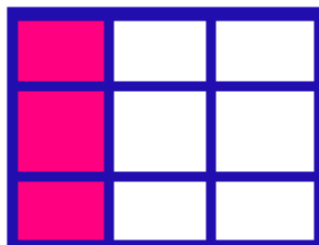




$$\frac{1}{3} = \frac{3}{9}$$

Diagram illustrating the multiplication of the fraction  $\frac{1}{3}$  by 3 to get  $\frac{3}{9}$ . Red arrows show the numerator 1 being multiplied by 3 to become 3, and the denominator 3 being multiplied by 3 to become 9.

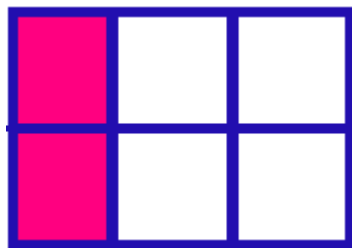
۱- با رسم شکل یک کسر مساوی با  $\frac{1}{3}$  بنویسید که مخرج آن ۹ باشد.



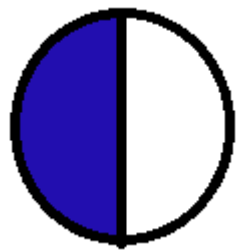
$$\frac{1}{3} = \frac{2}{6}$$

Diagram illustrating the multiplication of the fraction  $\frac{1}{3}$  by 2 to get  $\frac{2}{6}$ . Red arrows show the numerator 1 being multiplied by 2 to become 2, and the denominator 3 being multiplied by 2 to become 6.

حالا برای کسر  $\frac{1}{3}$  یک کسر مساوی دیگر بنویسید.

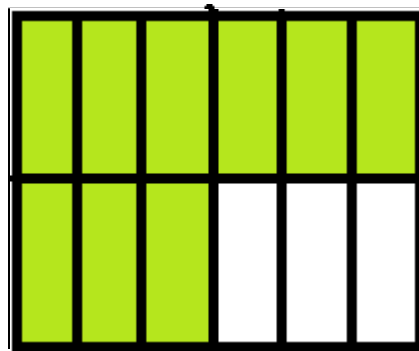


۲- مانند سؤال بالا، برای کسرهای داده شده یک کسر مساوی بنویسید.



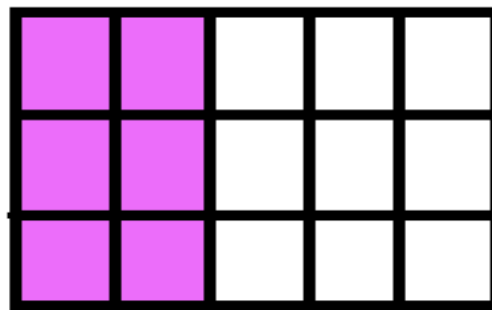
$$\frac{1}{2} = \frac{2}{4}$$

The equation shows the fraction  $\frac{1}{2}$  on the left and  $\frac{2}{4}$  on the right, separated by an equals sign. A red curved arrow above the equation points from the denominator 2 to the denominator 4, with a red  $\times 2$  next to it. A second red curved arrow below the equation points from the numerator 1 to the numerator 2, also with a red  $\times 2$  next to it.



$$\frac{3}{4} = \frac{9}{12}$$

The equation shows the fraction  $\frac{3}{4}$  on the left and  $\frac{9}{12}$  on the right, separated by an equals sign. A red curved arrow above the equation points from the denominator 4 to the denominator 12, with a red  $\times 3$  next to it. A second red curved arrow below the equation points from the numerator 3 to the numerator 9, also with a red  $\times 3$  next to it.



$$\frac{2}{5} = \frac{6}{15}$$

The equation shows the fraction  $\frac{2}{5}$  on the left and  $\frac{6}{15}$  on the right, separated by an equals sign. A red curved arrow above the equation points from the denominator 5 to the denominator 15, with a red  $\times 3$  next to it. A second red curved arrow below the equation points from the numerator 2 to the numerator 6, also with a red  $\times 3$  next to it.

با توجه به تساوی‌های بالا، توضیح دهید چگونه بدون رسم شکل می‌توان کسر مساوی یک کسر را پیدا کرد.

$$\frac{2}{5} = \frac{6}{15}$$

Diagram illustrating the multiplication of the fraction  $\frac{2}{5}$  by 3 to get  $\frac{6}{15}$ . A green arrow labeled  $\times 3$  points from the numerator 2 to 6, and another green arrow labeled  $\times 3$  points from the denominator 5 to 15.

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

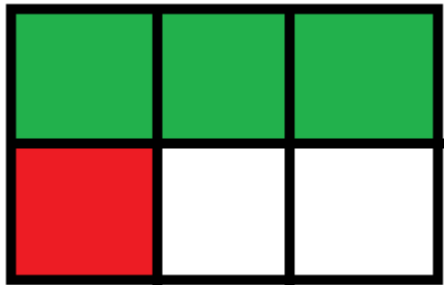
Diagram illustrating the multiplication of the fraction  $\frac{2}{3}$  by 3 to get  $\frac{2}{3}$ . A green arrow labeled  $\times 3$  points from the numerator 2 to 2, and another green arrow labeled  $\times 3$  points from the denominator 3 to 3.

**نکته:**

اگر صورت و مخرج کسری را همزمان در عددی غیر از صفر و یک ضرب و یا بر آن تقسیم کنیم، کسر مساوی با آن به وجود می‌آید.

به این کار ساده‌سازی می‌گویند.

۳- طاهها می خواست حاصل جمع زیر را به دست آورد. آموزگار برای راهنمایی او این شکل را رسم کرد. توضیح دهید طاهها باید چه کسری را به جای  $\frac{1}{2}$  بنویسد. چرا؟



$$\frac{1}{2} + \frac{1}{6} = \text{---} + \frac{1}{6} =$$

باید کسر مساوی با  $\frac{1}{2}$  را بنویسیم که مخرج آن ۶ باشد تا بتوانیم دو کسر را با هم جمع کنیم.

$$\frac{1}{2} = \frac{3}{6}$$

$\overset{\times 3}{\curvearrowright}$   
 $\underset{\times 3}{\curvearrowleft}$



۱- جاهای خالی را پر کنید.

$$\frac{4}{5} = \frac{6}{10}$$

$\times 2$  (top)

$\times 2$  (bottom)

$$\frac{2}{4} = \frac{4}{8}$$

$\times 2$  (top)

$\times 2$  (bottom)

$$\frac{4}{7} = \frac{12}{21}$$

$\times 3$  (top)

$\times 3$  (bottom)

$$\frac{4}{7} = \frac{6}{14}$$

$\times 2$  (top)

$\times 2$  (bottom)

۲- مانند نمونه، حاصل جمع و تفریق‌ها را به دست آورید.

$$\frac{2}{3} - \frac{4}{21} = \frac{14}{21} - \frac{4}{21} = \frac{10}{21}$$

$$\frac{7}{18} + \frac{2}{9} = \frac{7}{18} + \frac{4}{18} = \frac{11}{18}$$

$$\frac{1}{6} - \frac{1}{12} = \frac{2}{12} - \frac{1}{12} = \frac{1}{12}$$

$$\frac{1}{3} + \frac{5}{12} = \frac{4}{12} + \frac{5}{12} = \frac{9}{12}$$