

Fraction Piece Power

Build totals with equal fractional pieces.

GRADE 4 • 4.CE.3.c

4.CE.3.c "Solve single-step contextual problems involving multiplication of a whole number, limited to 12 or less, and a unit fraction (e.g., $6 \times \frac{1}{3}$, $15 \times \frac{1}{8}$, $2 \times \frac{1}{10}$), with models.*"

NAME _____

DATE _____

ADD UNIT PIECES

A unit fraction has 1 as its numerator. When you multiply a whole number by a unit fraction, add that unit fraction the same number of times. Keep the pieces the same size, then rename a fraction greater than 1 as a mixed number when needed.

WORKED EXAMPLE

Solve $7 \times \frac{1}{4}$.

1. Show seven unit pieces: $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$.
2. Add the numerators: $\frac{7}{4}$.
3. Rename $\frac{7}{4}$ as $1 \frac{3}{4}$.

Answer: $1 \frac{3}{4}$

PRACTICE 6 problems

1 Model: $\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$. What is $3 \times \frac{1}{5}$?

ANSWER _____

2 Model: 8 equal pieces, each with a length of $\frac{1}{3}$. Write $8 \times \frac{1}{3}$ as a mixed number.

ANSWER _____

3 Model: 6 groups of $\frac{1}{10}$. Solve $6 \times \frac{1}{10}$.

ANSWER _____

4 Model: 12 pieces, each $\frac{1}{8}$ of a whole. What mixed number is $12 \times \frac{1}{8}$?

ANSWER _____

5 Model: 5 pieces, each $\frac{1}{2}$ of a whole. What mixed number is $5 \times \frac{1}{2}$?

ANSWER _____

6 Model: 9 groups of $\frac{1}{6}$. What mixed number is $9 \times \frac{1}{6}$?

ANSWER _____

APPLY IT Show your work

- 1** Riley's fitness watch records $\frac{1}{8}$ mile for each lap around a short track. Riley runs 11 laps. How many miles does Riley run?

WORK SPACE

ANSWER _____

- 2** A game app gives $\frac{1}{3}$ of a star for each daily puzzle finished. Mei finishes 10 daily puzzles. How many stars does Mei earn?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Which product is greater, $10 \times \frac{1}{12}$ or $8 \times \frac{1}{10}$? Explain how you know.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Model: $\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$. What is $3 \times \frac{1}{5}$?	$\frac{3}{5}$
2	Model: 8 equal pieces, each with a length of $\frac{1}{3}$. Write $8 \times \frac{1}{3}$ as a mixed number.	$2 \frac{2}{3}$
3	Model: 6 groups of $\frac{1}{10}$. Solve $6 \times \frac{1}{10}$.	$\frac{3}{5}$
4	Model: 12 pieces, each $\frac{1}{8}$ of a whole. What mixed number is $12 \times \frac{1}{8}$?	$1 \frac{1}{2}$
5	Model: 5 pieces, each $\frac{1}{2}$ of a whole. What mixed number is $5 \times \frac{1}{2}$?	$2 \frac{1}{2}$
6	Model: 9 groups of $\frac{1}{6}$. What mixed number is $9 \times \frac{1}{6}$?	$1 \frac{1}{2}$

PART 2 • APPLY IT

- $1 \frac{3}{8}$ miles** Add eleven $\frac{1}{8}$ -mile pieces to make $1 \frac{1}{8}$ mile. Rename $1 \frac{1}{8}$ as $1 \frac{3}{8}$.
- $3 \frac{1}{3}$ stars** Ten groups of $\frac{1}{3}$ make $\frac{10}{3}$ stars. Rename $\frac{10}{3}$ as $3 \frac{1}{3}$.

CHALLENGE

$10 \times \frac{1}{12}$ is greater. It equals $\frac{5}{6}$, while $8 \times \frac{1}{10}$ equals $\frac{4}{5}$. Since $\frac{1}{6}$ is smaller than $\frac{1}{5}$, $\frac{5}{6}$ is closer to 1 than $\frac{4}{5}$.

Accept equivalent fractions and improper fractions when they have the same value, such as $\frac{12}{8}$ for $1 \frac{1}{2}$. For the challenge, accept a correct comparison with a clear fraction-based explanation.