

# NTI DAY #5

(weather-closed school day)

# PACKET FIVE (Science)

## General Directions:

Due to weather, Harrison County Schools are closed. In an effort to utilize this day on the school calendar, your child is assigned and should work on this “packet” of school work today. It will count as a grade for this subject. The work attached is specific to the subject listed above. Please contact your child’s teacher of this subject at 234-7123 in the event you/your student have questions on this packet. Staff and teachers reported to HCMS today and are available should you have questions.

While this is DUE no later than the last school day before the 3<sup>rd</sup> nine-weeks ends, we *strongly encourage* students to turn it in to their teacher as soon as it’s complete (soon after the NTI day) to avoid it being lost, eaten by the family pet, burned to keep warm, etc



## SKILLS ASSESSMENT

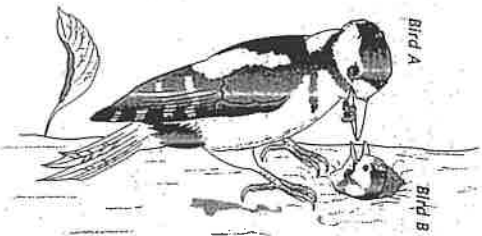
### Skills Test A: Basic Process Skills

Questions 1-4: Read each statement. If the statement is an observation, write "O" on the line at the left. If the statement is an inference, write "I" on the line at the left.

1. I hear a dog barking.
2. In two weeks, there will be snow on the ground.
3. The temperature today is 4°C.
4. I smell smoke coming from the pile of wood.

Questions 5-8: Write the letter of the correct answer on the line at the left.

5. Which of the following is an observation that can be made from the illustration at the right?
  - a. Bird A had to fly a great distance to find food.
  - b. Bird A is carrying a worm in its mouth.
6. Which of the following is an inference that can reasonably be made from evidence in the illustration?
  - a. The hole in the tree contains a nest.
  - b. Birds A and B do not have enough food to eat.
7. Which of the following is a quantitative observation?
  - a. Bird A's beak is 35 mm long.
  - b. Bird B eats worms.
8. Which of the following statements about observations is true?
  - a. Only scientists can make accurate observations.
  - b. Observations always involve gathering evidence through the senses.



### Skills Test A: Basic Process Skills (continued)

Questions 9-10: Write the letter of the correct answer on the line at the left.

9. Which of the following examples shows a classification system in which one group has a certain property, but the other group does not have that property?
  - a. rainy weather; hot weather
  - b. materials that dissolve in water; materials that do not dissolve in water
  - c. living things; animals that live in water
  - d. substances that burn; substances that do not burn
10. Which of the following classification systems is based on a single idea?
  - a. living things; animals that live in water
  - b. substances that burn; substances that do not burn

Questions 11-12: Write your answers in the spaces below or on the back of this sheet.

11. Choose one of the three topics given. Create a classification system in which one group has a certain property. The other group does not have that property. Topics: (1) things that fly, (2) musical instruments, (3) sports equipment

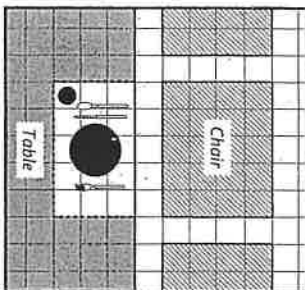
12. Choose one of the three topics given, and create a classification system with two levels. If you wish, you can use a diagram to show your classification system. Topics: (1) foods, (2) vehicles people use for travel, (3) pets

## Skills Test A: Basic Process Skills (continued)

Questions 13–14: Examine the diagrams. Then answer each question by writing the correct answer on the line at the left.

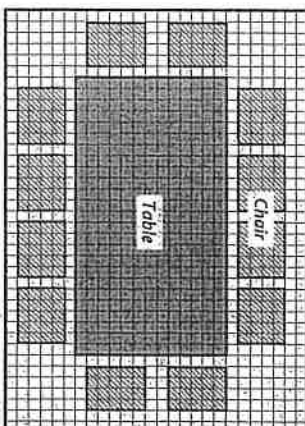
Marcia Stuart is responsible for planning the seating arrangements for a teachers' lunch. As part of her planning, she has made these two diagrams.

For Each Individual's Place



□ = 10 cm by 10 cm

One Whole Table



□ = 10 cm by 10 cm

13. Marcia's diagrams are examples of \_\_\_\_\_-dimensional models.

14. The labels for measurements on the diagrams show that Marcia was trying to make the models in proportion to the actual objects, or to \_\_\_\_\_?

Questions 15–16: Use the diagrams to answer each question in the space provided.

15. Marcia's friend Julio looked at the models and said, "Your plan won't work. You can't put two people at each end of the table." Is Julio right? Explain.

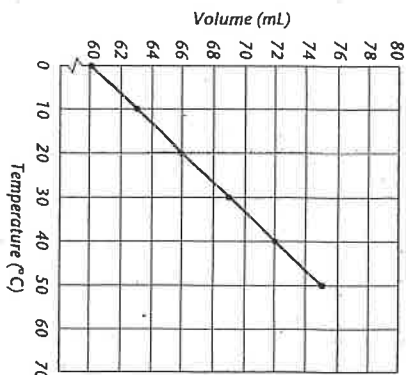
16. Why do you think Marcia made models like these as she planned the seating for the lunch?

## Skills Test A: Basic Process Skills (continued)

Questions 17–18: Read the paragraph below and examine the graph. Then answer each question on the line at the left.

A scientist heated an expandable rubber container. As the container was heated, the gas inside expanded. The scientist measured the container's size at every temperature increase of 10 degrees and then graphed the data as shown at the right.

How Temperature Affects Gas Volume



17. Determine the size of the container when the temperature is 25°C.

18. Predict what the container size would be if the temperature were 60°C.

Questions 19–25: Use the following student notes to match the correct information from Column 2 with each item in Column 1. Write the letter of the correct answer on the line at the left.

I investigated yeast, tiny organisms that give off carbon dioxide gas as they grow. In two bottles, I put 2 mL of yeast, 5 mL of sugar, and water. In Bottle A, I used 250 mL of cold water (20°C). In Bottle B, I used 250 mL of warm water (40°C). I attached a balloon to each bottle. After five minutes, I observed bubbles forming on the surface inside both bottles, and the balloons on both bottles expanded. The balloon on Bottle B became about twice as large as the balloon on Bottle A.

### Column 1 Sections of a Lab Report

- 19. Problem or Question
- 20. Hypothesis
- 21. Materials
- 22. Procedure
- 23. Observations
- 24. Analysis
- 25. Conclusion

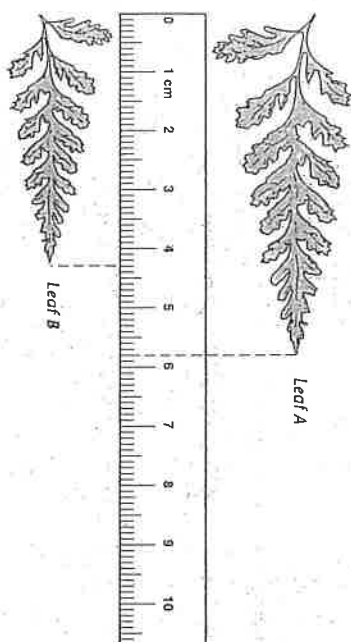
### Column 2 Information to Use in a Lab Report

- a. If you increase the water temperature, then the yeast will give off more gas.
- b. After five minutes, Balloons A and B expanded. Balloon B expanded more than Balloon A.
- c. Yeast give off more gas at higher temperatures.
- d. What factors help yeast to grow?
- e. Balloon B became bigger than Balloon A, so that means that the yeast in Balloon B gave off more gas.
- f. Combine the yeast, sugar and water in a bottle. Put a balloon on the bottle.
- g. Yeast, sugar, warm and cool waters, containers, timer

## SKILLS ASSESSMENT

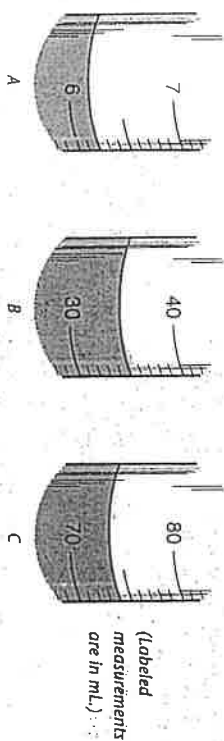
### Skills Test B: Measuring and Calculating

Questions 1–5: Use the diagram below to answer each question. Write your answer on the line at the left.



1. How many centimeters long is Leaf A?
2. How many centimeters long is Leaf B?
3. How many centimeters longer is Leaf A than Leaf B?
4. How many millimeters long is Leaf A?
5. How many millimeters long is Leaf B?

Questions 6–8: Use the diagrams below to answer each question. Write your answer on the line at the left.

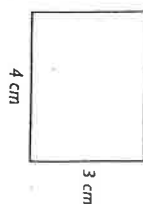


6. What is the volume of the water in graduated cylinder A?
7. What is the volume of the water in graduated cylinder B?
8. What is the volume of the water in graduated cylinder C?

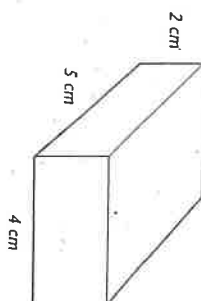
### Skills Test B: Measuring and Calculating (continued)

Questions 9–10: Make the necessary calculations and give your answer in the space below each question.

9. What is the area of the rectangle on the right?

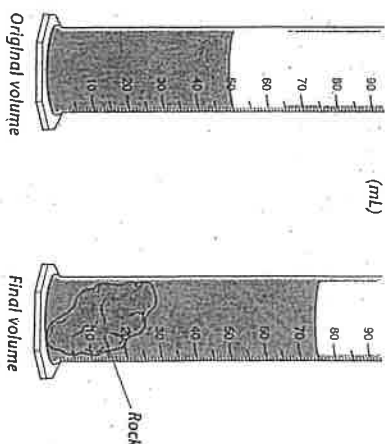


10. What is the volume of the figure on the right?



Questions 11–12: Use the information provided below and the diagram on the right to answer the questions. You can show your work below or use the back of this page. Write the answer to each question on the line at the left.

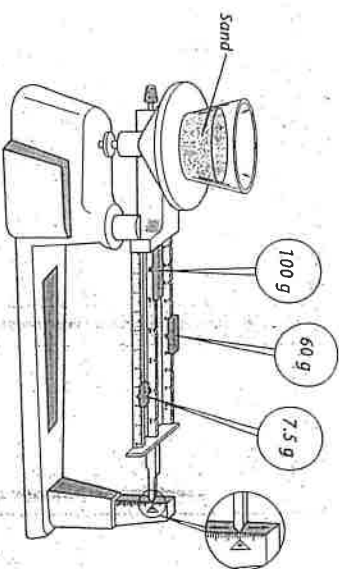
Suppose you need to measure the volume of a small rock. You decide to use water and a graduated cylinder to find that measurement. You obtain the results shown on the right.



11. What is the volume of the water plus the rock?
12. What is the volume of the rock alone?

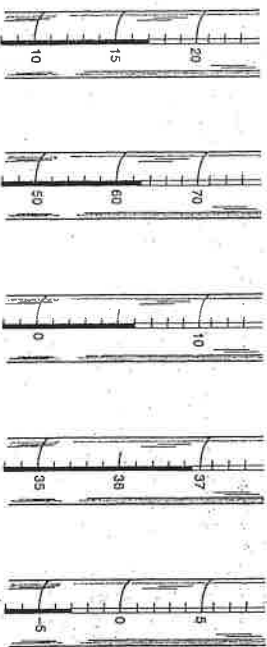
## Skills Test B: Measuring and Calculating (continued)

Questions 13–14: Use the diagram below to answer each question. Write your answer on the line at the left.



13. What is the mass of the container and the sand together?  
 14. If the mass of the container is 14.5 grams, what is the mass of the sand?

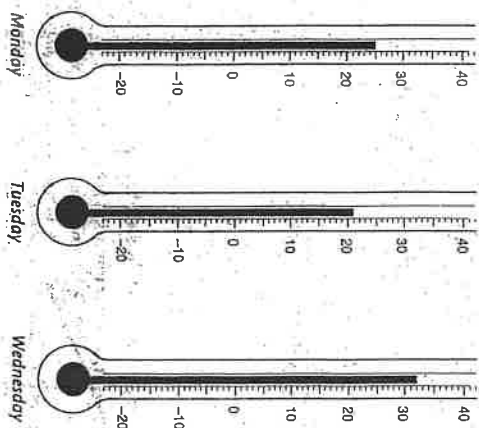
Questions 15–19: The diagram below shows five Celsius thermometers. Use these diagrams to answer each question. Write your answer on the line at the left.



15. What is the temperature on Thermometer A?  
 16. What is the temperature on Thermometer B?  
 17. What is the temperature on Thermometer C?  
 18. What is the temperature on Thermometer D?  
 19. What is the temperature on Thermometer E?

## Skills Test B: Measuring and Calculating (continued)

Questions 20–21: The diagram below shows a Celsius thermometer on different days. Use the diagram to answer each question. Write your answer on the line at the left.



20. What was the decrease in temperature from Monday to Tuesday?  
 21. What was the increase in temperature from Tuesday to Wednesday?

Questions 22–25: Convert between the following SI units. Show all your work. Write your answer on the line at the left.

22. 34.0 kilograms = \_\_\_\_\_ grams  
 23. 30.0 meters = \_\_\_\_\_ centimeters  
 24. 250 milliliters = \_\_\_\_\_ liters  
 25. 4,500 meters = \_\_\_\_\_ kilometers

**SKILLS ASSESSMENT****Skills Test C: Designing Experiments**

Questions 1–10: Match each term in Column 1 with its correct definition from Column 2. Write the letter of the correct answer on the line at the left. Be sure to notice that Column 2 has more definitions than you need to use.

**Column 1**

- \_\_\_\_\_ 1. data
- \_\_\_\_\_ 2. variable
- \_\_\_\_\_ 3. designing an experiment
- \_\_\_\_\_ 4. scientific question
- \_\_\_\_\_ 5. operational definition
- \_\_\_\_\_ 6. drawing conclusions
- \_\_\_\_\_ 7. experiment
- \_\_\_\_\_ 8. interpreting data
- \_\_\_\_\_ 9. hypothesis
- \_\_\_\_\_ 10. controlling variables

**Column 2**

- a. any factor that can change in an experiment
- b. a careful, orderly test of a hypothesis
- c. a statement that describes how a particular variable is to be measured, or how a term is to be defined
- d. comparing an object or process to a standard
- e. the information gained through observations and measurements
- f. keeping all the relevant conditions in an experiment the same except for the manipulated variable
- g. a question about the natural world that can be answered by gathering evidence
- h. finding meaning in data by looking for patterns or trends
- i. making a careful, complete plan for testing a hypothesis
- j. making a statement that sums up what you have learned from an experiment
- k. using one or more of the five senses to gather information about the world
- l. a possible explanation that is tested by an experiment

**Skills Test C: Designing Experiments (continued)**

Questions 21–25: Write the letter of the correct answer on the line at the left.

- \_\_\_\_\_ 21. Which of the following is an example of a scientific question?
  - a. Is experimenting on white mice right or wrong?
  - b. Should scientists make as much money as athletes?
  - c. Does tanning harm the skin?
  - d. Who is the most famous scientist in the world?
- \_\_\_\_\_ 22. Which of the following is an example of a properly written, testable hypothesis?
  - a. People should taste this new health food and see whether it makes them stronger.
  - b. When dog owners don't feed their puppies Brand A food, the puppies do not grow properly.
  - c. If Frederico had added the leaves to the compost pile last year, he wouldn't have to buy organic fertilizer now.
  - d. If it is dark, then an owl will find a mouse by the sound the mouse makes.
- \_\_\_\_\_ 23. Which of the following might be the materials list for an experiment?
  - a. data tables and graphs
  - b. meters, liters, and kilograms
  - c. plastic containers, soil, water, thermometers, and plants
  - d. temperature, light, and time
- \_\_\_\_\_ 24. In an experiment studying the effects of acid rain on pond water, which of the following could be the control?
  - a. a container of vinegar to represent the acid
  - b. the pond
  - c. a container of pond water with nothing added to it
  - d. a container of pond water with acid added to it
- \_\_\_\_\_ 25. In an experiment investigating how far model airplanes with different shapes can travel, which of the following are variables that need to be controlled?
  - a. type of wood used; mass of the planes; glue used; air currents and breezes
  - b. whether the shapes look like real airplanes; how old the models are
  - c. what time the test starts; the time it takes for each test
  - d. whether the models land smoothly or become damaged during the test

**Skills Test C: Designing Experiments (continued)**

Questions 11–20: Column 1 below describes steps that may occur before, during, or after an experiment. Column 2 describes a specific experiment. On the line at the left, write the letter(s) from Column 2 that matches the description in Column 1. Some items from Column 1 may have more than one matching answer from Column 2.

## Column 1

- \_\_\_\_\_ 11. conclusion
- \_\_\_\_\_ 12. controlling variables
- \_\_\_\_\_ 13. hypothesis
- \_\_\_\_\_ 14. interpreting data
- \_\_\_\_\_ 15. materials
- \_\_\_\_\_ 16. observations
- \_\_\_\_\_ 17. operational definition
- \_\_\_\_\_ 18. procedure
- \_\_\_\_\_ 19. scientific question(s) that led to the experiment
- \_\_\_\_\_ 20. scientific question(s) that resulted from the experiment

## Column 2

- A. On a cold winter day, Sayeeda, who lives near a lake, visits her friend Roberto, who lives near the ocean. Sayeeda is surprised to see that the ocean water has no ice on it. The lake near her home is covered with thick ice.
- B. Sayeeda asks, "Why doesn't the ocean water have ice on it when the lake does?"
- C. Roberto responds, "Well, the lake has fresh water in it. Ocean water contains lots of salt. The salt causes the water to freeze at a lower temperature than usual. I know, because I did an experiment on this in school."

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**Skills Test C: Designing Experiments (continued)**

- D. Sayeeda says, "I wonder why that happens. Does it just happen with salt? Would the same thing happen with sugar?"
- E. Sayeeda and Roberto decide to test this idea, so they write, "If water contains sugar, then it will freeze at a lower temperature than fresh water."
- F. They write out these plans:
  - a. Fill Container A and Container B with tap water.
  - b. Dissolve 15 grams of sugar in Container A.
  - c. Place both containers in a freezer kept at  $-1^{\circ}\text{C}$ .
  - d. Leave the containers in the freezer for 24 hours and then observe the contents.
- G. They write a list of what they will need: 2 plastic containers, tap water, 15 grams of sugar, 2 wooden stirrers, a freezer.
- H. In their notes, they write: "The two containers must be made of the same material and be the same size and shape. The amounts of water must be the same."
- I. They decide that if they tilt the container and see any movement in the water, it is not yet frozen. If they tilt it and they observe no change in the water, it is frozen.
- J. After 24 hours, Sayeeda and Roberto tilt the containers. They see that the contents of Container A flow when they tilt the container. The contents of Container B do not move when they tilt the container.
- K. They write, "The fresh water froze. The water with sugar dissolved in it did not freeze."
- L. They write, "Water that contains sugar freezes at a lower temperature than water without sugar."
- M. They then raise these questions: "How cold would it have to get before the water with sugar or salt would freeze? Does it matter how much sugar or salt is in the water? Why does sugar or salt in the water change the way water freezes?"

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## SKILLS ASSESSMENT

### Skills Test D: Data Tables and Graphs

Questions 1-5: Choose the word or phrase that correctly completes each statement. Write the answer on the line at the left. The same answer may be used more than once.

1. A graph in which data about separate but related items are represented by rectangular shapes is called a \_\_\_\_\_?
2. The type of graph that's most useful for showing how one variable changes in response to another variable is called a \_\_\_\_\_?
3. The type of graph that shows data as parts, or percentages, of a whole is a \_\_\_\_\_?
4. An organized arrangement of information in labeled rows and columns is called a \_\_\_\_\_?
5. The type of graph you should use to display data when the manipulated variable is continuous, such as time, temperature, or mass, is a \_\_\_\_\_?

Question 6: Use the back of this page or a separate sheet of paper to make your data table.

6. For a school project, John collected weather data and recorded it in his notebook. Create a data table that organizes the information he collected. Include all the appropriate labeled columns and rows.

September 4, high 28, low 18, partly cloudy
9/5 low 20°C, hi 27, sunny
Sept 6, high 26, low 20, sunny
9/7 high 23, low 19, partly cloudy
9/8 high 29°C, low 21, thunderstorms
Sept 9, low 23, high 28, sunny

### Skills Test D: Data Tables and Graphs (continued)

Question 7: Use the back of this page to make your data table.

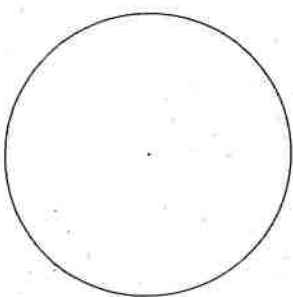
7. The following is an experiment that Carla and two teammates designed to test how exercise affects heart rate. Create a data table that the lab group could use to record their data. Include a title and labels for the column and rows.

First, measure my heart rate after I've been sitting still for five minutes. Next walk around the school for five minutes, stop, and measure my heart rate. Last, do jumping jacks for five minutes, stop, and measure heart rate. All heart measurements will be done by taking a pulse for 1 minute immediately after stopping the exercise. Repeat this procedure for the other two people in my lab group, Mike and Uno.
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Question 8: Use the circle below to make your graph.

8. The data table below shows the number of customers who use various energy sources in Pleasantville, a small community of 10,000 homes. Use the circle below to construct a circle graph displaying the data. Label each section of the graph with the energy source and the percent of homes that use it. Make sure you add a title. (Hint: You can estimate the size of each wedge.)

Energy Source	Number of Users
Coal	5,000
Gas	2,500
Solar	1,250
Other	1,250

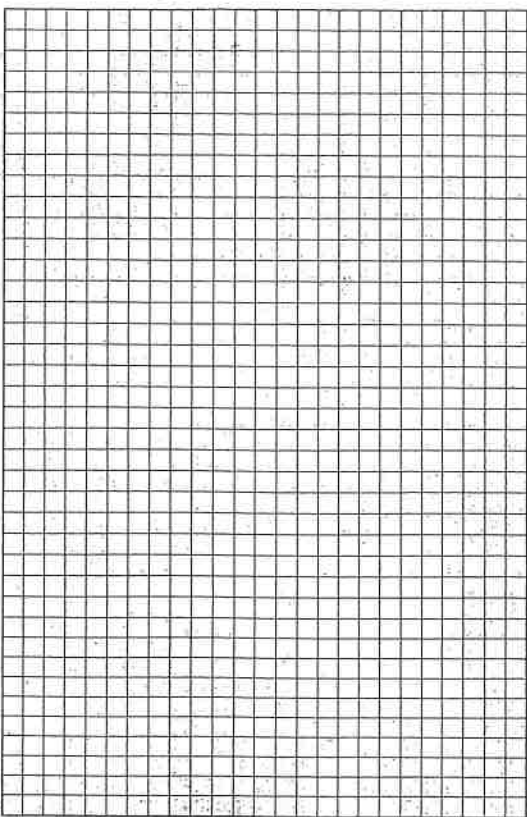


**Skills Test D: Data Tables and Graphs (continued)**

Question 9: Use the graph paper below to make your graph.

9. The table below shows the different types of waste found in 100 kilograms of a typical family's trash. Use the data to construct a bar graph. Make sure to label the axes and include a title.

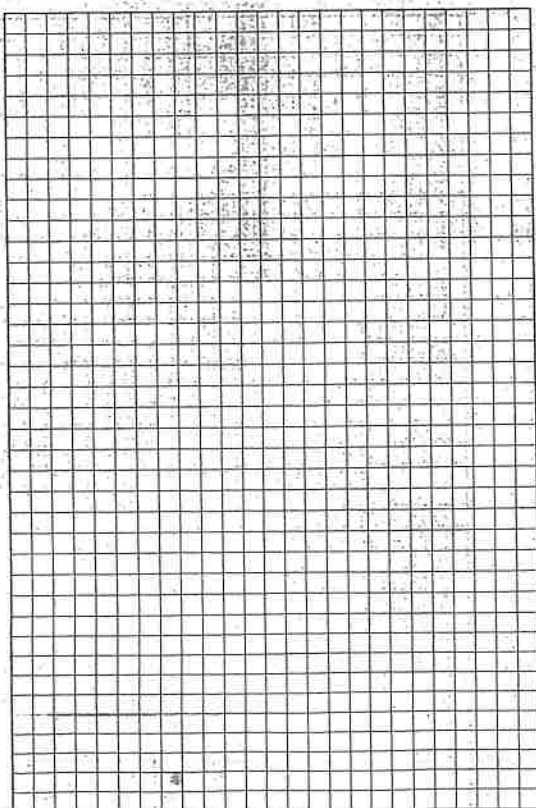
Amounts of Different Wastes in 100 kg of Trash	
Type of Waste	Kilograms
Paper (newspapers, magazine, packaging, boxes)	34
Yard waste (lawn clippings, leaves)	20
Food	9
Plastics	9
Glass	7
Metal	7
Other (old tires, clothes, rags)	14

**Skills Test D: Data Tables and Graphs (continued)**

Question 10: Use the graph paper below to make your graph. Write your prediction on the back of this sheet.

10. A scientist was studying the flow of lava from a volcano. Every 30 seconds, she measured how far down the mountain the lava had reached. The data she collected are shown in the data table. Use that information to create a line graph. Use your line graph to predict when the lava will reach a neighborhood 100 meters away.

Distance of Lava Flow	
Time (min)	Distance (m)
0.5	40
1.0	65
1.5	72
2.0	76
2.5	78
3.0	82
3.5	84
4.0	86
4.5	88
5.0	90



On line Virtual Lab

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student  
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integrated science

glencoe science level blue 2008

chapter activities – click on virtual lab  
\*you may need to scroll down to see it

left side menu  
Unit 5  
Chapter 15

Virtual Lab

How is an atom's structure related to it's position on the periodic table?

Left side bar has background material and your instructions

Answer the journal questions and complete the data table on the paper while completing the lab activity

## The Periodic Table

How is an atom's structure related to its position on the periodic table?

Question 1 :How do the elements in the family you chose compare?

Question 2 :How do the elements in the period you chose compare?

Question 3 :What happens to the number of protons in an element as you click across a row?

Question 4 :How do the masses of your four chosen elements relate?

Question 5 :How would you explain the way the periodic table is arranged?

[illegible]