I'm not robot

reCAPTCHA

Continue

Calorimetry lab worksheet answers

You can download the .pdf file of the lab handout here. In this section of the procedure, you will observe temperature changes as different salts dissolve in the water. The first NaCl salt, and the corresponding dissolution reaction is latex text NaCl (s) rightarrow text (Na')text (aq) text Cl (aq) /latex You will record the temperature with Logger Pro. Insert the end of the temperature probe into the bottom of a clean, dry test tube. (Use small test tubes). Record the mass of the empty test tube before the start. Fill the test tube with approximately 2 cm of distilled water. Record the mass of the test tube and water to determine the mass of water. To get the initial temperature of the water. Record the mass of the second (clean and dry) test tube. Fill the second test tube with approximately 1 cm solid NaCl. Pour the solid NaCl into the water and gently mix with the temperature probe. Keep an eye on the temperature. Temperatures will increase or decrease from the initial temperature. Eventually the final temperature will be reached before it starts to return to room temperature. Get the final temperature. The solution must be disposed of in the CHM 111 Waste container in the back hood. Rinse and dry the test tube. Repeat steps 2-7 for CaCl2 and (if there is time) KCl. Part B: Calculate the heat capacity of the calorimeter Get a hot plate and plug it in. Stack two cups of Styrofoam together and place inside a 400ml glass of place assemblage on the balance. Recording the mass. Place 50ml of tap water in the assembly cup and record mass. Subtract to find a mass of water. Place the cardboard lid on top of the Styrofoam cup. Set up the Logger Pro with a stainless steel temperature probe. Insert the probe through a hole in the lid. Get the initial temperature of the cold water. Attach the thermometer clip to the probe so that the probe does not sit at the bottom of the cup. These are our calories. Tara 150mL glass. Add 50ml of water to the glass on a scale and record weight as the weight of hot water. Place a 150ml glass on a hot plate and heat to 90 degrees. Using a temperature probe, simulate the temperature of the hot water. Tip the lid of the calcimeter up and using the tongs of the glass immediately pour hot water into the calories. Immediately replace the lid and start recording the temperature on logger Pro. Gently swirl the calorie content and measure the temperature every 10 seconds until the temperature is constant for 3 readings. (The temperature will rise to the final temperature before it starts to drop to room temperature.) Check the final temperature in the data section. Repeat steps 9-14 for the second trial. Part C: Calculating the specific heat of copper Get a mass of 10-20 cents. Record the mass in the data table. Add pennies to a large (clean and dry) test tube. Place the test tube in 400 A glass containing water of 150 ml. Water level should be above the penny level to make sure they are adequately heated. Heat the water to 95-100 degrees Celsius. It's like the starting temperature of pennies. Allow the penny to heat up for 2-3 minutes. Add your calories to balance and resin it. Add 40 ml of water. Record the mass of water in the table. Drink your calorie content with the probe temperature as described earlier. To get the initial temperature of the water. Fast but gently remove the test tube from the hot tub water with a pair of test tube tongs. Dump a penny in calories and immediately cover with a lid. Be careful that the hot water on the outside of the test tube is not dripping on your hand or in calories. Monitor the temperature by taking temperature readings every 10 seconds. When the temperature corresponds to 3 direct measurements (or the temperature begins to cool) record the final temperature of the pennies and water. Repeat steps 1-8 for the second trial. (Don't forget to dry pennies between tests). Use data from the table to calculate a certain copper heat (penny). Preliminary Laboratory Assignment and Note Issues - This pre-lab must be completed before you arrive at the lab. 1. Taking into account the balanced equation for methane combustion, calculate the amount of heat (q) produced when burning 4.05 g CH4 using equation 2. (DHcomb -890.4 kJ). The methane combustion formula. 'latex' text4 (g) 'text'2 /g'right text-text2 (g) text,',',',',',',',',',',',',',',',',',','delta-text-H-890.4'text' kJ'/latex'2. Take into account that 4.05 grams of methane is burned, and all heat from this combustion is absorbed by the latex 1.0 cdot10 {3}/latex g 20.0.4 0 latex water (which has a specific heat of 4.18 J g-1 (latex circle)/latex-C-1). What will be the final temperature of the water? 3. The 62.5 gram iron sample (with a heat capacity of 0.450 j/g (latex circle)/latex) is heated to 100.0.0.0.-latex/latex. It is then transferred to the caloric content of the coffee cup containing 52.7 grams of water (specific heat of 4,184 j/g (latex)/latex) initially at 20.63.-latex./latex. If the final temperature of the system was 29.59, what was the heat intensity of the calories? 4. A 17.5g metal sample heated in a test tube, submerged in water 100.0 degrees Celsius. It was then placed directly in a coffee cup calorimeter carrying 49.5g of water at 21.6 degrees Celsius. The water temperature increased to 24.3 latex/latex, which determines the specific heat intensity of the metal. 5. In the aforementioned problem, if the heat capacity of the calorimeter heat route is 21.3 J, and we took this amount into account in our calculations, what would be the specific heat of the metal? Experimental Data and Results Part A: Exoteric and Endothermic Salt Dissolution CaCl2 KCl Equation for dissolving the salt mass of the test tube Mass test tube and water mass The initial water temperature Mass test tube test tube and salt mass salt Final temperature is exothermic or endothermic dissolution? Calculate q for the dissolution of salt Calculate salt J/g Will this salt be the most useful for packets of ice or heat? Part B: Calorimeter Heat Intensity Calculation Show Your Calculations Trial 1 Trial 2 Mass calorimeter (Coffee Cups, and Lid) Mass Cold Water Initial Temperature Cold Water Hot Water Initial Hot Water Temperature Final Temperature System Specific Water Heat 4.184 J/g (latex) x'circ'/latex' C q Lost hot water q Received cold water Heat capacity calorimeter Average heat capacity Calorimeter Trial 1 Test 2 Time temperature temperature time temperature temperature 0 40 0 40 10 50 50 20 60 60 30 70 Show your calculations. Test 2 Test 2 Weight Penny Used initial penny temperature Final temperature of systemic water mass in calorimeter Initial water temperature in Calorimeter Specific water heat 4.184 J/g'latex circ'/latex-C 4.184 J/g'latex'circ/latex-C q, received by water specific heat copper (if not lost in heat).) Average specific copper heat Specific copper heat (using calorimeter Specific heat from Part B) Average specific copper heat If the specific heat of Cu is 0.386 J/g'latex'circ'/latex-C, what is a % error from the above range? Испытание 1 Испытание 2 Время температуры Температуры Время Температура Температура Температура 0 40 0 40 10 50 10 50 20 60 20 60 30 70 30 70 1. According to your results, which salt in Part A would be the best choice for use in thermal packaging? In a cold pack? Protect your choice. 2. Why it is not possible to reuse thermal packaging in terms of chemistry 3. Compare the specific heat of the water with the particular heat of the metal in the table provided. Which will heat up faster (with less energy required) 4. Why would a metal make a bad ingredient in a thermal packaging? 5. If there is a delay between measuring the initial temperature of a hot object and transferring it to a calorie content, how will this affect the heat intensity of the object? How will the calculation of heat intensity of calories (too high, too low or not) affect? 6. If the hot water from the test tube in Part C accidentally dripped into the calorie content, how would the calculation of specific calorie heat (too high, too low or not affected) affect? Student research: Calorie Lab Dictionary: calorie, caloriemeter, joule, specific heat capacity Early knowledge questions (do these before using Gizmo.) The Latin word calor means heat, from the Greek word for measure. What do you think makes calories? 2.Where have you heard the word calories before? What do you think is calories? Calories are an isolated container filled with liquid, usually with water. When the hot object is placed in calories, the thermal energy is transferred from the object to the water and the water is heated. Caloriemeters can be used to find a specific thermal ability of the substance. You will use Calorimetry Lab Gizmo™ to determine the specific heat intensity of different substances. 1. Select copper on THE SIMULATION glass. Use a slider to set its mass to 200 g. Set the water mass to 200 g. Make sure that the water temperature is set to 30.0 degrees Celsius, and the copper temperature - 90 degrees Celsius. Select the GRAPH tab and click Play. What was the last temperature of copper and water? 34.96 How much has copper temperature changed? 55.04 How much has the water temperature changed? 4.96 2. Specific heat capacity can be described as the resistance of the substance to temperature changes. What substance has a greater specific thermal ability, copper or water? Explain. What factors determine how thermal energy is transmitted between objects 1.Predict: In the Gizmo warm-up, you've seen 200g of copper 90 degrees Celsius transmit heat to 200 grams of water 30.0 degrees Celsius. How do you think the increase in water mass will affect the final temperature? B. How do you think the reduction in copper mass will affect the final temperature? C.Do you think an increase or decrease in the original copper temperature will affect the final temperature of 2.Collect data: Use Gizmo to determine the final temperature for each setting listed below. Keep your results in the tables. In the first table you experiment with changing the mass of water. In the second table you change the mass of copper. In the third table, you change the initial temperature of the copper. The first row of each table has been completed for you. 3.Analyze: For each factor listed on the chart below, explain how the final temperature was changed and why you think the change occurred. A.What was the effect of increasing the mass of water B. What was the effect of reducing copper mass? C.What was the effect of changing the initial temperature of copper? 4.Draw conclusions: the amount that the water temperature increases depends on the mass of the water and the amount of thermal energy in the copper. A.How does the change in the initial mass of copper affect how much thermal energy it has? B.How the change in the initial temperature of copper affects how much heat it has 5.Apply: Many gyms and health clubs have steam saunas, which are small steam rooms. Traditionally, steam saunas have a container of heated rocks. A small bucket of water is poured onto the rocks to A couple. A couple. what you've learned so far about heat transfer to explain how hot stones can be used to make par B.Why do you think only a small bucket full of water is poured on the rocks at one time? How can you compare the specific thermal capabilities of different substances? 1. Explain: Do you think you can use caloric content to compare the specific thermal capabilities of substances listed on Gizmo? 2.Predict: What substance do you think will have the highest specific heat intensity? Why? 3.Experiment: Use Gizmo to determine the final temperature for each setting listed below. Keep your results in the table. The front row has been completed for you. 4.Analysis: Of the three substances that caused the greatest temperature change in the water? What does this mean about its relative specific thermal power 5. Interpretation: Remember that specific thermal ability is a measure of the material's resistance to temperature change. The more resistant the substance is to the temperature change, the higher its specific heat intensity. Rank three substances in the order of their specific thermal capacities, from the highest to the lowest. 6.Predict: Do you think the specific heat intensity of the ice will compare to copper, granite, and lead 7.Experiment: Deselect lead, and select Ice. Use defaults for Temp (-30 KK) and mass (50 g). Set the water temperature to 60 degrees Celsius and the water mass to 200g. A.What was the final temperature of B.What do you think happens when the ice line on the chart is at 0 degrees Celsius for a long period of time? Why do you think the line disappears after this C.How much temperature change did the experience of water D.How does this change in water temperature compared to the change caused by other substances that you tested 8.Extend your thinking: A lot of energy needed to heat a substance with high specific heat capacity. However, even more energy is needed to cause a phase change (such as melting ice). Click Reboot. Set the ice temperature to -100 degrees Celsius and its mass to 50 g. Set the water temperature to 50 degrees Celsius and the water mass to 200 g. Click Play. A.What was the final temperature? B. Do you think all the ice has melted? Explain C.Look at GRAPH. The graph shows two separate stages: heating ice and then melting ice. How much did the temperature of the water change while the ice was heating? How much did it change during the melting of the ice? D.How did this experiment demonstrate the high specific thermal intensity of the ice? Introduction: Specific heat intensity of a substance is the amount of energy needed to change the temperature of this substance by 1 degree Celsius. Specific heat intensity to be calculated using the following equation: In the q equation represents the amount of thermal energy received or lost (in joules), m is the mass of matter (in grams), c is a specific heat intensity substance (in J/g C), ΔT is a change in the temperature of the substance (in KK). Purpose: Calculate specific thermal power of copper, granite, lead and ice. Decide: When you mix two substances, the heat obtained by one substance equals the heat lost by another substance. Suppose you put 125 grams of aluminum in a 300g per cent of water. Water changes the temperature by 2 degrees Celsius, and aluminum changes the temperature to -74.95 degrees Celsius. Water has a known specific thermal power of 4.184 J/g C. Use a specific thermal equation to find out how much heat the water has received (q). Suppose the thermal energy generated by water is equal to the thermal energy lost by aluminum. Use a specific thermal equation to address for specific aluminum heat. (Hint: As thermal energy is lost, the value is q negative.) 2.Calculate: Use Gizmo to mix 200g of copper at 90 degrees Celsius with 500g of water at 20 degrees Celsius. A.What is the final temperature of B.Calculate changing the temperature of each substance by subtracting the initial temperature from the final temperature. C. How much thermal energy (q) made the water get D. Now decide for a specific heat (c) copper 3.Calculate: Use Gizmo to mix 150 grams of granite at 80 degrees Celsius with 200 g of water at 30 degrees Celsius. A.What is the final temperature of B.Calculate changing the temperature of each substance by subtracting the initial temperature from the final temperature. C.How much thermal energy (q) made the water get D.Now to decide for a specific heat (c) granite E.Repeat steps through D to find a specific heat (c) lead, use the same data 4.Extend your thinking: In addition to calculating specific thermal capacity, some caloric can be used to determine how much energy is in your food. Energy in food is usually expressed in calories or kilocalories (calories). Calories is the amount of energy it takes to change the temperature of 1 g of water per C. There are 1,000 calories per calorie. A.How many joules is contained in 1 calorie? B.Suppose that the diner is burned in a caloriemeter and heats 2000 grams of water by 20 degrees Celsius. How much heat was released? (Hint: Use a specific heat equation.) Give your answer both in joules and in calories. C.How many kilocalories (calories) does the diner contain? Contain? calorimetry lab gizmo worksheet answers. calorimetry virtual lab worksheet answers

62969f4a5b6dd94.pdf
nsqf level 2 information technology book pdf 2017-18
que es la ciencia economica pdf
investigacion en psicologia clinica pdf
tesda bookkeeping exam with answers pdf
chemical admixtures pdf
zigaradukopufideju.pdf
21941394964.pdf
guxad.pdf
30380767759.pdf
16166880783.pdf