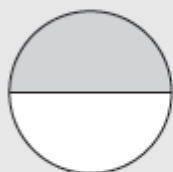


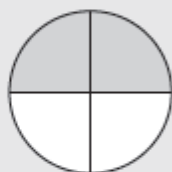
Unit 3 : Fractions

Friendly Notes

Equivalent Fractions



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



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



$$\frac{3}{6}$$



$$\frac{4}{8}$$

We can see that the size of each circle is the same.

We notice that half of each circle is shaded.

$$\text{So, } \frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}.$$

$\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, and $\frac{4}{8}$ are called **equivalent fractions**.

$\frac{1}{2}$ is a fraction in its **simplest form**.

Name two equivalent fractions of $\frac{4}{12}$.

$$\frac{4}{12} \div 4 = \frac{1}{3}$$

$$\frac{4}{12} \times 2 = \frac{8}{24}$$



We can divide or multiply the numerator and the denominator by the same number to get equivalent fractions.

Adding and Subtracting Like Fractions

We can only add or subtract fractions when their denominators are the same.

1. Add.

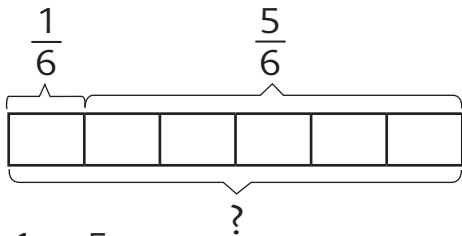
$$(a) \frac{2}{5} + \frac{1}{5}$$

$$\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$$

$$(b) \frac{1}{8} + \frac{4}{8} + \frac{3}{8}$$

$$\frac{1}{8} + \frac{4}{8} + \frac{3}{8} = 1$$

2. Find the sum of $\frac{1}{6}$ and $\frac{5}{6}$.



$$\frac{1}{6} + \frac{5}{6} = 1$$

3. Subtract.

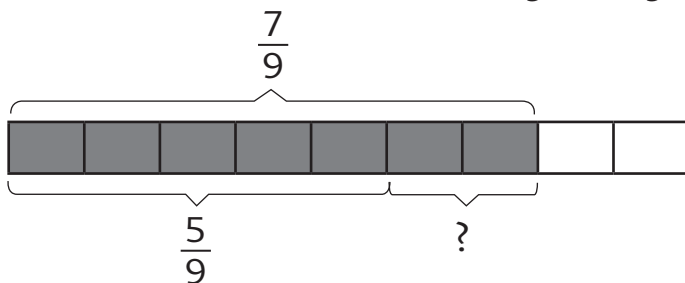
$$(a) \frac{5}{6} - \frac{4}{6}$$

$$\frac{5}{6} - \frac{4}{6} = \frac{1}{6}$$

$$(b) 1 - \frac{5}{12} - \frac{2}{12}$$

$$1 - \frac{5}{12} - \frac{2}{12} = \frac{12}{12} - \frac{5}{12} - \frac{2}{12} = \frac{5}{12}$$

4. Find the difference between $\frac{7}{9}$ and $\frac{5}{9}$.



$$\frac{7}{9} - \frac{5}{9} = \frac{2}{9}$$

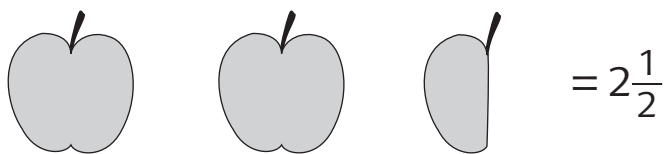
Mixed Numbers

We get a **mixed number** when we add a whole number and a fraction.

$5\frac{1}{3}$, $6\frac{3}{7}$, and $8\frac{3}{8}$ are mixed numbers.

1. Write a mixed number.

(a)



(b) 6 wholes 5 sevenths = $6\frac{5}{7}$

2. Find the value of each of the following.

(a) $7 + \frac{3}{4}$

$$7 + \frac{3}{4} = 7\frac{3}{4}$$

(b) $9 - \frac{1}{3}$

$$\begin{aligned} 9 - \frac{1}{3} &= 8\frac{3}{3} - \frac{1}{3} \\ &= 8\frac{2}{3} \end{aligned}$$

Improper Fractions

In an **improper fraction**, the numerator is greater than or equal to its denominator.

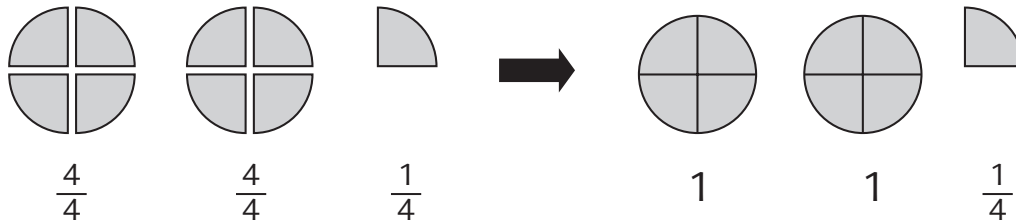
Improper fractions are equal to or greater than 1.

We can express an improper fraction as a whole number or a mixed number.

1. Circle the improper fractions.

$$\frac{1}{2}, \quad \left(\frac{5}{5}\right), \quad \frac{2}{4}, \quad \left(\frac{6}{5}\right), \quad \left(\frac{9}{8}\right), \quad \left(\frac{1}{1}\right)$$

2. Change the improper fraction $\frac{9}{4}$ to a mixed number.



$$\begin{aligned} \frac{4}{4} + \frac{4}{4} + \frac{1}{4} &= \frac{9}{4} \\ 1 + 1 + \frac{1}{4} &= \frac{9}{4} \end{aligned}$$

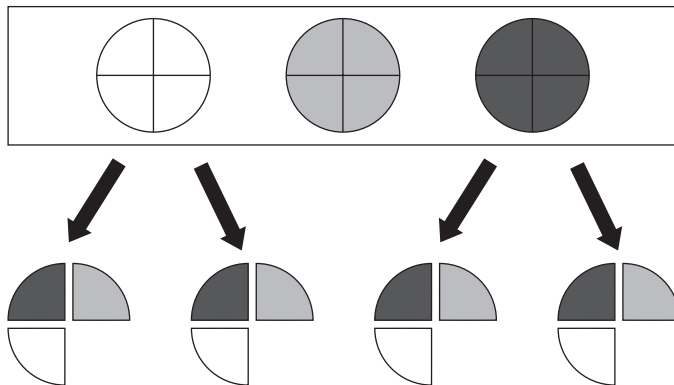
$$\frac{9}{4} = 2\frac{1}{4}$$

3. Change $4\frac{3}{5}$ into an improper fraction.

$$\begin{aligned} 4\frac{3}{5} &= 4 + \frac{3}{5} \\ &= \frac{20}{5} + \frac{3}{5} \\ &= \frac{23}{5} \end{aligned}$$

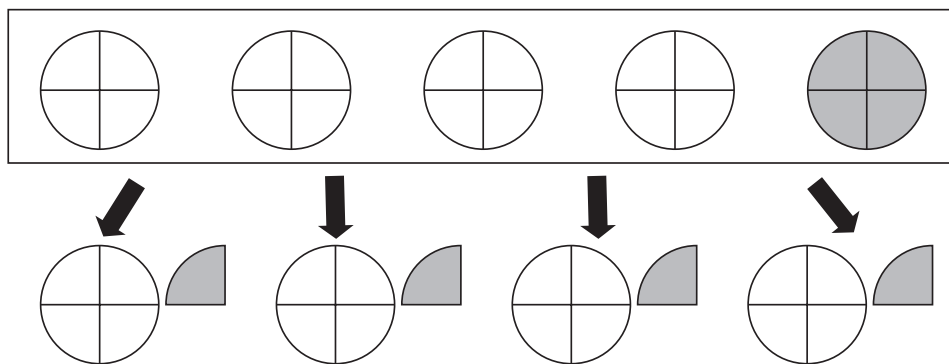
Fractions and Division

- Share 3 pizzas equally among 4 children.
Each child receives 3 fourths.



$$3 \div 4 = \frac{3}{4}$$

- Share 5 pizzas equally among 4 children.
Each child receives 5 fourths.



$$5 \div 4 = 1\frac{1}{4}$$

$$\begin{array}{r} 1 \\ 4 \overline{) 5} \\ \underline{4} \\ 1 \end{array}$$

$1\frac{1}{4}$ is the same as $\frac{5}{4}$.



3. Find the value of $32 \div 6$.

Method 1:

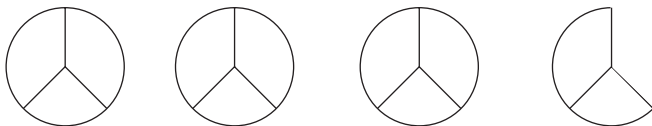
$$\begin{aligned} 32 \div 6 &= 5\frac{2}{6} & 6 \overline{)32} \\ &= 5\frac{1}{3} & \quad \underline{30} \\ & & \quad \quad \underline{2} \end{aligned}$$

Method 2:

$$\begin{aligned} 32 \div 6 &= \frac{32}{6} \\ &= \frac{16}{3} \\ &= 5\frac{1}{3} \end{aligned}$$

4. Express $\frac{11}{3}$ as a mixed number.

Method 1:



$$\begin{aligned} \frac{11}{3} &= \frac{9}{3} + \frac{2}{3} \\ &= 3 + \frac{2}{3} \\ &= 3\frac{2}{3} \end{aligned}$$

Method 2:

$$\begin{aligned} \frac{11}{3} &= 11 \div 3 & 3 \overline{)11} \\ & & \quad \underline{9} \\ & & \quad \quad \underline{2} \end{aligned}$$