Name **Key** Period ____

Perform the indicated operation and simplify.

1. $\dfrac{x^2-2x-15}{x^2+x-12} \cdot \dfrac{2x^2-6x}{x^3+3x^2}$

$$\dfrac{(x-5)(x+3)\,(2x)(x-3)}{(x+4)(x-3)(x^2)(x+3)}$$

$$\boxed{\dfrac{2(x-5)}{x(x+4)}}$$

2. $\dfrac{3x^4y^2}{16x^3yz^2} \cdot \dfrac{8xyz^3}{21x^2y}$

$$\dfrac{x^6y^3z^3}{14x^5y^2z^2} = \boxed{\dfrac{yz}{14}}$$

3. $\dfrac{x^2+8x+12}{x^2-7x+10} \div \dfrac{x^2+10x+24}{x^2+x-6}$

$$\dfrac{(x+6)(x+2)}{(x-5)(x-2)} \cdot \dfrac{(x+3)(x-2)}{(x+6)(x+4)}$$

$$\boxed{\dfrac{(x+2)(x+3)}{(x-5)(x+4)}}$$

4. $\dfrac{x+1}{x^2-1} \cdot \dfrac{x^2+4x-5}{3x} \div \dfrac{x^2+7x+10}{36x^2}$

$$\dfrac{(x+1)(x+5)(x-1)(3x)(12x)}{(x+1)(x-1)(3x)(x+5)(x+2)}$$

$$\boxed{\dfrac{12x}{x+2}}$$

5. $\dfrac{5x}{x^2+2x-15} - \dfrac{2}{x+5} \quad (x-3)$

$(x+5)(x-3) \quad (x+5)(x-3)$

$$\dfrac{(5x)-(2x-6)}{(x+5)(x-3)}$$

$$\boxed{\dfrac{3x+6}{(x+5)(x-3)}}$$

6. $\dfrac{9}{x^2-4} + \dfrac{2x}{x+2} \quad \dfrac{(x-2)}{(x-2)}$

$(x+2)(x-2)$

$$\dfrac{(9)+(2x^2-4x)}{(x+2)(x-2)}$$

$$\boxed{\dfrac{2x^2-4x+9}{(x+2)(x-2)}}$$

7. I am growing a vegetable garden in my backyard as shown below.
   Write a simplified rational expression for the ratio of the garden's perimeter to its area.

$\dfrac{P}{A}$ $\dfrac{28x}{49x^2} = \boxed{\dfrac{4}{7x}}$

7x

7x

_____

8. Simplify the complex fraction.

$$\dfrac{\dfrac{5(x+2)}{x(x+2)} + \dfrac{4(x)}{x+2(x)}}{5x+10} = \dfrac{5(x+2)+4x}{x(x+2)} = \dfrac{5x+10+4x}{x(x+2)}$$

$$\dfrac{9x+10}{(x)(x+2)} \cdot \dfrac{5(x+2)}{3}$$

$$\boxed{\dfrac{45x+50}{3x}}$$