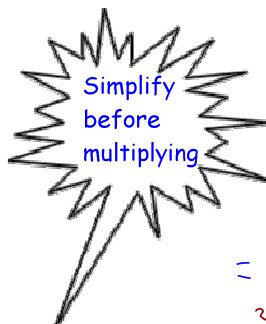


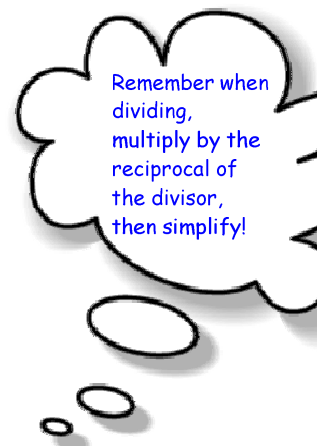
1.8 Multiplying and Dividing Rational Expressions

Recall:

$$a) \frac{2^1}{3^2} \times \frac{6^2}{14^7} = \frac{2}{21}$$



$$b) \frac{5}{6} \div \frac{10}{9} = \frac{5}{6} \times \frac{9}{10} = \frac{3}{4}$$



Ex.1 Simplify the rational expressions

$$a) \frac{4x-6}{8x^2y} \times \frac{4xy}{6x-9} = \frac{2(2x-3)}{8x^2y} \cdot \frac{4xy}{3(2x-3)} = \frac{1}{3x}$$

Rest
 $x \neq 0, \frac{3}{2}$
 $y \neq 0$

Steps!
1. Factor both the numerator and denominator.
2. State restrictions
3. IF <u>dividing</u> , multiply by the reciprocal of the divisor (flip the second fraction) and <u>state the rest of your restrictions.</u>
4. Simplify (diagonal and top/bottom)

$$b) \frac{12a^2-19a+5}{4a^2-9} \div \frac{3a-1}{2a-3} = \frac{(3a-1)(4a-5)}{(2a+3)(2a-3)} \div \frac{3a-1}{2a-3}$$

$$= \frac{(3a-1)(4a-5)}{(2a+3)(2a-3)} \times \frac{2a-3}{3a-1} = \frac{4a-5}{2a+3}$$

Rest
 $a \neq \pm \frac{3}{2}, \frac{1}{3}$

M 60
A -19

N $\frac{12}{-4}, \frac{12}{-15}$

$\frac{3}{-1}, \frac{4}{-5}$

$\frac{60}{1,60}$
 $\frac{2,30}{3,20}$
 $\frac{4,15}{4,15}$

4

Ex.2 Simplify and state restrictions

$$\begin{aligned}
 \text{a) } & \frac{2x^2 - 5x - 3}{2x^2 - 11x + 15} \times \frac{4x^2 - 8x - 5}{4x^2 + 4x + 1} \\
 & = \frac{\cancel{(x-3)}\cancel{(2x+1)} \cdot \cancel{(2x-5)}\cancel{(2x+1)}}{\cancel{(2x-5)}\cancel{(x-3)} \cdot \cancel{(2x+1)}^2} \\
 & = 1
 \end{aligned}$$

Rest
 $x \neq \frac{5}{2}, 3, -\frac{1}{2}$

$$\begin{aligned}
 \text{b) } & \frac{9a^2 + 30ab + 25b^2}{25a^2 - 25ab - 6b^2} \times \frac{20a^2 - 49ab + 30b^2}{12a^2 + 5ab - 25b^2} \\
 & = \frac{(3a+5b)^2}{(5a+b)(5a-6b)} \cdot \frac{(4a-5b)(5a-6b)}{\cancel{(3a+5b)}\cancel{(4a-5b)}} \\
 & = \frac{3a+5b}{5a+b}
 \end{aligned}$$

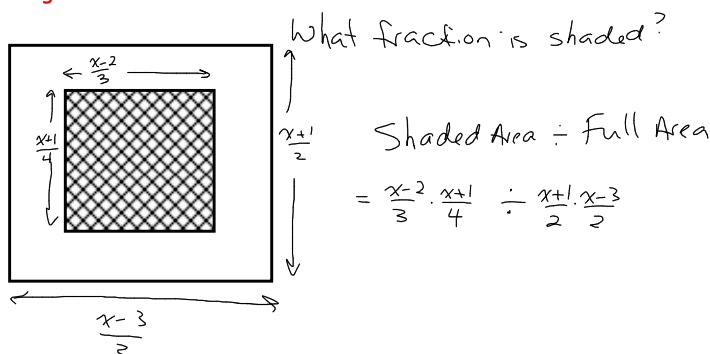
$3a+1b \neq 0$
 $a \neq -\frac{1}{3}b$

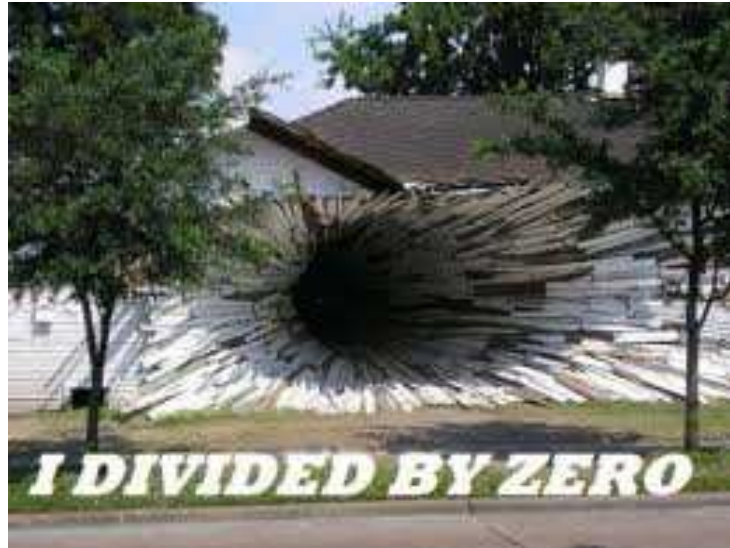
Rest.
 $a \neq -\frac{1}{5}b, \frac{6}{5}b, -\frac{5}{3}b, \frac{5}{4}b$

$$\begin{aligned}
 \text{c) } & \frac{12w^2 - 5w - 2}{8w^2 + 2w - 21} \div \frac{12w^2 + w - 6}{8w^2 - 2w - 15} \\
 & = \frac{(3w-2)(4w+1)}{(4w+7)(2w-3)} \div \frac{(4w+3)(3w-2)}{(2w-3)(4w+5)} \\
 & = \frac{\cancel{(3w-2)}(4w+1)}{(4w+7)\cancel{(2w-3)}} \times \frac{\cancel{(2w-3)}(4w+5)}{\cancel{(4w+3)}\cancel{(3w-2)}} \\
 & = \frac{(4w+1)(4w+5)}{(4w+7)(4w+3)}
 \end{aligned}$$

Rest.
 $w \neq -\frac{7}{4}, \frac{3}{2}, -\frac{5}{4}, \frac{2}{3}, 1, -\frac{3}{4}$

Ex.3 Pg 52 # 13





Hmk. Pg 50

2d,3b,4d,5f,6aceh,7ac,8ac,13