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ABSTRACT

                 The 11th Grade Test (1984) of the Illinois Inventory
of Educational Progress includes 19 reading items, 45 geometry items,
46 science items, a 27-item student questionnaire regarding science
opinions, and 49 mathematics items. The test booklet only is included
here. (PN)

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TM

THE ILLINOIS INVENTORY OF EDUCATIONAL PROGRESS

GRADE 11

1984

Walter W. Naumer, Jr., Chairman
Illinois State Board of Education

Donald G. Gill
State Superintendent of Education
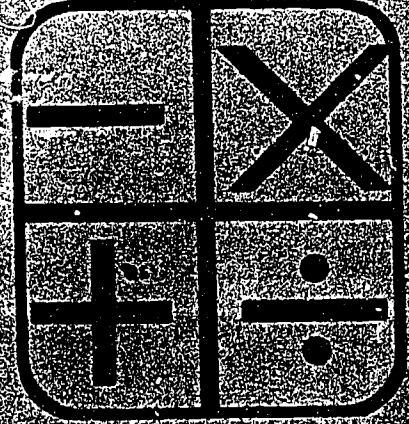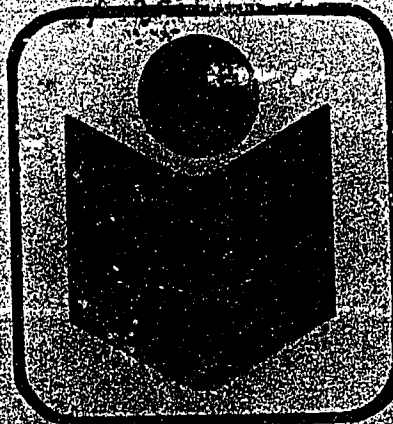
11th GRADE TEST

ILLINOIS INVENTORY OF EDUCATIONAL PROGRESS

DIRECTIONS FOR FILLING OUT THE ANSWER SHEET

*USE A #2 PENCIL TO MARK YOUR ANSWERS.

*MARK ALL OF YOUR ANSWERS ON THE ANSWER SHEET.

*DO NOT WRITE IN THE TEST BOOKLET.

*MATCH THE QUESTION NUMBER TO THE NUMBER ON THE ANSWER SHEET.

*MAKE YOUR MARKS WITHIN THE BUBBLE FOR THE ANSWER YOU SELECT.

*MAKE YOUR MARKS FIRMLY; FILL THE BUBBLE COMPLETELY.

*THERE ARE MORE PLACES FOR ANSWERS' THAN THERE ARE QUESTIONS IN THE
BOOKLET. BE SURE TO MARK YOUR ANSWER SHEET IN THE PROPER LOCATION.

*IF YOU WISH TO CHANGE AN ANSWER, COMPLETELY ERASE THE MARK YOU WISH TO
CHANGE.

*FOLLOW THE DIRECTIONS ON THE SEPERATE SHEET OF INSTRUCTIONS TO FILL IN
THE NAME AND STUDENT CODE ON THE ANSWER SHEET.

PART 1   SECTION 1

READING TEST

DIRECTIONS: This section contains reading items. For each item, read the
question and the answer choices. Then, darken the bubble of your choice on
the answer sheet. There are 19 reading items. You will have 30 minutes.
READY, BEGIN.

From <u>Napolean</u> by Emil Ludwig

1 About twenty men are seated round a
2 large oval table. Some are quite
3 young; some middle-aged, some
4 elderly. They are plainly dressed,
5 in accordance with the fashion of
6 1800, when wigs were no longer
7 worn, and lace was out-of-date;
8 those of them that are in uniform
9 are not resplendent with gold
10 braid, and they wear no orders.
11 Some have the bold, self-confident
12 look of the man of action; others
13 the thoughtful mien of the savant.
14 From town and from countryside, from
15 office and from laboratory, they
16 come, but are unified by a common
17 experience and a common aim. For
18 ten years, they have been living
19 through a revolutionary epoch; they
20 meet to bring that epoch to a
21 close. Around them is the chill
22 splendor of the Tuileries, the
23 palace of the last Bourbon kings.
24 The golds and the reds of the rich
25 carpets and the silken hangings
26 are out of keeping with their bour-
27 geois circumstantiality; the sil-
28 very sheen of the candles, reflect-
29 ed in rainbow tints from the myriad
30 facets of the candelabra, recalls
31 an era that scintillated with light
32 and glowed with color....

33 Several of those now seated at the
34 oval table had waited here of old
35 wearing powdered wigs, lace jabots,
36 and pumps - tremulous with eager-
37 ness to learn whether His Majesty
38 would receive them, and when. Some
39 of them had sat at a similar table
40 in the Luxembourg. There had been
41 no stability about those delibera-
42 tions. Law had come and gone, ur-
43 gency orders and exceptional pro-
44 visions; transitional decrees had
45 pushed foregoing decrees out of the
46 way; three constitutions had risen
47 and set, had shot up into the air
48 swiftly and brilliantly like rock-
49 ets, to vanish like these and to
50 fall like rocket sticks.

1. The word epoch in line 20 most nearly means

   A) a long, narrative poem about a great hero.
   B) a war, especially a civil war.
   C) an era or period of time.
   D) a council or governing body.

2. Study the context in which the word savant is used (line 13). It most likely means

   A) a well-trained servant, like a butler.
   B) a man of profound learning.
   C) one who has been in mourning.
   D) a member of the ruling class.

3. The word mien (line 13) means

   A) gaze.
   B) outpouring of advice.
   C) worried frown or puzzled expression.
   D) appearance or bearing.

4. How many men attended this meeting?

   A) 1,800
   B) between 10 and 15
   C) about 20
   D) The passage does not say.

5. The Tuileries, according to this selection, is

   A) the hall where the meeting is being held.
   B) a palace of the last Bourbon kings.
   C) elaborately decorated.
   D) All of the above.

6. The men are gathered at the oval table to

   A) plan for the restoration of His Majesty to the throne.
   B) argue for further taxation of the peasants.
   C) establish order and stability after a period of turmoil.
   D) press for an official declaration of war.

7. The "common experience" that unifies these men is

   A) a decade of revolution.
   B) a former acquaintance with His Majesty.
   C) the memories of their services in the Parliament.
   D) The passage gives no indication.

5

From __Antigone__ by Sophocles

ODE I

CHORUS

1   Numberless are the world's wonders, but none
2   more wonderful than man; the stormgray sea
3   yields to his prow;, the hugh crests bear him high;
4   Earth, holy and inexhaustible, is graven
5   with shining furrows where his plows have gone
6   year after year, the timeless labor of stallions.

7   The lightboned birds and beasts that cling to cover,
8   the lithe fish lighting their reaches of dim water,
9   all are taken, tamed in the net of his mind;
10 the lion on the hill, the wild horse windy-maned,
11 resign to him; and his blunt yoke has broken
12 the sultry shoulders of the mountain bull.

13 Words also, and thought as rapid as air,
14 he fashions to his good use; statecraft is his,
15 and his the skill that deflects the arrows of snow,
16 the spears of winter rain: from every wind
17 he has made himself secure-from all but one:
18 In the late wind of death he cannot stand.

19 O clear intelligence, force beyond all measure!
20 O fate of man, working both good and evil!
21 When the laws are kept, how proudly his city stands!
22 When the laws are broken, what of his city stands!
23 Never may the anarchic man find rest at my hearth,
24 Never be it said that my thoughts are his thoughts.

8. Study the context in which the word __fashions__ is used in line 14. In which sentence below is the word used with the same meaning?

A)   The actor had to walk in a particular fashion in one scene.
B)   The new housekeeper vacuumed and dusted -- after a fashion.
C)   The students fashioned costumes out of old sheets.
D)   It is no longer the fashion to kiss a lady's hand.

9. Which of the following is man __unable__ to conquer?

A)   statecraft
B)   natural forces
C)   the anarchic man
D)   death

10. Lines 2 and 3 describe

A)   the unconquerable force of the sea.
B)   man's ability to conquer the sea with ships.
C)   man's military might on the sea.
D)   man's being reduced in stature by the mightiness of a sea storm.

6

11. This ode praises primarily man's

    A)   nautical ability.
    B)   physical prowess.
    C)   intellectual ability.
    D)   religious devotion.

12. What example of antithesis (opposites) is not contained in this passage?

    A)   small animals and large animals
    B)   earth and seas
    C)   conqueror and conquered
    D)   day and night

13. Which of the following judgments is not supported by this passage?

    A)   The Greeks ascribed to man a lofty, noble position in the universe.
    B)   The Greeks believed in fate.
    C)   The Greeks approved of slavery.
    D)   The Greeks valued law and respect for authority.

1 During the seventeenth century,
2 Robert Hooke, an early scientist,
3 used a compound microscope to
4 study an "exceedingly thin piece
5 of cork." He found that the cork
6 was perforated or porous, much
7 like a honeycomb. He called the
8 microscopic compartments cells,
9 meaning "little rooms." To Hooke,
10 a cell was just a curious, empty
11 container which existed within
12 plant or animal matter. However,
13 his discovery of the cell
14 encouraged hundreds of scientists
15 to investigate other plant and
16 animal matter under their
17 microscopes.

18 The cork cells observed through
19 Hooke's microscope were dead, and
20 there was nothing inside these
21 particular cork cells. Other
22 scientists examined the living
23 cells of a variety of plants and
24 animals. Because Hooke looked
25 solely at dead cells, he had seen
26 only the outlines of the cells, or
27 the cell walls. The study of
28 living cells, however, indicated
29 that the cells were not just empty
30 containers. These scientists
31 found that some type of matter, or
32 protoplasm, existed within the
33 living cell walls.
34 The smallest object that the naked
35 eye can see is about 100 microns
36 (about 1/250th of an inch), but
37 the average cell is only about
38 five to fifteen microns in size.
39 Compound and electron microscopes
40 are necessary if cells are to be
41 studied. To examine cells
42 microscopically, plant or animal
43 tissue must be cut into very thin
44 sections so as to enable light to
45 pass through the tissue to the
46 scientist's eye. When the slivers
47 of tissues are prepared, the cells
48 are often rendered colorless.
49 Early biologists found that they

50 could add dyes or stains to the
51 cells on their slides. Because
52 different parts of the cell absorb
53 the dye differently, the scientist
54 is able to see each part clearly.
55 The use of such techniques led to
56 the identification of many parts
57 of the cell, and to an
58 understanding of the functions of
59 these parts.
60 Another especially important
61 breakthrough in cell study was
62 made by Anton Van Leeuwenhoek,
63 during the same period of time
64 that Hooke was examining his
65 microscope. In the drops of
66 water, much to Leeuwenhoek's
67 surprise, many living creatures
68 appeared to be swimming around by
69 quickly whipping their hairlike
70 tails. Today we call
71 Leeuwenhoek's microscopic animals
72 protozoa. Protozoa are
73 single-celled animals. The
74 discovery of protozoa made it
75 easier to study living cells. It
76 also pointed out that cells might
77 be important functional units of
78 living things, since all of the
79 life functions (such as eating,
80 waste removal, reproduction) of
81 the protozoa obviously must take
82 place within single cells.

8

14. What do we call the matter in living cells?

A)　·porous
B)　protozoa
C)　protoplasm
D)　cytology

15. Cytology is

A)　the study of plants and animals.
B)　cell study.
C)　cancer research.
D)　the study of blood.

16. Which of the following did not eventually help lead to the formulation of the cell theory?

A)　Hooke's discovery
B)　Leeuwenhoek's discovery
C)　the discovery of the effect of stains on cells
D)　the use of cytology in cell research

17. Acccording to the article, which discovery came first?

A)　the compound microscope
B)　the use of dyes to stain cells
C)　protoplasm
D)　the cell

18. Scientists discovered protoplasm

A)　through the use of a better microscope than that used by Hooke.
B)　through the use of stains.
C)　by examining cork.
D)　by examining living plant and animal matter.

19. Which of the following is the best title for this article?

A)　Robert Hooke, Scientist
B)　The Amazing Protozoa
C)　The Development of Cytology
D)　The Use of the Microscope

STOP! DO NOT CONTINUE UNTIL YOU ARE TOLD TO DO SO.

PART 1 .   SECTION 2

GEOMETRY TEST

DIRECTIONS: This section contains geometry items. For each item, read the
question and the answer choices. Then, darken the bubble of your choice on
the answer sheet. There are 45 geometry items. You will have 30 minutes.
READY, BEGIN.

20. In the figure below, ABDE is a rectangle. Which segment is parallel to DE?

    A. $\overline{AC}$

    B. $\overline{AE}$

    C. $\overline{CE}$

    D. $\overline{AB}$

    E. $\overline{BD}$
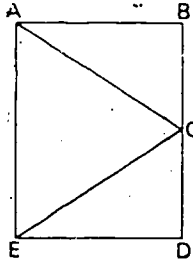
21. What is the area of the circle below with a radius of 4? (let $\pi = 3.14$)

    A. 6.23

    B. 12.56

    C. 25.18

    D. 50.24

    E. 57.25

    r = 4
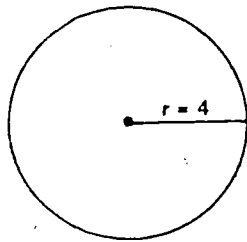
22. Which is true?

    A. All rectangles are squares.

    B. All squares are rectangles.

    C. No squares are rectangles.

    D. No rectangles are squares.

    E. Some squares are not rectangles.

23. This angle is

    A. an acute angle.

    B. an obtuse angle.

    C. a right angle.

    D. a vertical angle.

    E. an isoceles angle.

24. Using Figure 1, the measure of angle KFJ =

    Figure 1

    A. 50º

    B. 60º

    C. 70º

    D. 110º

    E. 130º

11
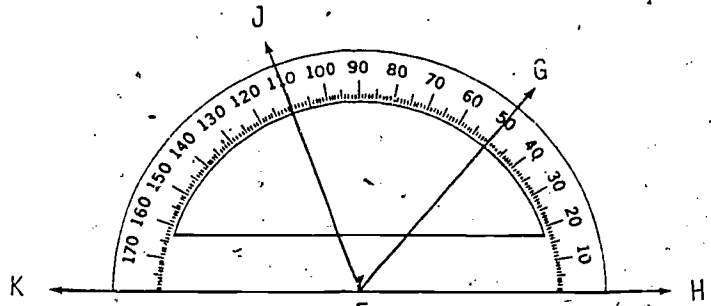
25. What is the perimeter of the triangle XYZ below?

Y

15" 20"

12"

X Z

W

25"
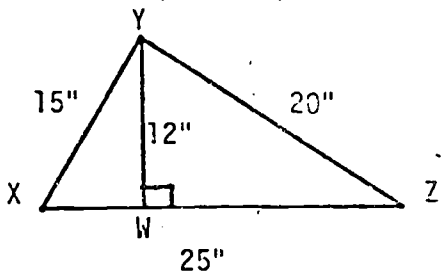
A. 36 inches

B. 60 inches

C. 72 inches

D. 300 inches

E. 3,750 inches

26. In the circle below with center O, which segment is a diameter?

A. $\overline{OA}$

B. $\overline{OB}$

C. $\overline{CE}$

D. $\overline{AF}$

E. $\overline{EF}$
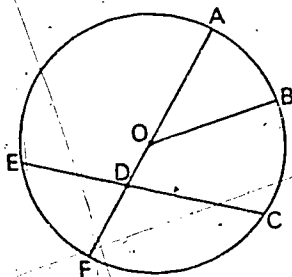
27. Identify the part of the circle below that is indicated with a dashed line.

A. center

B. diameter

C. radius

D. arc

E. perimeter
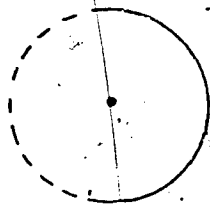
28. What is the perimeter of the room in the figure below?

A. 34 feet

B. 50 feet

C. 100 feet

D. 156 feet
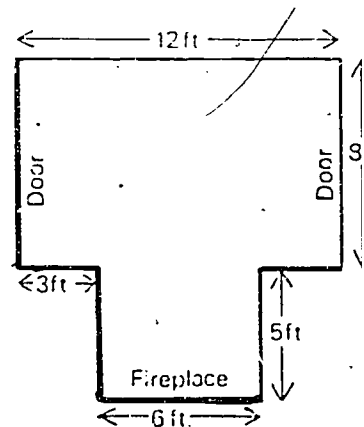
29. What is the area of the triangle shown below?

A. 9

B. 18

C. 20

D. 40

E. 80
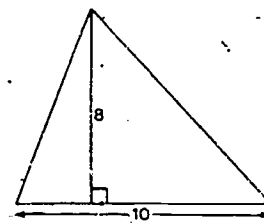
30. In a given triangle, the measure of two of the angles are 35 degrees and 75 degrees. The measure of the third angle is

A. 40 degrees.

B. 56 degrees.

C. 70 degrees.

D. 95 degrees.

E. 110 degrees.

12   CONTINUE TO THE NEXT PAGE

31. Mr. Johnson wants to buy carpeting for his living room. The room is square and has a perimeter of 48 feet. What is the area of the room in square feet?

   A.   144 square feet

   B.   169 square feet

   C.   182 square feet

   D.   196 square feet

   E.   576 square feet

32. What is the formula for finding the area of a circle whose radius is r?

   A. πr

   B. $2\pi r$

   C. πr^2

   D. $2\pi r^2$

   E. $4\pi^2 r^2$

33. In the circle below, which line segment represents the radius?

   A. $\overline{CD}$

   B. $\overline{AF}$

   C. $\overline{EC}$

   D. $\overline{DE}$

   E. $\overline{OB}$
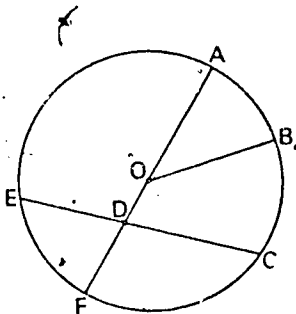
34. What is the volume of a box with a width of 9 cm, a length of 12 cm and a height of 25 cm?

   A.   46 cm^3

   B.   270 cm^3

   C.   460 cm^3

   D.   525 cm^3

   E.   2700 cm^3

35. The radius of the inside of the pipe below is 3 inches. The wall of the pipe is 1 inch thick. What is the outside diameter of the pipe?

   A.   4 inches

   B.   5 inches

   C.   7 inches

   D.   8 inches

   E.   9 inches

PIPE
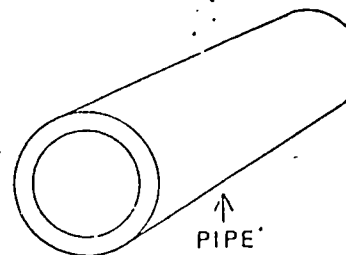
36. ABCD is a square. Each side of the square is 60 feet. How many feet long is segment AC?

   A.   30

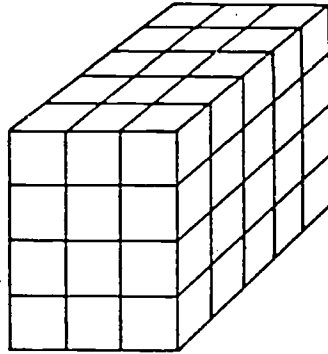   B. $60\sqrt{2}$

   C. $60\sqrt{3}$

   D.   90

   E.   120
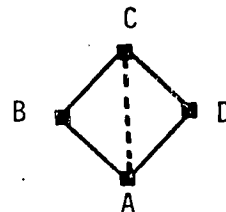
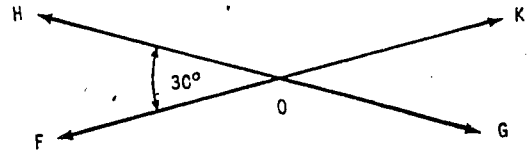37. In the figure below, lines AB and CD are parallel. Two angles whose measures sum to 180° are angles
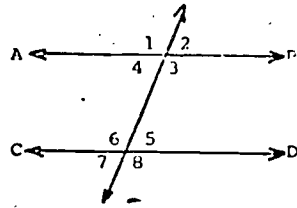
A. 1 and 3.

B. 4 and 6.

C. 2 and 5.

D. 2 and 7.

E. 1 and 8.

38. What is the volume of the rectangular solid shown below? (Each cube is 1 cm³.)

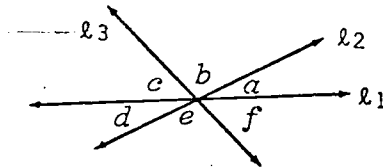A. 12 cm³

B. 15 cm³

C. 47 cm³

D. 60 cm³

E. 72 cm³
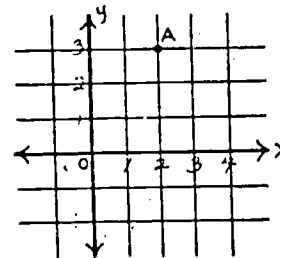

39. In the figure below, what is the size of angle FOG?

A. 30°

B. 70°

C. 150°

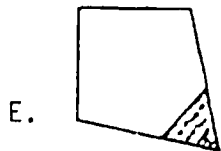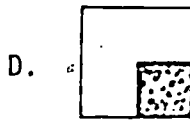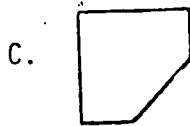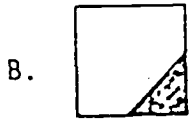D. 180°

40. In the figure below, two adjacen angles would be
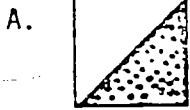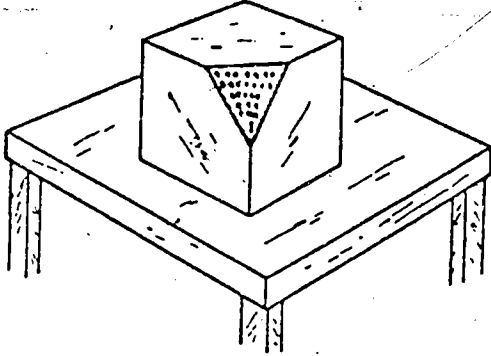

A. a and d.

B. d and f.

C. c and f.

D. a and b.
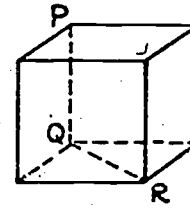
41. In the coordinate plane below, point A is named by:

A. (2,3)

B. (3,2)

C. (3,3)

D. (3,4)

E. (4,3)

14

42. The figure below shows a block with one corner cut off and shaded. Which of the figures in the answer choices shows how this block would look when viewed from directly above it.
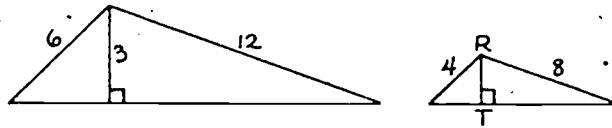

43. The figure [cube] is a cube.

What is the measure of angle PQR?

A.   45⁰

B.   90⁰

C.   135⁰

D.   150⁰

E.   180⁰

A.

B.

C.

D.

E.

44. The two triangles below are similar.

How long is RT?

A.   1

B.   2

C.   3

D.   4

E.   5

45. In the figure below, what fractional part of the large circle appears to be shaded?

A. $\frac{1}{8}$

B. $\frac{1}{6}$
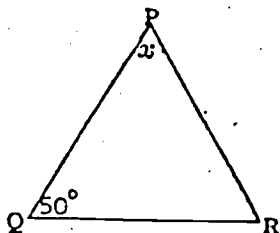
C. $\frac{1}{4}$

D. $\frac{1}{3}$

E. $\frac{1}{2}$
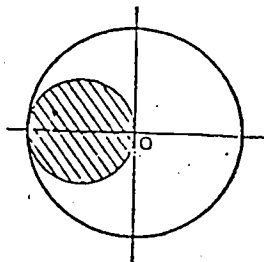
46. The volume of a box is known to be 1,320 cm^3. If the box is 10 cm deep and 12 cm wide, what is the length of the box?

A. 120 cm^2

B. 60 cm

C. 30 cm

D. 13 cm

E. 11 cm

47. Triangle PQR below is an isosceles triangle with $\overline{PQ} \cong \overline{PR}$. Angle x =

A. 40^0

B. 50^0

C. 65^0

D. 80^0

E. 100^0

48. Which polygon below has an area of 12 square centimeters?

A. 3cm / 3cm / 3cm / 3cm

B. 5cm / 1 cm / 7cm

C. 4cm / 3cm / 3cm / 4cm

D. 4cm / 2cm / 2cm / 4cm

E. 5cm / 1 cm / 7cm

49. The line m in the figure below is a line of symmetry for figure ABCDE. The measure of angle BCD =
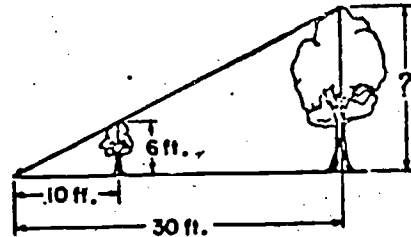
A. 30°

B. 50°

C. 60°

D. 70°

E. 110°
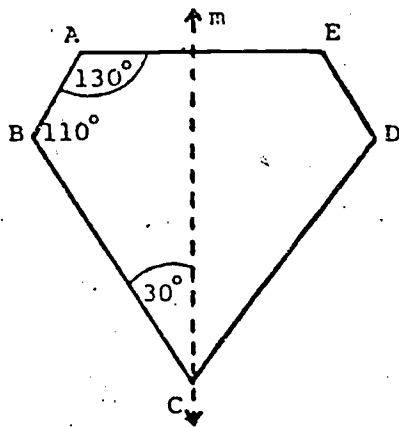
50. A box has a volume of 100 cm³. Another box is twice as long, twice as wide and twice as high. What is the volume of the second box?

A. 200 cm³

B. 450 cm³

C. 500 cm³

D. 600 cm³

E. 800 cm³

51. The figure below shows how to use a short tree to find the height of the tall tree. What is the height of the tall tree?

A. 12 feet

B. 18 feet

C. 20 feet

D. 36 feet

E. 46 feet

52. Which is true for the figure below?
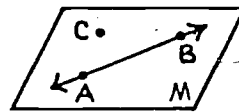
A. Line $\overleftrightarrow{AB}$ is contained in plane M.

B. Segment $\overline{AB}$ is parallel to point C.

C. Point C is contained in line $\overleftrightarrow{AB}$

D. Plane M is contained in line $\overleftrightarrow{AB}$

E. None of the above.

CONTINUE TO THE NEXT PAGE

53. In Figure 2 below, if you rotate PQR around line 1, which figure shows the three-dimensional figure traced out by the moving sides?
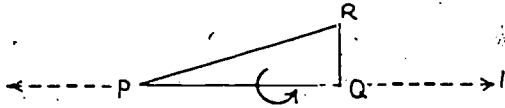
Figure 2

A.

B.

C.

D.

E.
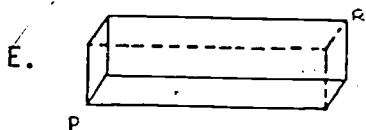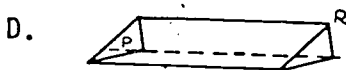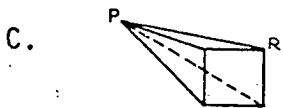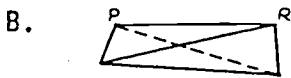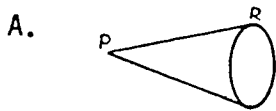
54. Which of the following statements is false?

A.   All squares are rectangles.

B.   No rectangles are squares.

C.   Some rectangles are squares.

D.   All rectangles are parallelograms.

E.   Some quadrilaterals are squares.

55. Nine faces are shown below.
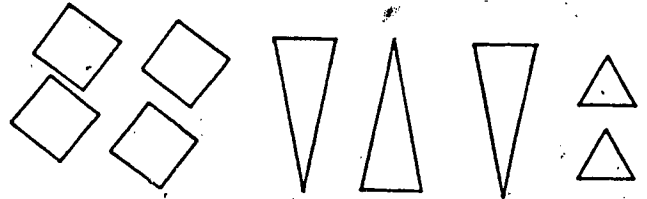
Which surface(s) shown BELOW can be built using only some or all of these 9 faces?

Figure I   Figure II   Figure III

A.   Only Figure I

B.   Only Figure II

C.   Only Figure III

D.   Only Figures I and III

E.   All three figures

18

CONTINUE TO THE NEXT PAGE

56. Select an answer that is NOT true about the surface pictured below.
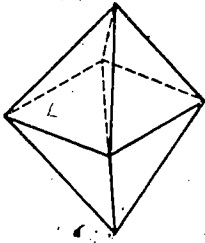
A. It is a closed space figure.

B. It is a pyramid.

C. It has 6 vertices.

D. It has 8 faces.

E. It has 12 edges.

57. Which of the following is NOT ALWAYS TRUE for a rhombus?

A. All of the sides are congruent.

B. All of the angles are congruent.

C. The diagonals bisect each other.

D. The diagonals are perpendicular to each other.

E. It has at least two lines of symmetry.

58. Which point is outside the shaded figure below?

A. (4,3)

B. (4,1)

C. (3,2)

D. (2,4)

E. (2,1)

CONTINUE TO THE NEXT PAGE
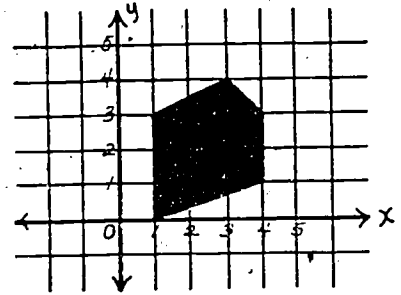
59. Seven faces are shown below.
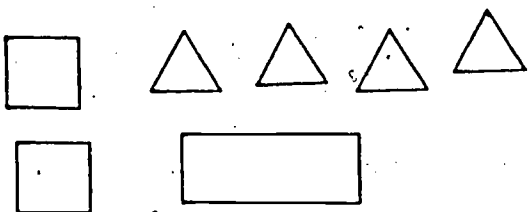
Which surface(s) shown BELOW can be built using only some or all of these 7 faces?

Figure I   Figure II   Figure III
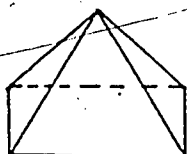
A.   Only Figure I

B.   Only Figure II

C.   Only Figure III

D.   Only Figures I and II

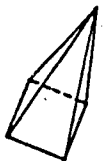E.   All three figures

Directions: Use the patterns in Figure 3 below to answer question 60.

A.

B.

C.

D.

E.

Figure 3

60. If the patterns in Figure 3 were each folded to try to make a box which one of the following statements is TRUE?

A.   In (A), square 1 and 6 would overlap.

B.   In (B), square 1 and 6 would overlap.

C.   In (C), square 1 and 6 would overlap.

D.   In (D), square 1 and 6 would overlap.

E.   In (E), square 1 and 6 would overlap.

20

CONTINUE TO THE NEXT PAGE

61. The straight line joining the points (2,3) and (2,7) cuts the straight line joining the points (1,4) and (6,4) at the point

A. (1,3).

B. (1,4).

C. (2,3).

D. (2,4).

E. (4,2).
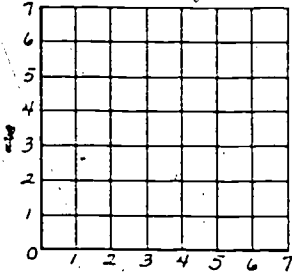
62. ℓ is a line of symmetry. Which point is the reflection (mirror image) of point X with respect to line ℓ?

A. P

B. Q

C. R

D. S

E. X
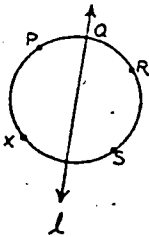
63. The definition of parallelopiped is satisfied by which figure(s) below?

Figure I

Figure II
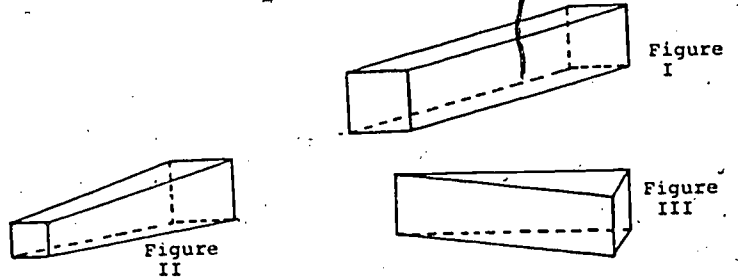
Figure III

A. Only Figure I

B. Only Figure II

C. Only Figure III

D. Only Figures I and II

E. Only Figures II and III

64. In right triangle HJK, the length of segment HK is

17

8

J

H

K

A. 9

B. 12

C. 13

D. 15

E. 25

21
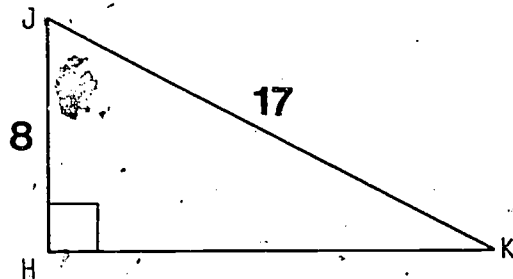
CONTINUE TO THE NEXT PAGE

This section contains items about science. For each item, read
the question and the answer choices. Then, darken the bubble
of your choice on the answer sheet. There are 46 science items.
You will have 25 minutes. READY, BEGIN.

_____

65.   What is the main way sweating helps your body?

a. It helps cool your body.
b. It keeps your skin moist.
c. It keeps you from catching cold.
d. It gets rid of the salt in your body.

66.   All of the following can be called matter EXCEPT

a. gold.
b. ideas.
c. shoes.
d. water.
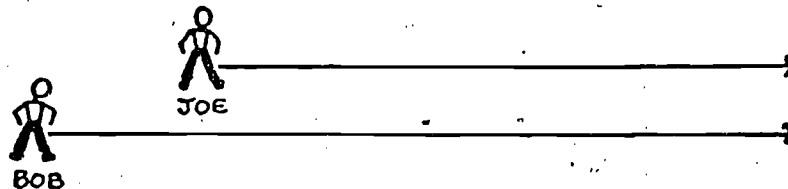
67.   Two boys raced. Joe is younger than Bob, so he started
closer to the finish line. Both started to run when the
signal was given. Both got to the finish line at the
same time. Which is true?

a. Joe ran further than Bob.
b. Joe ran faster than Bob.
c. Bob ran faster than Joe.
d. Bob ran for a longer time.

22

68.   Look carefully at the following picture stories of the
      life of a frog.   Which picture story is CORRECT?

a.

b.

c.

CONTINUE TO THE NEXT PAGE
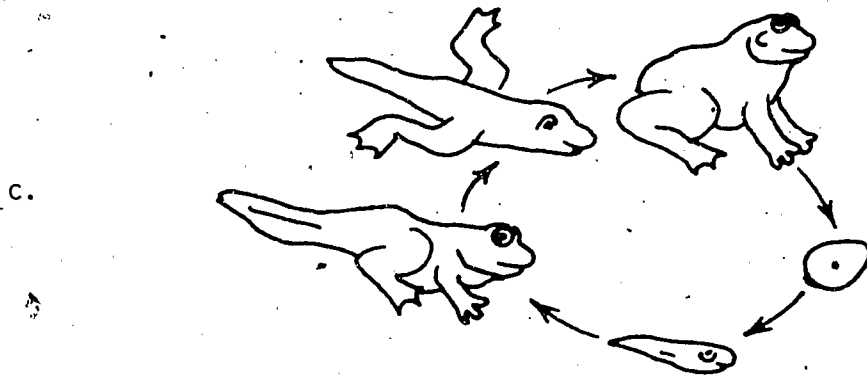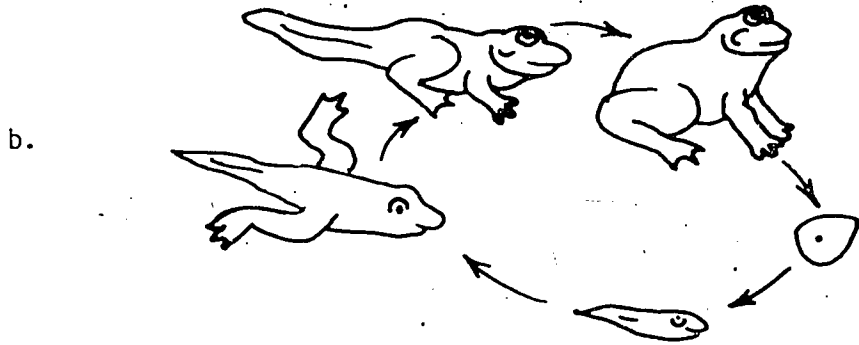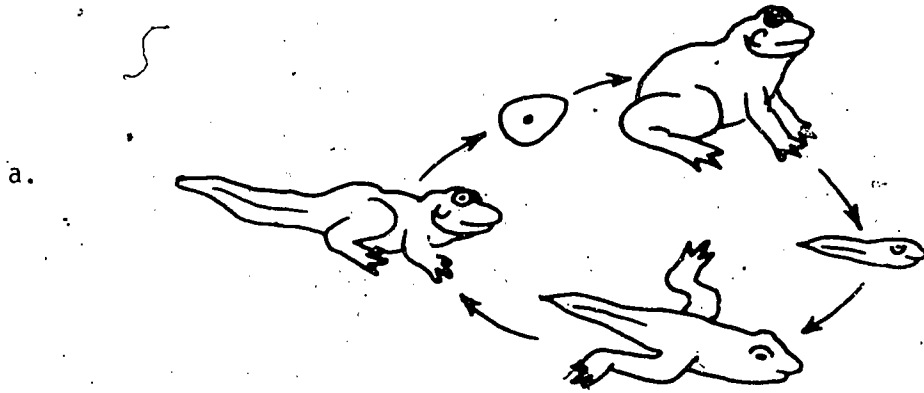
69. Green plants make food by the process called

a. digestion.
b. evaporation.
c. photosynthesis.
d. osmosis.

70. If you want to find out how much height a girl gained
in one year, which of the following MUST you know about
her?

a. Her age
b. The type of food she eats
c. The height of her mother and father
d. Her height at the beginning of the year

71. All of the following are needed for a fish to live in
an aquarium EXCEPT

a. food.
b. sand.
c. water.
d. oxygen.

24

72. Some children went on a nature walk and visited three
different places. They made a chart using symbols for
animals they saw. Their charts show that they saw

```
┌─────────────┐
│ > > > >     │
│ • • • ~      │
└─────────────┘
   Woods
```
```
┌─────────────┐
│ 6 6 6 ~      │
│ > • • • •    │
└─────────────┘
   Swamp
```
```
┌─────────────┐
│ • 6 6 •      │
│ >           │
└─────────────┘
   Pond
```
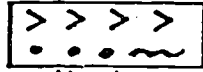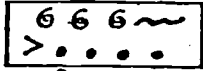
• insect

6 snail

~ snake

> bird

a. more birds than any other animal.
b. more insects than any other animal.
c. more snakes than snails.
d. more snails than birds.

73. If you had to find who was the fastest runner in your
school, which way would be best?

a. Boys run against boys and girls run against girls.
b. You only run people of the same age.
c. Each person runs the same distance and is timed.
d. Younger runners should get a 15-step head start.

74. Sally and Jill have a foot race from A to B on different paths. Sally runs from A to C and then to B, and Jill runs straight from A to B. Both leave A at the same time and arrive at B together, making a tie.
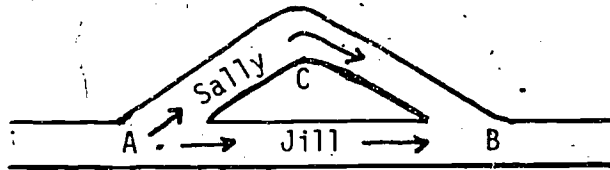
This means that

a. Jill took longer to get to B than Sally.
b. Sally is a faster runner than Jill.
c. both girls ran at the same speed.
d. their speeds made no difference.

75. What happens when you pour hot water into a cold, empty cup?
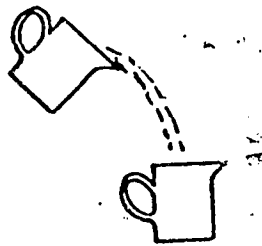
a. The water will get hotter.
b. The cup will get colder.
c. The water will get colder.
d. The cup will stay the same temperature.

26

76. A plant grows this way:

Week	Height (centimeters)
1	1
2	2
3	4

Which graph shows this growth pattern?

a.

b.

c.

d.

CONTINUE TO THE NEXT PAGE
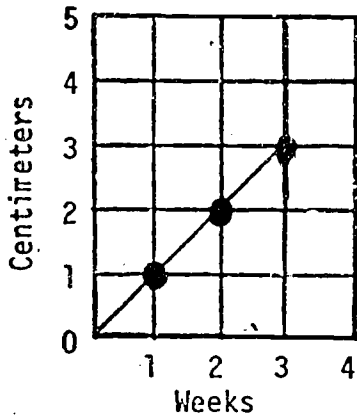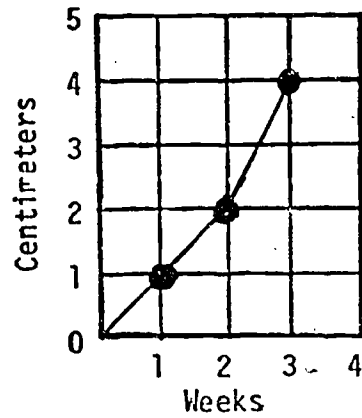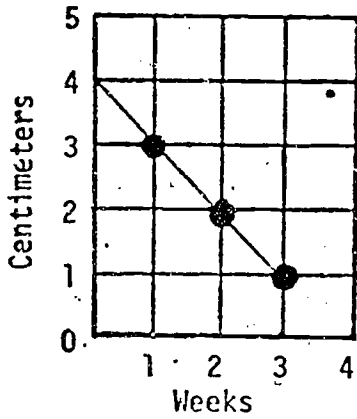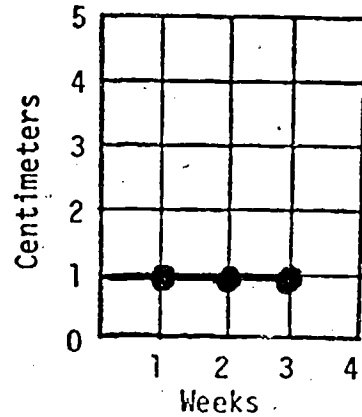
77. A piece of hot metal is placed in cool water. Which of the following is MOST likely to happen?

    a. The metal will cool to the original water temperature.
    b. The water will heat to the original metal temperature.
    c. The water and metal will reach the same temperature.
    d. The water and metal will remain at their original temperatures.

78. The same amount of water is poured into each of the containers shown below, and they are left uncovered in a warm room. After a day, which container will have the LEAST amount of water left in it.

    a.   b.   c.   d.
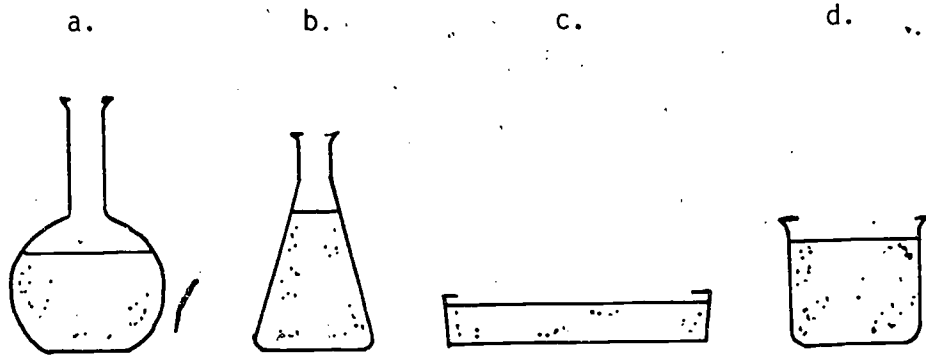
79. In order to determine atmospheric air pressure, you should use

    a. a thermometer.
    b. a barometer.
    c. an anemometer.
    d. a hydrometer.

28

80.   In the United States, air masses which cause weather
generally move from the

    a. east to west.
    b. west to east.
    c. north to south.
    d. south to north.

81.   The most prevalent agent of erosion on the earth's
surface is

    a. wind.
    b. moving glaciers.
    c. running water.
    d. falling rocks.

82.   Which one of the following is MOST likely to make a rock
break open?

    a. Dew evaporating on the rock
    b. Tree leaves decaying on the rock
    c. Snow melting in a crack in the rock
    d. Water freezing in a crack in the rock

CONTINUE TO THE NEXT PAGE

Look at the information in the diagram below and answer the two questions.

WEATHER DATA FOR SUN CITY

Day		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Time		Noon	Noon	Noon	Noon	Noon	Noon	Noon
Cloudiness	☁				☲	☁☁	☁	🌧
Temperature. °F	80° 60° 40°							
Atmospheric Pressure milli bars	1040 1020 1000							
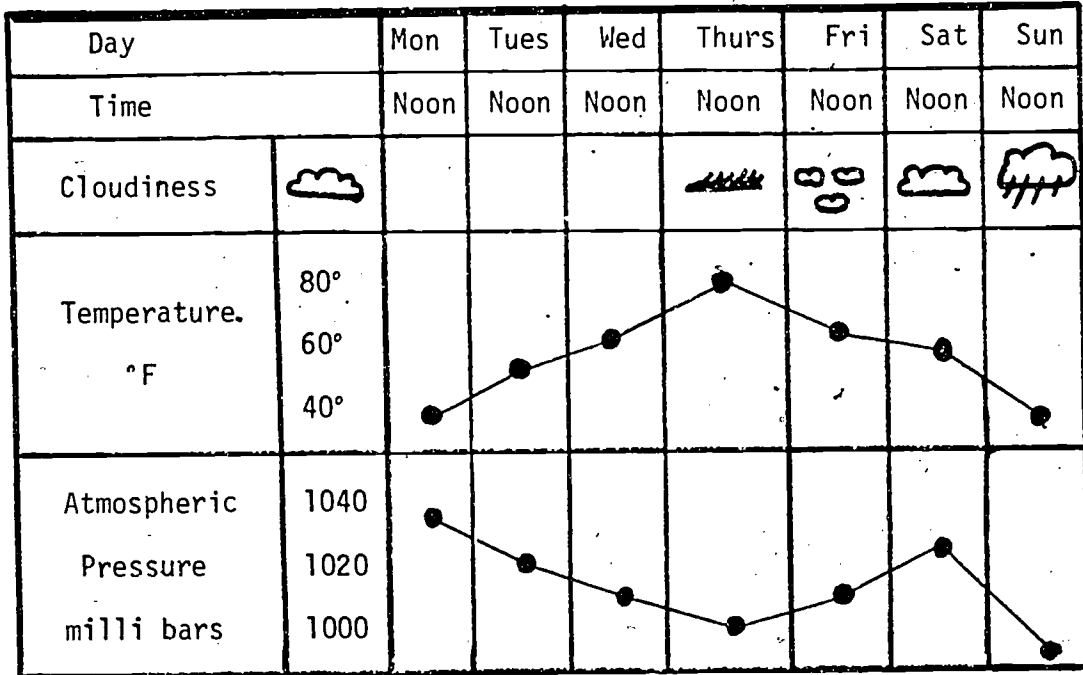
83. Which one of the following conditions might have predicted rain on Sunday?

a. The pressure was dropping, and the temperature was rising.
b. The pressure was rising, and the temperature was dropping.
c. The pressure was dropping, and the temperature was dropping.
d. The pressure was rising, and the temperature was rising.

84. Look at the diagram for the days <u>Monday through Thursday</u>. Choose the best description of the relationship between temperatures and pressure on those days.

a. As the temperature rose, the pressure remained the same.
b. As the pressure rose, the temperature remained the same.
c. As the pressure rose, the temperature dropped.
d. As the temperature rose, the pressure dropped.

30

85. Many times when road builders cut into hills, they notice various layers of soil and rocks. These layers are probably caused by

   a. the machinery picking up the lighter materials first as it is easier.
   b. different amounts of rainfall each year.
   c. deposits of various layers over many years during periods of time in the earth's history.
   d. heavier materials settling faster.
   e. the spinning of the earth causing the lighter materials to come to the surface.

86. Some people think that the solution to coal, gas and oil shortages is to switch over to electricity. In other words, if we run out of gas and oil, we can just switch over to electric cars. What is wrong with this idea?

   a. Most electricity is produced from coal, gas and oil.
   b. If we switch over to electricity, many people will lose their jobs.
   c. It has been proven that it is impossible to build electric cars in great quantities.
   d. Electricity is far too expensive.

87. Which of the following is NOT true about a hypothesis?

   a. It is testable.
   b. It is an intelligent guess.
   c. It is one step in the scientific process.
   d. It is a proven statement.

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Look at the drawing of a metal pitcher that has been sitting on a table for 20 minutes. Using ONLY the evidence in the drawing, answer the two questions.

--- moisture
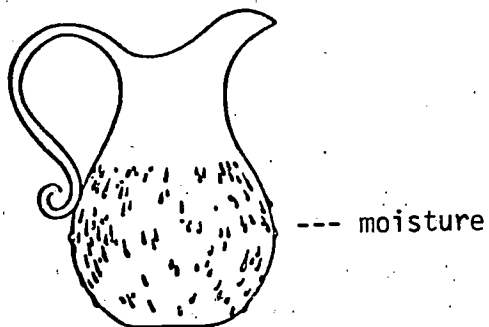
88. The pitcher is full.

    a. Probably true
    b. Probably false
    c. Cannot tell from the drawing.

89. There is something cold inside the pitcher.

    a. Probably true
    b. Probably false
    c. Cannot tell from the drawing.

32

90.   To determine the average length of a fish called a bluegill
       in a pond, it would be most important to

       a. know the exact size of the pond.
       b. know which animals prey on bluegills.
       c. use a large sample of bluegills.
       d. have several people measuring the length of bluegills.

91.   Four bricks are placed in full sunlight at 10 a.m. The
       bricks are colored white, yellow, blue, and black. Which
       brick will have stored the most heat energy by 2 p.m.?

       a. White brick
       b. Yellow brick
       c. Blue brick
       d. Black brick

92.   If ice with a temperature of 0°C (Celsius) is in the process
       of melting, what is the approximate temperature the water
       that is forming will have?

       a. -5°C
       b. 0°C
       c. 7°C
       d. 32°C

33

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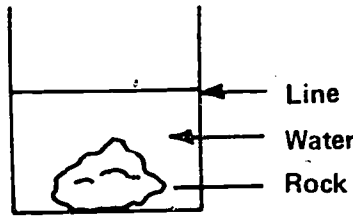
93. When a rock is put into a pail of water, the water comes up to the line as the picture above shows. If the rock is broken into three pieces, which of the pictures below shows how high the water is?
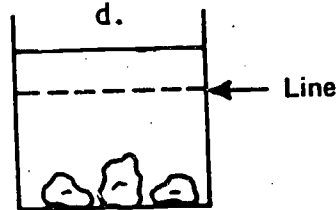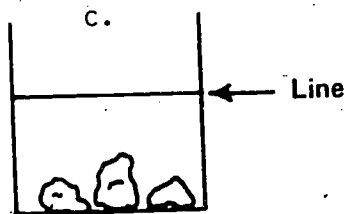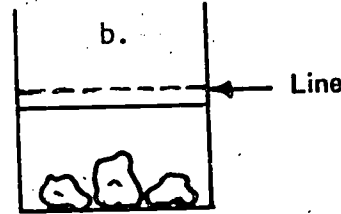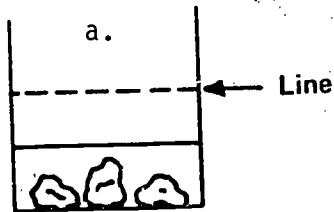
94. Some grape leaves were accidentally sprayed with paint. Those leaves did not get moldy. Other unsprayed grape leaves did get moldy. This discovery led to a way to protect fruit trees and vines from many diseases caused by mold.

This shows that

a. unexpected results are sometimes useful.
b. science and technology work together.
c. scientific laws are the result of careful experimentation.
d. measurement is important in science.

34

95. A town that was once located on the mouth of a river is now several kilometers inland from the sea. This change probably occurred as a result of

    a. a drop in the level of the ocean.
    b. a dam being built on the upstream side of the town.
    c. a buildup of soil deposited by the river.
    d. sand being deposited by dust storms.

96. Most cells contain all of the following EXCEPT

    a. nucleus.
    b. tissue.
    c. membrane.
    d. cytoplasm.

97. It is known that certain gases condense around crystals. What is this knowledge used for?

    a. Detecting radio signals
    b. Seeding clouds to make rain
    c. Making certain crops mature faster
    d. Measuring ocean depths

98. If someone tells you that her sprained ankle hurts, she is communicating to you

    a. an inference.
    b. a hypothesis.
    c. an observation.
    d. a measurement.

35

99. Why is it cooler to wear light-colored clothes in the summer?

    a. Light-colored clothes let more air in.
    b. Light-colored clothes prevent sweating.
    c. Light-colored clothes are not as heavy as dark-colored clothes.
    d. Light-colored clothes reflect more sunlight than dark-colored clothes.

100. Look at the four pictures below. Each shows a battery, a bulb, and a switch. Which bulb will light when the switch is closed?

a.

b.

c.

d.

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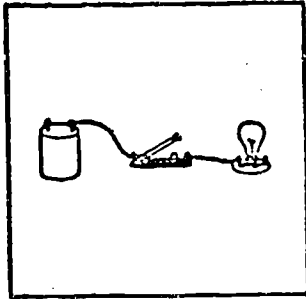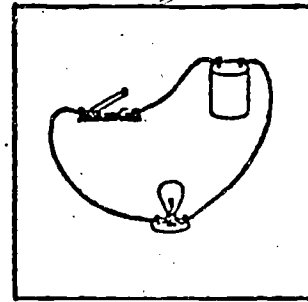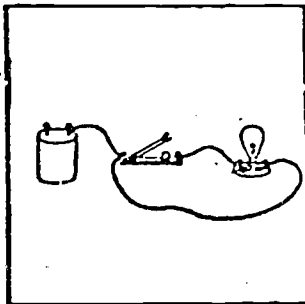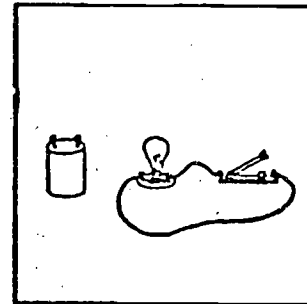
101.   If a scientist needs to conduct an experiment, which of
       the following would indicate the proper sequence of tasks
       he/she should perform?

       a.   Experiment, record data, interpret the data.
       b.   Record data, draw conclusions, write a hypothesis.
       c.   Design an experiment, interpret the data, conduct
            the experiment.
       d.   Interpret data, record the data, draw conclusions.

102.   Tom wanted to find out whether plants can grow better in
       the dark or in the light. He put a pot with 6 radish
       seeds in a dark room and a pot with 6 bean seeds on the
       window sill.
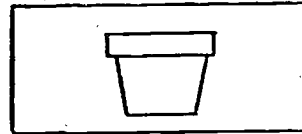
          radish seeds   bean seeds

       He added the same amount of water to both pots. The bean
       seeds grew better than the radish seeds, so Tom said his
       plants grew in the light.

       One of the things Tom should have done to be able to say
       this and be correct is:

       a.   watered both pots more.
       b.   watered the radish seeds more.
       c.   put the same kind of seeds in both pots.
       d.   grown the seeds in water instead of soil.

103. Which statement best describes how the earth's surface changes over billions of years?

    a. A flat surface is gradually pushed up into steeper and steeper mountains until the world is covered with mountains.
    b. Very steep mountains gradually wear down until most of the world is worn down to sea level.
    c. Very steep mountains gradually wear down to flat surfaces that may be again pushed up into mountains, and so on over and over again.
    d. Very steep mountains and flat plains stay side by side for billions of years with little change.

104. Which one of the following is not made up of atoms?

    a. Molecules
    b. Air
    c. Heat
    d. Gasoline

105. Over the past 200 years, the greatest threat to the natural environment has been from

    a. germs.
    b. insects.
    c. man.
    d. predators.

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CONTINUE TO THE NEXT PAGE

, 106.   Here is a picture of three earthworms and two piles of dirt. One of the piles of dirt is dry and one is moist.
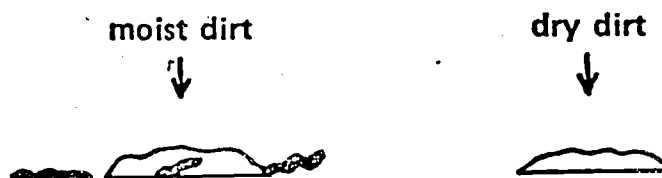
moist dirt   dry dirt

Suppose you experiment. No matter where you place the earthworms, they end up in the moist dirt.

Which one is an observation?

a. The earthworms were thirsty.
b. Living things need water.
c. Animals that crawl need moist dirt.
d. The earthworms moved toward the moist dirt.

107.   The dotted line is level. If the wagon starts rolling by itself down the hill, what is the FARTHEST it could go?

a. 1
b. 2
c. 3
d. 4

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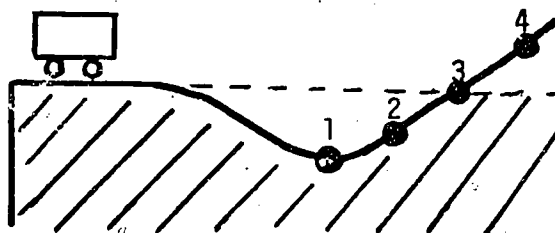
108.   A large factory begins to empty industrial waste into the
        Illinois River. Later, it is found that there are no young
        catfish downstream from this factory. However, the number
        of large catfish downstream is about the same as the number
        of large catfish upstream.

        It is likely that the industrial waste

        a. prevents spawning.
        b. lowered the temperature of the river.
        c. has no effect on catfish growth.
        d. has decreased the death rate of the young catfish.

109.   Two identical springs are arranged as shown. If a weight
        is suspended as shown in the picture, which of the following
        will occur?
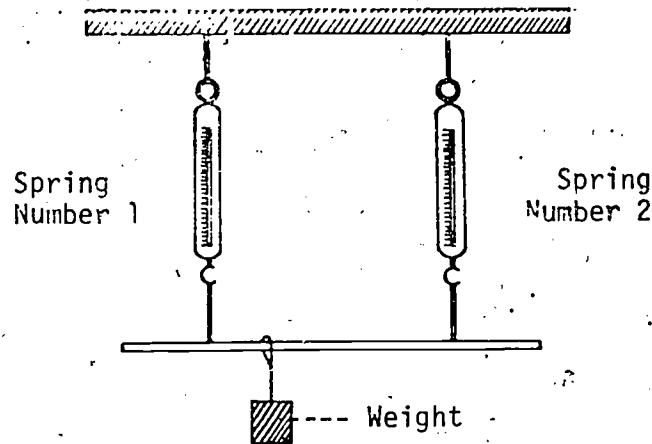
        a. Spring Number 1 stretches more.
        b. Spring Number 2 stretches more.
        c. Both springs will stretch the same distance.
        d. One cannot predict the amount the springs will
            stretch.

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110.   A brick wall absorbed energy, and its temperature increased.
       Later the brick wall cooled to its original temperature.
       Compared to the amount of energy absorbed, the energy given
       off in cooling will be

       a.   greater.
       b.   less.
       c.   equal.
       d.   impossible to determine.

S T O P

DO NOT CONTINUE UNTIL TOLD TO DO SO.

Part 2; Section 1
Student Questionnaire

DIRECTIONS: This section contains items about you and your opinions. For each item, read the question and the answer choices. Then, darken the bubble of your choice on the answer sheet. There are 27 student questionnaire items. You will have 15 minutes. READY, BEGIN.

111. Are you male or female?

(A) Male
(B) Female

112. How often do you read books about science other than the ones you read for school?

(A) Just about every day
(B) Once or twice a week
(C) Once or twice a month
(D) Once or twice a year
(E) Rarely or never

113. Which group do you belong to?

(A) White American
(B) Black American
(C) American of Cuban, Mexican, Puerto Rican or other Latin American descent
(D) Oriental American
(E) Other

114. About how many hours a day do you watch TV?

(A) More than 4 hours
(B) Between 3 and 4 hours
(C) Between 2 and 3 hours
(D) Between 1 and 2 hours
(E) Less than an hour

115. Out of the 46 items in the science test, how many do you think you answered correctly?

(A) 0-9
(B) 10-18
(C) 19-27
(D) 28-36
(E) 37-46

116. Out of the 46 items in the science test, how low could you score and still be satisfied with the results.

(A) 0-9
(B) 10-18
(C) 19-27
(D) 28-36
(E) 37-46

117. How often do you watch TV documentary programs about nature, medicine, the solar system, or the universe?

A. Just about every day
B. Once or twice a week
C. Once or twice a month
D. Once or twice a year
E. Rarely or never

118. When you perform well on a science assignment at school, it is because

A. you are good at it.
B. you worked very hard.
C. you were lucky.
D. the assignment was easy.

119. When you perform poorly on a science assignment at school, it is because

A. you are not very good at it.
B. you did not work hard enough.
C. you were unlucky.
D. the assignment was hard.

120. How many children are there in your family?

A. Five or more
B. Four
C. Three
D. Two
E. I am an only child.

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121. How often do you talk to your parents about science?

    A.   Never or hardly at all
    B.   Once or twice a month
    C.   Once or twice a week
    D.   Just about every day

122. Are you studying science in school this year?

    A.   Yes
    B.   No

123. How many semesters of science have you had in high school?

    A.   None
    B.   One or two
    C.   Three or four
    D.   Four or five
    E.   Six or more

124. Does your mother and/or father work in some science-related area such as medicine, chemistry, or research?

    A.   Yes
    B.   No

125. How often do you do science projects other than the ones you do for school?

    A.   Just about every day
    B.   Once or twice a week
    C.   Once or twice a month
    D.   Once or twice a year
    E.   Rarely or never

126. When was your last science class in school?

    A.   Recently
    B.   Last semester
    C.   Last school year
    D.   A few years ago

ANSWER EACH OF THE FOLLOWING QUESTIONS ABOUT HOW YOU FEEL OR WHAT YOU THINK. THERE ARE NO RIGHT OR WRONG ANSWERS.

127. Knowledge of science is important to me because it helps me get good grades.

    A.   Strongly agree
    B.   Agree
    C.   Neither agree nor disagree
    D.   Disagree
    E.   Strongly disagree

128. Knowledge of science is important to me because it helps me understand the world around me.

    A.   Strongly agree
    B.   Agree
    C.   Neither agree nor disagree
    D.   Disagree
    E.   Strongly disagree

129. Knowledge of science is important to me because it impresses my friends.

    A.   Strongly agree
    B.   Agree
    C.   Neither agree nor disagree
    D.   Disagree
    E.   Strongly disagree

130. Knowledge of science is important to me because it's fun to learn.

    A.   Strongly agree
    B.   Agree
    C.   Neither agree nor disagree
    D.   Disagree
    E.   Strongly disagree

131. Knowledge of science is important to me because it gets approval from my teacher

    A.   Strongly agree
    B.   Agree
    C.   Neither agree nor disagree
    D.   Disagree
    E.   Strongly disagree

132. Knowledge of science will impress my friends.

    A.   Strongly agree
    B.   Agree
    C.   Neither agree nor disagree
    D.   Disagree
    E.   Strongly disagree

133. Knowledge of science will get me good grades.

   A.   Strongly agree
   B.   Agree
   C.   Neither agree nor disagree
   D.   Disagree
   E.   Strongly disagree

134. Knowledge of science will help me understand the world around me.

   A.   Strongly agree
   B.   Agree
   C.   Neither agree nor disagree.
   D.   Disagree
   E.   Strongly disagree

135. Knowledge of science will be fun to learn.

   A.   Strongly agree
   B.   Agree
   C.   Neither agree nor disagree
   D.   Disagree
   E.   Strongly disagree

136. Knowledge of science will get me the approval of my teacher.

   A.   Strongly agree
   B.   Agree
   C.   Neither agree nor disagree
   D.   Disagree
   E.   Strongly disagree

137. Knowledge of science will help me get a good job later in life.

   A.   Strongly agree
   B.   Agree
   C.   Neither agree nor disagree
   D.   Disagree
   E.   Strongly disagree

LMP3810f

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PART 2   SECTION 2

MATHEMATICS TEST

DIRECTIONS: This section contains mathematics items. For each item, read the
question and the answer choices. Then, darken the bubble of your choice on
the answer sheet. There are 49 mathematics items. You will have 45 minutes.
READY, BEGIN.

45

138. Multiply:

 2,037
x   82

A. 167,770

B. 20,370

C. 230,034

D. 167,034

139. Which fraction is the largest?

A. $\frac{2}{3}$

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

C. $\frac{4}{5}$

D. $\frac{5}{8}$

140. Twenty cents is what part of $1.00?

A. $\frac{1}{20}$

B. $\frac{1}{9}$

C. $\frac{1}{5}$

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

E. $\frac{1}{2}$

141. Which is closest to the size of one cm^2?

A. A tennis court

B. The cover of a record album

C. A slice of bread

D. Your thumbnail

142. Tom bought a bicycle last year for $70. This year the same model is selling for 10% more. What is the price of the bicycle this year?

A. $77

B. $80

C. $82

D. $87

143. There are 13 boys and 15 girls in a group. What fractional part of the group is boys?

A. $\frac{13}{28}$

B. $\frac{15}{28}$

C. $\frac{13}{15}$

D. $1\frac{2}{13}$

46

144. In one year, a government department spends the following sums on four projects:

Project A: $11,954,164
Project B: $1,126,055
Project C: $4,170,522
Project D: $750,572

Approximately how many MILLIONS of dollars were spent on these four projects? Give your answer to the nearest MILLION dollars.

A. $16,000,000

B. $17,000,000

C. $18,000,000

D. $19,000,000

145. Multiply: $\frac{7}{14} \times \frac{4}{5}$

A. $\frac{11}{19}$

B. $\frac{2}{5}$

C. $\frac{35}{56}$

D. $\frac{28}{9}$

146. A recipe for punch calls for equal amounts of lemonade, limeade, orange juice, and ginger ale. How many quarts of ginger ale would be needed in order to make two gallons of this punch?

A.   1

B.   2

C.   3

D.   4

147. 80 is what percent of 40?

A.   20%

B.   32%

C.   50%

D.   200%

148. A used car can be bought for cash for $2,850 or on credit with a down payment of $450 and $80 a month for three years. How much MORE would a person pay by buying on credit rather than by buying the car for cash?

A. $400

B. $430

C. $450

D. $470

149. Multiply: $4 \times 1\frac{5}{6}$

    A. $4\frac{5}{6}$

    B. $5\frac{5}{6}$

    C. $7\frac{1}{3}$

    D. $\frac{11}{24}$

150. A parking lot charges 35 cents for the first hour and 25 cents for each additional hour or fraction of an hour. For a car parked from 10:45 in the morning until 3:05 in the afternoon, how much money should be charged?

    A. $1.25

    B. $1.35

    C. $1.65

    D. $1.75

151. Multiply: 0.18
                x 0.9

    A. 1.72

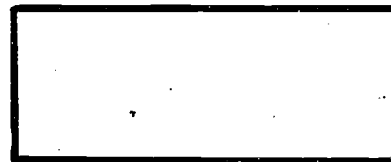   B. 1.62

    C. 0.92

    D. 0.162

152. What is the area of the rectangular region?

5 Units

12 Units

    A. 17 square units

    B. 34 square units

    C. 60 square units

    D. 240 square units

153. Cloth is sold by the square meter. If 6 square meters of cloth cost $4.80, the cost of 16 square meters will be

    A. $12.80

    B. $14.40

    C. $28.80

    D. $52.80

    E. $128

154. In which of these is the order of the numbers from smallest to largest?

    A. 30.99, 31.3, 31.29

    B. 31.29, 30.99, 31.3

    C. 31.29, 31.3, 30.99

    D. 31.3, 31.29, 30.99

    E. 30.99, 31.29, 31.3

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CONTINUE TO THE NEXT PAGE

155. The measure of the smaller angle formed by the two hands of a clock at four o'clock is

A. 45 degrees.

B. 60 degrees.

C. 90 degrees.

D. 120 degrees.

E. 150 degrees.

156. Add: $\frac{1}{2} + \frac{1}{3}$

A. $\frac{1}{5}$

B. $\frac{2}{5}$

C. $\frac{2}{6}$

D. $\frac{5}{6}$

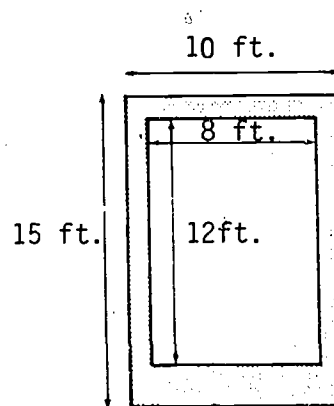157. 2^3 is equal to:

A. 5

B. 6

C. 8

D. 9

E. 16

158. If x is replaced by 3, then the value of $x^2 - 1$ is

A. 2

B. 5

C. 8

D. 11

159. What is the area of the shaded portion of the figure below?

A. 48 square feet

B. 54 square feet

C. 96 square feet

D. 150 square feet

CONTINUE TO THE NEXT PAGE

160. Which of the following pairs of fractions are equivalent?

A. $\frac{5}{8}$ and $\frac{2}{3}$

B. $\frac{3}{5}$ and $\frac{9}{25}$

C. $\frac{4}{5}$ and $\frac{14}{15}$

D. $\frac{3}{5}$ and $\frac{9}{15}$

E. $\frac{1}{2}$ and $\frac{14}{24}$

161. Which one of the following is closest to the SQUARE ROOT of 10?

A. 2.5

B. 2.7

C. 3.2

D. 3.8

162. If there are 300 calories in 9 ounces of a certain food, how many calories are there in a 6-ounce portion of that food?

A. 150

B. 180

C. 200

D. 220

163. Divide: $3\frac{1}{2} \div 2 =$

A. $1\frac{1}{2}$

B. $1\frac{3}{4}$

C. $2\frac{1}{4}$

D. 3

164. John's parents bought a refrigerator for $375. If they pay $20 per month for two years, how much more than $375 will the refrigerator cost them?

A. $ 95

B. $105

C. $200

D. $375

165. $(r + s) - (r - s) =$

A. $2r$

B. $2s$

C. $2r + 2s$

D. $2r - 2s$

50

166. In a given triangle, the measures of two of the angles are 35 degrees and 75 degrees. The measure of the third angle is

A. 40 degrees.

B. 55 degrees.

C. 70 degrees.

D. 95 degrees.

E. 110 degrees.

167. Solve for n: $\frac{12}{26} = \frac{18}{n}$

A. 39

B. 38

C. 32

D. 13

168. A door-to-door sales representative receives 20 percent of the retail value of a sale as commission. What must the total retail sale be if the commission is $60?

A. $120

B. $200

C. $250

D. $300

169. Subtract: $\begin{array}{r} 3\frac{1}{5} \\ -1\frac{4}{5} \\ \hline \end{array}$

A. $1\frac{7}{5}$

B. $2\frac{3}{5}$

C. $1\frac{2}{5}$

D. $2\frac{2}{5}$

170. At the end of the season, the price of lawn chairs was reduced 35%. How much should Mr. Johnson pay for a chair that was originally $10.00?

A. $3.50

B. $5.50

C. $6.50

D. $7.50

171. If a + 3 = b and 3 + c = b, then

A. a is less than c.

B. a is equal to c.

C. a is greater than c.

D. there is not enough information to determine the relation between a and c.

172. $\frac{7}{9}$ equals:

   A. 0.77

   B. 0.78

   C. 0.777

   D. 0.777...

173. Using the scale of 1 yard = $\frac{1}{2}$ inch, a scale drawing is made of a swimming pool 25 yards in length. How many inches long is the pool in the drawing:

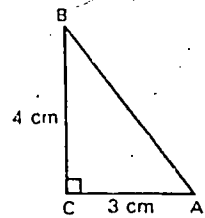   A. $12\frac{1}{2}$

   B. 20

   C. 25

   D. $25\frac{1}{2}$

174. Solve: $3x - 3 = 12$

             $x =$

   A. 3

   B. 5

   C. 9

   D. 15

175. $\frac{3}{5}$ is equal to

   A. 6%

   B. 15%

   C. 30%

   D. 60%

176. In the figure below, what is the area of $\triangle$ ABC?

   A. 6 cm^2

   B. 7 cm^2

   C. 7.5 cm^2

   D. 10 cm^2

   E. 12 cm^2

   A. 47 inches

   B. 60 inches

   C. 72 inches

   D. 15ℂ inches

177. In a school election with three candidates, Joe received 120 votes, Mary received 50 votes, and George received 30 votes. What percentage of the total number of votes did Joe receive?
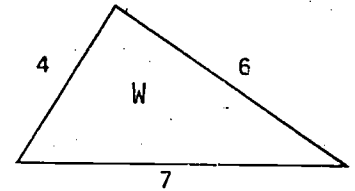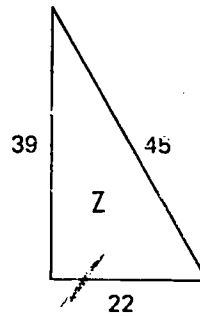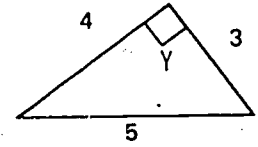
   A. 40%

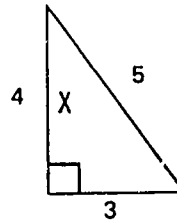   B. 50%

   C. 60%

   D. 70%

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178. (4X + 2) (X - 5) =

    A. $4X^2 + 2X - 5$

    B. $4X^2 - 18X - 10$

    C. $4X^2 - 10$

    D. $4X^2 + 2X - 3$

179. 45% of 180 is

    A. 45

    B. 90

    C. 81

    D. 180

180. Which of the triangles below is/are congruent to triangle X?

A. Only Y

B. Only Y and Z

C. Only Z

D. Only W

E. Only Z and W

53

181. 45% of what number is 90.

    A. 0.20

    B. 40.50

    C. 50

    D. 200

182. What is the volume of a box with a width of 9 cm, a length of 12 cm and a height of 25 cm?

    A. 46 cm^3

    B. 270 cm^3

    C. 460 cm^3

    D. 525 cm^3

    E. 2700 cm^3

183. Three friends go through the same lunch line. In how many different ways can they arrange themselves in the line?

    A. 3

    B. 4

    C. 5

    D. 6

184. A runner ran 3,000 meters in exactly eight minutes. What was the average speed?

    A. 3.75 meters per second

    B. 6.25 meters per second

    C. 16.0 meters per second

    D. 37.5 meters per second

    E. 6?.5 meters per second

185. If a city's property tax is $30.00 per $1,000 of assessed value, the tax on property assessed at $14,900 would be CLOSEST to which amount?
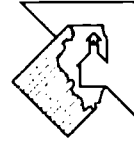
    A. $400

    B. $420

    C. $450

    D. $470

186. Lynn was paid $15 for one week mowing lawns. What other information is needed before you can find out how much Lynn charges per hour?

    A. Lynn worked 2 hours on Monday and 3 hours on Wednesday.

    B. Lynn paid $1.00 to have the lawn mower fixed and 50¢ for gas.

    C. Lynn earned more this week than last week.

    D. Lynn spent 90¢ on ice cream cones.

**Illinois
State Board of
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100 North First Street
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