Literacy support worksheet

1.1 Science laboratories contain hazards

Pages 2–3

Safety in the science laboratory

1 What is a hazard?

2 When is a chemical considered hazardous?

3 What should you wear when working with chemicals?

a

b

c

d

e

4 Draw a picture of someone wearing the right clothing for working with chemicals. Use Figure 1.1 to help you.

5 When observing chemical reactions what are two things you should never do?

a

b

6 Why can’t chemicals be disposed of down the sink?

7 How would you dispose of the following materials?

a olive oil

b plasticine

c a dilute acid

d a rat in a dissection

e ammonia (a base–alkali)

f untreated eucalyptus leaves

Word detective

8 Matching meaning

Draw a line from the picture to its description.

|  |  |
| --- | --- |
| SW0106_00951-r | Substance that can cause irritation (redness or rash). |
| SW0101_00951-r | Can cause death if touched, inhaled or swallowed. |
| SW0105_00951-r | Substance that may explode if exposed to fire, heat, movement or friction. |
| SW0102_00951-r | Substance that is corrosive (destructive) to living tissues, such as skin and eyes. Also used for substance that is corrosive to metals. |
| SW0103_00951-r | Substance is toxic to marine organisms and may cause long-lasting effects in the environment. |
| SW0108_00951-r | Contains gas under pressure. Released gas may be very cold. Gas container may explode if heated. |
| SW0109_00951-r | Substance that catches fire easily. |
| SW0104_00951-r | Substance can cause serious health effects if touched, inhaled or swallowed. |

Literacy support worksheet

1.2 Dissection is an important science skill

Pages 4–7

Dissection

1 What is dissection?

2 What are the four main pieces of specialised equipment that are required to perform a dissection?

3 Fill in the gaps in the table below using the information in *Oxford Science 8*.

|  |  |
| --- | --- |
| SW0110_00951-r | **Name: Scissors**  Function: Used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ skin and other tissue.  Have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tips, which are less destructive to the  tissue being cut. |
| SW0111_00951-rf | **Name: Probe**  Function: used to look at and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a specimen,  and to probe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. They take the place of your  fingers, i.e. they are used for the same purpose. |
| SW0112_00951-r | **Name: Scalpel**  Function: Small and extremely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ steel blade  which is used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cutting. Sometimes small  incisions can be made with these and scissors do the rest. |
| SW0113_00951-r | **Name: Forceps or tweezers**  Function: A hinged \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ used for grasping and  holding \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. These can also be used in place  of hands. |

Word detective

4 Flow diagram

Number each statement from 1–10 to complete the correct order for dissecting a chicken wing, as shown on pages 6–7.

\_\_\_\_ Use scissors to cut when you can see what’s under the structure you’re cutting.

\_\_\_\_ Use probes to look inside any folds.

\_\_\_\_ Collect your specimen for dissection. Examine all external structures.

\_\_\_\_ Use forceps to hold and pull tissue.

\_\_\_\_ Set up the space with newspaper and put out dissection tools.

\_\_\_\_ Fingers are the least damaging way to ‘look’ around your specimen.

\_\_\_\_ Use scalpels to cut carefully away from your hands. Run the scalpel over the tissue several times to cut through.

\_\_\_\_ Make sure you are wearing appropriate safety gear: gloves, lab coat and safety glasses.

\_\_\_\_ You may want to pin the specimen on the dissection board to keep it from moving.

\_\_\_\_ When finished, wrap your specimen in newspaper for disposal. Clean, rinse and disinfect instruments and wash your hands.

Literacy support worksheet

1.3 Scientists design their own experiments

Pages 8–9

Designing experiments

1 For all of the ‘What if?’ questions, write a hypothesis and identify the independent variable, dependent variable and three control variables in the spaces below. The first one has been done for you.

a What if the balloon was blown up more?

Hypothesis: If the balloon was blown up more, the rocket would move further along the string.

Dependent variable: the distance that the rocket travels

Independent variable: the amount of gas inside the balloon

Control variables: friction between string and straw, balloon shape, balloon material

b What if the string had less friction? (Was more tight)

Hypothesis:

Dependent variable:

Independent variable:

Control variables:

c What if the string had more friction? (Was less tight)

Hypothesis:

Dependent variable:

Independent variable:

Control variables:

d What if the straw were shorter?

Hypothesis:

Dependent variable:

Independent variable:

Control variables:

2 In an experiment, a fizzy Alka-Seltzer tablet was dropped into100mL of room-temperature water. It was then timed for how long it took the tablet to dissolve. Students were then given three ‘What if?’ questions to investigate the ways to make a chemical reaction go faster.

i What if the water was warmer?

ii What if the tablet was crushed into powder?

iii What if the tablet was coated in vaseline?

a What is the independent variable (factor being changed) in each question above?

i

ii

iii

b What is the dependent variable (factor being tested) in all three questions?

c Name two control variables for these experiments. That is, two factors that must remain the same in each for each experiment to be fair. (Hint- they may be related to sizes and amounts).

Word detective

3 True or false

Read the statement and circle whether it is true or false.

a The independent variable is the factor that remains the same in an experiment. T or F

b The control variable is the factor that changes in an experiment. T or F

c The dependent variable is the factor being tested in an experiment. T or F

d The hypothesis is the relationship between independent and dependent variables. T or F

e The results section discusses if the hypothesis was supported. T or F

f The method section includes which steps to take. T or F

g If the dependent variable is clear, it is a fair test. T or F

Literacy support worksheet

1.4 Scientists keep a logbook and write formal reports

Page 10–11

Logbooks

1 A student wrote an entry in their laboratory logbook. The entry is shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| Temperature rise of different volumes of water | | | 10th March 2016 |
| Results: |  |  |  |
|  | 1 min | 2 min | 3 min |
| 50mL | 18°C | 40°C | 80°C |
|  |  |  |  |
|  | 1 min | 2 min | 3 min |
| 100mL | 20°C | 30°C | 70°C |
|  |  |  |  |
| Observations | The water heated up faster in the 50mL beaker. 200mL of water rose from 19°C to 25°C and then to 60°C | | |
|  |  | | |
| Aim | To heat up water | | |
|  |  | | |
| Hypothesis | The smaller beaker will heat up faster. | | |
|  |  | | |
| Conclusion | Water heats up. | | |

Each section has an error or is missing. Below, state the errors that the student made:

a Aim:

b Hypothesis:

c Method:

d Results:

e Observations:

f Conclusion:

2 Using the Observations section of the logbook in Q1, fill in the information for when 200mL of water was heated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Temperature rise of different volumes of water | | | | 10th March 2016 |
| Results: |  | |  |  |
|  | 1 min | | 2 min | 3 min |
| 50mL | 18°C | | 40°C | 80°C |
|  |  | |  |  |
|  | 1 min | | 2 min | 3 min |
| 100mL | 20°C | | 30°C | 70°C |
|  |  | |  |  |
| 1 min | | 2 min | 3 min |
| 200ml | °C | °C | | °C |

Word detective

3 True or false

Read each of the following statements and indicate whether it is true or false.

a The main purpose of a logbook is for a scientist to draw in. T or F

b It is important to label a logbook with your contact details. T or F

c Bound notebooks are more reliable that electronic device logbooks. T or F

d You should date every entry you make in your logbook. T or F

e It is more important to record your data and observations in your logbook than to avoid errors. T or F

f Your logbook entries will give you all the details to write up a formal report, if required. T or F

Literacy support worksheet

1.5 Tables and graphs are used to present scientific data

Pages 12–13

Graphing and interpretation

1 What are four common features in graphs?

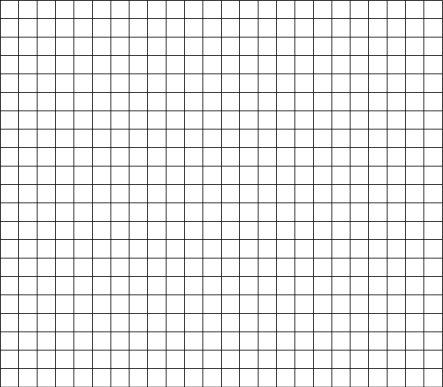
a

b

c

d

2 What is the most common type of graph, used to represent data, in science?

3 A student put two chemicals together and recorded the temperature of the reaction for eight minutes.

a Create a line graph for the following set of data.

|  |  |
| --- | --- |
| Time (mins) | Temperature (ᵒc) |
| 0 | 20 |
| 1 | 30 |
| 2 | 40 |
| 3 | 50 |
| 4 | 60 |
| 5 | 65 |
| 6 | 68 |
| 7 | 69 |
| 8 | 70 |

What is the shape of the graph?

c Complete the following sentences:

As the independent variable increases, the dependant variable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This relationship can be described as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ relationship.

4 For most graphs you can calculate the slope of the graph using the formula .

(rise = top *y*-axis point – bottom *y*-axis point) (run = top *x*-axis point – bottom *x*-axis point)

a A student heats water by using a Bunsen burner. Then they heat water using a hotplate.Graph the results of the two methods below:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bunsen burner   |  |  | | --- | --- | | Time (min) | Temp (ºc) | | 0 | 18 | | 1 | 34 | | 2 | 50 | | 3 | 66 | | 4 | 82 | | 5 | 98 |   SW0114_00951 | Hotplate   |  |  | | --- | --- | | Time (min) | Temp (ºc) | | 0 | 18 | | 1 | 26 | | 2 | 34 | | 3 | 42 | | 4 | 50 | | 5 | 58 |   SW0114_00951 |

b Calculate the slope of each of the graphs above.

|  |  |
| --- | --- |
|  |  |

Word detective

5 Matching meaning

Draw a line to match the words on the left to the description on the right.

|  |  |
| --- | --- |
| A directly proportional relationship | To continue the shape of the graph |
| Patterns in the data | When the line slopes upward |
| Graphs | If the line slopes downward |
| Extrapolate | Show what happened |
| An inversely proportional  relationship | Needs to be divided into sections |
| A curved graph | Enables predictions about what  might happen if it continued |