

Estimating Quotients

When you are working with fractions and mixed numbers, you can estimate using rounding and compatible numbers.

Estimate $23\frac{5}{6} \div 8\frac{3}{7}$.

$$\begin{array}{r} 23\frac{5}{6} \div 8\frac{3}{7} \\ \downarrow \quad \downarrow \\ 24 \div 8 = 3 \end{array}$$

$24 \div 8 = 3$

$23\frac{5}{6} \div 8\frac{3}{7} \approx 3$

Round each mixed number to the nearest whole number.

Divide.

Estimate $31\frac{1}{6} \div 4\frac{5}{8}$.

$$\begin{array}{r} 31\frac{1}{6} \div 4\frac{5}{8} \\ \downarrow \quad \downarrow \\ 30 \div 5 = 6 \end{array}$$

$30 \div 5 = 6$

$31\frac{1}{6} \div 4\frac{5}{8} \approx 6$

Change $31\frac{1}{6}$ and $4\frac{5}{8}$ to the nearest compatible whole numbers.

Think: $31\frac{1}{6}$ and $4\frac{5}{8}$ are close to 30 and 5.

Estimate each quotient.

1. $11\frac{1}{2} \div 6\frac{1}{4}$ _____

2. $19\frac{1}{3} \div 3\frac{2}{3}$ _____

3. $41\frac{7}{9} \div 7\frac{1}{5}$ _____

4. $35\frac{1}{8} \div 5\frac{4}{5}$ _____

5. $61\frac{3}{8} \div 8\frac{5}{9}$ _____

6. $72\frac{2}{9} \div 7\frac{7}{8}$ _____

7. $86\frac{3}{4} \div 10\frac{5}{6}$ _____

8. $26\frac{9}{10} \div 2\frac{5}{8}$ _____

9. $11\frac{2}{7} \div 3\frac{3}{5}$ _____

10. $7\frac{9}{10} \div 2\frac{3}{10}$ _____

11. $47\frac{6}{10} \div 7\frac{1}{12}$ _____

12. $60\frac{5}{12} \div 5\frac{4}{9}$ _____

13. **Critical Thinking** Which of these two estimates is closer to the actual quotient?

How do you know?

Lisa's estimate: $55\frac{1}{2} \div 6\frac{3}{4} \approx 54 \div 6 = 9$

Hayden's estimate: $55\frac{1}{2} \div 6\frac{3}{4} \approx 56 \div 7 = 8$

14. Patrick uses wire to make wreaths. He has $31\frac{1}{2}$ feet of wire left on a spool. Estimate how many $3\frac{3}{4}$ pieces can he cut from the longer piece of wire.
