

Day 8: Multiplying & Dividing Fractions

Multiplying Fractions

To multiply fractions, simply multiply the numerators and multiply the denominators.

<p>Example 9: $\frac{1}{7} \times \frac{2}{3} = \frac{1 \times 2}{7 \times 3}$ $= \frac{2}{21}$</p>	<p>Example 10: $\frac{-1}{4} \times \frac{8}{3} = \frac{-1 \times 8}{4 \times 3}$ $= \frac{-8}{12}$ GCF: 4 $= \frac{-8 \div 4}{12 \div 4} \Rightarrow = \frac{-2}{3}$</p>
<p>Example 11: $\left(\frac{1}{2}\right)^2 = \left(\frac{1}{2}\right)\left(\frac{1}{2}\right)$ $= \frac{1}{4}$</p>	<p>Example 12: $\left(1\frac{3}{4}\right)^3 = \left(\frac{1 \times 4 + 3}{4}\right)^3$ $= \left(\frac{7}{4}\right)^3$ $= \left(\frac{7}{4}\right)\left(\frac{7}{4}\right)\left(\frac{7}{4}\right)$ $= \frac{243}{64}$</p>

Dividing Fractions

To divide fractions, we multiply by the reciprocal. The reciprocal is flip the fraction

<p>Example 13: $\frac{1}{2} \div \frac{8}{3} = \frac{1}{2} \times \frac{3}{8}$ $= \frac{1 \times 3}{2 \times 8}$ $= \frac{3}{16}$</p>	<p>Example 14: $\frac{-1}{2} \div \frac{5}{-4} = \frac{-1}{2} \times \frac{-4}{5}$ $= \frac{(-1)(-4)}{2 \cdot 5}$ $= \frac{4}{10}$ GCF=2 $\frac{4 \div 2}{10 \div 2} = \frac{2}{5}$</p>
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Practice: Operations with Fractions

Evaluate the following: *final answers should be in lowest terms

i. $\frac{2}{5} \times \frac{1}{4} = \frac{2 \times 1}{5 \times 4} = \frac{2}{20} = \frac{2 \div 2}{20 \div 2} = \frac{1}{10}$ (GCF: 2)
 j. $\frac{-2}{5} \times \frac{3}{4} = \frac{-2 \times 3}{5 \times 4} = \frac{-6}{20} = \frac{-6 \div 2}{20 \div 2} = \frac{-3}{10}$ (GCF: 2)
 k. $\frac{-4}{5} \times \frac{3}{-4} = \frac{-4 \times 3}{5 \times -4} = \frac{-12}{-20} = \frac{-12 \div 4}{-20 \div 4} = \frac{3}{5}$ (GCF: 4)
 l. $2\frac{2}{5} \times \frac{-1}{4} = \frac{2 \cdot 5 + 2}{5} \times \frac{-1}{4} = \frac{10+2}{5} \cdot \frac{-1}{4} = \frac{12}{5} \cdot \frac{-1}{4} = \frac{-12}{20} = \frac{-12 \div 4}{20 \div 4} = \frac{-3}{5}$ (GCF: 4)
 m. $\left(\frac{3}{4}\right)^2 = \left(\frac{3}{4}\right)\left(\frac{3}{4}\right) = \frac{9}{16}$
 n. $\left(\frac{-3}{5}\right)^2 = \left(\frac{-3}{5}\right)\left(\frac{-3}{5}\right) = \frac{9}{25}$
 o. $\left(2\frac{1}{2}\right)^2 = \left(\frac{2 \times 2 + 1}{2}\right)^2 = \left(\frac{5}{2}\right)^2 = \left(\frac{5}{2}\right)\left(\frac{5}{2}\right) = \frac{25}{4}$
 p. $\left(-1\frac{1}{2}\right)^3 = \left(-\frac{2 \times 1 + 1}{2}\right)^3 = \left(-\frac{3}{2}\right)^3 = \left(-\frac{3}{2}\right)\left(-\frac{3}{2}\right)\left(-\frac{3}{2}\right) = -\frac{27}{8}$ (GCF: 4)
 q. $\frac{2}{5} \div \frac{1}{4} = \frac{2}{5} \times \frac{4}{1} = \frac{8}{5}$
 r. $3 \div \frac{1}{4} = 3 \times \frac{4}{1} = 12$
 s. $3\frac{1}{5} \div 2 = \frac{3 \cdot 5 + 1}{5} \cdot \frac{1}{2} = \frac{16}{5} \cdot \frac{1}{2} = \frac{16}{10} = \frac{8}{5}$ (GCF: 2)
 t. $3\frac{2}{5} \div -2\frac{1}{4} = \frac{3 \cdot 5 + 2}{5} \div \frac{-2 \cdot 4 + 1}{4} = \frac{17}{5} \div \frac{-9}{4} = \frac{17}{5} \cdot \frac{-4}{9} = \frac{-68}{45}$

ANSWERS: i. $\frac{1}{10}$ j. $\frac{-3}{10}$ k. $\frac{3}{5}$ l. $\frac{-3}{5}$ m. $\frac{9}{16}$ n. $\frac{9}{25}$ o. $\frac{25}{4}$ p. $\frac{-27}{8}$ q. $\frac{8}{5}$ r. 12 s. $\frac{8}{5}$ t. $\frac{-68}{45}$