

Fraction Estimate Detectives

Use benchmark fractions to check sums and differences.

GRADE 4 • TEKS 4.3.F

4.3.F "evaluate the reasonableness of sums and differences of fractions using benchmark fractions 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1, referring to the same whole; and"

NAME _____

DATE _____

USE FRIENDLY BENCHMARKS

Make sure the fractions name parts of the same whole. Replace each fraction with the closest benchmark, 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, or 1. Then add or subtract the benchmarks to decide whether an answer is reasonable.

WORKED EXAMPLE

Estimate $\frac{9}{10} - \frac{1}{5}$ using benchmark fractions.

1. $\frac{9}{10}$ is close to 1.
2. $\frac{1}{5}$ is close to $\frac{1}{4}$.
3. Subtract: $1 - \frac{1}{4} = \frac{3}{4}$.

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

PRACTICE 6 problems

- 1** Each fraction is part of the same whole. Estimate $\frac{5}{12} + \frac{2}{9}$ using benchmark fractions.

ANSWER _____

- 2** Each fraction is part of the same whole. Noah says that $\frac{7}{16} + \frac{4}{9}$ is about $\frac{1}{2}$. Is Noah's estimate reasonable? Explain with benchmarks.

ANSWER _____

- 3** Each fraction is part of the same whole. Estimate $\frac{11}{12} - \frac{2}{7}$ using benchmark fractions.

ANSWER _____

- 4** Each fraction is part of the same whole. Which is a reasonable estimate for $\frac{5}{16} + \frac{13}{20}$, 1 or $1\frac{1}{2}$?

ANSWER _____

- 5** Each fraction is part of the same whole. Estimate $\frac{7}{10} - \frac{7}{20}$ using benchmark fractions.

ANSWER _____

- 6** Each fraction is part of the same whole. Lena says that $\frac{9}{20} + \frac{11}{24}$ is about $\frac{3}{4}$. Is Lena's estimate reasonable? Explain with benchmarks.

ANSWER _____

APPLY IT

Show your work

- 1** A hiking club walks the same 1-mile trail over two days. The club walks $\frac{7}{12}$ mile on Saturday and $\frac{3}{10}$ mile on Sunday. Estimate the total distance walked. Is $\frac{1}{2}$ mile a reasonable estimate?

WORK SPACE

ANSWER _____

- 2** A water bottle starts full. Kai drinks $\frac{3}{5}$ of the bottle at practice and $\frac{1}{6}$ of the same bottle after practice. About how much of the bottle is left?

WORK SPACE

ANSWER _____

CHALLENGE

One step up

Maya says that $\frac{7}{8} - \frac{5}{12}$ is about $\frac{1}{2}$. Omar says it is about $\frac{3}{4}$. Who is correct? Explain using benchmark fractions.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Each fraction is part of the same whole. Estimate $5/12 + 2/9$ using benchmark fractions.	About $3/4$
2	Each fraction is part of the same whole. Noah says that $7/16 + 4/9$ is about $1/2$. Is Noah's estimate reasonable? Explain with benchmarks.	No. $7/16$ is about $1/2$ and $4/9$ is about $1/2$, so the sum is about 1.
3	Each fraction is part of the same whole. Estimate $11/12 - 2/7$ using benchmark fractions.	About $3/4$
4	Each fraction is part of the same whole. Which is a reasonable estimate for $5/16 + 13/20$, 1 or $1\frac{1}{2}$?	1
5	Each fraction is part of the same whole. Estimate $7/10 - 7/20$ using benchmark fractions.	About $1/2$
6	Each fraction is part of the same whole. Lena says that $9/20 + 11/24$ is about $3/4$. Is Lena's estimate reasonable? Explain with benchmarks.	No. Both fractions are about $1/2$, so the sum is about 1.

PART 2 • APPLY IT

1. **About $3/4$ mile. No, $1/2$ mile is not a reasonable estimate.** $7/12$ is about $1/2$, and $3/10$ is about $1/4$. The benchmark sum is $3/4$.
2. **About $1/4$ of the bottle is left.** $3/5$ is about $1/2$, and $1/6$ is about $1/4$, so Kai drinks about $3/4$. A full bottle minus $3/4$ is about $1/4$.

CHALLENGE

Maya is correct. $7/8$ is about 1 and $5/12$ is about $1/2$, so $1 - 1/2$ is about $1/2$.

Accept equivalent benchmark reasoning and answers stated with "about." For explanation items, accept any correct comparison of each fraction to nearby benchmarks that leads to the listed estimate.