Fractions

Fill in the guided notes as you watch the video in the Digital Toolbox.

- **Fractions** must have the same **denominator** in order to add or subtract them.
- Write mixed numbers as improper fractions **BEFORE** multiplying or dividing.

> It is helpful to rewrite all mixed numbers as improper fractions before performing any operations.

- Fractions do not need to be written as mixed numbers, but they do need to be **simplified**.
- When directions say **evaluate**, calculate the value by performing the given operation on the fraction and then write it in simplest form.
- Simplest form means that the **greatest common factor** of the numerator and denominator is **one**.

Example 1

Complete the example as you watch the video in the Digital Toolbox.

Evaluate.

$$2\frac{4}{7}-\left(-\frac{2}{3}\right)$$

Implement	Explain
$\frac{18}{7}+\frac{2}{3} \quad \text{LCD}(7,3)=21$	Rewrite the mixed number as an improper fraction Simplify the double negative and find the LCD
$\frac{18}{7}\left(\frac{3}{3}\right)+\frac{2}{3}\left(\frac{7}{7}\right)$	Write fractions with the LCD
$\frac{54}{21}+\frac{14}{21}=\left(\frac{68}{21}\right)$	Add the numerators

Example 2

Complete the example as you watch the video in the Digital Toolbox.

Evaluate.

$$-3\frac{1}{5} \div \left(1\frac{1}{3}\right)$$

Implement

$$-\frac{16}{5} \div \frac{4}{3}$$

$$\frac{-4\cancel{-16}}{5} \cdot \frac{3}{\cancel{4}_{1}}$$

$$-\frac{12}{5}$$

Explain

Rewrite mixed fractions as improper fractions

Take the reciprocal of the fraction after the division symbol
Simplify fractions

Practice

Evaluate. Show your work. Answers do not need to be written as mixed numbers.

1) $-4\frac{2}{3}-\left(-\frac{4}{5}\right)$

$-4\frac{2}{3}+\frac{4}{5}=-\frac{14}{3}+\frac{4}{5}$ $\quad \text{LCD}(3,5)=15$

$-\frac{14}{3}\left(\frac{5}{5}\right)+\frac{4}{5}\left(\frac{3}{3}\right)$

$-\frac{70}{15}+\frac{12}{15}=\boxed{-\frac{58}{15}}$

2) $3\frac{3}{4}\cdot 2\frac{2}{13}$

$\frac{15}{\cancel{4}_{1}}\cdot\frac{\cancel{28}^{7}}{13}=\boxed{\frac{105}{13}}$

3) $\frac{7}{12}-\frac{1}{3}$

$\text{LCD}(12,3)=12$

$\frac{7}{12}-\frac{1}{3}\left(\frac{4}{4}\right)$

$\frac{7}{12}-\frac{4}{12}=\frac{3}{12}=\boxed{\frac{1}{4}}$

4) $\frac{9}{10}\div 1\frac{1}{2}$

$\frac{9}{10}\div\frac{3}{2}=\frac{^{3}\cancel{9}}{\cancel{10}_{5}}\cdot\frac{\cancel{2}^{1}}{\cancel{3}_{1}}=\boxed{\frac{3}{5}}$

5) $2\frac{3}{4}-\frac{5}{6}$

$\frac{11}{4}-\frac{5}{6}$ $\quad \text{LCD}(4,6)=12$

$\frac{11}{4}\left(\frac{3}{3}\right)-\frac{5}{6}\left(\frac{2}{2}\right)=\frac{33}{12}-\frac{10}{12}=\boxed{\frac{23}{12}}$

6) $-3\frac{2}{5}\div 1\frac{2}{7}$

$-\frac{17}{5}\div\frac{9}{7}=-\frac{17}{5}\cdot\frac{7}{9}=\boxed{-\frac{119}{45}}$

Evaluate. Show your work. Answers do not need to be written as mixed numbers.

7) $\frac{3}{4} \cdot 2\frac{2}{9}$

$\frac{3}{4} \cdot \frac{20}{9} = \frac{\cancel{3}^{1}}{\cancel{4}_{1}} \cdot \frac{\cancel{20}^{5}}{\cancel{9}_{3}} = \boxed{\frac{5}{3}}$

8) $-\frac{2}{5} - 5\frac{1}{3}$

$-\frac{2}{5} - \frac{16}{3}$ $\text{LCD}(3, 5) = 15$

$-\frac{2}{5}\left(\frac{3}{3}\right) - \frac{16}{3}\left(\frac{5}{5}\right) = -\frac{6}{15} - \frac{80}{15} = \boxed{-\frac{86}{15}}$

9) $\frac{5}{9} - \frac{5}{6}$

$\text{LCD}(9, 6) = 18$

$\frac{5}{9}\left(\frac{2}{2}\right) - \frac{5}{6}\left(\frac{3}{3}\right) = \frac{10}{18} - \frac{15}{18} = \boxed{-\frac{5}{18}}$

10) $\frac{8}{21} \div \frac{9}{14}$

$\frac{\cancel{8}^{}}{\cancel{21}_{3}} \cdot \frac{\cancel{14}^{2}}{9} = \boxed{\frac{16}{27}}$

11) $2\frac{2}{5} \cdot \frac{9}{16}$

$\frac{\cancel{12}^{3}}{5} \cdot \frac{9}{\cancel{16}_{4}} = \boxed{\frac{27}{20}}$

12) $4\frac{2}{3} - 1\frac{1}{8}$

$\frac{14}{3} - \frac{9}{8}$ $\text{LCD}(3, 8) = 24$

$\frac{14}{3}\left(\frac{8}{8}\right) - \frac{9}{8}\left(\frac{3}{3}\right)$

$\frac{112}{24} - \frac{27}{24} = \boxed{\frac{85}{24}}$