

Mixed Numbers & Improper Fractions

MN 1

Instructions: In each problem below, an improper fraction is represented by blocks beneath a number line. Use the number line to determine what the equivalent mixed number form would be. (Notice that some number lines have different sub-divisions: thirds, fourths, fifths...)

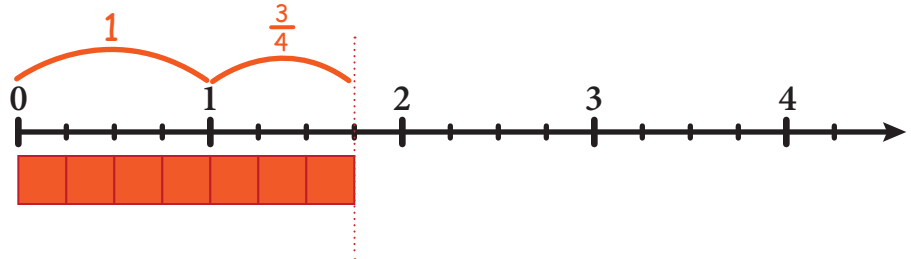
1

Mixed Number

$$1\frac{3}{4}$$

Improper Fraction

$$\frac{7}{4}$$



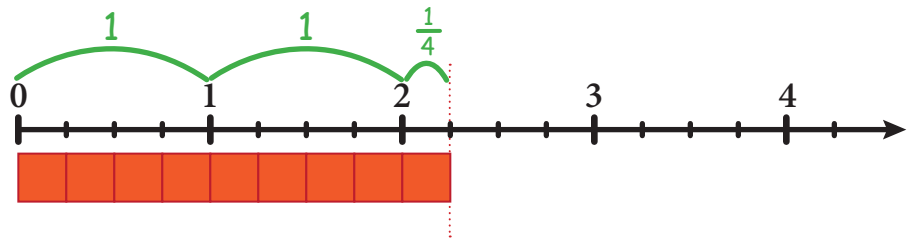
2

Mixed Number

$$2\frac{1}{4}$$

Improper Fraction

$$\frac{9}{4}$$



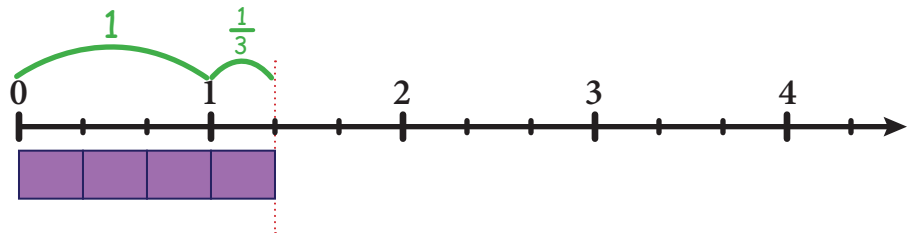
3

Mixed Number

$$1\frac{1}{3}$$

Improper Fraction

$$\frac{4}{3}$$



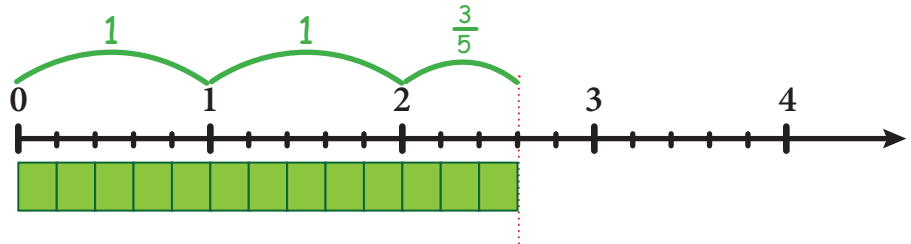
4

Mixed Number

$$2\frac{3}{5}$$

Improper Fraction

$$\frac{13}{5}$$



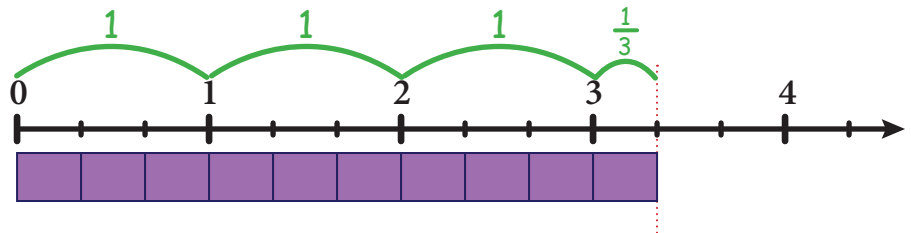
5

Mixed Number

$$3\frac{1}{3}$$

Improper Fraction

$$\frac{10}{3}$$



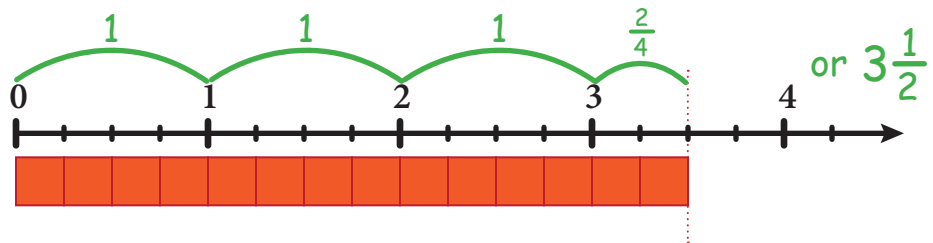
6

Mixed Number

$$3\frac{2}{4}$$

Improper Fraction

$$\frac{14}{4}$$



Converting Mixed Numbers - The Long Way

MN 2

Instructions: Re-write each mixed number as a sum of 'whole fractions' and a proper fraction. Then add those fractions up to get the improper fraction form of the mixed number.

$$\begin{aligned} 1 \frac{3}{8} &= 1 + \frac{3}{8} \\ &= \frac{8}{8} + \frac{3}{8} = \left(\frac{11}{8}\right) \end{aligned}$$

$$\begin{aligned} 3 \frac{1}{5} &= 1 + 1 + 1 + \frac{1}{5} \\ &= \frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{1}{5} = \left(\frac{16}{5}\right) \end{aligned}$$

$$\begin{aligned} 2 \frac{3}{4} &= 1 + 1 + \frac{3}{4} \\ &= \frac{4}{4} + \frac{4}{4} + \frac{3}{4} = \left(\frac{11}{4}\right) \end{aligned}$$

$$\begin{aligned} 2 \frac{1}{9} &= 1 + 1 + \frac{1}{9} \\ &= \frac{9}{9} + \frac{9}{9} + \frac{1}{9} = \left(\frac{19}{9}\right) \end{aligned}$$

$$\begin{aligned} 1 \frac{7}{10} &= 1 + \frac{7}{10} \\ &= \frac{10}{10} + \frac{7}{10} = \left(\frac{17}{10}\right) \end{aligned}$$

$$\begin{aligned} 3 \frac{1}{3} &= 1 + 1 + 1 + \frac{1}{3} \\ &= \frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{1}{3} = \left(\frac{10}{3}\right) \end{aligned}$$

$$\begin{aligned} 2 \frac{6}{7} &= 1 + 1 + \frac{6}{7} \\ &= \frac{7}{7} + \frac{7}{7} + \frac{6}{7} = \left(\frac{20}{7}\right) \end{aligned}$$

$$\begin{aligned} 2 \frac{3}{25} &= 1 + 1 + \frac{3}{25} \\ &= \frac{25}{25} + \frac{25}{25} + \frac{3}{25} = \left(\frac{53}{25}\right) \end{aligned}$$

$$\begin{aligned} 4 \frac{1}{2} &= 1 + 1 + 1 + 1 + \frac{1}{2} \\ &= \frac{2}{2} + \frac{2}{2} + \frac{2}{2} + \frac{2}{2} + \frac{1}{2} = \left(\frac{9}{2}\right) \end{aligned}$$

$$\begin{aligned} 1 \frac{5}{12} &= 1 + \frac{5}{12} \\ &= \frac{12}{12} + \frac{5}{12} = \left(\frac{17}{12}\right) \end{aligned}$$

Converting Mixed Numbers by Multiplying

MN 3

Instructions: Convert each mixed number into an improper fraction using multiplication like you saw in the video. (Since multiplication is repeated addition, it's much quicker to multiply the whole number part of the mixed number by a 'whole fraction' and then add the product you get to the fraction part of the mixed number.)

$$\begin{aligned} 1 \quad 2\frac{3}{4} &= 2 \times \frac{4}{4} + \frac{3}{4} \\ &= \frac{8}{4} + \frac{3}{4} = \left(\frac{11}{4}\right) \end{aligned}$$

$$\begin{aligned} 2 \quad 5\frac{1}{3} &= 5 \times \frac{3}{3} + \frac{1}{3} \\ &= \frac{15}{3} + \frac{1}{3} = \left(\frac{16}{3}\right) \end{aligned}$$

$$\begin{aligned} 3 \quad 5\frac{1}{6} &= 5 \times \frac{6}{6} + \frac{1}{6} \\ &= \frac{30}{6} + \frac{1}{6} = \left(\frac{31}{6}\right) \end{aligned}$$

$$\begin{aligned} 4 \quad 4\frac{3}{8} &= 4 \times \frac{8}{8} + \frac{3}{8} \\ &= \frac{32}{8} + \frac{3}{8} = \left(\frac{35}{8}\right) \end{aligned}$$

$$\begin{aligned} 5 \quad 10\frac{3}{4} &= 10 \times \frac{4}{4} + \frac{3}{4} \\ &= \frac{40}{4} + \frac{3}{4} = \left(\frac{43}{4}\right) \end{aligned}$$

$$\begin{aligned} 6 \quad 9\frac{1}{9} &= 9 \times \frac{9}{9} + \frac{1}{9} \\ &= \frac{81}{9} + \frac{1}{9} = \left(\frac{82}{9}\right) \end{aligned}$$

$$\begin{aligned} 7 \quad 2\frac{4}{15} &= 2 \times \frac{15}{15} + \frac{4}{15} \\ &= \frac{30}{15} + \frac{4}{15} = \left(\frac{34}{15}\right) \end{aligned}$$

$$\begin{aligned} 8 \quad 11\frac{3}{7} &= 11 \times \frac{7}{7} + \frac{3}{7} \\ &= \frac{77}{7} + \frac{3}{7} = \left(\frac{80}{7}\right) \end{aligned}$$

$$\begin{aligned} 9 \quad 1\frac{7}{12} &= 1 \times \frac{12}{12} + \frac{7}{12} \\ &= \frac{12}{12} + \frac{7}{12} = \left(\frac{19}{12}\right) \end{aligned}$$

$$\begin{aligned} 10 \quad 25\frac{1}{4} &= 25 \times \frac{4}{4} + \frac{1}{4} \\ &= \frac{100}{4} + \frac{1}{4} = \left(\frac{101}{4}\right) \end{aligned}$$

Converting Improper Fractions by Dividing

MN 4

Instructions: You can convert an improper fraction into a mixed number just by dividing the top number (numerator) by the bottom number (denominator). The answer to the division is the whole number part of the mixed number and the remainder of the division tells you what fraction is left over.

1 $\frac{14}{5} = 2\frac{4}{5}$

$$\begin{array}{r} 5 \overline{)14} \\ \underline{-10} \\ 4 \end{array}$$

divide top
by bottom

2 $\frac{23}{7} = 3\frac{2}{7}$

$$\begin{array}{r} 7 \overline{)23} \\ \underline{-21} \\ 2 \end{array}$$

3 $\frac{19}{5} = 3\frac{4}{5}$

$$\begin{array}{r} 5 \overline{)19} \\ \underline{-15} \\ 4 \end{array}$$

4 $\frac{11}{4} = 2\frac{3}{4}$

$$\begin{array}{r} 4 \overline{)11} \\ \underline{-8} \\ 3 \end{array}$$

5 $\frac{31}{7} = 4\frac{3}{7}$

$$\begin{array}{r} 7 \overline{)31} \\ \underline{-28} \\ 3 \end{array}$$

6 $\frac{42}{8} = 5\frac{2}{8}$

or $5\frac{1}{4}$

$$\begin{array}{r} 8 \overline{)42} \\ \underline{-40} \\ 2 \end{array}$$

7 $\frac{50}{9} = 5\frac{5}{9}$

$$\begin{array}{r} 9 \overline{)50} \\ \underline{-45} \\ 5 \end{array}$$

8 $\frac{22}{7} = 3\frac{1}{7}$

$$\begin{array}{r} 7 \overline{)22} \\ \underline{-21} \\ 1 \end{array}$$

9 $\frac{17}{3} = 5\frac{2}{3}$

$$\begin{array}{r} 3 \overline{)17} \\ \underline{-15} \\ 2 \end{array}$$

10 $\frac{84}{9} = 9\frac{3}{9}$

or $9\frac{1}{3}$

$$\begin{array}{r} 9 \overline{)84} \\ \underline{-81} \\ 3 \end{array}$$

Converting Mixed Numbers and Improper Fractions - Set 1

MN 5

Instructions: Use the procedures you learned to convert each mixed number into an improper fraction, and each improper fraction into a mixed number.

$$\begin{aligned} 1 \quad 4\frac{1}{6} &= 4 \times \frac{6}{6} + \frac{1}{6} \\ &= \frac{24}{6} + \frac{1}{6} = \left(\frac{25}{6}\right) \end{aligned}$$

$$2 \quad \frac{36}{5} = \left(7\frac{1}{5}\right) \quad \begin{array}{r} 5 \overline{)36} \\ \underline{-35} \\ 1 \end{array}$$

$$\begin{aligned} 3 \quad 3\frac{5}{8} &= 3 \times \frac{8}{8} + \frac{5}{8} \\ &= \frac{24}{8} + \frac{5}{8} = \left(\frac{29}{8}\right) \end{aligned}$$

$$4 \quad \frac{20}{3} = \left(6\frac{2}{3}\right) \quad \begin{array}{r} 3 \overline{)20} \\ \underline{-18} \\ 2 \end{array}$$

$$\begin{aligned} 5 \quad 7\frac{1}{2} &= 7 \times \frac{2}{2} + \frac{1}{2} \\ &= \frac{14}{2} + \frac{1}{2} = \left(\frac{15}{2}\right) \end{aligned}$$

$$6 \quad \frac{23}{10} = \left(2\frac{3}{10}\right) \quad \begin{array}{r} 10 \overline{)23} \\ \underline{-20} \\ 3 \end{array}$$

$$\begin{aligned} 7 \quad 9\frac{2}{3} &= 9 \times \frac{3}{3} + \frac{2}{3} \\ &= \frac{27}{3} + \frac{2}{3} = \left(\frac{29}{3}\right) \end{aligned}$$

$$8 \quad \frac{29}{6} = \left(4\frac{5}{6}\right) \quad \begin{array}{r} 6 \overline{)29} \\ \underline{-24} \\ 5 \end{array}$$

$$\begin{aligned} 9 \quad 5\frac{1}{12} &= 5 \times \frac{12}{12} + \frac{1}{12} \\ &= \frac{60}{12} + \frac{1}{12} = \left(\frac{61}{12}\right) \end{aligned}$$

$$10 \quad \frac{34}{8} = 4\frac{2}{8} \quad \begin{array}{r} 8 \overline{)34} \\ \underline{-32} \\ 2 \end{array}$$

or $\left(4\frac{1}{4}\right)$

Converting Mixed Numbers and Improper Fractions - Set 2

MN 6

Instructions: Use the procedures you learned to convert each mixed number into an improper fraction, and each improper fraction into a mixed number.

$$\begin{aligned} 1 \quad 5\frac{1}{4} &= 5 \times \frac{4}{4} + \frac{1}{4} \\ &= \frac{20}{4} + \frac{1}{4} = \left(\frac{21}{4}\right) \end{aligned}$$

$$2 \quad \frac{13}{5} = \left(2\frac{3}{5}\right) \quad \begin{array}{r} 5 \overline{)13} \\ \underline{-10} \\ 3 \end{array}$$

$$\begin{aligned} 3 \quad 2\frac{4}{15} &= 2 \times \frac{15}{15} + \frac{4}{15} \\ &= \frac{30}{15} + \frac{4}{15} = \left(\frac{34}{15}\right) \end{aligned}$$

$$4 \quad \frac{75}{7} = \left(10\frac{5}{7}\right) \quad \begin{array}{r} 7 \overline{)75} \\ \underline{-70} \\ 5 \end{array}$$

$$\begin{aligned} 5 \quad 8\frac{1}{8} &= 8 \times \frac{8}{8} + \frac{1}{8} \\ &= \frac{64}{8} + \frac{1}{8} = \left(\frac{65}{8}\right) \end{aligned}$$

$$6 \quad \frac{16}{5} = \left(3\frac{1}{5}\right) \quad \begin{array}{r} 5 \overline{)16} \\ \underline{-15} \\ 1 \end{array}$$

$$\begin{aligned} 7 \quad 12\frac{2}{3} &= 12 \times \frac{3}{3} + \frac{2}{3} \\ &= \frac{36}{3} + \frac{2}{3} = \left(\frac{38}{3}\right) \end{aligned}$$

$$8 \quad \frac{30}{4} = 7\frac{2}{4} \quad \begin{array}{r} 4 \overline{)30} \\ \underline{-28} \\ 2 \end{array}$$

or $\left(7\frac{1}{2}\right)$

$$\begin{aligned} 9 \quad 6\frac{2}{5} &= 6 \times \frac{5}{5} + \frac{2}{5} \\ &= \frac{30}{5} + \frac{2}{5} = \left(\frac{32}{5}\right) \end{aligned}$$

$$10 \quad \frac{100}{11} = \left(9\frac{1}{11}\right) \quad \begin{array}{r} 11 \overline{)100} \\ \underline{-99} \\ 1 \end{array}$$