

8.10 Multiplication & Division Expressions with Fractions

When you **EVALUATE** an expression, you find the value of an algebraic expression by replacing each variable with a given number and simplify.

****REMINDER****

What does it mean when the expression is $2a$?

2 times a
(multiplication)

Example: Evaluate each expression.

1.) $\frac{3}{5}s$ when $s = \frac{2}{3}$ 2.) $3\frac{3}{4}a$ when $a = \frac{8}{15}$ 3.) $8c$ when $c = \frac{11}{24}$

$$\frac{3}{5} \cdot s$$

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

$$3\frac{3}{4} \cdot a$$

$$\frac{15}{4} \cdot \frac{8}{15} = \frac{2}{1}$$

$$= 2$$

$$8 \cdot c$$

$$\frac{8}{1} \cdot \frac{11}{24} = \frac{11}{3} \text{ or } 3\frac{2}{3}$$

Example: Evaluate each expression.

4.) $\frac{n}{4}$ when $n = 2\frac{2}{5}$

$$n \div 4 = 2\frac{2}{5} \div 4 = \frac{12}{5} \div \frac{4}{1} = \frac{12}{5} \cdot \frac{1}{4} = \frac{3}{5}$$

5.) $(b + c) \div (\frac{1}{6}b)$ when $b = \frac{2}{3}$ and $c = \frac{1}{12}$

$$\left(\frac{2}{3} + \frac{1}{12} \right) \div \left(\frac{1}{6} \cdot \frac{2}{3} \right)$$

$$\frac{\frac{8}{12} + \frac{1}{12}}{\frac{1}{9}} = \frac{\frac{9}{12}}{\frac{1}{9}} = \frac{9}{12} \cdot \frac{9}{1} = \frac{27}{4}$$

Example: Evaluate each expression.

6.) $(q + r) \div (\frac{1}{5}q)$ when $q = \frac{1}{4}$ and $r = \frac{1}{10}$

$$\left(\frac{1}{4} + \frac{1}{10} \right) \div \left(\frac{1}{5} \cdot \frac{1}{4} \right)$$

$$\frac{\frac{5}{20} + \frac{2}{20}}{\frac{1}{20}}$$

$$\frac{7}{20} \div \frac{1}{20} = \frac{7}{20} \cdot \frac{20}{1} = \frac{7}{1} = 7$$