YEAR 9 BASIC SCIENCE

WORKSHEET SOLUTION

WEEK 3

1. State three important things to follow when drawing graphs.

   1. Each graph must have a title – what the graph shows
   2.Start graph at 0 on vertical axis (horizontal axis as well if it is part of data)
   3.Label the x-axis and y-axis with their appropriate name and their units within brackets.

2. Identify the different types of graphs used when analyzing data.

   The four different types of graph are histogram, bar graph, line graph and pie chart.

3. Define the following terms:

   i. Aim - **purpose of the experiment**

   ii. Inference -**is a likely explanation of what you observed. It is how you explain the observation**

   ii. Method - **an account of what was done**
4. Explain the method of lighting a Bunsen burner in the laboratory.

   1. Push the rubber tube on to the gas outlet.

   2. Close the air hole. You do this by turning the collar.

   3. Light the match and hold it over the top of the barrel (refer to diagram above).

   4. Turn on the gas. Always turn on the gas last. (Note: When the air hole is closed, no air gets in and the colour of the flame is bright yellow. This flame is called the safety flame. It is not very hot and not good for heating).

   5. Open the air hole, so that air mixes with gas to produce a hotter, pale blue flame. This flame is used for heating.

   6. When the Bunsen burner is not being used for heating, the yellow safety should be used.

5. State three safety precautions that needs to be adhered to while doing experiments in the lab.

   1. When heating or mixing substances, never look inside the flask or beaker .Do not point the open end of test tubes or beakers towards you or others. Wear safety goggles while heating.

   2. Follow the correct method for lighting a Bunsen burner.

   3. After heating equipment, let it cool down before picking it up. This will avoid burns.

   **4. If you have long hair, keep it tied back and away from flames and chemicals.**

   5. Do not place flammable substances near naked flames.

6. What is the color of safety flame in a Bunsen burner?

    A. Blue   C. Red

    B. Yellow   D. White

7. Which one of the following instructions is the proper way of heating a test tube?

    A. Point the test tube to yourself.

    B. Rotate the test tube while heating.

    C. Heat the bottom of the test tube.

    D. Have the test tube more than one third full.

8. What is the function of leaves in plants?

    A**. Make food for plant.**   C. Carry water to leaves.

    B. Reproductive part of plant.   D. Store food.

9. What is the main purpose of the flower?

    A. reproduction   C. to look pretty

    B. to attract bees   D. to smell good

10. Differentiate between anatomy and morphology.

    Anatomy is the study of the internal structure of plants. Morphology is the study of the external structure of plants.

11. State the function of the following parts of a plant

    (i) Roots - **Provides anchorage in the soil. Absorb and conduct/transport water and minerals/nutrients**

    (ii) Stem - **Support the leaves, flowers and fruit. Carry water, minerals and**

    (iii) Leaf - **A plant's food factory • Main site of photosynthesis where sugars are made from water, carbon dioxide using sunlight energy.**

    (iv) Root hairs- **Increase the absorption of water**

12. The diagram below shows the cross-section of a root. The function of the structure **X** is to transport
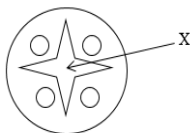
    A. food from leaves to all parts of the plant.

    B. food from roots to leaves.

    C. water from roots to leaves.

    D. water from leaves to roots

Worksheet (Week 3) - Ticker Timer Tape analysis (solutions

1. While conducting an experiment to investigate gravitational acceleration, some Physics students obtained the following ticker tape using a 50 Hz ticker timer connected to a trolley.

Diagram is not drawn to scale.

5.3 cm   8.1 cm
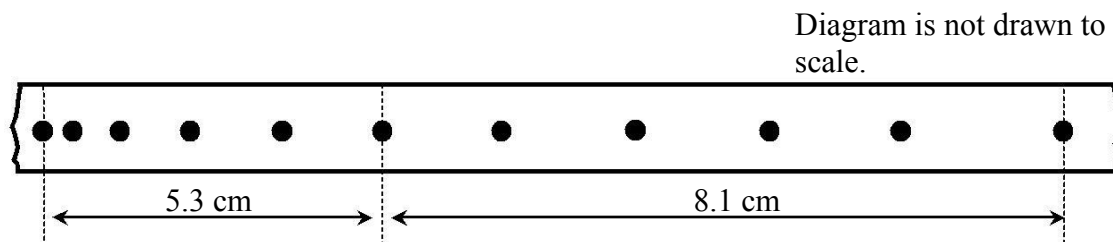
(i)   How does the ticker tape above show that the trolley is accelerating?

Since the distances between the dots are increasing we conclude that the ticker time tape is predicting acceleration.

(ii) Calculate the acceleration of the trolley in m/s^2.

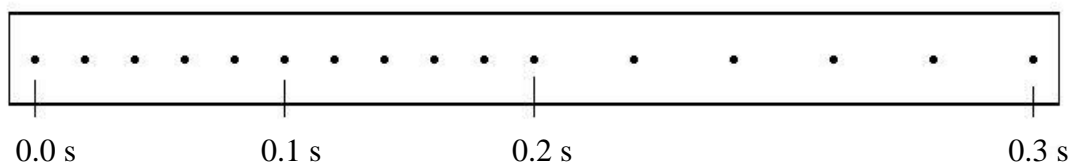$$u = \frac{5.3}{5 \times 0.02} \qquad v = \frac{8.1}{5 \times 0.02}$$

$u = 53$cm/s or $\mathbf{0.53m/s}$ $v = 81$cm/s or $\mathbf{8.1m/s}$

$$a = \frac{v - u}{t}$$

$$a = \frac{\mathbf{8.1m/s - 0.53}}{(10 - 1)(0.01)}$$

$\underline{\boldsymbol{a = 7.77m/s}}$

2. A group of physics students attached a ticker timer tape to a toy remote controlled car. Part of the tape was taken for analysis and is shown below.

0.0 s   0.1 s   0.2 s   0.3 s

Which of the displacement - time graphs shown below **best** represents this section of the tape? A

A.   displacement (m)

0.0   0.1   0.2   0.3   0.4
time (s)

B.   displacement (m)

0.0   0.1   0.2   0.3   0.4
time (s)

C.   displacement (m)

0.0   0.1   0.2   0.3   0.4

time (s)

D.   displacement (m)

0.0   0.1   0.2   0.3   0.4

time (s)

4