

Kansas City Area Teachers of Mathematics  
2017 KCATM Contest

**GEOMETRY AND MEASUREMENT TEST  
GRADE 4**

**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.

Student Name \_\_\_\_\_ Student Number \_\_\_\_\_

School \_\_\_\_\_

51. Your teacher is putting a 1" (1 inch) border around the classroom bulletin board. The bulletin board is in the shape of a rectangle 12 feet wide and 4 feet high. **About how much border will your teacher need?**

- A. 48 feet    B. 36 feet    C. 16 feet    D. 32 feet    E. None of the above

52. Mallory is 5 feet tall. Joseph is 58 inches tall. Pete is  $1\frac{1}{2}$  yards tall.  
**Who is the shortest?**

- A. Mallory    B. Joseph    C. Pete    D. They are all the same size.  
E. None of the above

53. **How many sides does a decagon have?**

- A. 5    B. 7    C. 8    D. 10    E. None of the above

54. The total mass of a banana, a grapefruit, and some cherry tomatoes is 1,138 grams.  
**How many kilograms is this?**

- A. 1.138 kg    B. 11.38 kg    C. 0.1138 kg    D. 113.8 kg  
E. None of the above

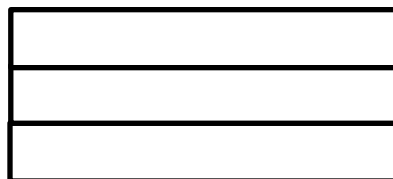
55. Students in a math class were measuring different objects in the class. **Which measure is a reasonable height of a student desk?**

- A. 2 meters    B. 4 feet    C. 30 cm    D. 30 inches    E. None of the above

56. **How much fencing** is needed to enclose a rectangular garden 13m long and 5m wide?

- A. 18m    B. 36m    C. 65m    D. 130m    E. None of the above

57. **How many rectangles are there in the figure below?**

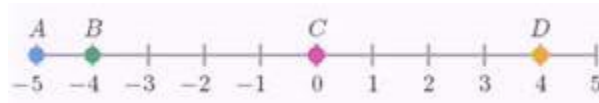


- A. 3    B. 4    C. 5    D. 6    E. None of the above

58. How many 1 inch squares make up one square foot?

- A. 144
- B. 12
- C. 3
- D. 9
- E. None of the above

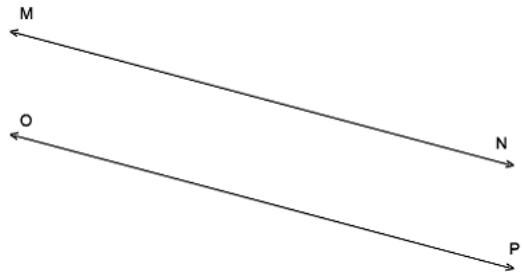
59. Which segment below has a length of 5 units?



- A.  $\overline{AB}$
- B.  $\overline{BC}$
- C.  $\overline{CD}$
- D.  $\overline{AD}$
- E. None of the above

60. Line MN and line OP are what type of lines?

- A. Perpendicular
- B. Intersecting
- C. Parallel
- D. Acute
- E. None of the above



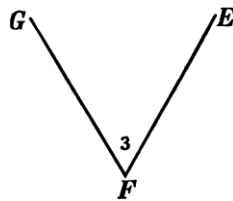
61. Name the figure:

- A. Line ST
- B. Ray TS
- C. Segment TS
- D. Ray ST
- E. None of the above



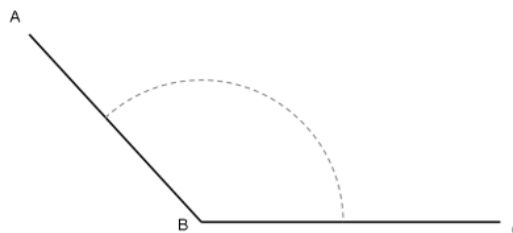
62. Name the angle:

- A.  $\angle G$
- B.  $\angle EGF$
- C.  $\angle GEF$
- D.  $\angle GFE$
- E. None of the above



63. Identify the type of angle:

- A. Acute
- B. Right
- C. Obtuse
- D. Straight
- E. None of the above



64. In a **pentagon**, how many diagonals can be drawn from one vertex?

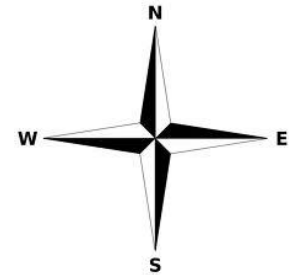
- A. 2      B. 3      C. 4      D. 5      E. None of the above

65. In a **pentagon**, what is the **total number of diagonals** that can be drawn with no duplicates?

- A. 10      B. 5      C. 8      D. 6      E. None of the above

66. You and your friend are watching the ducks at a pond. Your friend decides to go to the pool. Which of the following matches how your friend would **get from the duck pond to the pool** using the cardinal directions and the grid coordinates?

3	Duck Pond	Picnic Area		Park
2			Play Area	
1	Zoo			Pool
	A	B	C	D



- A. Start at A3, go east to D3, turn north and go to the pool located at D1.
- B. Start at A3, go north to the zoo located at A1, turn west and go to the pool located at D1.
- C. Start at A3 and go south to A2, turn east and go to D2.
- D. Start at A3, go south to the zoo located at A1, turn east and go to the pool located at D1.
- E. None of the above

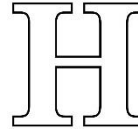
67. Julian and Kiley live the same distance from the neighborhood park. They live 1,346 ft. apart. Julian lives directly east of the park and Kiley lives directly west of the park. **How many feet does Julian live from the park?**

- A. 1,346 ft.      B. 2,692 ft.      C. 336.5 ft.      D. 673 ft.      E. None of the above

68. What is the **area of a square** with a perimeter of 12 meters?

- A. 3 m<sup>2</sup>      B. 6 m<sup>2</sup>      C. 9 m<sup>2</sup>      D. 144 m<sup>2</sup>      E. None of the above

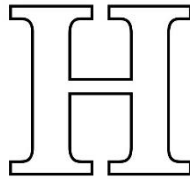
69. The letter “H” has **how many lines of symmetry?**



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

70. The letter “H” has the following **type(s) of symmetry?**

- A. Vertical reflection
- B. Horizontal reflection
- C. Point symmetry
- D. All of these
- E. None of the above

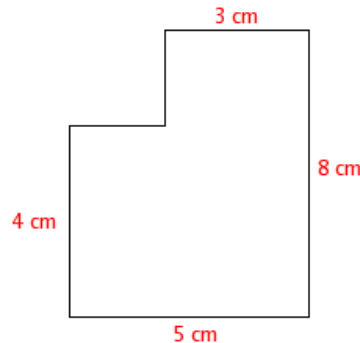


71. **What is the name** of a 4-sided figure with 4 congruent sides and 4 right angles?

- A. Rectangle
- B. Rhombus
- C. Square
- D. Trapezoid
- E. None of the above

72. Find the **perimeter** of the figure:

- A. 20 cm
- B. 21 cm
- C. 24 cm
- D. 26 cm
- E. None of the above

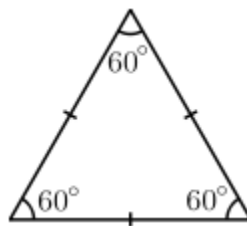


73. Jaci is sewing strips of ribbon together. Each strip is 8 inches long. **How many strips does she need to make a ribbon 4 feet long?**

- A. 5
- B. 6
- C. 7
- D. 8
- E. None of the above

74. **Name the type of triangle:**

- A. Acute triangle
- B. Right triangle
- C. Obtuse triangle
- D. Equilateral triangle
- E. None of the above



75. Alex is building a dog pen for his dog. If the pen measures 6 ft. by 12 ft., **what is the perimeter of the pen in yards?**

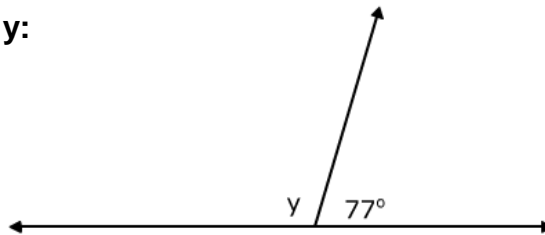
- A. 6 yards    B. 12 yards    C. 36 yards    D. 72 yards    E. None of the above

76. **Compare a hexagon and an octagon:**

- A. The number of sides of a hexagon > the number of sides of an octagon.  
 B. The number of sides of a hexagon < the number of sides of an octagon.  
 C. The number of sides of a hexagon = the number of sides of an octagon.  
 D. The number of sides of an octagon < the number of sides of a hexagon.

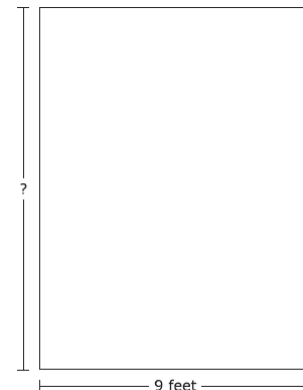
77. **Find the missing angle measure, y:**

- A.  $77^\circ$   
 B.  $103^\circ$   
 C.  $180^\circ$   
 D.  $13^\circ$   
 E. None of the above



78. The area of the rectangular sandbox at Davien's school is 108 sq. feet. The width of the sandbox is 9 ft. **What is the length, in feet, of the sandbox?**

- A. 27 ft.  
 B. 12 ft.  
 C. 6 ft.  
 D. 36 ft.  
 E. None of the above



79. What is the **volume** of a rectangular prism with side lengths: 6m by 6m by 8m?

- A. 288 meters                      B. 288 sq. meters                      C. 288 cubic meters  
 D. 20 units                          E. None of the above

80. The scale drawing is 1 in. = 4 ft. What are the **actual dimensions** of a rectangular drawing that is 6 inches by 5 inches?

- A. 11 ft. by 11 ft.                      B. 27 ft. by 20 ft.                      C. 24 ft. by 20 ft.  
 D. 10 ft. by 9 ft.

**Convert the following measurements**, and then **select the set of answers that is listed correct in order of your answers.**

81. **2.5 km = \_\_\_\_\_ m**

- A. 25m      B. 250m      C. 2500m      D. 0.025 m      E. None of the above

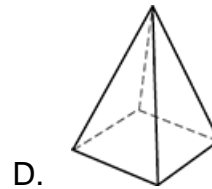
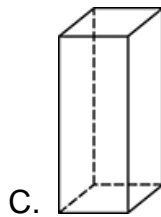
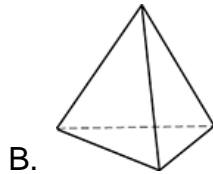
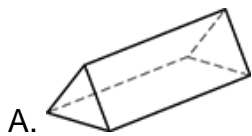
82. **1 gallon = \_\_\_\_\_ quarts**

- A. 4 quarts      B. 6 quarts      C. 8 quarts      D. 10 quarts      E. None of the above

83. **1 cup = \_\_\_\_\_ ounces**

- A. 4 ounces      B. 6 ounces      C. 8 ounces      D. 12 ounces      E. None of the above

84. **Which shape is a square pyramid?**



E. None of the above

85. What is the area of a triangle with a base of 37m and a height of 10m?

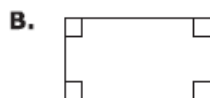
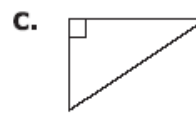
- A.  $370m^2$       B.  $380m^2$       C.  $420m^2$       D.  $740m^2$       E. None of the above

86.  $3 \text{ ft. } 11 \text{ in.} + 2 \text{ ft. } 7 \text{ in.} =$

- A. 1 ft. 4 in.      B. 5 ft. 6 in.      C. 6 ft. 6 in.      D. 5 ft. 11 in.      E. None of the above

87. Which shapes below have perpendicular lines?

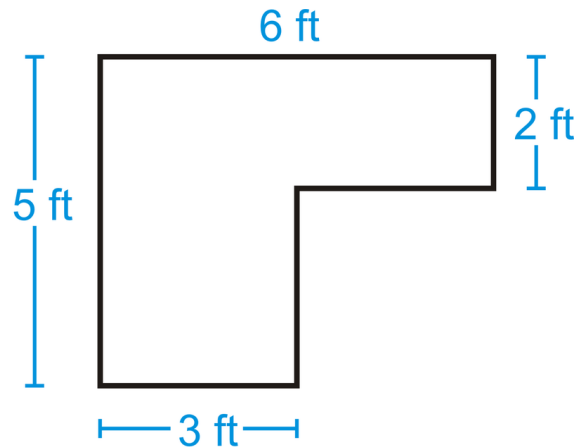
- A. Shapes A, C, E  
 B. Shapes C, D, E  
 C. Shapes A, B, C  
 D. Shapes D, A, E  
 E. None of the above



88. The Amazon River is about 6,516 km long. The Mississippi River is about 3,775 km long. What is the difference, in kilometers, between these two lengths?

- A. 10,291 km      B. 2741 km      C. 24,597,900 km  
D. 1.726 km      E. None of the above

89. What is the area of this shape?



- A. 16 sq. ft.      B. 21 sq. ft.      C. 30 sq. ft.      D. 42 sq. ft.  
E. None of the above

90. What is the difference in the perimeter of an octagon with all side lengths 6m and an equilateral triangle with a side length of 6m?

- A. 12 m      B. 18 m      C. 24 m      D. 30 m      E. None of the above