

Name: Key Date: _____

Unit 4 Review

Simplify

1. $(3a^2b^4)^3(4a^{-4}b)$
 $(3^3a^6b^{12})(4a^{-4}b^1)$
 $(27a^6b^{12})(4a^{-4}b^1)$
 $108a^2b^{13}$

2. $\left(\frac{k^{-1}m^2}{4k^4m}\right)^{-2}$
 $\frac{4^2 k^2 k^8 m^2}{m^4}$
 $\frac{16k^{10}}{m^2}$
 $\frac{k^2 m^{-4}}{4^{-2} k^{-8} m^{-2}}$

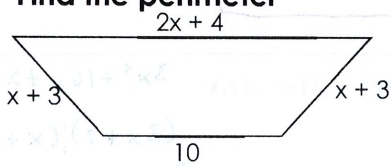
Multiply

3. $7x^2(8x^4+2)$
 $56x^6 + 14x^2$

4. $(x+6)^2$
 $(x+6)(x+6)$
 $x^2 + 6x + 6x + 36$
 $x^2 + 12x + 36$

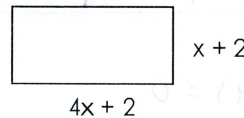
5. $(5x-6)(x^2+9x-3)$
 $5x^3 + 45x^2 - 15x - 6x^2 - 54x + 18$
 $5x^3 + 39x^2 - 69x + 18$

6. Find the perimeter



$2x+4 + x+3 + 10 + x+3$
 $4x+20$

7. Find the area.



$(4x+2)(x+2)$
 $4x^2 + 8x + 2x + 4$
 $4x^2 + 10x + 4$

Factor each of the following expressions. Remember to GCF first!

8. $6x^3 + 15x^2$
 $3x^2(2x+5)$

9. $8x^4y^5 + 12x^3y^3 - 16x^2y^6$
 $4x^2y^3(2x^2y^2 + 3x - 4y^3)$

10. $x^2 + 9x + 18$
 $(x+6)(x+3)$


11. $2x^2 + 14x - 88$
 $2(x^2 + 7x - 44)$
 $2(x+11)(x-4)$

12. $x^2 - 81$
 $(x+9)(x-9)$

13. $5x^2 + 26x + 24$
 $(5x+6)(x+4)$

14. $6x^2 - 18x - 24$
 $6(x^2 - 3x - 4)$
 $6(x - 4)(x + 1)$

15. $9x^2 - 60x + 100$
 $(3x - 10)(3x - 10)$
 or $(3x - 10)^2$

16. $81 - 4x^2$
 $(9 + 2x)(9 - 2x)$
 or $(2x + 9)(-2x + 9)$ 

17. $x^4 - 16$
 $(x^2 + 4)(x^2 - 4)$
 $(x^2 + 4)(x + 2)(x - 2)$

Solve for the given variable.

18. $x^2 - 24 = 5x$
 $x^2 - 5x - 24 = 0$
 $(x - 8)(x + 3) = 0$
 $x - 8 = 0 \quad | \quad x + 3 = 0$
 $x = 8 \quad | \quad x = -3$

19. $4x^2 - 10x = -6$
 $4x^2 - 10x + 6 = 0$
 $2(2x^2 - 5x + 3) = 0$
 $2(2x - 3)(x - 1) = 0$
 $2 = 0 \quad | \quad 2x - 3 = 0 \quad | \quad x - 1 = 0$
 Nope! $2x = 3 \quad | \quad x = 1$
 $x = \frac{3}{2} \quad | \quad x = 1$

20. $4x^2 = 15x - 11$
 $4x^2 - 15x + 11 = 0$
 $(4x - 11)(x - 1) = 0$
 $4x - 11 = 0 \quad | \quad x - 1 = 0$
 $4x = 11 \quad | \quad x = 1$
 $x = \frac{11}{4} \quad | \quad x = 1$

21. $x^2 - 16 = 0$
 $(x + 4)(x - 4) = 0$
 $x + 4 = 0 \quad | \quad x - 4 = 0$
 $x = -4 \quad | \quad x = 4$

22. $9x^2 - 12x = 0$
 $3x(3x - 4) = 0$
 $3x = 0 \quad | \quad 3x - 4 = 0$
 $x = 0 \quad | \quad 3x = 4$
 $x = \frac{4}{3}$

23. $3x^2 + 21 = -16x$
 $3x^2 + 16x + 21 = 0$
 $(3x + 7)(x + 3) = 0$
 $3x + 7 = 0 \quad | \quad x + 3 = 0$
 $3x = -7 \quad | \quad x = -3$
 $x = -\frac{7}{3} \quad | \quad x = -3$

24. The area of a rectangle is $(8x^2 + 8x + 2)$ cm². The width is $(2x + 1)$ cm. What is the length of the **rectangle**?

$\frac{8x^2}{2x} = 4x \quad \frac{2}{1} = 2 \quad (4x + 2)$

Because $(2x + 1)(4x + 2) = 8x^2 + 8x + 2$

Additional Topics:

- Function Notation
- Linear Characteristics from a graph (literally look at the old tests – we're going to ask the SAME questions with a new line)