REGENTS
GRAPHING PRACTICE

August 2010

Base your answers to questions 52 through 55 on the information and data table below and on your knowledge of biology.

An investigation was carried out over a five-year period to measure the effect of color on the survival of trout in a stream. The stream contained many brightly colored stones and food was plentiful. At the start of the investigation (year 0), 100 bright-colored trout and 100 drab-colored trout were placed into a section of the stream that had been blocked with netting. Investigators monitored the trout populations for five years and recorded the water condition each time a count was done. The data collected are shown in the table below.
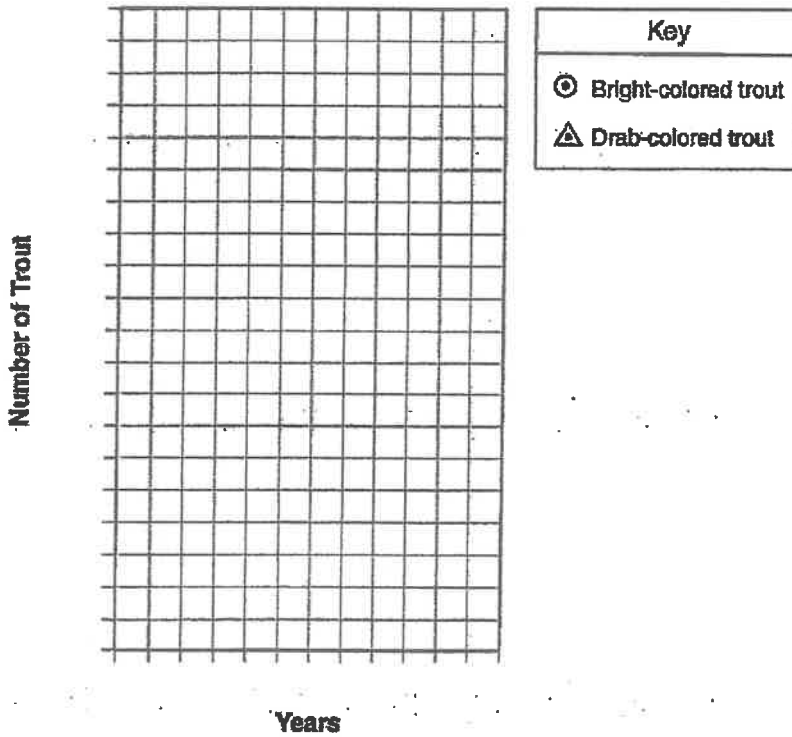
Trout Population Over Five Years

Year	Bright-Colored Trout	Drab-Colored Trout	Condition of Water
0	100	100	clear
1	64	36	clear
2	86	25	clear
3	25	77	cloudy
4	14	86	cloudy
5	90	9	clear

Directions (52–54): Using the information in the data table, construct a line graph on the grid on the following page, following the directions below.
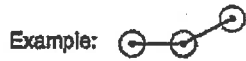
52 Mark an appropriate scale on each labeled axis. [1]

(on next page)

Trout Population Over Five Years

<table>
<tr><td rowspan="2">Number of Trout</td><td></td></tr>
<tr><td></td></tr>
</table>

Key

⊙ Bright-colored trout

△ Drab-colored trout

Years

53 Plot the data for the bright-colored trout on the grid. Surround each point with a small circle and connect the points. [1]

Example: ⊙—⊙—⊙

54 Plot the data for the drab-colored trout on the grid. Surround each point with a small triangle and connect the points. [1]

Example: △—△—△
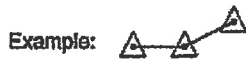
55 Explain how trout survival is related to the color of trout and the environmental condition of the stream. [1]

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June 2010

Base your answers to questions 46 through 49 on the information and data table below and on your knowledge of biology.

Birds colliding with aircraft either on the ground or in the air create problems for the Air Force. An organization known as BASH (Bird Aircraft Strike Hazard) studied the impact of birds colliding with aircraft. In 2001, there were 3854 bird collisions reported at a total cost to the Air Force of over 31 million dollars in damage—approximately eight thousand dollars per collision. August, September, and October were the busiest months with 1442 collisions. Nearly 50% of all these collisions occurred in the airfield environment, an environment that can most easily be controlled.

The top five species of birds involved in these collisions are listed in the data table below.

Top Five Bird Species Involved in Collisions in 2001

Type of Bird	Number of Collisions
American mourning dove (species A)	123
horned lark (species B)	100
barn swallow (species C)	83
American cliff swallow (species D)	55
American robin (species E)	55

Source of data: Bird Aircraft Strike Hazard by Matt Granger, http://www.find.articles.com

Directions (46–47): Using the information in the data table, construct a bar graph on the grid, following the directions below.

46 Mark an appropriate scale on the axis labeled "Number of Collisions." [1]

47 Construct vertical bars to represent the data. Shade in each bar. [1]

**Top Five Bird Species
Involved in Collisions in 2001**

Number of Collisions

A   B   C   D   E

Bird Species
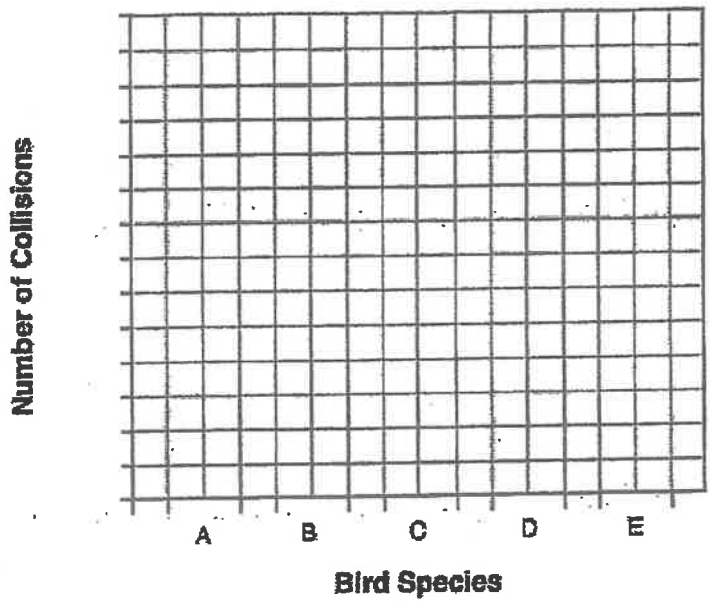
January 2010

Base your answers to questions 46 through 49 on the information below and on your knowledge of biology.

The masses of six sections of dialysis tubing, each containing 20 mL of a 25% sugar solution, were recorded. They were then placed in beakers each containing 100-mL solutions of varying sugar concentrations, as shown in the diagrams below.
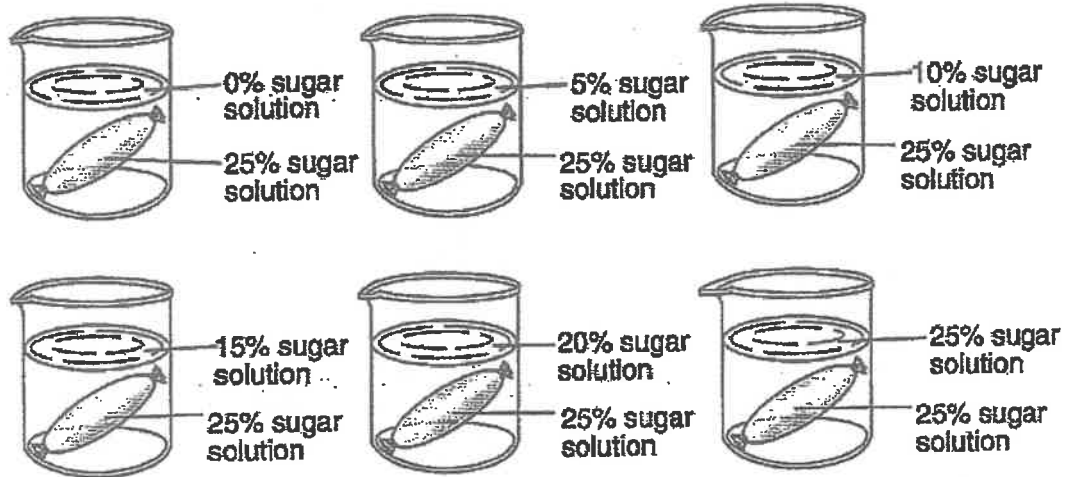
The sections of tubing remained in the beakers for 30 minutes. They were then removed and the outside of each section of tubing was blotted dry. Following this, the mass of each section of tubing was measured again. The mass change of each section of tubing in the different sugar solutions is indicated in the data table below.
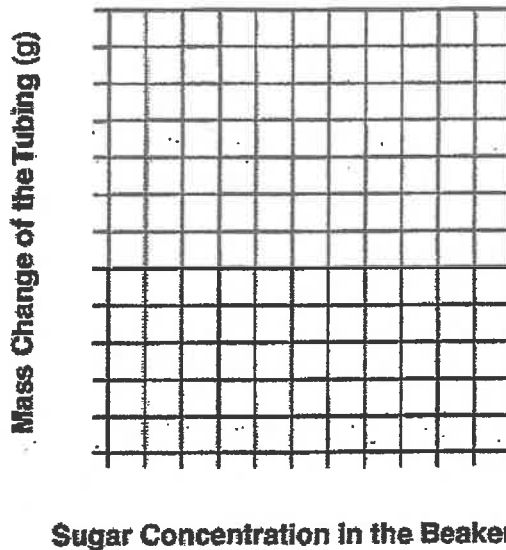
**Mass Change of Dialysis Tubing
Sections in Different Sugar Solutions**

Sugar Concentration in the Beaker (%)	Mass Change of the Tubing (g)
0	5.1
5	4.7
10	4.4
15	2.5
20	1.4
25	0.0

47 Plot the data on the grid. Surround each point with a small circle and connect the points. [1]

Example:

Mass Change of Dialysis Tubing Sections in Different Sugar Solutions

Mass Change of the Tubing (g)

Sugar Concentration in the Beaker (%)

48 If another dialysis tube containing a 25% sugar solution were placed in a beaker containing a 12% sugar solution for 30 minutes, the change in the mass of the tubing would most likely be closest to

(1) 1.2 g

(2) 1.9 g

(3) 2.6 g

(4) 3.8 g

August 2009

Hydrogen peroxide is a toxic substance produced in an organism as a result of certain metabolic processes. Catalase, a biological catalyst produced by cells, speeds the breakdown of hydrogen peroxide into less harmful substances.

In an investigation, 2-gram pieces of liver (which contains catalase) were added to separate dishes. Each dish contained the same amount of a 3% solution of hydrogen peroxide, but at different temperatures. The relative activity of the catalase was determined. The results were recorded and are shown in the data table below.
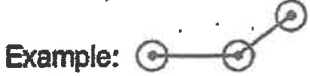
The Effect of Temperature on Catalase Activity

Temperature (°C)	Relative Catalase Activity
20	17
25	22
30	33
35	43
40	37
45	24
50	12

Directions (47–48): Using the information in the data table, construct a line graph on the grid on the next page, following the directions below.
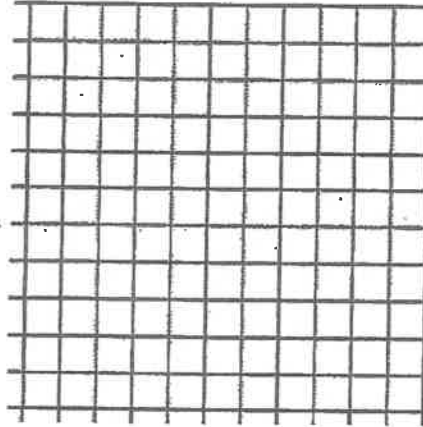
47 Mark an appropriate scale on each axis. [1]

48 Plot the data, surround each point with a small circle, and connect the points. [1]

Example:

**The Effect of Temperature
on Catalase Activity**

Relative Catalase Activity

Temperature (°C)

49 At which temperature does catalase work most effectively? Support your answer. [1]

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June 2009

Base your answers to questions 43 through 46 on the information below and on your knowledge of biology.

Yeast cells carry out the process of cellular respiration as shown in the equation below.

$$C_6H_{12}O_6 \rightarrow 2C_2H_5OH + 2CO_2$$

glucose   ethyl   carbon
   alcohol   dioxide
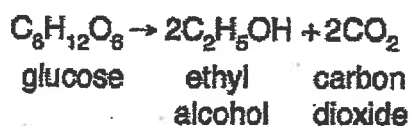
An investigation was carried out to determine the effect of temperature on the rate of cellular respiration in yeast. Five experimental groups, each containing five fermentation tubes, were set up. The fermentation tubes all contained the same amounts of water, glucose, and yeast. Each group of five tubes was placed in a water bath at a different temperature. After 30 minutes, the amount of gas produced (D) in each fermentation tube was measured in milliliters. The average for each group was calculated. A sample setup and the data collected are shown below.
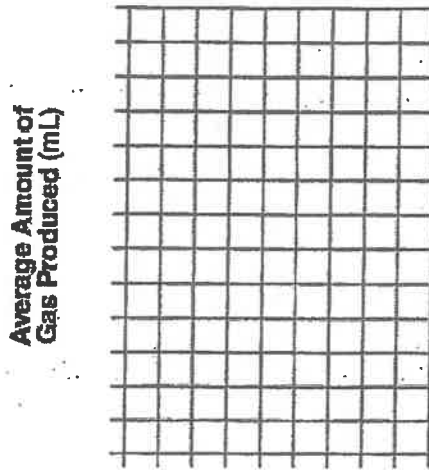
Directions (43 and 44): Using the information in the data table, construct a line graph on the grid below, following the directions below.

43 Mark an appropriate scale on each labeled axis. [1]

44 Plot the data from the data table. Surround each point with a small circle, and connect the points. [1]

Example:
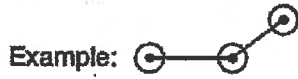
**Average Amount of Gas Produced
at Various Temperatures**

Average Amount of
Gas Produced (mL)

Temperature (°C)