

Name: Key

Date: _____ Period _____

Unit #1 Study Guide #1

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

What you need to know & be able to do	Things to remember	Examples	
<ul style="list-style-type: none"> • There are 5280 feet in one mile • There are 0.034 ounces in one milliliter • There are 0.454 kg in one pound • There are 1.6 kilometers in one mile • There are 1.05 quarts in one liter • There are 4 quarts in one gallon • There are 16 ounces in a pound. • 1 gallon = 3.785 liters 		<p>1. Convert 6 liters to quarts.</p> $\frac{6 \cancel{\text{L}}}{1} \cdot \frac{1.05 \cancel{\text{qt}}}{1 \cancel{\text{L}}} = 6.3 \text{ qt}$	<p>2. A bowl of cereal weighs 60 oz. How heavy is that in kg?</p> $\frac{60 \cancel{\text{oz}}}{1} \cdot \frac{1 \cancel{\text{lb}}}{16 \cancel{\text{oz}}} \cdot \frac{0.454 \text{ Kg}}{1 \cancel{\text{lb}}} = 1.7 \text{ Kg}$
<p>2. Writing and interpreting algebraic expressions</p> <ul style="list-style-type: none"> • # of terms • Coefficients • Factors • Constants 		<p>3. Convert 35 miles per hour into feet per second.</p> $\frac{35 \cancel{\text{mi}}}{1 \cancel{\text{hr}}} \cdot \frac{5280 \cancel{\text{ft}}}{1 \cancel{\text{mi}}} \cdot \frac{1 \cancel{\text{hr}}}{60 \cancel{\text{min}}} \cdot \frac{1 \cancel{\text{min}}}{60 \cancel{\text{sec}}} = 51.3 \cancel{\text{ft}}/\cancel{\text{sec}}$	<p>4. A gallon of water is about 8.4 pounds. How much is that in grams per liter?</p> $\frac{8.4 \cancel{\text{lb}}}{1 \cancel{\text{gal}}} \cdot \frac{0.454 \text{ Kg}}{1 \cancel{\text{lb}}} \cdot \frac{1000 \text{ g}}{1 \cancel{\text{Kg}}} \cdot \frac{1 \cancel{\text{gal}}}{3.785 \cancel{\text{L}}} = 1002.6 \text{ g/L}$
		<p>5. How many terms are in the expression $-12x^3 + 7x^2 - 4x - 19$? 4</p> <p>How many factors are in the expression $5x(3x+4)(x-5)$? 4</p>	<p>6. a. What are the coefficients, and constants in the expression $20x^4 - 11x + 3$? Coefficients: <u>20, -11</u> Constants: <u>3</u></p> <p>b. write an expression to represent the total cost of 20 fair tickets with a 30% discount if the price of a ticket is \$8.00. $20[8.00 - 8.00(.30)]$</p> <p>c. 4 less than 5 times a number $5n - 4$</p> <p>d. the total cost of purchasing 4 t-shirts on-line with a \$7 shipping fee. $4n + 7$</p>

<p>3. Adding, subtracting and multiplying polynomials</p>	<ul style="list-style-type: none"> When adding, just combine like terms. Exponents stay the same; only add coefficients. When subtracting, distribute the negative then combine like terms. Distributive property; add exponents; simplify completely 	<p>7. Simplify</p> <p>a. $(3x + 2) + (x - 4)$ $4x - 2$</p> <p>b. $(3x + 2) - (x - 4)$ $2x + 6$</p> <p>c. $(3x^3 - 5x^2 + 7x - 1) - (-2x^3 + 4x^2 - 8)$ *distribute the negative and WRITE OUT the new problem. $(3x^3 - 5x^2 + 7x - 1) + (2x^3 - 4x^2 + 8)$ $5x^3 - 9x^2 + 7x + 7$</p> <p>d. $(9x + 4) - (2x^2 - 7x + 1)$ $(9x + 4) + (-2x^2 + 7x - 1)$ $-2x^2 + 16x + 3$</p>	<p>8. Simplify</p> <p>a. $5x^2(3x + 6)$ $15x^3 + 30x^2$</p> <p>b. $(6x + 2)(2x - 1)$ $12x^2 - 6x + 4x - 2$ $12x^2 - 2x - 2$</p> <p>c. $(3x + 4)^2$ $(3x + 4)(3x + 4)$ $9x^2 + 12x + 12x + 16$ $9x^2 + 24x + 16$</p> <p>d. $(2x + 3)(2x - 3)$ $4x^2 - 6x + 6x - 9$ $4x^2 - 9$</p> <p>e. $(x - 4)(3x^2 - 6x + 9)$ $3x^3 - 6x^2 + 9x - 12x^2 + 24x - 36$ $3x^3 - 18x^2 + 33x - 36$</p>
<p>4. Perimeter, area, and volume using polynomials</p>	<p>Perimeter: add all sides (combine like terms)</p> <p>Area of rectangle: multiply length times width</p> <p>Volume of rectangular prism: multiply $l \times w \times h$</p>	<p>11.</p> <p>a. Write an expression for the perimeter of a rectangle whose length is $x + 7$ and whose width is $2x - 3$. $2(x + 7) + 2(2x - 3)$ $2x + 14 + 4x - 6$ $6x + 8$ units</p> <p>b. find the area of the above rectangle. $(x + 7)(2x - 3)$ $2x^2 - 3x + 14x - 21$ $2x^2 + 11x - 21$ units²</p>	<p>12. Write an expression representing the volume of the rectangular prism whose length is $2x + 4$, width is x, and height is $x - 3$.</p> <p>$x(2x + 4)(x - 3)$ $(2x^2 + 4x)(x - 3)$ $2x^3 - 6x^2 + 4x^2 - 12x$ $2x^3 - 2x^2 - 12x$ units³</p>
<p>5. Radicals</p>	<ul style="list-style-type: none"> Simplify Add/subtract Multiply Divide 	<p>13. simplify completely</p> <p>a. $5\sqrt{27}$ $3 \cdot 5\sqrt{9 \cdot 3} = 15\sqrt{3}$</p> <p>b. $3\sqrt{24} - \sqrt{6}$ $2 \cdot 3\sqrt{4 \cdot 6} - \sqrt{6}$ $6\sqrt{6} - 1\sqrt{6}$ $5\sqrt{6}$</p>	<p>14. simplify completely</p> <p>a. $4\sqrt{12} \cdot 2\sqrt{3} = 8\sqrt{36} = 8 \cdot 6 = 48$</p> <p>b. $2\sqrt{45} \cdot 2\sqrt{50}$ $2\sqrt{9 \cdot 5} \cdot 2\sqrt{25 \cdot 2}$ $6\sqrt{5} \cdot 10\sqrt{2} = 60\sqrt{10}$</p> <p>c. $(3 + \sqrt{5})(2 + \sqrt{5})$ $6 + 3\sqrt{5} + 2\sqrt{5} + 5$ $11 + 5\sqrt{5}$</p>
<p>6. rational and irrational numbers</p>	<p>-rational #s can be written as fractions. -Irrational #s are non terminating and non-repeating. -Square roots of non-perfect squares are irrational</p>	<p>15. rational or irrational?</p> <p>a. $5\sqrt{27}$ $5\sqrt{9 \cdot 3} = 15\sqrt{3}$ irrational</p> <p>b. 3.14 rational</p> <p>c. -2/3 rational</p>	<p>d. π irrational</p> <p>e. $\sqrt{400} + \sqrt{121}$ $20 + 11 = 31$ rational</p> <p>f. $2\sqrt{98} \cdot \sqrt{2}$ $2\sqrt{49 \cdot 2} \cdot \sqrt{2} = 14(\sqrt{2} \cdot \sqrt{2}) = 14 \cdot 2 = 28$ rational</p> <p>g. $(3 + \sqrt{5})(3 - \sqrt{5})$ $9 - 3\sqrt{5} + 3\sqrt{5} - 5 = 9 - 5 = 4$ rational</p> <p>h. 4.333... rational</p>