

Unit 11 Test Review

Name Key Hr. _____

Simplify:

1.
$$\frac{6a+12}{5} \cdot \frac{10}{a+2}$$

$$\frac{6(a+2)}{5} \cdot \frac{10}{(a+2)} = \boxed{12}$$

2.
$$\frac{2x^2+15x-27}{4x+18} \cdot \frac{10}{2x^2-3x}$$

$$\frac{(2x-3)(x+9)}{2(2x+9)} \cdot \frac{10}{x(2x-3)} = \boxed{\frac{5(x+9)}{x(2x+9)}}$$

3.
$$\frac{x}{x^2-9} \div \frac{x^2}{x-3}$$

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

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

5.
$$\frac{\frac{x^2-64}{4x^2+32x}}{x-6} \div \frac{2x^3-72x}{2}$$

$$\frac{(x+8)(x-8)}{4x(x+8)} \cdot \frac{1}{2} \frac{x(x+6)(x-6)}{(x-6)} = \boxed{\frac{(x-8)(x+6)}{2}}$$

4.
$$\frac{\frac{m^2}{5n^3}}{\frac{m}{n^2}} \cdot \frac{n^2}{m} = \frac{m^2 n^2}{5m n^3} = \boxed{\frac{m}{5n}}$$

Find the LCM of each set of polynomials.

6. $10x^2, 30xy^2, 55x^4y^3$
 $10x^2: 2 \cdot 5 \cdot x^2$
 $30xy^2: 2 \cdot 3 \cdot 5 \cdot x \cdot y^2$
 $55x^4y^3: 5 \cdot 11 \cdot x^4 \cdot y^3$

LCM: $2 \cdot 3 \cdot 5 \cdot 11 \cdot x^4 \cdot y^3$

$$\boxed{330x^4y^3}$$

7. y^2+y-42, y^2+6y-7

$y^2+y-42: (y-6)(y+7)$

$y^2+6y-7: (y-1)(y+7)$

LCM: $\boxed{(y-6)(y+7)(y-1)}$

Simplify each expression.

$$8. \frac{10}{pg} + \frac{4}{g} = \frac{10}{pg} + \frac{4p}{pg}$$

$$= \frac{10+4p}{pg}$$

$$10. \frac{7}{2d-1} - \frac{3}{1-2d}$$

$$\frac{7}{2d-1} + \frac{3}{2d-1}$$

$$\frac{10}{2d-1}$$

$$9. \frac{4}{k+1} + \frac{9}{2k+2}$$

$$\frac{4 \cdot 2}{2(k+1)} + \frac{9}{2(k+1)}$$

$$\frac{8}{2(k+1)} + \frac{9}{2(k+1)}$$

$$\frac{17}{2(k+1)}$$

For Questions 11 and 12, solve each equation.

$$11. \frac{x}{1} + \frac{2x}{x-2} = \frac{3x-2}{x-2}$$

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

$$x(x-2) + 2x = 3x-2$$

$$x^2 - 2x + 2x = 3x - 2$$

$$x^2 = 3x - 2$$

$$x^2 - 3x + 2 = 0$$

$$(x-1)(x-2) = 0$$

$$x-1=0$$

$$x=1$$

$$x-2=0$$

$$x=2$$

$$12. \frac{x}{x-2} = \frac{7}{5}$$

$$\frac{5 \cdot x}{5(x-2)} = \frac{7(x-2)}{5(x-2)}$$

$$5x = 7x - 14$$

$$14 = 2x$$

$$7 = x$$

$$11. \underline{x=1}$$

Undefined at $\underline{x=2}$

$$12. \underline{x=7}$$

Undefined at $\underline{x=2}$