Chapter 4 Rational Numbers

3 **Find** $\dfrac{1}{2} \div 7\dfrac{1}{2}$.

$\dfrac{1}{2} \div 7\dfrac{1}{2} = \dfrac{1}{2} \div \dfrac{15}{2}$ Rename $\dfrac{15}{2}$ as $7\dfrac{1}{2}$.

$\qquad\qquad = \dfrac{1}{\cancel{2}} \cdot \dfrac{\overset{1}{\cancel{2}}}{15}$ Multiply by the reciprocal of $\dfrac{2}{15}$, $\dfrac{15}{2}$. Divide out common factors.

$\qquad\qquad = \dfrac{1}{15}$ Multiply.

7 **Cheryl is organizing her movie collection. If each movie case is $\dfrac{3}{4}$ inch wide,**

how many movies can fit on a shelf $5\dfrac{1}{4}$ feet wide?

Convert $5\dfrac{1}{4}$ feet to inches. There are 12 inches in 1 foot.

$5\dfrac{1}{4}$ ft $\times \dfrac{12 \text{ in.}}{1 \text{ ft}} = \dfrac{21}{4}$ ft $\times \dfrac{12 \text{ in.}}{1 \text{ ft}}$ Multiply.

$\qquad\qquad = \dfrac{21}{\cancel{4}} \, \cancel{\text{ft}} \times \dfrac{\overset{3}{\cancel{12}} \text{ in.}}{1 \, \cancel{\text{ft}}}$ Divide out common units.

$\qquad\qquad = \dfrac{21 \times 3}{1 \times 1}$ Simplify.

$\qquad\qquad = 63$

Divide the length of the shelf in inches by $\dfrac{3}{4}$.

$63 \div \dfrac{3}{4} = \dfrac{\overset{21}{\cancel{63}}}{1} \cdot \dfrac{4}{\underset{1}{\cancel{3}}}$ Multiply by the reciprocal. Divide out common units.

$\qquad\quad = \dfrac{84}{1}$ Simplify.

$\qquad\quad = 84$

So, Cheryl can fit 84 movies on the shelf.

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