Secondary Math III
Unit 14 Review

Name: Key
Period: _____

Unit 14 Review

Factor out the greatest common factor:

1. $4m^3+8m^2-16m$

$4m(m^2+2m-4)$

2. $x(x-4)+6(x-4)$

$(x-4)(x+6)$

Factor completely:

3. $w^2+13w+40$

$(w+8)(w+5)$

4. $2x^2+13x+15$

$2x^2+3x+10x+15$

$x(2x+3)+5(2x+3)$

$(2x+3)(x+5)$

5. x^2+4x+3

$(x+3)(x+1)$

Simplify: LCD: $2x$

6. $\frac{2\cdot 7}{2\cdot x}+\frac{5\cdot x}{2\cdot x}=\frac{14}{2x}+\frac{5x}{2x}=\frac{14+5x}{2x}$

7. $\frac{2x}{x-3}\div\frac{x-3}{2x}$

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

Solve the equation for the variable:

8. $-18+13y+3=3(5y-1)-2$

$13y-15=15y-3-2$

$13y-15=15y-5$

$-13y+5\quad -13y+5$

$\frac{10}{2}=\frac{2y}{2}$

$y=5$

9. $8(w-2)=32$

$8w-16=32$

$+16\quad +16$

$\frac{8w}{8}=\frac{48}{8}$

$w=6$

10. $-x+3+2x=18$

$x+3=18$

$-3\quad -3$

$x=15$

11. $6y=28-4$

$\frac{6y}{6}=\frac{24}{6}$

$y=4$

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Find the LCD of the following:

12. $\frac{x+4}{x^2-4}$ and $\frac{-2x-2}{x^2-4}$

x^2-4

13. $\frac{4x+12}{x^2+5x+6}$ and $\frac{5x+15}{10x+20}$

$(x+2)(x+3)$ $10(x+2)$

LCD: $10(x+2)(x+3)$

Add, Subtract, Multiply, or Divide:

14. $\frac{x}{3x-6} \cdot \frac{x-2}{x+9} = \frac{x^2-2x}{(3x-6)(x+9)}$ OR $\frac{x(x-2)}{3(x-2)(x+9)}$

15. $\frac{x+3}{x^2+8x+15} \div \frac{x^2-25}{x-5} \rightarrow \frac{x+3}{x^2+8x+15} \cdot \frac{x-5}{x^2-25} = \frac{(x+3)}{(x+3)(x+5)} \cdot \frac{(x-5)}{(x+5)(x-5)}$

$= \frac{(x+3)(x-5)}{(x+3)(x+5)(x+5)(x-5)} = \boxed{\frac{1}{(x+5)^2}}$

LCD: $x(1+x)$

16. $\frac{1}{1+x} + \frac{1-x}{x}$

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

LCD: $(x+2)(x-2)$

17. $\frac{3}{(x+2)(x-2)} - \frac{x+5}{x+2}\frac{(x-2)}{(x-2)} = \frac{3}{(x+2)(x-2)} - \frac{(x+5)(x-2)}{(x+2)(x-2)} = \frac{3-(x^2+3x-10)}{(x+2)(x-2)}$

$= \boxed{\frac{-x^2-3x+13}{(x+2)(x-2)}}$

16. Art A glassblower can produce several sets of simple glasses in about 3 hours. When the glassblower works with an apprentice, the job takes about 2 hours. How long would it take the apprentice to make the same number of sets of glasses when working alone?

$t \neq 0$

LCD: $6t$

$\frac{1 \cdot 6t}{3} + \frac{1 \cdot 6t}{t} = \frac{1 \cdot 6t}{2}$

$2t + 6 = 3t$

$-2t \quad -2t$

$\boxed{t = 6 \text{ hrs}}$