Name_____

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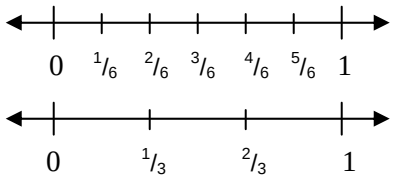
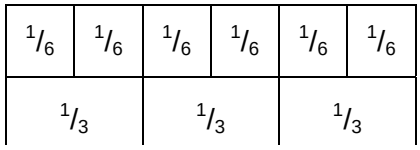
4.5 Equivalent Fractions

Equivalent Fractions name the same amount.

$^4/_6$ and $^2/_3$ are the same amount.

$^4/_6$ and $^2/_3$ are equivalent.



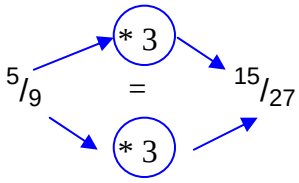


You can see that they are the same amount by using number lines and fraction strips.

You can use mathematics to easily make equivalent fractions.

Multiply

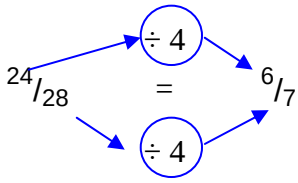
Decide what number you will multiply by and multiply **both** the numerator and denominator to obtain the equivalent fraction.



$^5/_9$ and $^{15}/_{27}$ are equivalent fractions.

Divide

Decide what number you will divide by and divide **both** the numerator and denominator to obtain the equivalent fraction.



$^{24}/_{28}$ and $^6/_7$ are equivalent fractions.

Find the missing number that makes the following fractions equivalent.

$\frac{2}{3} * \frac{\mathbf{4}}{\mathbf{4}} = \frac{8}{12}$ $\quad \frac{3}{4} * \frac{\quad}{\quad} = \frac{12}{16}$ $\quad \frac{5}{8} * \frac{\quad}{\quad} = \frac{25}{40}$

$\frac{20}{40} \div \frac{\quad}{\quad} = \frac{5}{10}$ $\quad \frac{15}{35} \div \frac{\quad}{\quad} = \frac{3}{7}$ $\quad \frac{9}{75} \div \frac{\quad}{\quad} = \frac{3}{25}$

Find the missing number that makes the following fractions equivalent.

$\frac{1}{2} = \frac{\quad}{6}$ $\quad \frac{2}{3} = \frac{10}{\quad}$ $\quad \frac{3}{\quad} = \frac{18}{24}$ $\quad \frac{\quad}{5} = \frac{14}{35}$

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4.5b Equivalent Fractions – Simplifying Fractions

Equivalent Fractions name the same amount. Most of the time, you will be asked to show your answer in simplest form (otherwise the multitude of possible answers to a problem would make checking your work prohibitive!).

Simplest Form is a fraction whose numerator and denominator have a GCF of 1.

There are several ways to go about simplifying fractions.

GCF Style

1. Find the GCF of the numerator and denominator.
2. Create a fraction (equivalent to 1) using the GCF.
3. Divide the original fraction by "one".

$$\frac{15}{24} \div \frac{3}{3} = \frac{5}{8}$$

15: 1, **3**, 5, 15
24: 1, 2, **3**, 4, 6, 8, 12, 24

Prime Factor Style

1. Write the numerator and denominator as a product of prime factors.
2. Delete all common prime factors.
3. Multiply the remaining factors.

$\frac{36}{48}$

36 = 3 * 3 * 2 * 2
48 = 3 * 2 * 2 * 2 * 2

36 = [redacted] 3 [redacted]
48 = [redacted] 2 [redacted] 2

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

Use one of the methods above to simplify each of the following fractions.

$\frac{6}{24} =$ ___

$\frac{12}{15} =$ ___

$\frac{12}{21} =$ ___

$\frac{8}{16} =$ ___

$\frac{16}{56} =$ ___

$\frac{9}{24} =$ ___

$\frac{7}{9} =$ ___

$\frac{21}{25} =$ ___