HOMEWORK: MATH INTERLUDES VII – RATES OF CHANGE

These problems were borrowed or inspired from *Pathways to Math Literacy* by Sobecki and Mercer.

Remember – neatness and completeness count. Also, you must show your work. The correct result without a sufficient amount of correct and appropriate work is worth zero points. Please remember to include this assignment in your Math Interludes Notebook.

Scenario for # 1 – 6: When advertising special financing deals, car makers use rates to describe what your monthly payment will look like. In January 2013, Hyundai offered 2.9% financing on the Genesis coupe which would result in monthly payments of $22.09 per $1,000 borrowed for 48 months.

1) For every _____ borrowed, the monthly payment will be _____.

2) Complete the table of loan payments using your answer to question 1.

Amount Borrowed	Loan Payment
$1,000	$22.09
$2,000	
$3,000	
$4,000	
$5,000	
$6,000	
$7,000	
$8,000	
$9,000	
$10,000	

3) Write the rate Hyundai advertised as a fraction.

4) What would your monthly payment be if you borrowed $18,000? Use the rate from number 3 and dimensional analysis to answer this question. Show your work.

5) If your monthly payment is $331.35, how much did you borrow? Use the rate from number 3 and dimensional analysis to answer this question. Show your work.

6) If you agree on a price of $23,900 (including taxes and fees) for a Genseis and the dealership offers you $7,500 in trade for your old car, how much would your monthly payment be? Use the rate from number 3 and dimensional analysis to answer this question. Show your work.

7) When shopping for Doritos for your large office party, you find that you can buy several 11.5 oz bags for $4 each or a case of 64 small 1.75 oz bags for a total of $38.99. Always trying to save money, your boss says, “Just get the one with the lower unit price.” What should you do? First if you need to, you should go straight to Google and look up unit price. Then calculate the unit price of each option. Which is the better option? Note: rounding may prevent you from answering this question correctly.

Scenario for # 8 – 10: Glaciers are large masses of ice that flow like rivers across the ground. Really, really, really slow rivers – did I mention that they're ice? Most move less than a foot per day. At one point, the San Rafael glacier in Chile was moving 203 millimeters per day.

8) If 1 in = 25.4 mm, how fast was the San Rafael Glacier moving in yards per hour? If necessary round to six decimal places.

9) Use your result from number 8) and the *Measurement Equivalencies* tables to find the speed in miles per hour. Write your answer in scientific notation rounded to four decimal places. Then explain why this is a silly unit of speed in this case.

10) Use dimensional analysis, your result from number 8), and the *Measurement Equivalencies* tables to do this problem. Determine how many **<u>years</u>** it would take the glacier to move the length of a football field (100 yards). Assume there are 365 days in one year, and round your answer to four decimal places.

Math Interludes VII Homework:

1) $1,000, $22.09 **3)** $\frac{22.09\ pay}{1{,}000\ borrow}$ **4)** $\frac{\$18{,}000\ \cancel{borrow}}{1} \cdot \frac{22.09\ pay}{1{,}000\ \cancel{borrow}}$ = $397.62 pay

5) $\frac{331.35\ \cancel{pay}}{1} \cdot \frac{1{,}000\ borrow}{22.09\ \cancel{pay}}$ = $15,000 borrow **6)** $\frac{16{,}400\ \cancel{borrow}}{1} \cdot \frac{22.09\ pay}{1{,}000\ \cancel{borrow}}$ = $362.28 pay

7) $\frac{\$4}{11.5\ oz} = \frac{\$0.347826}{oz}, \frac{\$38.99}{112\ oz} = \frac{\$0.348125}{oz}$ The 11.5 oz bags are cheaper, so buy those.

8) $\frac{0.00925\ yd}{hr}$ **9)** $\frac{5.2558\times10^{-6}\ mi}{hr}$ **10)** 1.2341 years