6.2 Multiplying and Dividing Rational Expressions

REMEMBER

① $\frac{4}{7} \times \frac{14}{3} = \frac{56}{21} = \frac{8}{3}$

$\frac{4}{7} \times \frac{14}{3} = \frac{8}{3}$

② $-\frac{3}{10} \div \frac{9}{25} = -\frac{3}{10} \times \frac{25}{9} = \frac{-75}{90} = -\frac{5}{6}$

$-\frac{3}{10} \times \frac{25}{9} = \frac{-1 \times 5}{2 \times 3} = -\frac{5}{6}$

③ $\frac{9y}{4x} \cdot \frac{7y}{x^5} = \frac{63y^2}{4x^6}$ (exponent laws)

④ $\frac{3}{x} \div \frac{5}{x} = \frac{3}{x} \cdot \frac{x}{5} = \frac{3}{5}$

Multiply Rational Expressions

ex.1 $\frac{2a}{9} \cdot \frac{3b^2}{5a^2} = \frac{6ab^2}{45a^2} = \frac{2b^2}{15a}$ $a \neq 0$

$\frac{2a}{9} \cdot \frac{3b^2}{5a^2} = \frac{2b^2}{15a}$

2. $\frac{2x^2(x+2)}{3x} \cdot \frac{5(x-4)}{8x(x+2)}$

FACTORED FORM

$\frac{(2x^2)(5)(x-4)}{(3x)(8x)}$

$(3x)(\cancel{8}x)$ 4

$$= \frac{(\cancel{x^2})(5)(x-4)}{(3\cancel{x})(4\cancel{x})} = \frac{5(x-4)}{12}$$

Divide Rational Expressions

3. $$\frac{7n^3}{4} \div \frac{(7n)^2}{-12}$$

$(7n)^2 = (7n)(7n)$
$= 49n^2$

$$= \frac{1\cancel{7}n^3}{1\cancel{4}} \times \frac{\cancel{-12}\ -3}{7\cancel{49}n^2} = \frac{-3n^3}{7n^2} = \frac{-3n}{7}$$

4. $$\frac{5(x-3)}{2x} \div \frac{10(x-3)}{3x(x+5)}$$

FACTORED FORM !!

$$= \frac{1\cancel{5}\cancel{(x-3)}}{2x} \times \frac{3x(x+5)}{2\cancel{10}\cancel{(x-3)}}$$

$$= \frac{3\cancel{x}(x+5)}{4\cancel{x}} = \frac{3(x+5)}{4}$$

5. $$\frac{x-2}{3x-21} \div \frac{3x^2-12}{3x^2-12x-63}$$

F F F

FACTOR !!

$$= \frac{x-2}{3(x-7)} \times \frac{\cancel{3}(x^2-4x-21)}{\cancel{3}(x^2-4)}$$

F → + −4 × −21
−7, 3

F → bi-diff of sq.

$3(x-7)$ $\qquad$ $\cancel{3}(x^2-4)$ F $\longrightarrow$ bi-diff of sq.

$$= \frac{\cancel{x-2}^{\,1}}{3\cancel{(x-7)}^{\,1}} \times \frac{\cancel{(x-7)}^{\,1}(x+3)}{\cancel{(x-2)}^{\,1}(x+2)}$$

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

$$\boxed{\text{p 536 \# 4-8 (minimum of 3 in each), 11a, 12(2), 15}}$$