

Unit 7: Rational Expressions & Equations**7.2 Multiplying & Dividing Rational Expressions**

Recall:

$$\left(\frac{5}{8} \times \frac{4}{15}\right) = \boxed{\frac{1}{6}}$$

$$\frac{5}{3} \div \frac{1}{6} = \frac{5}{3} \times \frac{6}{1} = \boxed{10}$$

Same idea for rational expressions. Remember to **factor!****ex.** Simplify. Identify all non-permissible values.

a) $\left(\frac{4x^2}{3xy}\right)\left(\frac{y^2}{8x}\right)$

$\boxed{\frac{y}{6}}$ or $\frac{y}{6}$

$x \neq 0$
 $y \neq 0$

b) $\frac{x^2-x-12}{x^2-9} \times \frac{x^2-4x+3}{x^2-4x}$

$$\frac{(x-4)(x+3)}{(x-3)(x+3)} \times \frac{(x-3)(x-1)}{x(x-4)}$$

$$= \boxed{\frac{x-1}{x}}$$

$$x \neq \pm 3, 0, 4$$

c) $\frac{x^2-4}{x^2-4x} \div \frac{x^2+x-6}{x^2+x-20}$

$$\frac{(x+2)(x-2)}{x(x-4)} \div \frac{(x-2)(x+3)}{(x-4)(x+5)}$$

$$\frac{(x+2)(x-2)}{x(x-4)} \times \frac{(x-4)(x+5)}{(x-2)(x+3)}$$

$$= \boxed{\frac{(x+2)(x+5)}{x(x+3)}}$$

d) $\frac{2m^2+7m-15}{10m+2m^2} \div \frac{9-4m^2}{6} \times (2m+3)$

$$\frac{(m+5)(2m-3)}{2m(5+m)} \div \frac{(3-2m)(3+2m)}{6} \times \frac{2m+3}{1}$$

$$\frac{(m+5)(2m-3)}{2m(5+m)} \times \frac{-63}{(3-2m)(3+2m)} \times \frac{2m+3}{1}$$

$$x \neq 0, 4, -5, 2, -3$$

$$\boxed{\frac{-3}{m}}$$

$$m \neq 0, -5, \pm \frac{3}{2}$$

Practice: pg. 327/ #1ab, 2abd, 5, 6, 8bcd, 10, 11, 15, 16, 19