Kansas City Area Teachers of Mathematics
2018 KCATM Contest

GEOMETRY AND MEASUREMENT TEST
GRADE 5
#51-90

INSTRUCTIONS

- **Do not open this booklet** until instructed to do so.

- Time limit: **15 minutes**

- You **may use calculators** on this test.

- Use **3.14** as the approximation for pi.

- Mark your answer on the answer sheet by **FILLING in the circle.**

- You **may not use rulers, protractors, or other measurement devices** on this test.

Mark your answers for this test from #51 - #90.

Student Name _____ Student Number _____

School _____

51. How many faces does a triangular pyramid have?

    A. 3
    B. 4
    C. 5
    D. 6
    E. None of the above

52. Numbers used to locate a point in the coordinate system are known as:

    A. Ordered Pair
    B. Quadrant
    C. Origin
    D. Coordinate System
    E. None of the above

53. A rectangle has a length of 5ft and width of 3 ft. Find the perimeter of this rectangle.

    A. 6 ft
    B. 7 ft
    C. 10 ft
    D. 16 ft
    E. None of the above

54. Which one is NOT a name for the given figure?

    A. Polygon
    B. Quadrilateral
    C. Parallelogram
    D. Trapezoid
    E. None of the above
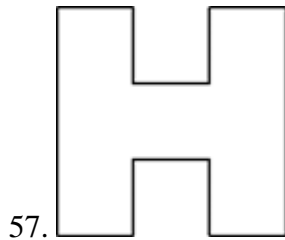
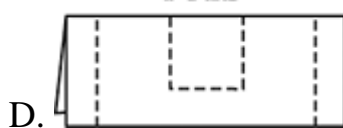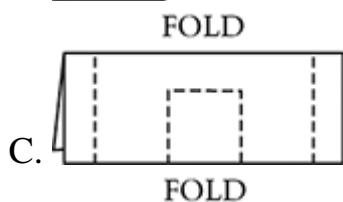55. 12 inches equals =
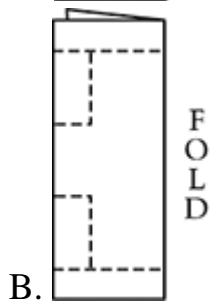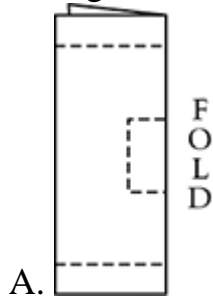
    A. 2 feet
    B. 1 foot
    C. 4 feet
    D. 1 mile
    E. None of the above

56. Calculate the volume for a figure that is 5 ft. by 3 ft. by 4 ft.

 A. 60 cubic feet
 B. 64 cubic feet
 C. 37 cubic feet
 D. 72 cubic feet
 E. None of the above

57.
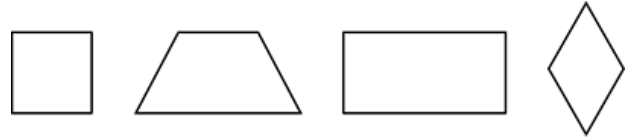
Which figure below, when cut on the dotted lines and unfolded, will look like the figure shown above?
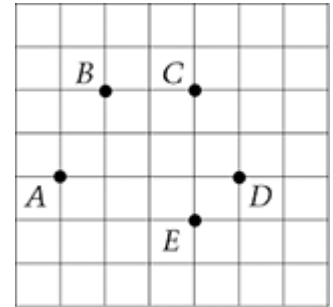
A.

B.

C.

D.

 E. None of the above.

58. Which statement is true about all four shapes shown?
    A. Each shape is a rectangle.
    B. Each shape is a quadrilateral.
    C. Each shape has two pairs of parallel sides.
    D. Each shape has one or more right angles.
    E. None of the above.

59. Pablo connected points, with straight lines, in the following order:

    A to B
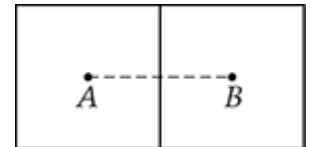   **B to C**
    C to D
    D to A

    What shape did he make?
    A. Hexagon
    B. Pentagon
    C. Rectangle
    D. Trapezoid
    E. None of the above.

60. Each square on the right is 10 units on a side. Points A and B are the centers of the squares. What is the distance between A and B?
    A. 5 units
   B. 10 units
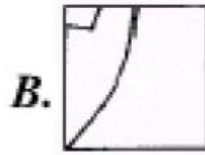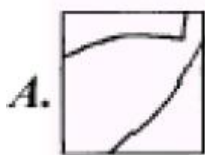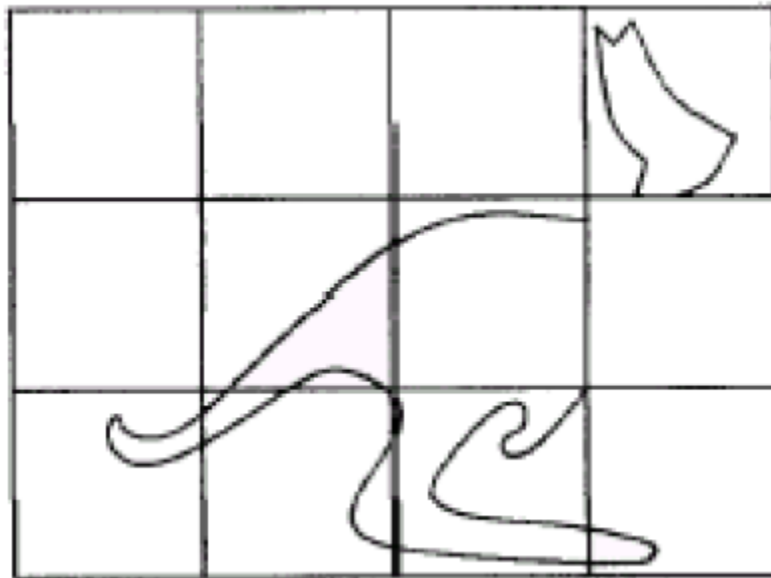   C. 15 units
    D. 20 units
    E. None of the above.

61. How are the right triangle and the rectangle alike?
    A. Each figure has at least one right angle.
    B. Each figure has parallel sides.
    C. Each figure has at least one line of symmetry.
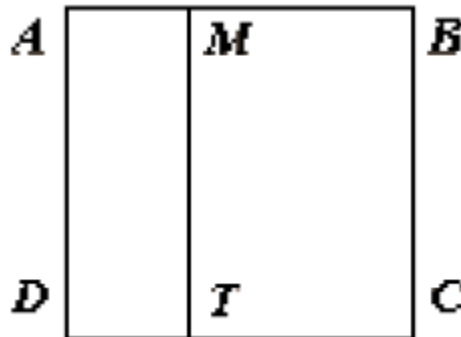   D. Each figure has at least two sides that are the same length.
    E. None of the above

62. Which of the squares was removed from the picture of the Kangaroo below?
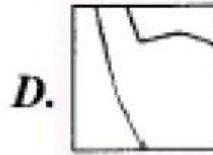
A.   B.   C.   D.

E. None of the above

63. ABCD is a square. Its side is equal to 10cm. AMTD is a rectangle. Its shorter side is equal to 3 cm.

How many centimeters is the perimeter of the square ABCD larger than that of the rectangle AMTD?

A. 14 cm

B. 10 cm

C. 7cm

D. 6cm

E. None of the above.

64. I made a tunnel using some identical cubes (fig.1). When I got bored, I rearranged the tunnel into a complete pyramid (fig.2).
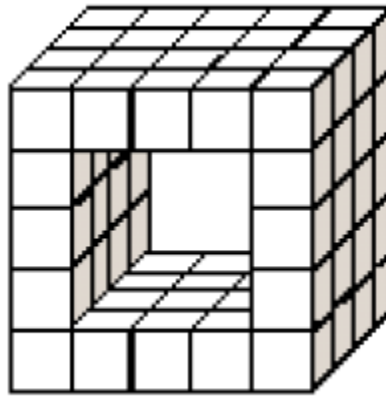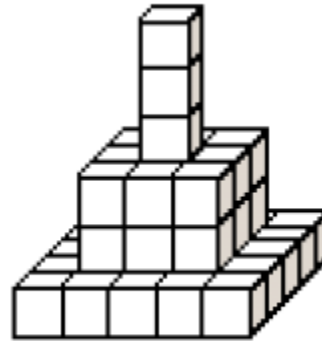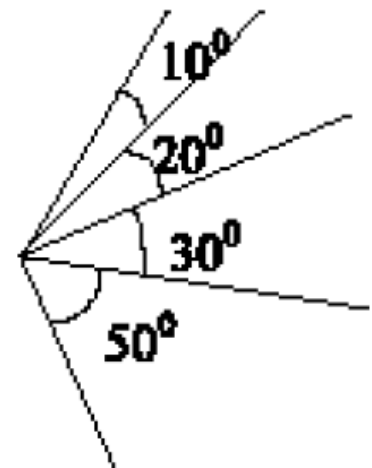

fig.1   fig.2

How many cubes from the original tunnel did I *not* use for the pyramid?
A. 34
B. 29
C. 22
D. 18
E. None of the above.

65. How many angles with different degree measures can be seen in the picture?
A. 6
B. 8
C. 10
D. 11
E. None of the above.

66. An acute triangle is a triangle with _____ acute angles
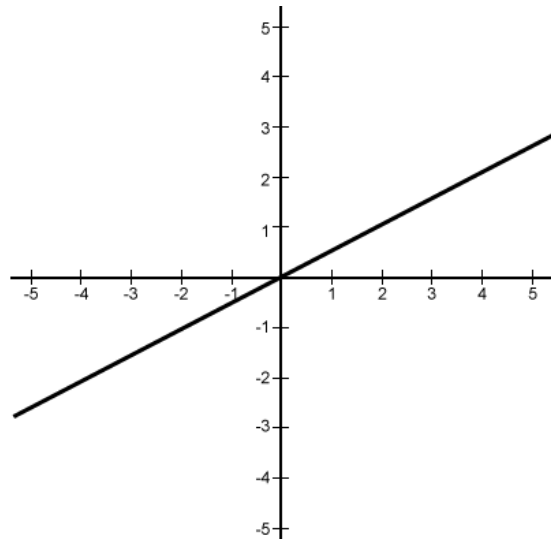A. One
B. Two
C. Three
D. Four
E. None of the above

67. The area of a rectangle equals 1. What is the area of the triangle, which is cut off from the rectangle by the line connecting the midpoints of the two adjacent sides?

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

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

C. $\frac{3}{8}$

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

E. None of the above

68. The line (in the figure) goes through which of the coordinates?

A. (1, 2)

B. (2,1)
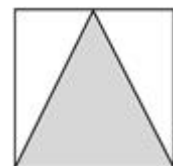
C. (3,4)

D. (4,3)

E. None of the above

69. The height of a building is 25.5 meters. What is the height of the building in centimeters?

   A. 25.5 cm

   B. 255 cm

   C. 2550 cm

   D. 25,500 cm

   E. None of the above

70. If the area of the shaded triangle is 4 square inches, what is the area of the entire square?

A. 2 square inches

B. 4 square inches

C. 8 square inches

D. 16 square inches

E. None of the above

71. The brick in the picture below has been constructed using red and blue cubes of the same size. The outside of the brick is completely red, but all cubes inside are blue. How many blue cubes were used?
    A. 12
    B. 24
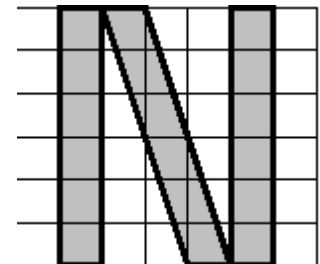   C. 36
    D. 40
    E. None of the above.
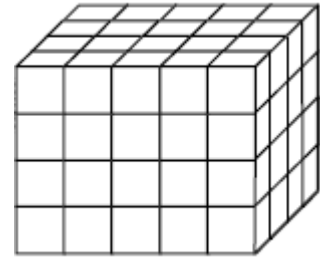
72. What type of angle is shown in the figure to the right?
    A. acute angle
    B. obtuse angle
    C. right angle
    D. straight angle
    E. None of the above
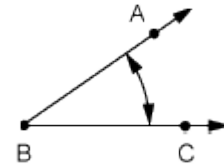
73. If the length of the side of each little square is 1cm, what is the area of the letter N?
    A. 15
    B. 16
    C. 17
    D. 18
    E. None of the above.
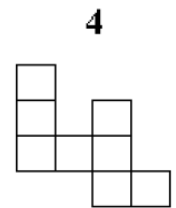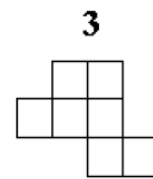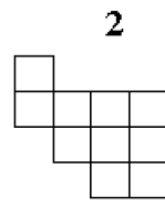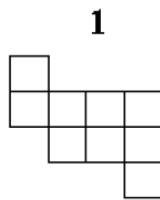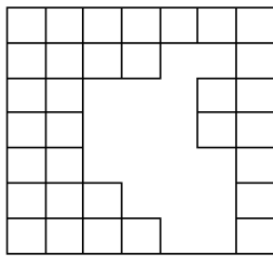
74. If each cube shown measures 2 inches on a side, what is the total volume of all the cubes combined?
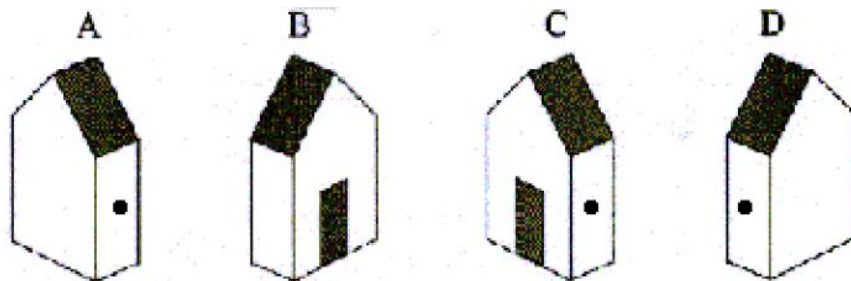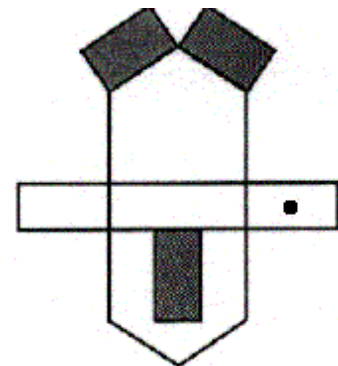
    A. 12 cubic in
    B. 24 cubic in
    C. 72 cubic in
    D. 96 cubic in
    E. None of the above

75. Which two of these figures can one use to cover exactly the empty area?

| 1 | 2 | 3 | 4 |

A. 1 + 3
B. 2 + 4
C. 2 + 3
D. 1 + 4
E. None of the above

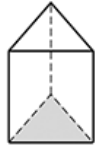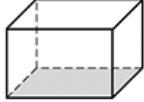76. The picture on the right has been drawn on paper and cut out to make a house. Which of the houses did it become?

A   B   C   D   E. None of
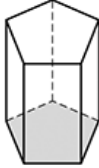   the above

77. Which statement is false?
    A. A parallelogram is a quadrilateral
    B. Rectangles, squares and rhombuses are all parallelograms
    C. A trapezoid is a parallelogram
    D. Some quadrilaterals are parallelograms
    E. None of the above

78. The table shows the number of edges for each prism. What is the number of edges for a prism if the bottom face has 7 sides?

    A. 18
   B. 20
    C. 21
    D. 22
    E. None of the above

Shape	Number of Edges
Triangular Prism	9
Rectangular Prism	12
Pentagonal Prism	15

79. A circle, a square, and a triangle are drawn overlapping on the plane. What is the maximum possible number of intersection points determined by these three figures?

    A. 14
    B. 16
    C. 18
    D. 20
    E. None of the above

80. The picture shows Rachel's path to school. How many right angle turns does Rachel make to get to school?

    A. Two
    B. Three
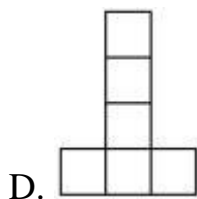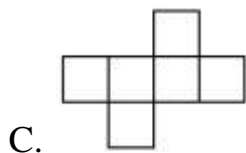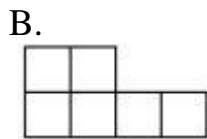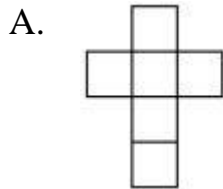   C. Five
    D. Seven
    E. None of the above
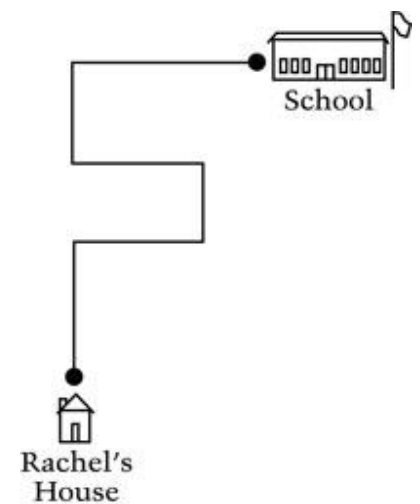
81. Two 9cm x 9cm squares overlap to form a 9cm x 13cm rectangle, as show. What is the area of the region where the two squares overlap?

A. $36cm^2$
B. $45 cm^2$
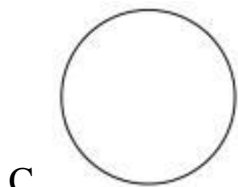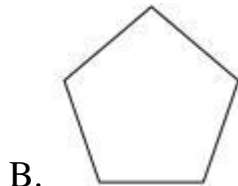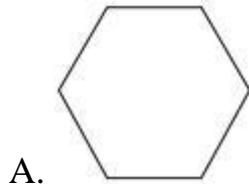C. $63 cm^2$
D. $72 cm^2$
E. None of the above.

82. Which of the following could **NOT** be folded into a cube?

A.

B.

C.

D.

E. None of the above.

83. A cow is tied to a post in the middle of a flat meadow. If the cow's rope is several meters long, which of the following figures shows the shape of the region where the cow can graze?
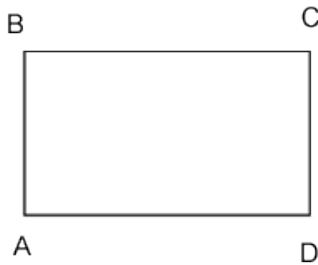
A.

B.

C.

D.

E. None of the above

84. The triangle below can best be described as

B

A

C
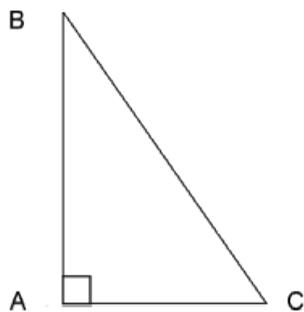
    A. an acute triangle.
    B. a right triangle.
    C. an obtuse triangle.
    D. an isosceles triangle
    E. None of the above

85. Rectangle ABCD is a special kind of parallelogram because

B   C

A   D

  A. It has all of the properties of a parallelogram.
  B. All of its angles are 90 degrees in measure.
  C. Its diagonals are congruent in length.
  D. All of the above
  E. None of the above

86. Side AC of the triangle on the right measures 4 units and side
    BC measures 3 units.
    If you plot the triangle on a coordinate plane with point A at
    the origin (0, 0) and point C at (4, 0), what are the
    coordinates of point B?
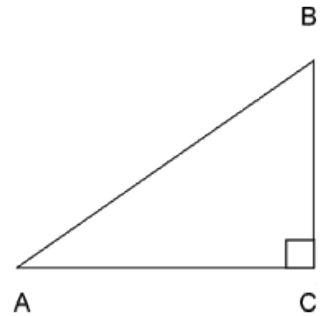
  A. (3, 4)
  B. (4, 3)
  C. (0, 7)
  D. (7, 0)
  E. None of the above

87. A rectangle is divided into exactly 12 identical squares arranged in three rows.
    What is the perimeter of the rectangle, if the perimeter of one little square is 12
    cm?
  A. 42 cm
  B. 108 cm
  C. 60 cm
  D. 24 cm
  E. None of the above

88. Which statement is false?
  A. A parallelogram is a quadrilateral
  B. Rectangles, squares and rhombuses are all parallelograms
  C. A trapezoid is a parallelogram
  D. Some quadrilaterals are parallelograms
  E. None of the above

89.I have three transparent sheets with the following opaque black patterns:
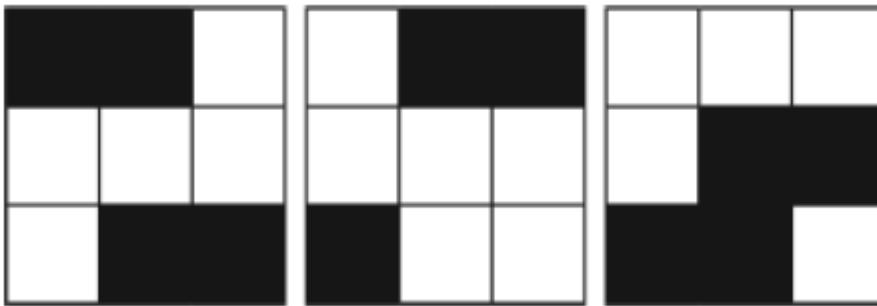
I can only rotate the sheets, I CANNOT flip them over. If I rotated the sheets and then put them one on top of the other, what would be the maximum possible number of black squares I could see if looking down on all the sheets?

   A. 5
   B. 7
   C. 8
   D. 9
   E. None of the above

90. If the shape in Figure 1 is cut into identical triangles as in Figure 2, how many triangles will one get?

   A. 8
   B. 12
   C. 14
   D. 15
   E. None of the above
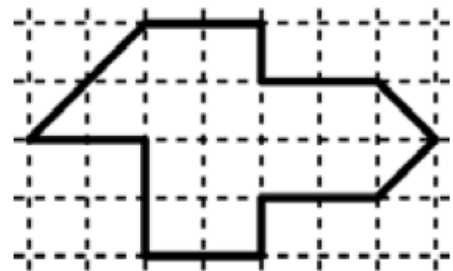

Figure 1

Figure 2