

Guided Notes 2-0-1 – Equivalent Fractions & Simplifying Fractions

Equivalent Fractions

Fractions, unlike whole numbers, can be written in many different ways and yet represent the same value. For example,

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12} = \frac{7}{14} = \frac{8}{16} = \frac{9}{18} = \frac{10}{20} = \frac{11}{22} = \frac{12}{24} = \frac{13}{26} = \frac{14}{28} = \frac{15}{30}$$

All of these fractions have the same value as $\frac{1}{2}$. Fractions that have the same value are called **equivalent fractions**.

You can create equivalent fractions by multiplying or dividing both the numerator and denominator of a fraction by the same number.

$$\frac{20}{35} = \frac{20/5}{35/5} = \frac{4}{7}$$

or

$$\frac{4}{7} = \frac{4 \cdot 6}{7 \cdot 6} = \frac{24}{42}$$

Write the equivalent fraction with the given denominator.

$$\frac{8}{9} = \frac{\quad}{27} \quad \frac{3}{5} = \frac{\quad}{10} \quad \frac{4}{7} = \frac{\quad}{28} \quad \frac{6}{7} = \frac{\quad}{56} \quad \frac{5}{8} = \frac{\quad}{48} \quad \frac{1}{6} = \frac{\quad}{54}$$

$$\frac{15}{35} = \frac{\quad}{7} \quad \frac{36}{45} = \frac{\quad}{5} \quad \frac{12}{18} = \frac{\quad}{3} \quad \frac{14}{49} = \frac{\quad}{7} \quad \frac{56}{64} = \frac{\quad}{8} \quad \frac{72}{81} = \frac{\quad}{9}$$

Write the equivalent fraction for the whole number.

$$6 = \frac{\quad}{3} \quad 9 = \frac{\quad}{2} \quad 1 = \frac{\quad}{8} \quad 3 = \frac{\quad}{3} \quad 5 = \frac{\quad}{7} \quad 4 = \frac{\quad}{8}$$

$$10 = \frac{\quad}{6} \quad 2 = \frac{\quad}{5} \quad 3 = \frac{\quad}{4} \quad 7 = \frac{\quad}{4} \quad 6 = \frac{\quad}{6} \quad 5 = \frac{\quad}{8}$$

Simplifying Fractions

A fraction is considered simplified when its numerator and denominator do not share any common factors (besides 1).

Examples of simplified fractions: $\frac{1}{8}, \frac{4}{9}, \frac{11}{12}, \frac{16}{25}, \frac{2}{3}$

Examples of non-simplified fractions: $\frac{2}{8}, \frac{4}{10}, \frac{11}{22}, \frac{16}{24}, \frac{14}{21}$

To simplify a fraction, divide its numerator and denominator by the GCF of the two numbers. Or, divide out common factors until the numerator and denominator no longer have any common factors.

Simplify the fraction.

$$\frac{2}{8} \quad \frac{4}{24} \quad \frac{3}{9} \quad \frac{18}{30} \quad \frac{21}{28} \quad \frac{20}{40} \quad \frac{12}{20} \quad \frac{16}{24} \quad \frac{56}{64} \quad \frac{63}{81}$$

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Write the equivalent fraction.

1. $\frac{7}{8} = \frac{\quad}{72}$

2. $\frac{3}{7} = \frac{\quad}{42}$

Write the equivalent fraction for the whole number.

3. $12 = \frac{\quad}{4}$

4. $8 = \frac{\quad}{9}$

Simplify the fraction as much as possible.

5. $\frac{15}{21}$

6. $\frac{27}{72}$

7. $\frac{36}{54}$

Challenge (Optional): Write the equivalent fraction. *Hint: Simplify the fraction first.*

8. $\frac{27}{36} = \frac{\quad}{28}$

9. $\frac{30}{45} = \frac{\quad}{18}$