

# 11.4 Multiplying + Dividing Rat. Exp.

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Multiply:  $\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$

Dividing:  $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$

Dividing is the Same as  
Multiplying by the Recip.

ex1

$$\frac{3x^3}{4x} \cdot \frac{8x}{15x^4} = \frac{24x^4}{560x^4} = \frac{2}{5x}$$

$$\frac{\cancel{3}x^{\cancel{3}}}{\cancel{4}x} \cdot \frac{\cancel{8}x}{\cancel{5}15x^{\cancel{4}}} = \frac{2}{5x}$$

as long  
as something  
on the top  
cancel or  
Reduce w/  
something  
on the bottom

we must first factor all parts completely

ex 2

$$\frac{\cancel{x} \cdot (x-3)}{3x^2 - 9x} \cdot \frac{(x-3)}{2x^2 + x - 3}$$
$$\frac{\cancel{3x}(x-3)}{3(x-3)} \cdot \frac{(x-3)}{(x-1)(2x+3)}$$

$$= \frac{1}{3(x-1)(2x+3)}$$

Leave the Answer in the  
Reduced factored form.

ex 3]

$$\frac{7x}{x^2 + 5x + 4} \cdot \frac{(x+4)}{1} = \frac{7x}{(x+1)}$$

The image shows a handwritten mathematical equation on lined paper. The equation is  $\frac{7x}{x^2 + 5x + 4} \cdot \frac{(x+4)}{1} = \frac{7x}{(x+1)}$ . The denominator  $x^2 + 5x + 4$  is factored into  $(x+1)(x+4)$ . Red annotations show the factoring process: '1·4' and '2·2' are written above the '4' in the original denominator, and '1' and '4' are written in red below the '1' and '4' in the factored denominator. The terms  $(x+4)$  in both the numerator and denominator are highlighted with a light brown background. The final result  $\frac{7x}{(x+1)}$  is underlined with two horizontal lines.

ex4)

$$\frac{4n}{n+3} \div \frac{n-9}{n+3}$$

Before we talk  
about Factor  
completly,  
Change  $\div$  to  $*$

$$= \frac{4n}{(n+3)} \cdot \frac{(n+3)}{(n-9)} = \frac{4n}{(n-9)}$$

ex5

$$\frac{x^2 - 9}{4x^2} \div \frac{(x-3)}{1} =$$

$$= \frac{(x+3)(x-3)}{4x^2} \cdot \frac{1}{(x-3)} = \frac{(x+3)}{4x^2}$$

O.T.L.

① Pa 655: 16-28 (a)

② Ch. 11 Test Tuesday

③ Ch. 12 Test Following  
week on ~~Thursday~~  
Tuesday