

Math 105 Skill Builder # F - 5

Multiplying a Whole Number and a Fraction – Simplification Required

Don't forget that a whole number can be written as a fraction by writing the whole number over 1. For example,

$$5 = \frac{5}{1} \text{ and } 22 = \frac{22}{1}$$

Step 1 Cancel the common factors, between the numerators and the denominator.

Step 2 Multiply the numerators together for the numerator of the product, and multiply the denominator together for the denominator for the product.

$$\frac{5}{14} \cdot 2 = \frac{5}{14} \cdot \frac{2}{1} \quad \text{Write 2 as a fraction.}$$

$$= \frac{5 \cdot 2}{14 \cdot 1} \quad \text{Divide 2 and 14 by 2.}$$

$$= \frac{5 \cdot 1}{7 \cdot 1} \quad \text{Multiply 5 and 1 for the numerator; 7 and 1 for denominator.}$$

$$= \frac{5}{7} \quad \text{Stop, since the numerator and the denominator have no factor in common other than 1.}$$

Examples:

Multiplying a Whole Number and a Fraction
$\frac{7}{8} \cdot 12 = \frac{7}{8} \cdot \frac{12}{1} = \frac{7 \cdot \cancel{4} \cdot 3}{\cancel{4} \cdot 2 \cdot 1} = \frac{21}{2}$
$\frac{5}{24} \cdot 4 = \frac{5}{24} \cdot \frac{4}{1} = \frac{5 \cdot \cancel{4} \cdot 1}{6 \cdot \cancel{4} \cdot 1} = \frac{5}{6}$
$\frac{7}{30} \cdot 15 = \frac{7}{30} \cdot \frac{15}{1} = \frac{7 \cdot \cancel{15} \cdot 1}{2 \cdot \cancel{15} \cdot 1} = \frac{7}{2}$

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Perform the indicated operation:

1) $\frac{13}{36} \cdot 3 =$

2) $\frac{2}{11} \cdot 22 =$

3) $\frac{3}{64} \cdot 24 =$

4) $\frac{5}{16} \cdot 20 =$

5) $\frac{3}{32} \cdot 4 =$

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Answers:

1) $\frac{13}{12}$

2) 4

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

4) $\frac{25}{4}$

5) $\frac{1}{8}$

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