

Pre-algebra
Skill-BUILDER # F – 3
Dividing Signed Fractions

To divide two signed fractions, **multiply the first fraction by the reciprocal of the second fraction**. The same rules for dividing integers apply. Thus, for nonzero integers b , c , and d , we have

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{a \cdot d}{b \cdot c}$$

Examples Find the quotient.

1) $\frac{5}{6} \div \frac{3}{5}$

Solution:

$$\begin{aligned} & \frac{5}{6} \div \frac{3}{5} \\ &= \frac{5}{6} \cdot \frac{5}{3} \\ &= \frac{25}{18} \end{aligned}$$

Change division to multiplication and get the reciprocal of $\frac{3}{5}$.

Multiply.

2) $-\frac{3}{8} \div \frac{5}{4}$

Solution:

$$\begin{aligned} -\frac{3}{8} \div \frac{5}{4} &= -\frac{3}{8} \cdot \frac{4}{5} \\ &= -\frac{3 \cdot \cancel{4}}{\cancel{4} \cdot 2 \cdot 5} \\ &= -\frac{3}{10} \end{aligned}$$

Change division to multiplication and get the reciprocal of $\frac{5}{4}$.

Factor 8.

Cancel common factors.

3) $-\frac{9}{15} \div \left(-\frac{27}{35}\right)$

Solution:

$$\begin{aligned} & -\frac{9}{15} \div \left(-\frac{27}{35}\right) \\ &= \frac{9}{15} \cdot \frac{35}{27} \\ &= \frac{\cancel{9} \cdot 7 \cdot \cancel{5}}{3 \cdot \cancel{5} \cdot 3 \cdot \cancel{9}} \\ &= \frac{7}{9} \end{aligned}$$

$(-)(-) = (+)$; multiply by the reciprocal of $\frac{27}{35}$

Factor 35, 15, and 27.

Cancel common factors.

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Find the quotient.

1) $\frac{6}{7} \div \frac{5}{9}$

2) $-\frac{8}{5} \div \frac{2}{7}$

3) $-\frac{8}{21} \div \left(-\frac{6}{14}\right)$

4) $\frac{18}{5} \div \left(-\frac{27}{25}\right)$

5) $\left(-\frac{20}{35}\right) \div \left(-\frac{15}{28}\right)$

6) $-\left(-\frac{40}{49}\right) \div \left(-\frac{16}{63}\right)$

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Answer Key:

1) $\frac{54}{35}$

2) $-\frac{28}{5}$

3) $\frac{8}{9}$

4) $-\frac{10}{3}$

5) $\frac{16}{15}$

6) $-\frac{45}{14}$