Chapter 1: Science toolkit

Challenge 1.1: Sideways ping pong

Experiment worksheet answers (pages 2–3 and 170)

What if?

What if you change the colour of the ball?

Student answers will vary.

What if you change the type of floor covering?

Student answers will vary.

What if you drill holes in the ball?

Student answers will vary.

What if you roll the ball down a tube?

Student answers will vary.

What if you spin the ball?

Student answers will vary.

What if you vary the height from which the ping pong ball is dropped?

Student answers will vary.

Skills Lab 1.2: Drawing scientific diagrams

Experiment worksheet answers (pages 4–5 and 171)

Questions

1 Which piece of equipment was the most difficult to draw?

Student answers will vary.

2 Which did you find the easiest to draw?

Student answers will vary.

3 Name up to five pieces of equipment you had not seen before and list their uses in a laboratory.

Student answers will vary.

4 Name two pieces of equipment that can be used for:

a holding things

b mixing chemicals

c pouring.

a test tube holder, boss head and clamp

b stirring rod, spatula

c beaker, measuring cylinder

5 Where in your laboratory do you find:

a test tubes?

b Bunsen burners?

c tongs?

d retort stands?

e test tube racks?

f heating mats?

g a rubbish bin?

h beakers?

Student answers will vary depending on individual science laboratory.

Skills Lab 1.4: Observation verses inference

Experiment worksheet answers (pages 8–9 and 172)

Discussion

How good are you at making observations? Do you confuse observations with inferences?

There are many things you can observe.

1 Draw up a table with two columns, one for observations and one for inferences.

Student answers will vary.

2 Examine Figure 10.15, which is a drawing of a crime scene. Write six observations from the crime scene.

Student answers will vary.

3 Write down three inferences you can make from your observations.

Student answers will vary.

Skills Lab 1.5: Measuring mass and volume

Experiment worksheet answers (pages 10­–13 and 172)

Questions

1 Which drink had the most sugar?

Student answers will vary.

2 Which drink had the most serves in a single container?

Student answers will vary.

3 Which drink had the most sugar in a whole container?

Student answers will vary.

4 Was there any volume or sugar content that surprised you?

Student answers will vary.

Skills Lab 1.6A: Lighting a Bunsen burner

Experiment worksheet answers (pages 14­–15)

There are no questions in this experiment.

Skills Lab 1.6B: Using your Bunsen burner

Experiment worksheet answers (pages 14­–15)

6 Why do you think the yellow flame is called the safety flame? Give at least two reasons.

The yellow flame is called the safety flame because it is not as hot and is easy to see.

Which flame is noisier: blue or yellow? Why is this helpful to know?

The blue flame is noisier. This is helpful to know because the blue flame is difficult to see so the noise can alert you to the Bunsen burner being on.

Which flame leaves a sooty carbon black deposit on whatever object it heats?

The yellow flame

Which flame is the ‘clean’ flame for heating?

a

Give reasons for using a blue flame for heating in an experiment.

The blue flame is hotter.

Skills Lab 1.8: Heating water

Experiment worksheet answers (pages 18–21 and 173)

Questions

1 What type of data have you collected?

quantitative data

2 What type of graph should you draw for this type of data?

a line graph

3 Does your graph support your hypothesis? Explain.

Student answers will vary.

4 Was your experiment a fair test? Explain why or why not.

Student answers will vary.