

**Instructions:** Create at least 5 real-life problems that can be modeled with an ALGEBRAIC equation or formula. Then explain how the equation or formula models the problem. Lastly, solve the equation clearly labeling and explaining what your answer means.

- 1) Create, write and solve a real-life problem that can modeled by a 1 step ALGEBRAIC equation in the form of:  $y = Ax$ , with  $A$  and  $y$  as known values.
- 2) Create, write and solve a real-life problem that can modeled by a 1 step ALGEBRAIC equation in the form of:  
 $y = x \pm B$ , with  $B$  and  $y$  as known values.
- 3) Create, write and solve a real-life problem that can modeled by a 2 step ALGEBRAIC equation in the form of:  $y = Cx + D$ , with  $C$ ,  $D$  and  $y$  as known values.
- 4) Create, write and solve a real-life problem that can modeled by a 2 step ALGEBRAIC equation in the form of:  $y = Ex + F$ , with  $E$ ,  $F$  and  $y$  as known values, one of which must be NEGATIVE.
- 5) Create, write and solve a real-life problem that can modeled by a 3 step ALGEBRAIC equation in the form of:  $Gx + H = Jx + K$ , with  $G$ ,  $H$ ,  $J$  and  $K$  as known values, one of which must be NEGATIVE.

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Self-Assessment: \_\_\_\_\_ Teacher-Assessment: \_\_\_\_\_

Checked Boxes: 1 = D-, 2 = D, 3 = D+, 4-5 = C-, 6 = C, 7 = C+, 8 = B-, 9 = B, 10 = B+, 11-12 = A-, 13 = A, 14 = A+

<b>Assignment</b>		Algebraic Modeling and Reasoning (Quiz 1.4-1.5 Alternative Assessment)
<b>Learning Target</b>		Know several problem solving strategies to algebraically solve real-life problems.
<b>Success Criteria</b>		Students will use software such as <i>Word, Power Point, etc.</i> to <b>1)</b> create, type and solve 5 real-life problems using algebraic reasoning; <b>2)</b> turn-in this rubric, a paper copy & e-mail the digital file to <a href="mailto:bklee@ccs.coloma.org">bklee@ccs.coloma.org</a> .
<b>Self</b>	<b>Teacher</b>	EC for accurately assessing yourself
<b>4 or A+ (mastery)</b>		
		<b>4.4</b> All of the problems AND solutions are typed and a digital copy is e-mailed to <a href="mailto:bklee@ccs.coloma.org">bklee@ccs.coloma.org</a> .
		<b>4.3</b> All of the problems are typed and
		<b>4.2 (+3.4)</b> A 2 step real-life problem in the form of $Gx + H = Jx + K$ with at least one of the known values as a NEGATIVE has an algebraic model and reasoning supporting the solution
		<b>4.1 (+3.3)</b> A 2 step real-life problem in the form of $Gx + H = Jx + K$ with at least one of the known values as a NEGATIVE has been written and has been solved.
<b>3 or B+ (advanced proficiency)</b>		
		<b>3.4 (+2.4)</b> A 2 step real-life problem in the form of $y = Ex + F$ with at least one of the known values as a NEGATIVE has an algebraic model and reasoning supporting the solution.
		<b>3.3 (+2.3)</b> A 2 step real-life problem in the form of $y = Ex + F$ with at least one of the known values as a NEGATIVE has been written and has been solved.
		<b>3.2 (+2.2)</b> A 2 step real-life problem in the form of $y = Cx + D$ has an algebraic model and reasoning supporting the solution.
		<b>3.1 (+2.1)</b> A 2 step problem real-life in the form of $y = Cx + D$ has been written and has been solved.
<b>2 or C (basic proficiency)</b>		
		<b>2.4</b> A 1 step real-life problem in the form of $y = x \pm B$ has an algebraic model and reasoning supporting the solution.
		<b>2.3</b> A 1 step real-life problem in the form of $y = x \pm B$ has been written and has been solved.
		<b>2.2</b> A 1 step real-life problem in the form of $y = Ax$ has an algebraic model and reasoning supporting the solution.
		<b>2.1</b> A 1 step real-life problem in the form of $y = Ax$ has been written and has been solved.
<b>1 or D (some basic problems with minimal help)</b>		
		At least 5 problems are created and written with some attempted to be solved
<b>0.5 or D- (some basic problems with considerable help)</b>		
		At least 5 problems are created.
<b>0 or E (displays no ability or understanding)</b>		

Examples:

- 1) While Mr. Klee was shopping for batteries, he had the choice of buying a 20 pack of Rayovac batteries for \$10.99. What is the price per battery?

$$\text{Batteries} \times \text{Price per Battery} = \text{Total Price}$$

$$b \cdot p = t$$

$$20 \cdot p = 10.99$$

$$p = 0.55, \text{ the price is } \$0.55 \text{ per battery}$$

- 2) I need to shower each day. It takes 5 minutes. I have to leave in 20 minutes. How much time extra will I have?

$$\text{Total Time} = \text{Shower Time} + \text{Extra Time}$$

$$T = S + E$$

$$20 = 5 + E$$

$$15 = E, \text{ I would have 15 extra minutes}$$

- 3) When Mr. Klee was in high school he was able to **easily** run a lap around the track at an average of 1 minute and 30 seconds. If Mr. Klee has already run for 6 minutes and wants to run for a total of 20 minutes, how many more laps would he need to run?

$$\text{Total Time} = (\text{Average Lap Time}) \cdot (\text{Laps}) + \text{Time Already Run}$$

$$T = A \cdot L + R$$

$$20 = 1.5L + 6$$

$$14 = 1.5L$$

$$9.33 = L, \text{ Mr. Klee would have to run 9.33 more laps}$$

- 4) You owe \$5,000 for a car and make interest free payments of \$200 per month. How many months before you would only owe \$2,000 for the car?

$$\text{Remaining Amount Owed} = \text{Total Owed} - (\text{Payment per Month}) \cdot (\text{Months})$$

$$R = T - P \cdot M$$

$$2000 = 5000 - 200 \cdot M$$

$$-3000 = -200 \cdot M$$

$$15 = M, \text{ the car would be paid down to } \$2,000 \text{ in 15 months}$$

- 5) You have to make 2 payments per month on a car and a truck. \$5,000 is owed on the car and you make interest free payments of \$200 per month. \$4,000 is owed on the truck and you make interest free payments of \$175 per month. How many months before the amount owed on each vehicle is the same?

$$\text{Car Owed} - (\text{Payment})(\text{Months}) = \text{Truck Owed} - (\text{Payment})(\text{Months})$$

$$C - P \cdot M = T - P \cdot M$$

$$5000 - 200 \cdot M = 4000 - 175 \cdot M$$

$$5000 = 4000 + 25 \cdot M$$

$$1000 = 25 \cdot M$$

$$40 = M, \text{ the amount owed on both vehicles will be equal after 40 months}$$