

1 Yeast cells produce an enzyme called invertase. Invertase catalyses the breakdown of sucrose into reducing sugars. Sucrose is **not** a reducing sugar.

A student investigated the effect of two different concentrations of invertase extract on a sucrose solution.

The student used this method:

Step 1 Label three test-tubes **A**, **B** and **W**.

Step 2 Use a syringe to put 2 cm³ of sucrose solution into all three test-tubes.

Step 3 Use a clean syringe to put 2 cm³ of 100% invertase extract into test-tube **A**.

Step 4 Use a clean syringe to put 2 cm³ of 10% invertase extract into test-tube **B**.

Step 5 Use a clean syringe to put 2 cm³ of distilled water into test-tube **W**.

Step 6 Put all three test-tubes in a warm water-bath at 40 °C for 15 minutes.

Step 7 Measure the temperature of the liquid in the test-tubes.

(a) State the name of the piece of equipment that is used to measure temperature.

..... [1]

Step 8 Use a clean syringe to add 4 cm³ of Benedict's solution to all three test-tubes.

Step 9 Place all three test-tubes into a hot water-bath for five minutes.

Step 10 After five minutes, record the colour of the liquid in each test-tube.

Fig. 1.1 shows the notes the student made about their observations in step 10.

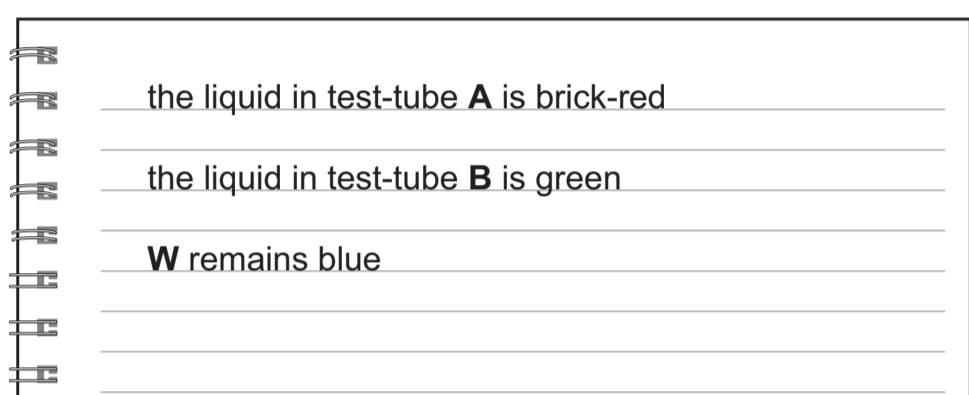


Fig. 1.1

(b) Prepare a table and record the results of this investigation using the information in Fig. 1.1.

[3]

(c) State a conclusion for the results shown in test-tube **A** and test-tube **B**.

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..... [1]

(d) Explain the purpose of test-tube **W**.

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..... [2]

(e) State the independent variable in this investigation.

..... [1]

(f) Explain why the test-tubes were placed in the warm water-bath in step 6.

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..... [1]

(g) Explain why a clean syringe was used in steps 3, 4 and 5.

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..... [1]

(h) Invertase is a protein.

State the reagent used to test for the presence of protein.

..... [1]

[Total: 11]