

(25 Q's on the Test)

Name: Key

Date: 01/25 per 1/4

Unit 1 Study Guide

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	KHDBDCM	* Bullet point #2 ↓																		
<p>1. Unit Conversions</p> <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 73 gallons in 2 barrels There are 1.05 quarts in one liter There are 4 quarts in one gallon There are 16 ounces in a pound. 		<p>1. Convert 1500 dg to hg.</p> <p>KHDBDCM 1500 ÷ 10³ = 1.5 hg ✓</p> <p>3. Convert 12 kilometers to inches.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>12 km</td> <td>1 mi</td> <td>5,280 ft</td> <td>12 in</td> </tr> <tr> <td></td> <td>1.6 km</td> <td>1 mi</td> <td>1 ft</td> </tr> </table> <p>475,200 in. ✓</p>	12 km	1 mi	5,280 ft	12 in		1.6 km	1 mi	1 ft	<p>2. A bowl of cereal weighs 60 oz. How heavy is it in L?</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>60 oz</td> <td>1 mL</td> <td>1 L</td> </tr> <tr> <td></td> <td>0.034 oz</td> <td>10³ mL</td> </tr> </table> <p>= 1.76 L</p> <p>4. You are in a car traveling that is traveling at 65 mph. How long will it take to travel to Chattanooga (150 miles away)?</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>150 mi</td> <td></td> </tr> <tr> <td>65 mph</td> <td></td> </tr> </table> <p>= 2.31 hrs. OR = 2 hr and 19 min</p>	60 oz	1 mL	1 L		0.034 oz	10 ³ mL	150 mi		65 mph	
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<p>2. Identify Vocabulary</p>	<ul style="list-style-type: none"> # of terms Coefficients Factors Constants 	<p>5. How many terms are in the expression $12x^3 + 7x^2 - 4x - 19$?</p> <p>Four ✓</p>	<p>6. What are the factors, coefficients, and constants in the expression $20x^4 - 11x + 3$?</p> <p>factors: x, 1, 2, 3, 4, 5, 10, 11, 20 coeff: 20, 11 con: 3 ✓</p>																		
<p>3. Linear Models</p>	<p>$y = mx + b$</p> <ul style="list-style-type: none"> m - increase or decrease b - starting point 	<p>7. Lucy gets paid \$150 a week and \$10 for every computer she sells. Write an expression that represents her weekly income.</p> <p>$y = 10x + 150$, where x equals numbers of computers sold ✓</p>	<p>8. Andy wants to mail a package. It costs \$4.99 plus \$0.30 for every ounce the package weighs. Write an equation that represents the total cost of shipping the package.</p> <p>$y = .3x + 4.99$, where x equals weight in oz. ✓</p>																		
<p>6. Consecutive Integers</p>	<p>Start with x. $x + (x+1) + (x+2) + \dots =$</p> <p>odds $x + (x+2) + (x+4)$</p>	<p>9. 3 consecutive integers add up to 153. Find the three integers.</p> <p>$x + (x+1) + (x+2) = 153$ $3x + 3 = 153$ $3x = 150$ $x = 50$</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x = 50</td> </tr> <tr> <td>x+1 = 51</td> </tr> <tr> <td>x+2 = 52</td> </tr> </table>	x = 50	x+1 = 51	x+2 = 52	<p>10. Three ODD integers add up to 381. Find the integers.</p> <p>$x + (x+2) + (x+4) = 381$ $3x + 6 = 381$ $3x = 375$ $x = 125$</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x = 125</td> </tr> <tr> <td>x+2 = 127</td> </tr> <tr> <td>x+4 = 129</td> </tr> </table>	x = 125	x+2 = 127	x+4 = 129												
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Check: $50 + 51 + 52 = 153$

Check: $125 + 127 + 129 = 381$

<p>7. Averages</p>	<ul style="list-style-type: none"> Add the values and x Divide by the number of numbers Set equal to the average Solve for x 	<p>11. You are trying to save \$20 a week to buy a new CD player. During the last 4 weeks you have saved \$35, \$15, \$10, and \$12. How much do you need to save this week to average \$20 for the 5 weeks?</p> $\frac{35+15+10+12+x}{5} = 20$ $72+x = 100$ $x = 28$	<p>12. Currently, you have made a 78, 83, and an 80 on your tests in math. What do you need to make on the next test in order to get an average of an 82?</p> $\frac{78+83+80+x}{4} = 82$ $241+x = 328$ $x = 87$
<p>8. Rectangle - Find length and width</p>	<ul style="list-style-type: none"> Draw a picture Define your l and w Add all 4 sides Solve for both variables 	<p>13. The width of a rectangle is 11 feet longer than the length. The perimeter of the rectangle is 70 feet. Find the length and the width.</p> $l = 12$ $w = 23$ $l = x$ $w = x + 11$ $P = 2(l+w)$ $2(x+x+11) = 2(2x+11)$ $4x+22=70 \quad x=12$	<p>14. The length of a rectangle is nine inches more than the width. The perimeter is 34 inches. Find the length.</p> $x+9=l$ $P = 2(l+w) = 34$ $34 = 2(x+x+9) = 2(2x+9)$ $34 = 4x+18$ $16 = 4x$ $4 = x$ $w = 4$ $l = 13$
<p>9. Solve for 2-variable Equations</p>	<p>$ax + by = c$</p> <ul style="list-style-type: none"> Never move the variable you're solving for. 	<p>15. Tony is going to buy fruit for a smoothie. He wants raspberries, r, that are \$4 a carton and strawberries, s, that are \$2 a carton. Write an equation to represent all the combinations of fruit if Tony has \$18 to spend.</p> $4r + 2s = 18$ <p>check $4(2) + 2(5) = 18$ $8 + 10 = 18 \checkmark$</p>	<p>16. Using your equation from #15, solve for s, in terms of r, the number of raspberries.</p> $4r + 2s = 18$ $2s = 18 - 4r$ $s = \frac{18-4r}{2} \text{ or } s = 9-2r$ <p>17. If he buys 2 cartons of raspberries, how many strawberries can he buy? $s = 9 - 2r$, and $r = 2$. $s = 9 - 4$ $s = 5$ He can buy 5 cartons.</p>
<p>10. Solve for an indicated variable</p>	<p>PEMDAS</p> <ul style="list-style-type: none"> Backwards, from the ground up! 	<p>18. Solve for x: $y = -4x + 16$</p> $y = -4x + 16$ $y - 16 = -4x$ $\frac{y-16}{-4} = x \text{ or } -\frac{y}{4} + 4 = x$	<p>19. Solve for L: $P = 2(L + W)$</p> $P = 2(L+W)$ $\frac{P}{2} = L+W$ $\frac{P}{2} - W = L$
<p>11. Simplify Radicals</p>	<p>Pull out the pairs!</p>	<p>20. $4\sqrt{98p^2}$ $28p\sqrt{2}$</p> <p>21. $x\sqrt{72} - x\sqrt{18} + 5x\sqrt{2}$ $6x\sqrt{2} - 3x\sqrt{2} + 5x\sqrt{2}$ $= 8x\sqrt{2}$</p>	<p>22. $3x\sqrt{2} \cdot 5\sqrt{7}$ $15xy\sqrt{14}$</p> <p>23. $\sqrt{30x^4y} \cdot \sqrt{12xy^3}$ $= \sqrt{360x^5y^4} = 6x^2y^2\sqrt{10x}$</p>

Name: _____ Date: _____

Unit 1 Test Review

Unit Conversions

1. Convert 90 dkm to cm.

$$90 \text{ dkm} = 90,000 \text{ cm}$$

2. Convert 1560 dg to g.

$$1560 \div 10 = 156 \text{ g}$$

3. A big bowl of chili weighs 60 oz.

How heavy is it in kg? oz \rightarrow lb \rightarrow kg

60 oz	1 lb	.454 kg
	16 oz	1 lb

$$= 1.7 \text{ kg}$$

4. Convert from 0.37 miles to: a) feet, b) inches, c) meters, and d) kilometers.

$$0.37 \text{ mi} \times 5280 = 1,953.6 \text{ ft} \quad \times 12 = 23,443.2 \text{ in}$$

$$0.37 \text{ mi} \times 1.6 = 0.592 \text{ km} \quad \times 10^3 = 592 \text{ m}$$

$$\text{a) } 1,953.6 \text{ ft} \quad \text{b) } 23,443.2 \text{ in.}$$

$$\text{c) } 592 \text{ m} \quad \text{d) } 0.592 \text{ km}$$

5. How long does a car traveling at 70 mph take to travel 230 miles, in hours?

$$\frac{230 \text{ mi}}{70 \text{ mph}} = 3.29 \text{ hrs or } 3 \text{ hrs and } 17 \text{ min}$$

- 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 73 gallons in 2 barrels
- There are 1.05 quarts in one liter
- There are 4 quarts in one gallon
- There are 16 ounces in a pound.

Short Answer:

6. For the expression $12x^2 + 15x + 10$, find any coefficients, factors, and the number of terms.

$$\text{Coefficients: } 12, 15, 10$$

$$\text{Factors: } x, 1, 2, 3, 4, 5, 6, 12, 10, 15$$

$$\text{number of terms: } 3$$

7. April is moving apartments. Her family needs to rent an U-Haul truck to transport their furniture. The rental company charges \$19.99 for the truck. Then, they charge \$0.20 per mile. Write an equation that represents how much it will cost to use the truck where x = the miles driven. How much will it cost if the family drives it 40 miles?

$$y = .2x + 19.99 \rightarrow y = 0.2(40) + 19.99 = \$27.99$$

8. You need a plumber to come to your house. Pete charges \$50 to come to your house and \$75 per hour he is there. Paul charges \$75 to come to your house and \$50 for each hour he is there. Write an equation to represent the charges for both plumbers. Who is cheaper

for 3 hours worth of work?

$$\begin{array}{l} \text{(Pete)} \quad y = 75x + 50 \\ \text{(Paul)} \quad y = 50x + 75 \end{array} \quad \text{So } \rightarrow$$

$$\begin{array}{l} y = 75(3) + 50 = 225 + 50 = 275 \\ y = 50(3) + 75 = 150 + 75 = 225 \end{array}$$

$$225 < 275$$

Paul is cheaper
for 3 hrs of
work

9. The sum of 3 consecutive integers is 75. Write an equation and find the three numbers.

$$x + (x+1) + (x+2) = 75$$

$$3x + 3 = 75$$

$$3x = 72$$

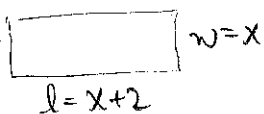
$$x = 24, x+1 = 25, x+2 = 26$$

10. Peyton wants to get an A in her Chemistry class this semester. Her first 4 tests were a 94, 83, 88, and a 91. What does she need to make on her 5th test to get a 90% average?

$$\frac{94 + 83 + 88 + 91 + x}{5} = 90 \rightarrow 356 + x = 450$$

$$x = 94$$

11. Bill is building a sand box for his son to play in. The length is 2 feet more than the width. He has 20 feet of boards. What are the dimensions of his sand box?



$$P = 2(l+w)$$

$$20 = 2(x+x+2)$$

$$20 = 2(2x+2) = 4x+4$$

$$20 = 4x + 4$$

$$16 = 4x$$

$$4 = x$$

$$l = 6$$

$$w = 4$$

12. Mary is going to the store to get some ice cream for her party. Her mom gave her \$15 to spend. She wants to get a combination of ice cream sandwiches at \$3 per box and gallons of Breyers ice cream at \$5 each. $s =$ ice cream sand, $b =$ gallons of ice cream

a) Write an equation in standard form to model this situation where s is the number of boxes of sandwiches, and b is the gallons of Breyers.

$$y = 3s + 5b \rightarrow 3s + 5b = 15$$

b) Solve the equation for b , in terms of s , the number of boxes of ice cream sandwiches.

$$b = \frac{15 - 3s}{5} \text{ or } -\frac{3s}{5} + 3$$

c) If she buys 3 boxes of sandwiches, how many gallons of Breyers can she get?

$$b = \frac{15 - 3(3)}{5} = \frac{15 - 9}{5} = \frac{6}{5} \rightarrow \text{so she can buy } 1 \text{ gallon.}$$

Solve the formula for the indicated variable:

13. For r : $V = \pi r^2 h$

$$r = \frac{\sqrt{V}}{\pi h}$$

14. For y : $7x + 14y = -21$

$$7x + 14y = -21$$

$$14y = -7x - 21$$

$$y = \frac{-7x - 21}{14} \text{ or } y = -\frac{x}{2} - \frac{3}{2}$$

15. For h : $V = \frac{A+h}{3}$

$$3V = A+h$$

$$3V - A = h$$

Simplify.

16. $\sqrt{32z^4}$

$$4z^2\sqrt{2}$$

17. $\sqrt{40a^7}$

$$2a^3\sqrt{10a}$$

18. $5\sqrt{6} - \sqrt{6}$

$$4\sqrt{6}$$

19. $\sqrt{2x} \cdot 2\sqrt{8x^5}$

$$2\sqrt{16x^6} = 2 \cdot 4 \cdot x^3$$

$$= 8x^3$$