○], **7/4 = 1 3/4** A full strip has 4 stickers. Leo has 4 selected stickers plus 3 more, for 7/4, or 1 3/4.
2. [● ● ● ● ● ●][● ● ● ● ● ●][● ● ○ ○ ○ ○], **14/6 = 2 2/6** Two full trays have 12 batteries, and 2 more batteries make 14. The model shows 14/6, or 2 2/6.

CHALLENGE

Yes. There are 21 selected counters. Two full groups use 16 counters, leaving 5 counters, so $21/8 = 2 \frac{5}{8}$.

Accept equivalent simplified mixed numbers when the student also correctly represents the given set model, such as 1 1/2 for 1 2/4. For circle-and-build items, accept any counter placement that fills the correct number of whole sets and leftover parts.