KENTUCKY DEPARTMENT OF EDUCATION
To ensure for each child an internationally superior education and a love of learning

COMMONWEALTH ACCOUNTABILITY TESTING SYSTEM
KENTUCKY CORE CONTENT TEST–SPRING 1999

RELEASE FORM

*G*RADE *11*

EDUCATION
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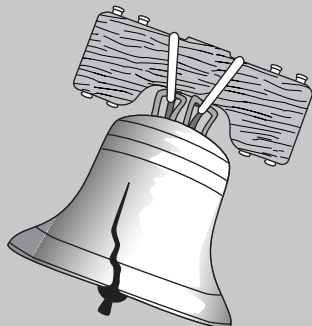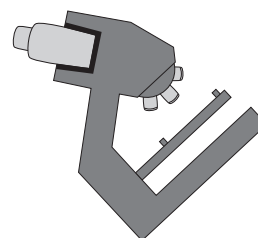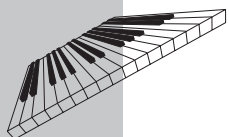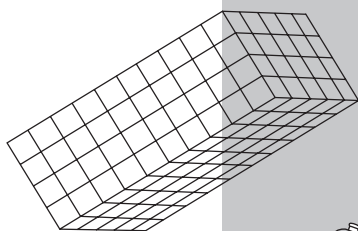
RELEASE FORM

NOTICE: This test form released for school use Spring 1999.

KENTUCKY GENERAL SCORING GUIDE

|	
SCORE POINT 4	• You follow all directions and finish all parts of the question. • You are able to answer the question clearly so that others can understand. • You show that you completely understand the information that is asked about. • You show and/or explain the quickest and best way to get an answer. • You are able to show and explain what you know by using complex examples, by showing connections between ideas and the real world, by comparing different ideas, and/or by showing how the ideas work together.
SCORE POINT 3	• You follow the directions and finish most of the parts of the question. • You are able to answer the question clearly so that others can understand. • You show and/or explain that you understand the big ideas about the question but there may be a few little mistakes or wrong ideas.
SCORE POINT 2	• You follow some of the directions and finish some parts of the question. • Your answer may not be complete but it is clear so that others can understand. • You understand only parts of the information to answer the question.
SCORE POINT 1	• You understand only a small part of the information asked for in the question. • You only answer a small part of the question.
SCORE POINT 0	• Your answer is completely wrong or has nothing to do with the question.
BLANK	• You did not give any answer at all.

2
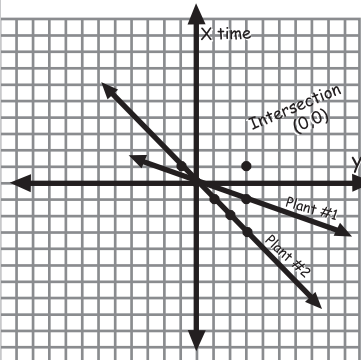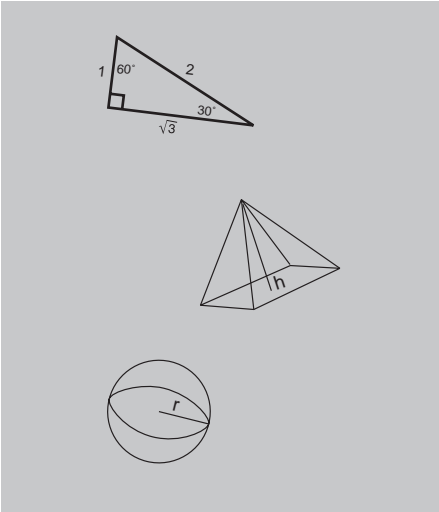
Grade 11 Mathematics

EDUCATION PAYS
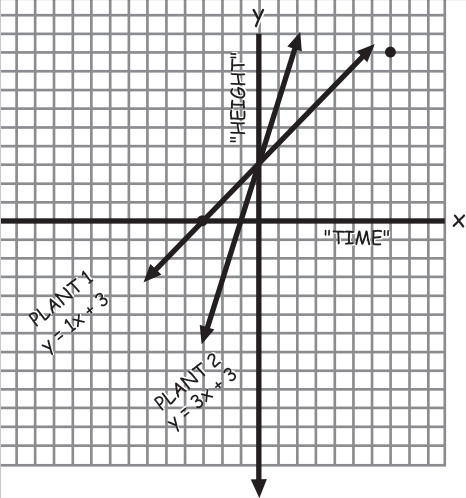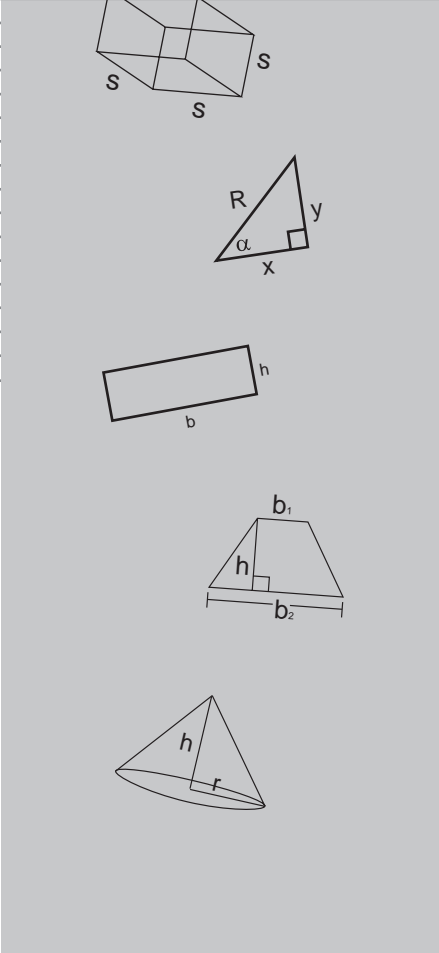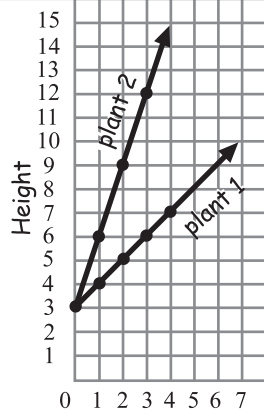
MATHEMATICS – SECTION A

This test section contains nine multiple-choice and three open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Mathematics). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

*Use the Venn diagram below to answer question 1.*
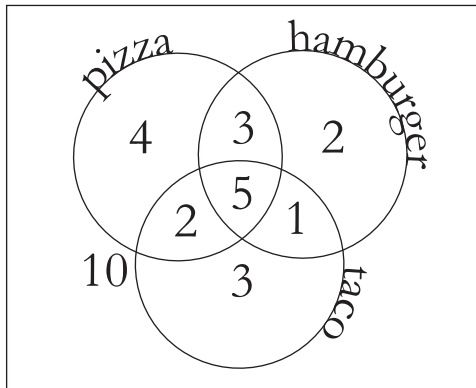
1. The Venn diagram above represents proportionally the number of students who reported, in a survey, that they had pizza, hamburgers, tacos, or none of those foods last week. If 12,000 students were surveyed, how many had pizza, tacos, or both, but no hamburgers?
   A. 800
   B. 2,800
   C. 3,600
   D. 4,800

2. Monica wants to earn an 'A' in math.
   - An 'A' requires an average greater than or equal to 92%.
   - The final project is 20% of the grade.

   If Monica has an average of 95%, what is the **lowest** possible score she can earn on the final project and still earn an 'A'?
   A. 75%
   B. 80%
   C. 86%
   D. 92%

3. Chris correctly measured the length of a line segment and rounded his answer to the nearest centimeter. If the rounded measurement is 6 cm, the most accurate statement about the actual measure of the line segment would be
   A. between 5.00 cm and 7.00 cm.
   B. between 5.4 cm and 6.5 cm.
   C. between 5.5 cm and 6.4 cm.
   D. between 5.75 cm and 6.25 cm.

KY – Grade 11 – Form 4a – 1998-99

C(3,4)

A(0,0)   B(6,0)
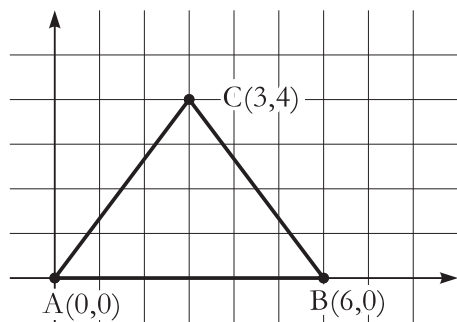
4. On the graph above, the coordinates of each vertex of ΔABC shown above are tripled (multiplied by 3) to create ΔDEF. How does the perimeter of the new triangle ΔDEF compare to the perimeter of the original triangle ΔABC?
   A. The new perimeter is $1\frac{1}{2}$ times the original perimeter.
   B. The new perimeter is 3 times the original perimeter.
   C. The new perimeter is 9 times the original perimeter.
   D. The new perimeter is 27 times the original perimeter.

5. The length of a rectangle is increased by 40% and the width is decreased by 20%. Which equation could represent the area of the new rectangle?
   A. A = $(0.4l)(0.2w)$
   B. A = $(l + 0.4l)(w - 0.2w)$
   C. A = $(l + 0.4)(w - 0.2)$
   D. A = $lw + (0.4l)(0.2w)$

6. A 24-foot ladder is leaning against a building. The base of the ladder is 9 feet from the building. If α is the angle formed by the ladder and the ground, which equation could be used to find the measure of α?
   A. $\sin \alpha = \frac{24}{9}$
   B. $\cos \alpha = \frac{9}{24}$
   C. $\cos \alpha = \frac{24}{9}$
   D. $\sin \alpha = \frac{9}{24}$

7. You have defined a new operation such that a ★ b = a + ab. Which expression is equal to b ★ b?
   A. $a + b^2$
   B. $b + ab$
   C. $2b^2$
   D. $b + b^2$

8. In an experiment, each of two people has six cards labeled 1 through 6. The first person chooses a card while the second person tries to choose the same card from an identical set. What is the probability that the two people will choose the same card?
   A. $\frac{1}{36}$
   B. $\frac{2}{36}$
   C. $\frac{1}{6}$
   D. $\frac{2}{6}$

KY – Grade 11 – Form 4a – 1998-99

Use the illustration below to answer question 9.
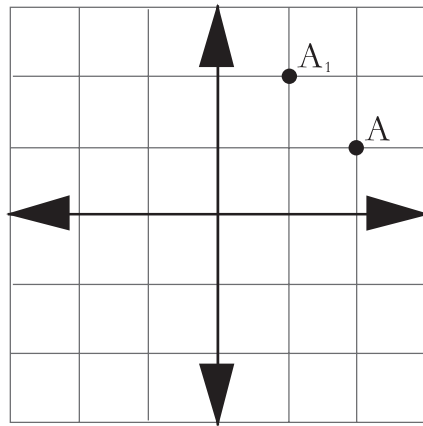
9. As a result of a transformation, the image of the point A (2,1) is A$_1$(1,2). This transformation is described as a reflection across the
   A. line y = x.
   B. line y = -x.
   C. x-axis.
   D. y-axis.

MATHEMATICS OPEN-RESPONSE QUESTIONS

Read all parts of each open-response question before you begin. Write your answers to open-response questions 10, 11, and 12 in the spaces provided on pages _, _, and _ of your Student Response Booklet (Mathematics). Use the grid provided in your Student Response Booklet to create any required charts or graphs. If a question does not require a chart or graph, write your written response over the grid lines. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.
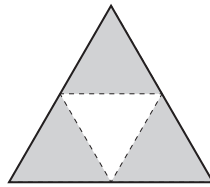
Write your answer to question 10 in the space provided on page _ of your Student Response Booklet.
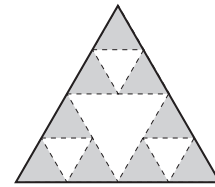
Triangle Patterns

Use the diagrams below to answer question 10.
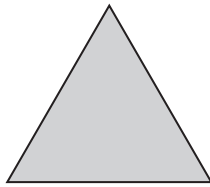
| STEP 1 | STEP 2 | STEP 3 |

10. The diagrams above show the first three steps of a process used to make a triangle pattern. In Step 1, the large triangle has an area equal to 1 unit. In Step 2, the large triangle is divided into 4 congruent triangles, and the middle triangle is removed.

    a. What is the area of the **shaded** region in Step 2?

    In Step 3, the dividing process continues. Each of the shaded triangles in Step 2 is divided into 4 congruent triangles. Each middle triangle is removed, and the shaded parts remain. The dividing process continues until the total shaded area is less than $\frac{1}{2}$ unit.

    b. How many steps does it take until the **shaded** area is less than $\frac{1}{2}$ unit? Give a complete explanation to justify your answer.

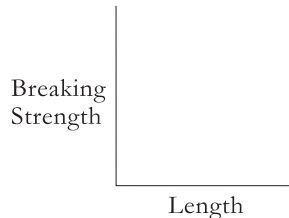## *Rope Strength*

11. Manufacturers consider several different features when making rope for various uses. In this problem, you will graph or find a relationship between these different features. (To answer this question, you will need to draw 3 graphs in your Student Response Booklet.)

   a. In your Student Response Booklet, copy the labeled axes below and sketch a graph showing that if you double the length of a piece of rope, you double its weight.

   Weight | Length
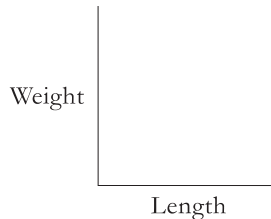
   b. In your Student Response Booklet, copy the labeled axes below and sketch a graph showing that the breaking strength of a rope is not affected by its length.

   Breaking Strength | Length

   c. In your Student Response Booklet, copy the labeled axes below and sketch a graph showing that if you double the diameter of a rope, you multiply its breaking strength by 4.

   Breaking Strength | Diameter
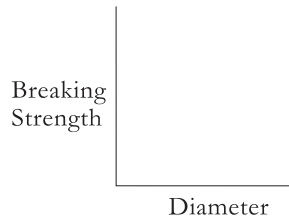
   d. The table of data below shows the relationship between the diameter of a rope and its breaking strength. Using the data, write a formula for the breaking strength (S) in terms of the diameter (d).

diameter (in mm)	0	2	4	6	8	10	12
approximate breaking strength (in kg)	0	80	320	720	1280	2000	2880

   BE SURE TO LABEL YOUR ANSWERS (a), (b), (c), AND (d).

Write your answer to question 12 in the space provided on page _ of your Student Response Booklet.

Determining a Square

12. Jamie, Chris, and Pat are outlining a square foundation for a storage building. They have string, tape measures, and a protractor. Each person's method for forming a square is given below:

Jamie's method: "Cut four strings that have the same length as the sides of the square storage building. Place these strings to form a quadrilateral. That quadrilateral will be a square."

a. Will Jamie's method **always** form a square? Justify your reasoning using the properties of squares.

Chris' Method: "Cut four strings that have the same length as the sides of the square storage building. Place these strings to form a quadrilateral, making sure that two of the adjacent sides form a right angle."

b. Will Chris' method **always** form a square? Justify your reasoning using the properties of squares.

Pat's Method: "Cut two strings the same length as diagonals of the square base of the storage building. Fold them in half, marking the center of each string. Unfold the strings and place them on the ground so that they intersect at their centers to form an x. Connect the endpoints of the strings to form a quadrilateral. That quadrilateral will be a square."

c. Will Pat's method **always** form a square? Justify your reasoning using the properties of squares.

BE SURE TO LABEL YOUR RESPONSES (a), (b), and (c).

MATHEMATICS – SECTION B

This test section contains nine multiple-choice and two open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Mathematics). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

13. What is the **x-intercept** of the graph for the following equation?

$$y = 3x + 4$$

A. $(\frac{-4}{3}, 0)$

B. $(\frac{-3}{4}, 0)$

C. $(\frac{4}{3}, 0)$

D. $(\frac{3}{4}, 0)$

14. A baseball player, on the average, has 3 hits out of every 4 attempts to hit the ball. What is the probability that she will go hitless on the next **three** times at bat?

A. $\frac{1}{64}$

B. $\frac{1}{4}$

C. $\frac{27}{64}$

D. $\frac{3}{4}$

15. The ratio of white blood cells to red blood cells in humans is 1 to 600. If one mm^3 of blood contains 5×10^6 red blood cells, how many white blood cells does it contain?

A. $\frac{5}{6} \times 10^4$

B. $\frac{5}{6} \times 10^6$

C. $\frac{5}{6} \times 10^8$

D. $\frac{5}{6} \times 10^{12}$

16. An experiment consists of two parts: tossing a fair coin and then rolling a number cube. The number cube has the numbers 1 through 6 on its faces. One possible outcome is (Head,1). How many elements are in the sample space?

A. 6

B. 8

C. 10

D. 12

Use the illustration below to answer question 17.
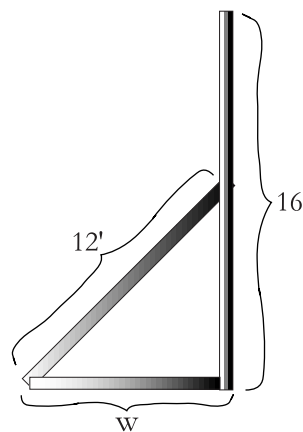
17. A 12-foot-long support board is attached to the **center** of a 16-foot-high vertical display board. What is the width (w) of the horizontal support board, rounded to the nearest foot?

A. 6 feet

B. 8 feet

C. 9 feet

D. 10 feet

KY – Grade 11 – Form 4a – 1998-99
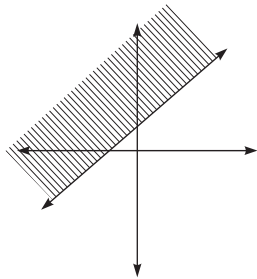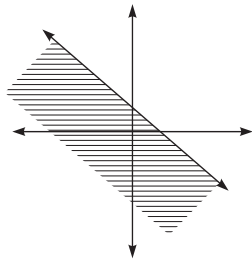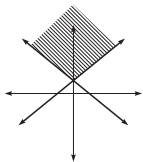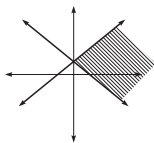
Illustration #1   Illustration #2

Runners' Times

18. If y ≥ 1x + 1 is represented by the graph in Illustration #1 and y ≤ -1x + 1 is represented by the graph in Illustration #2, then which of the following graphs would represent the solution of this system of inequalities?
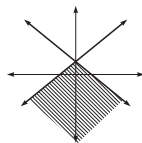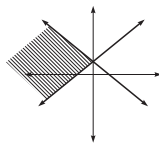
y ≥ 1x + 1, y ≤ -1x + 1

A.   B.   C.   D.
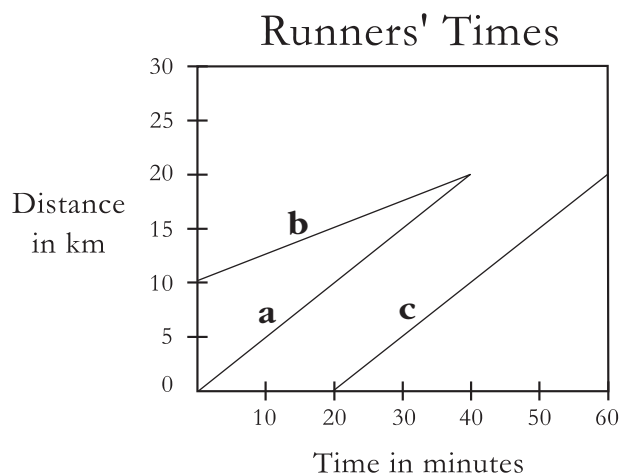
19. The   graph   above   shows   the relationship between the different times and distances for three runners (**a**, **b**, and **c**) at a track meet. Based on the graph, which statement is true?

A.   Runners **a** and **c** have equal times, but they ran different distances.

B.   Runners **a** and **b** have equal times, but they ran different distances.

C.   Runners **b** and **c** have different times, but they ran equal distances.

D.   Runners **a**, **b**, and **c** all ran the same distance.

20. In the expression xy, the values of x and y are each decreased by 25%. The new value of xy is what percent of the original value of xy?

A.   31.64%

B.   50%

C.   56.25%

D.   75%

21. A rectangular garden with an area of 225 square feet requires 61 feet of fencing to enclose it. Which set of equations below could help find the dimensions of the garden?

A. $w = 225$ and $l + w = 61$

B. $l = \frac{225}{w}$ and $2l + 2w = 61$

C. $2l + 2w = 225$ and $lw = 61$

D. $l = 225 - w$ and $lw = 61$

MATHEMATICS OPEN-RESPONSE QUESTIONS

Read all parts of each open-response question before you begin. Write your answers to open-response questions 22 and 23 in the spaces provided on pages _ and _ of your Student Response Booklet (Mathematics). Use the grid provided in your Student Response Booklet to create any required charts or graphs. If a question does not require a chart or graph, write your written response over the grid lines. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 22 in the space provided on page _ of your Student Response Booklet.

Simplifying Factorials

22. The expression 6! is read "6 factorial" and means 6! = 6 x 5 x 4 x 3 x 2 x 1. Therefore, 6! = 720.

   a. With this definition in mind, compute the value of each of the following numbers:

$$\frac{7!}{5!} \qquad\qquad \frac{9!}{6!}$$

   b. Explain why the following equation is a true statement:

$$\frac{112!}{109!} = 112 \bullet 111 \bullet 110$$

   c. Based on your work in **part b**, give a general expression that is equivalent to $\frac{n!}{(n-5)!}$.

Write your answer to question 23 in the space provided on page _ of your Student Response Booklet.

Predictable Data

23. The faces of a six-sided cube are printed with the numbers 1 through 6. Chris performed an experiment by rolling the cube 60 times, recording the results after each roll. The results are as follows:

Number rolled	1	2	3	4	5	6
Frequency	13	9	10	7	12	9

Chris's friend says that the results cannot be correct because their teacher said that the probability of rolling any one of the six outcomes is $\frac{1}{6}$.

a. Based on the teacher's comment, what results should Chris theoretically expect to see after 60 rolls of the six-sided number cube? Copy the chart below into your Student Response Booklet, and then complete the chart with the theoretically expected values.

Number rolled	1	2	3	4	5	6
Frequency						

b. Do you agree or disagree with Chris's friend that the original results cannot be correct? Explain your reasoning.

MATHEMATICS – SECTION C

This test section contains six multiple-choice questions and one open-response (short-answer) question. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Mathematics). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

24. A consumer survey claimed that 2 out of 3 people preferred product A over product B. Which factor would be the **least** useful in determining the validity of this claim?
    A. whether the size of the sample is large enough
    B. whether the sample was random
    C. whether the results were presented in a chart or a graph
    D. whether the people were equally familiar with the two products

25. The hamburger bar at a restaurant offers the following items:

 | ketchup | mayonnaise | cheese |
    | onions | lettuce | mustard |
    | tomatoes | pickles | |

    How many different hamburger combinations can be prepared by selecting one, two, all, or none of these items?
    A. 16
    B. 38
    C. 66
    D. 88

26. In the expression $\frac{1}{n^n}$, as n continues to get larger, the value of the expression approaches
    A. zero.
    B. one one-hundreth.
    C. one.
    D. infinity.

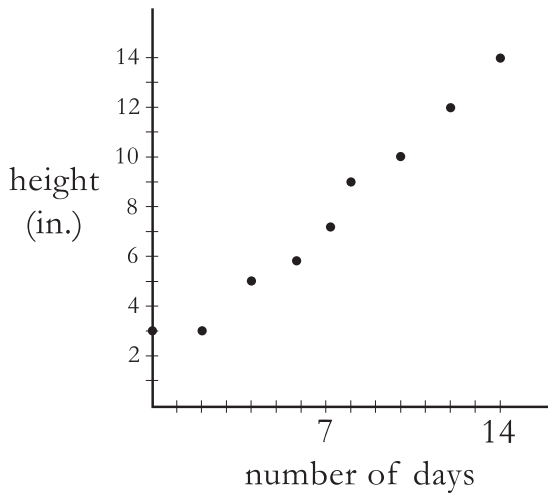*Use the diagram below to answer question 27.*
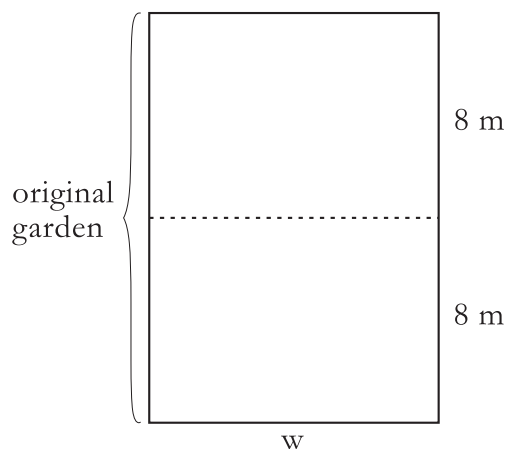
27. The garden above is divided into two smaller gardens **similar** to the original garden. What is the width (w) of the original garden?
    A. $4\sqrt{2}$ meters
    B. $8\sqrt{2}$ meters
    C. 8 meters
    D. 16 meters

KY – Grade 11 – Form 4a – 1998-99

Growth of Tomato Plant

28. A tomato plant was originally 3 inches tall. Over a two-week period, its height was measured and plotted on a graph as shown above. Which linear equation best represents the growth of the tomato plant?

   A. $y = x$

   B. $y = \frac{5}{2}x$

   C. $y = \frac{5}{2}x + \frac{3}{2}$

   D. $y = x + \frac{3}{2}$

29. The diagonals of the rhombus shown below have the lengths of 14 cm and 12 cm. What is the approximate length of a side of the rhombus?
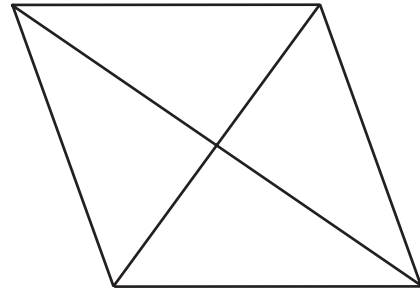
   A.   3.6 cm
   B.   6.5 cm
   C.   9.2 cm
   D. 18.4 cm

MATHEMATICS OPEN-RESPONSE QUESTIONS

Read all parts of the open-response question before you begin. Write your answer to open-response question 30 in the space provided on page _ of your Student Response Booklet (Mathematics). Use the grid provided in your Student Response Booklet to create any required charts or graphs. If a question does not require a chart or graph, write your written response over the grid lines. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 30 in the space provided on page _ of your Student Response Booklet.

Storage Tank Measurement

30. The Mattox Oil Company has a 90-foot-tall cylindrical storage tank that contains 210,000 gallons of oil when it is full.
    a. Find the radius of the tank. Show your work.
       ($V = \pi r^2 h$ and 1 gallon = 0.1337 cubic feet)
    b. How tall would the tank in **part a** have to be in order to double the volume? Show your work.
    c. How would the volume of the tank in **part a** be affected if both the radius and height of the tank were doubled? Explain your answer.

Grade 11 Science

EDUCATION PAYS
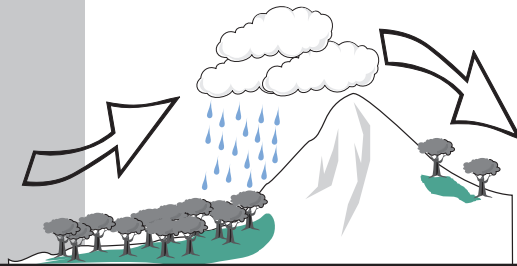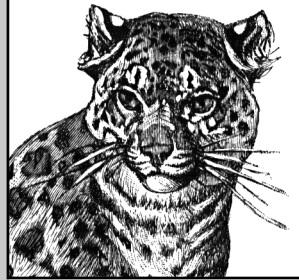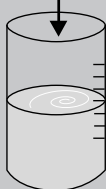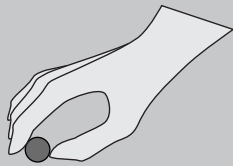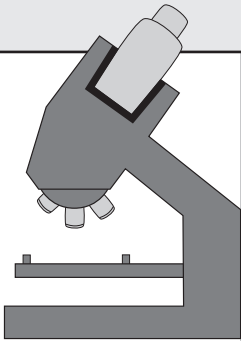
SCIENCE – SECTION A

This test section contains nine multiple-choice and three open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Science). Mark on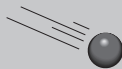ly one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

1. Static electricity happens when electrons pass from one object to another, such as from your hair to a comb as you comb your hair. If you then hold the comb near your hair, strands of hair appear to move forward and "stick to the comb." The hair and the comb
   A. attract each other because they have the same charges.
   B. attract each other because they have opposite charges.
   C. repel each other because they have the same charges.
   D. repel each other because they have opposite charges.

2. Which statement about DNA is correct?
   A. A child's DNA will be unrelated to the mother's or father's DNA.
   B. A child's DNA will show similarities to both the mother's and father's DNA.
   C. A female child's DNA will exactly match the mother's DNA.
   D. A male child's DNA will exactly match the father's DNA.

Use the diagram below to answer question 3.
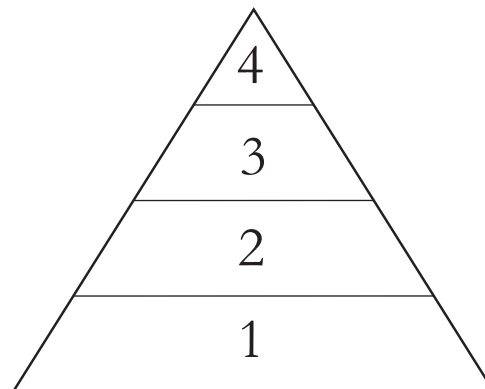
3. In this energy pyramid, which organism would most likely be in level 2?
   A. bird
   B. fox
   C. caterpillar
   D. tree

KY – Grade 11 – Form 4a – 1998-99

4. Which graph best represents the relationship between the density of a substance and its state of matter (phase) for most Earth material, excluding water?

A.

State of Matter

B.

State of Matter

C.

State of Matter

D.

State of Matter
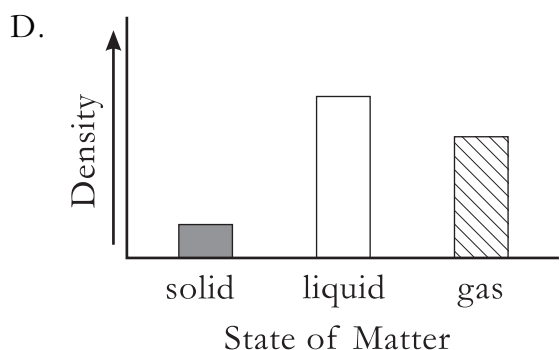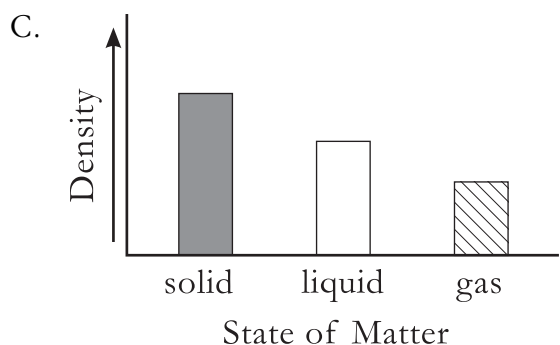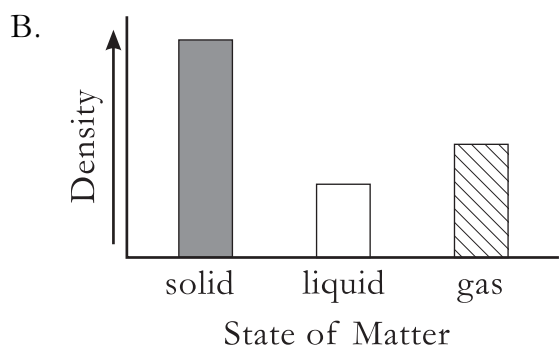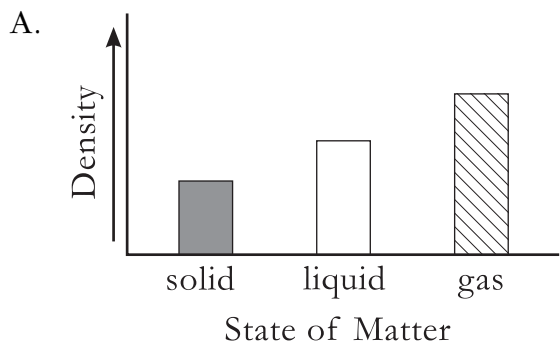
5. Students studying a moth population in the woods in Kentucky found the distribution of moth wing color shown in the graph below. The woods contained trees with bark that was mostly black.

Distribution of Moth Wing Color
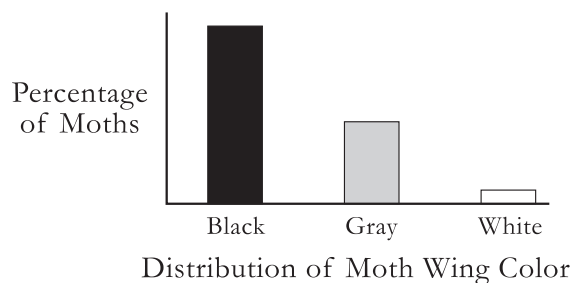
Two years later a fungus attacked nearly all of the trees in the woods and the tree bark changed from black to patches of gray and white. Which graph shows the probable distribution of moth wing color within the next few years?

A.

B.

C.

D.

KY – Grade 11 – Form 4a – 1998-99
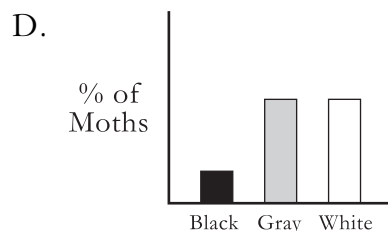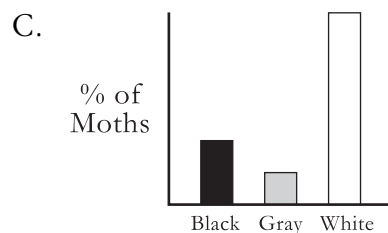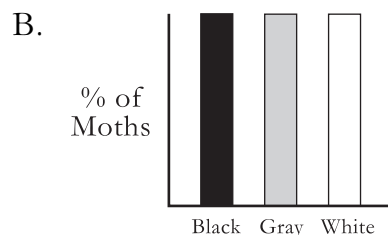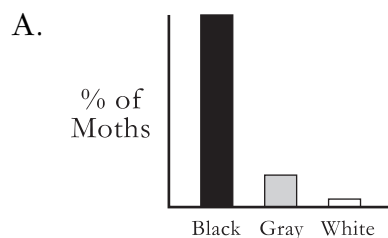
6. Which **best** describes the changes occurring to the Earth's surface over time?
   A. New mountains are being formed as old mountains are gradually worn down. →
   B. Mountains are gradually being worn down, but no new ones are formed.
   C. More mountains are gradually formed as the oceans recede.
   D. New mountains are only formed under the oceans.

7. A balanced chemical equation reflects the idea that the mass of the products
   A. is greater than the mass of the reactants.
   B. is less than the mass of the reactants.
   C. equals the mass of the reactants.
   D. is not related to the mass of the reactants.

8. A microfossil is viewed under high power by a microscope. If the magnification of the eyepiece is 10X and the magnification of the high power objective is 40X, how many times larger does the microfossil appear?
   A.   4
   B.   40
   C.   400
   D. 4000

9. Matter is made up of smaller particles. Which correctly lists the particles of matter from the **smallest to the largest**?
   A. cells, molecules, atoms
   B. atoms, cells, molecules
   C. molecules, atoms, cells
   D. atoms, molecules, cells

KY – Grade 11 – Form 4a – 1998-99

SCIENCE OPEN-RESPONSE QUESTIONS

Read all parts of each open-response question before you begin. Write your answers to open-response questions 10, 11, and 12 in the spaces provided on pages _, _, and _ of your Student Response Booklet (Science). DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 10 in the space provided on page _ of your Student Response Booklet.

Scientific Design-Biological Clock

10. The presence or absence of light can change the internal biological clock of mammals. Based on this fact, scientists at Lightwave University propose that modifying the biological clock will cause body chemistry patterns normally occurring in the morning to occur instead at night.
    a. Design an experiment to test this hypothesis. Describe the steps you would follow in your experiment.
    b. Assuming the scientists' hypothesis is correct, explain how this information could be useful.

Write your answer to question 11 in the space provided on page _ of your Student Response Booklet.

Soil Erosion Protection Methods

11. Soil erosion can cause problems during road construction, housing development, and farming.
    a. Propose **two** models that would demonstrate different ways to prevent soil erosion and explain how each model works.
    b. Describe a test to evaluate the effectiveness of **one** of your models.

Write your answer to question 12 in the space provided on page _ of your Student Response Booklet.

Motion and Energy of Molecules

12. All molecules contain energy. Give a complete description of the motion and energy of the molecules of a substance as that substance changes from a solid, to a liquid, to a gas.

SCIENCE – SECTION B

This test section contains nine multiple-choice and two open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Science). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

13. Radiation is known to cause mutations. After atomic bombs were dropped on Hiroshima and Nagasaki in 1945, nearby hospitals reported dramatic increases in stillborns, birth defects, and leukemia. Which of the following would best explain these increases?

A. Mutations occurred only in body cells, but not the sex cells, of the survivors.

B. Mutations occurred only in the sex cells of the survivors.

C. Mutations occurred in both sex cells and other body cells of the survivors.

D. Increased radiation left in the atmosphere affected the newborn babies.

14. Exposure to sunlight over many years can cause mutation in skin cells. Some of these mutations lead to skin cancer. Suppose a child is born to a mother who has skin cancer. How will the mutations in the mother's skin cells affect the child?

A. The child will be born with mutated skin cells.

B. The child will definitely develop skin mutations.

C. The child will have mutations that have spread to underlying muscle tissue.

D. The child will not be affected by the mother's skin cancer.

15. Which of the following pairs of atoms is **unlikely** to form a compound?

A. potassium (K) and iodine (I)

B. calcium (Ca) and chlorine (Cl)

C. iron (Fe) and sulfur (S)

D. neon (Ne) and argon (Ar)

16. A lynx, *Lynx canadensis*, has a short tail with a black tip running all the way around the tail. It also has highly visible tufts of hair on the ears. A bobcat, *Lynx rufus*, has a short tail with black only on top of the tail's tip. It also has inconspicuous ear tufts. From the descriptions and scientific names of both animals you can conclude that

A. the lynx and bobcat are the same species.

B. "lynx" and "bobcat" are two names for the same animal.

C. the lynx and bobcat are the same genus.

D. the lynx and bobcat are not from the same phylum.

17. Salt can be used to preserve food and prevent spoilage because it

A. coats the food and prevents liquids from evaporating.

B. neutralizes the acid or base in the food.

C. dehydrates the microorganisms that would cause spoilage.

D. raises the boiling point of water and results in faster sterilization.

18. A solution in a dish contains 3 grams of salt dissolved in water. If half the water evaporates, how much salt will remain in the dish?

A. 0.0 grams
B. 1.0 gram
C. 1.5 grams
D. 3.0 grams

19. The pictures below show the position of different elements on the periodic table. Which picture has an X in the locations of the three elements that would be most similar in the way they react?

A.

X		
X		
X		

B.

X	X	X

C.

X		
	X	
		X

D.

		X
	X	
X		

Use the information below to answer question 20.

C = normal color vision   XX = female
c = colorblind   XY = male

20. Which pairing could result in a colorblind female (XcXc)?

A. XcXc x XCY
B. XCXc x XCY
C. XCXc x XcY
D. XCXC x XcY

21. Through cell respiration, plants get energy from glucose. The energy stored in glucose originally came from

A. plants.
B. animals.
C. the sun.
D. geothermal sources.

KY – Grade 11 – Form 4a – 1998-99

SCIENCE OPEN-RESPONSE QUESTIONS

Read all parts of each open-response question before you begin. Write your answers to open-response questions 22 and 23 in the spaces provided on pages _ and _ of your Student Response Booklet (Science). DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 22 in the space provided on page _ of your Student Response Booklet.

Cell Comparison

Use the diagram below to answer question 22.
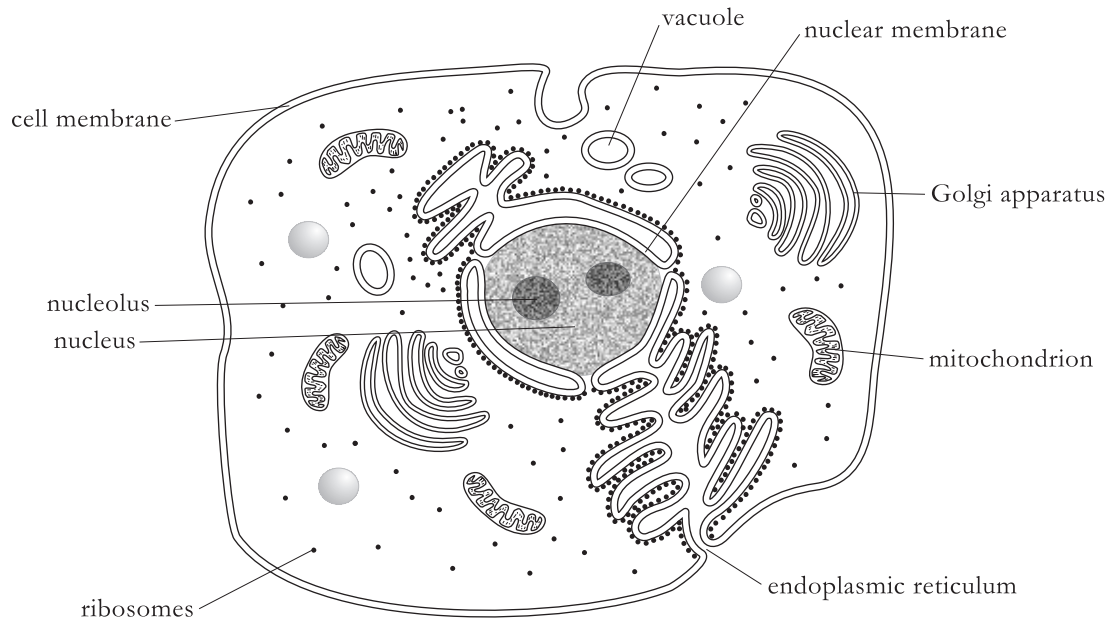
The Cell and its Parts

22. The diagram above shows a cell with its organelles. Select four organelles from the diagram and explain how the structures and functions of those organelles within the cell are similar to the structures and functions of the different parts of your school.

Write your answer to question 23 in the space provided on page _ of your Student Response Booklet.

Bicycle Design

Use the illustration of a bicycle below to answer question 23.
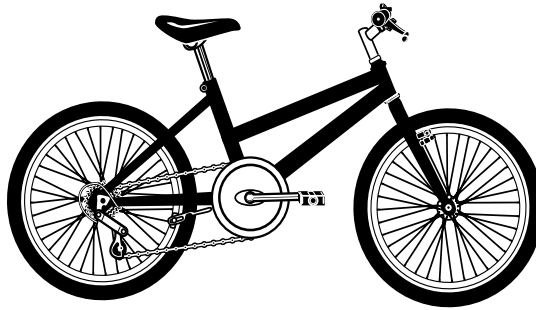
23. A bicycle is a composite of several simple machines.
    a. Describe where these simple machines are found on a bicycle: lever, pulley, and wheel-and-axle.
    b. Describe how each is used to transfer energy.

SCIENCE – SECTION C

This test section contains six multiple-choice and one open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Science). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

*Use the diagram below to answer question 24.*

B ← (raft) → **A**

24. If a person dives out of the raft in the direction indicated by arrow A, the boat will move in the direction indicated by arrow B. Which principle does this illustrate?
   A. Mass can be converted into energy.
   B. Every action force results in an equal but opposite reaction force.
   C. Energy is neither created nor destroyed; it only changes form.
   D. Unless another force is applied, an object in motion will move at a constant speed.

Use the diagram below to answer question 25.

Fox — Bird — Insect — Flower — Rabbit — Fox (food web cycle)
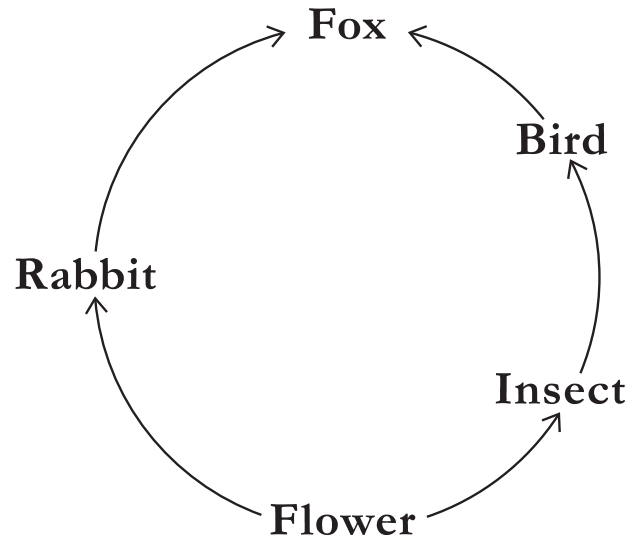
25. Which group of organisms is **not** represented in the diagram above of a simple food web?
   A. decomposers
   B. prey
   C. consumers
   D. producers

KY – Grade 11 – Form 4a – 1998-99
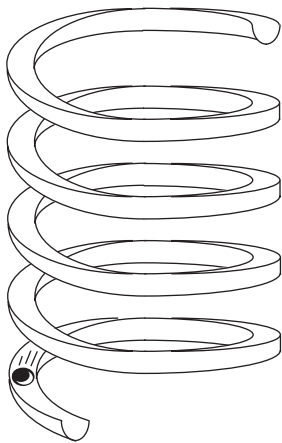
26. A marble was rolled down the ramp as shown in the diagram above. What path will the marble take after it rolls off the ramp?

A.

B.

C.

D.
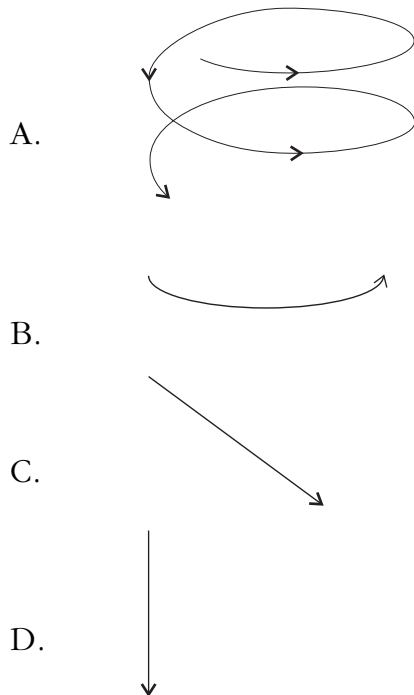
27. Which statement about plant and animal cells is true?
   A. Plant cells have a nucleus and a cell wall; animal cells do not have either of these structures.
   B. Plant cells have a cell wall and chloroplasts; animal cells do not have either of these structures.
   C. Plant cells have a cell wall and a cell membrane; animal cells have a cell wall but not a cell membrane.
   D. Plant cells have chloroplasts and mitochondria; animal cells have chloroplasts but do not have mitochondria.

28. The highest concentration of life exists in the top 200 meters of ocean water. The **most important factor** that influences this concentration of life is the
   A. amount of gases at the surface.
   B. amount of nutrients in the water.
   C. large number of predators at lower depths.
   D. amount of sunlight.

29. Betsy wants to find out if the rain in her town contains pollutants. The best way for Betsy to gather information would be to collect
   A. one sample on one rainy day.
   B. one sample a day on several rainy days.
   C. several separate samples on one rainy day.
   D. several separate samples on several rainy days.

SCIENCE OPEN-RESPONSE QUESTIONS

Read all parts of the open-response question before you begin. Write your answer to open-response question 30 in the space provided on page _ of your Student Response Booklet (Science). DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 30 in the space provided on page _ of your Student Response Booklet.

Dating Rock Layers

*Use the diagram below to answer question 30.*
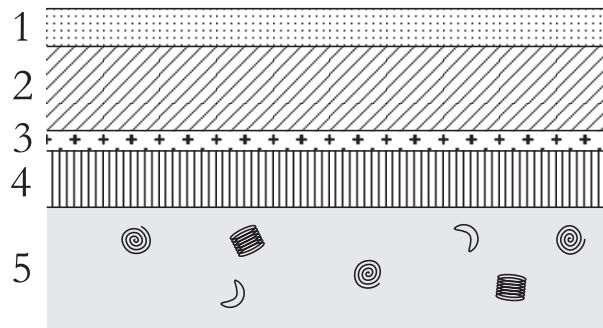
30. The diagram above shows 5 rock layers. You have been asked to determine the age of rock layer 5. Two measures of geologic time are absolute time, which relates to the year something happened, and relative time, which relates to the order or sequence in which events occurred.

   a. Describe **three** methods that could be used to determine the age of the rock layer. One of the three methods should be a method for determining **relative time**. One of the three methods should be a method for determining **absolute time**.

   b. How will these methods identify the age of the rock layer?

GRADE 11 SOCIAL STUDIES

We the people ...

EDUCATION PAYS

Santa Maria
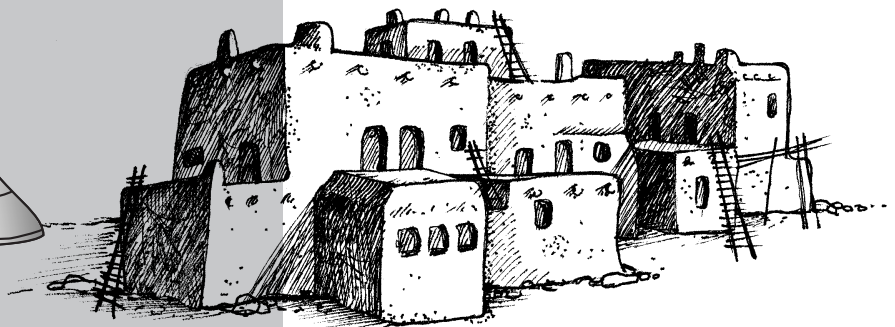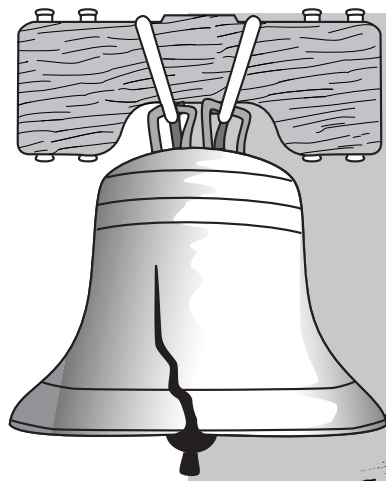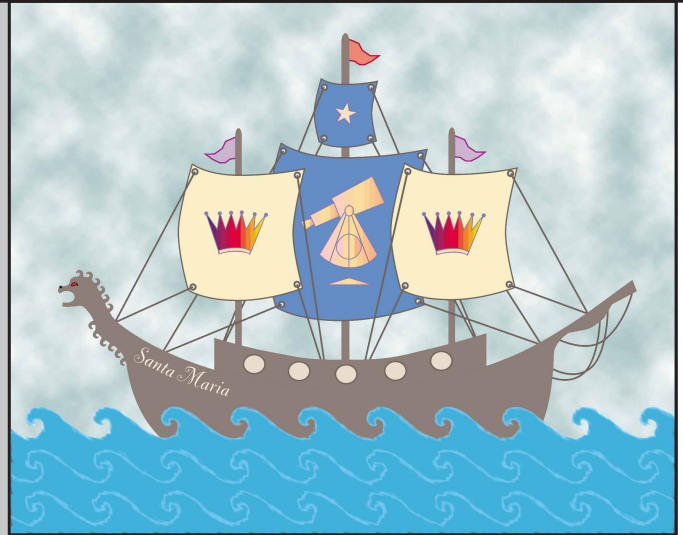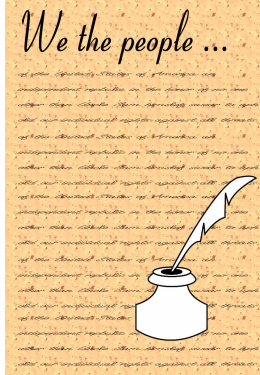
SOCIAL STUDIES — SECTION A

This test section contains nine multiple-choice and three open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Social Studies). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

1. During the Renaissance, there was a rebirth of interest in, and study of, the classical cultures of
   A. Greece and Rome.
   B. Japan and India.
   C. Egypt and Turkey.
   D. Russia and China.

2. The main purpose of voter registration is to
   A. require people to vote.
   B. provide census information.
   C. prevent illegal voting.
   D. collect poll taxes.

3. An economy in which the market and the government both play an important role in determining the production and consumption of goods is called a
   A. traditional economy.
   B. command economy.
   C. mixed economy.
   D. subsistence economy.

4. A region composed of several major cities that are located close to one another and that are connected by major transportation routes is known as
   A. a megalopolis.
   B. a municipality.
   C. suburban sprawl.
   D. residential zoning.

5. The settlement of the western plains of the United States in the late 1800s was encouraged by the provisions of the
   A. Volstead Act.
   B. Federal Housing Act.
   C. Agricultural Adjustment Act.
   D. Homestead Act.

6. Which **best** describes conditions when inflation is occurring?
   A. money supply increases; prices decrease
   B. money supply increases; prices increase
   C. money supply remains constant; prices decrease
   D. money supply remains constant; prices increase

7. The South African law that enforced a policy of strict racial separation was known as
   A. apartheid.
   B. integration.
   C. sedition.
   D. glasnost.

8. One of the basic principles stated in the U.S. Constitution is the division of power between the federal and state governments. What is this principle called?
   A. judicial review
   B. representative democracy
   C. federalism
   D. territorialism

9. The Gulf of Tonkin Resolution, an act of Congress, was used by President Lyndon Johnson to justify United States bombing during
   A. World War I.
   B. the Vietnam War.
   C. the Persian Gulf War.
   D. World War II.

SOCIAL STUDIES OPEN-RESPONSE QUESTIONS

Read all parts of each open-response question before you begin. Write your answers to open-response questions 10, 11, and 12 in the spaces provided on pages _, _, and _ of your Student Response Booklet (Social Studies). DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 10 in the space provided on page _ of your Student Response Booklet.

Ocean Waste

10. For many years, countries have released industrial and human waste into the ocean. In recent years, scientists have begun to see changes in the ocean's ecosystem due to contamination by this waste.
    a. Identify **three** ways that changes in the ocean's ecosystem might affect human life.
    b. Discuss **two** possible strategies to help solve the problems associated with the contamination of the ocean's ecosystem.

Write your answer to question 11 in the space provided on page _ of your Student Response Booklet.

Containment

11. Following World War II, American foreign policy was described by the word "containment." Containment means stopping the spread of communist influence in the world. The following examples were results of this policy:

<div align="center">

Truman Doctrine

Marshall Plan

NATO

Korean War

Vietnam War

Cuban Missile Crisis

</div>

    a. Choose **two** examples from the list above.
    b. Describe how each resulted from America's desire to contain communism.
    c. Explain whether America was successful in that goal.

KY – Grade 11 – Form 4a – 1998-99

Write your answer to question 12 in the space provided on page _ of your Student Response Booklet.

Citizen Power

12. The *Declaration of Independence* states, "...governments are instituted among men, deriving their just power from the consent of the governed...."

   A democracy derives its power from its citizens. Discuss in detail **three** ways in which the citizens provide the U.S. government with its power.

SOCIAL STUDIES — SECTION B

This test section contains nine multiple-choice and two open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Social Studies). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

13. Throughout history, certain natural resources have been replaced by other resources. The use of gasohol (a combination of gasoline and alcohol) could dramatically affect the use of
   A. coal.
   B. bauxite.
   C. magnesium.
   D. oil.

14. The **central focus** of the Progressive Movement in the early 20th century was
   A. military reform.
   B. monetary reform.
   C. political reform.
   D. religious reform.

15. Freedom of speech does **not** protect a person who
   A. criticizes the mayor in a public meeting.
   B. slanders another person publicly.
   C. wishes to speak against the government.
   D. demonstrates against tax increases.

16. If consumers decide to buy more hamburgers than pizza, what will **most** likely happen?
   A. The price of pizza will rise.
   B. The price of hamburgers will fall.
   C. The price of hamburgers will rise.
   D. The price of hamburgers will not change.

17. Catherine the Great acquired territory on the Black Sea for Russia in order to further the Russian goal of
   A. obtaining a warm water port.
   B. controlling the serfs.
   C. annexing Greece.
   D. defeating the Chinese.

18. In what climate region would Louisville, Kentucky be found?
   A. Mediterranean
   B. humid subtropical
   C. marine west coast
   D. humid continental

19. The federal lunch program implemented by Congress under the direction of former Kentucky Congressman Carl Perkins was **primarily** intended to
   A. import foreign foods.
   B. create new jobs.
   C. improve nutrition for students.
   D. subsidize farm products.

20. In the United States economy, who has the **greatest** influence on the quantity of goods and services that is available?
   A. consumers, by choosing what they will purchase
   B. businesses, by deciding what and how much to produce
   C. stores, by setting prices of goods
   D. the government, by setting limits on production

21. The assassination of Archduke Ferdinand in 1914 was the event that led to the outbreak of
   A. the Spanish-American War.
   B. World War I.
   C. the Franco-Prussian War.
   D. World War II.

KY – Grade 11 – Form 4a – 1998-99

SOCIAL STUDIES OPEN-RESPONSE QUESTIONS

Read all parts of each open-response question before you begin. Write your answers to open-response questions 22 and 23 in the spaces provided on pages _ and _ of your Student Response Booklet (Social Studies). DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 22 in the space provided on page _ of your Student Response Booklet.

Formal and Informal Groups

22. Because people are able to interact easily today with others who live in their communities, as well as with those who live thousands of miles away, the importance of both formal and informal groups in society is increasing. Some examples of formal and informal groups are listed below.

Examples of formal groups:

schools, churches, workplaces, civic organizations, towns, cities

Examples of informal groups:

neighborhoods, friendships, hobby groups, computer-user groups

a. Describe the characteristics of formal and informal groups.
b. Explain how formal and informal groups meet the needs of individuals.

Write your answer to question 23 in the space provided on page _ of your Student Response Booklet.

Government Regulation

23. Government involvement in business, agriculture, and social issues has developed gradually since the late 1800s. Some examples of this involvement are:

- the required labeling of food, drug, and tobacco products;
- government deregulation of the airlines and communications industries;
- price supports for agricultural products;
- Social Security, Medicare, and welfare programs;
- environmental protection regulations;
- occupational safety and health standards and laws for the workplace.

Many people feel that a certain amount of government regulation is necessary and has been beneficial to our society as a whole. Others, however, believe that there should be little or no government regulation in certain areas.

a. Discuss the **positive** effect(s) of government regulation of business, agriculture, or social issues. Support your discussion with examples.

b. Discuss the **negative** effect(s) of government regulation of business, agriculture, or social issues. Support your discussion with examples.

SOCIAL STUDIES — SECTION C

This test section contains six multiple-choice and one open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Social Studies). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

24. The First Amendment guarantees the right of
    A. trial by jury.
    B. voting privileges.
    C. a speedy trial.
    D. free speech.

25. An atomic bomb has been used only twice in the history of warfare: on August 6th, 1945 and August 9th, 1945, by the United States. Against which country was this weapon used?
    A. Italy
    B. Germany
    C. Japan
    D. Russia

26. Karl Marx, the author of *Das Kapital*, is known as the father of what form of government?
    A. totalitarianism
    B. communism
    C. federalism
    D. nationalism

27. Which term **best** describes the economic situation in which there are unlimited wants but a limited amount of resources available to satisfy those wants?
    A. deficit
    B. scarcity
    C. inflation
    D. surplus

KY – Grade 11 – Form 4a – 1998-99

Europe and the Former Soviet Union

Country	Flag and Principal Language(s)	Population and Landmass	Principal Products	
			Export	Import
LIECHTENSTEIN Vaduz	German	POPULATION 30,000 484 per sq mi/187 per sq km LANDMASS 62 sq mi/161 sq km	Machinery	N/A
LITHUANIA Vilnius	Lithuanian, Russian	POPULATION 3,700,000 147 per sq mi/57 per sq km LANDMASS 25,174 sq mi/65,201 sq km	N/A	N/A
LUXEMBOURG Luxembourg	French, German, Letzburgesch	POPULATION 400,000 400 per sq mi/155 per sq km LANDMASS 999 sq mi/2,587 sq km	Steel	Crude Oil
MALTA Valletta	Maltese, English	POPULATION 400,000 3,279 per sq mi/1,266 per sq km LANDMASS 122 sq mi/316 sq km	Clothing	Machinery
MONACO Monaco	French	POPULATION 29,000 39,726 per sq mi/15,338 per sq km LANDMASS 0.73 sq mi/2 sq km	N/A	N/A
NETHERLANDS Amsterdam	Dutch	POPULATION 14,700,000 1,040 per sq mi/401 per sq km LANDMASS 14,140 sq mi/36,623 sq km	Chemicals	Crude Oil
NORWAY Oslo	Norwegian, Lapp Dialects	POPULATION 4,200,000 34 per sq mi/13 per sq km LANDMASS 125,049 sq mi/323,877 sq km	Crude Oil	Machinery
POLAND Warsaw	Polish	POPULATION 38,200,000 316 per sq mi/122 per sq km LANDMASS 120,756 sq mi/312,758 sq km	Machinery	Machinery
PORTUGAL Lisbon	Portuguese	POPULATION 10,400,000 294 per sq mi/113 per sq km LANDMASS 35,383 sq mi/91,642 sq km	Clothing	Crude Oil

28. According to the chart above, which nation or principality has the greatest population **density**?

A. Portugal

B. Monaco

C. Luxembourg

D. Lithuania

29. A totalitarian government is characterized by
    A. a single leader or group holding absolute power.
    B. strict adherence to constitutional principles.
    C. involvement of many political parties.
    D. voter allegiance to the government.

KY – Grade 11 – Form 4a – 1998-99

SOCIAL STUDIES OPEN-RESPONSE QUESTIONS

Read all parts of the open-response question before you begin. Write your answers to open-response question 30 in the space provided on page _ of your Student Response Booklet (Social Studies). DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 30 in the space provided on page _ of your Student Response Booklet.

Job Opportunities

Use the chart below to answer question 30.

FASTEST GROWING OCCUPATIONS, 1992 – 2005

Occupation	percent change	Occupation	percent change
Home health aides	138%	Medical assistants	71%
Human service workers	136%	Detectives, except public	70%
Personal and home care aides	130%	Correction officers	70%
Computer engineers and scientists	112%	Child care workers	66%
Systems analysts	110%	Travel agents	66%
Physical and corrective therapy assistants and aides	93%	Radiologic technologists and technicians	63%
Physical therapists	88%	Nursery workers	62%
Paralegals	86%	Medical records technicians	61%
Teachers, special education	74%	Operations research analysts	61%
		Occupational therapists	60%
		Legal secretaries	57%

30. The chart above shows occupations in the United States that are expected to experience the greatest rate of growth in the future.

Discuss **two** changes occurring in American society that offer an explanation for the fast growth of **two** of these occupations.

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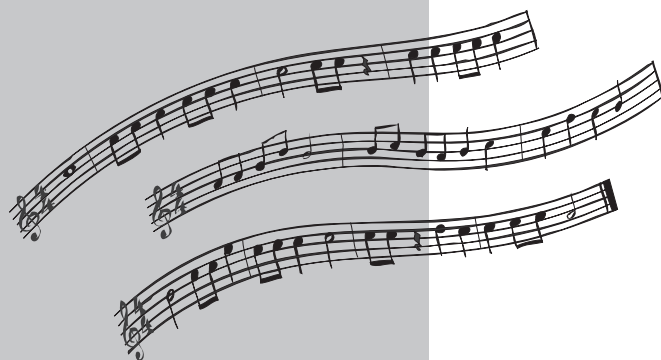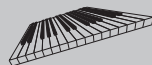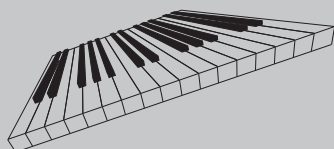
KY – Grade 11 – Form 4a – 1998-99

Grade 11
Arts & Humanities

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ARTS AND HUMANITIES

This test section contains eight multiple-choice and two open-response (short-answer) questions. Please mark your answers for the multiple-choice questions in the spaces provided on page _ of your Student Response Booklet (Arts and Humanities). Mark only one answer for each question. If you do not know the answer, make your best guess. DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET. WHEN YOU FINISH, DO NOT WORK ON ANY OTHER TEST SECTION.

1. Lighting in dance is usually used to affect the
   A. mood of the dance.
   B. tempo of the dance.
   C. length of the dance.
   D. sequence of the dance.

2. A musical introduction to an opera or other large musical work is called an
   A. aria.
   B. overture.
   C. alto.
   D. octave.

3. In a play, a soliloquy is a dramatic speech in which a character
   A. improvises all of the words.
   B. speaks internal thoughts aloud.
   C. expresses love for another character.
   D. foreshadows the play's end.

4. Pablo Picasso's visual art career included a Blue Period. During this time he used cool colors (blues, greens, and purples) in his paintings. What emotion is **best** illustrated by his use of cool colors?
   A. anger
   B. hate
   C. sadness
   D. passion

5. Mikhail Baryshnikov and Martha Graham are 20th-century
   A. dancers.
   B. painters.
   C. vocalists.
   D. writers.

KY – Grade 11 – Form 4a – 1998-99

Interior View of the Guggenheim Museum at 1071 Fifth Avenue. Photograph by Robert E. Mates. Copyright © The Solomon R. Guggenheim Foundation, New York. Reprinted with permission.

6. In the photograph above, architectural unity is achieved by the use of
   A. proportion.
   B. style.
   C. repetition.
   D. variety.

7. Philosophy can best be defined as
   A. an attempt to record human achievements.
   B. a chronological listing of historic events.
   C. an inquiry into the nature of human knowledge.
   D. an understanding of cultural art forms.

8. Pythagoras, the Parthenon, and Homer are from which period?
   A. Romanticism
   B. Classical Greek
   C. Medieval
   D. Renaissance

45   **PLEASE GO ON TO THE NEXT PAGE →**

ARTS AND HUMANITIES OPEN-RESPONSE QUESTIONS

Read all parts of each open-response question before you begin. Write your answers to open-response questions 9 and 10 in the spaces provided on pages _ and _ of your Student Response Booklet (Arts and Humanities). DO NOT WRITE ANY ANSWERS IN THIS TEST BOOKLET.

Write your answer to question 9 in the space provided on page _ of your Student Response Booklet.

River Music

9. Composers often create music to express feelings or ideas. You have been chosen to create a piece of music celebrating a community's relationship to its river.
    a. What aspect(s) of the community's relationship to the river (e.g., trade, recreation, commerce, river traffic, life on the bank, social activities, river transportation) might you choose to represent in sound?
    b. Identify the instruments or families of instruments that you would use to create the sounds in your piece of music. Explain why you selected these particular instruments for expressing the community's relationship to its river.

Write your answer to question 10 in the space provided on page _ of your Student Response Booklet.

Stage Directions

10. When playwrights write plays, they include stage directions in their scripts. Explain the importance of these stage directions and why it is necessary for the director to understand them. Provide three examples to illustrate your ideas.

PLEASE STOP!

DO NOT GO ON TO THE NEXT PAGE.

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KY – Grade 11 – Form 4a – 1998-99

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