Kansas City Area Teachers of Mathematics
2017 KCATM Contest

GEOMETRY AND MEASUREMENT TEST
GRADE 5

INSTRUCTIONS

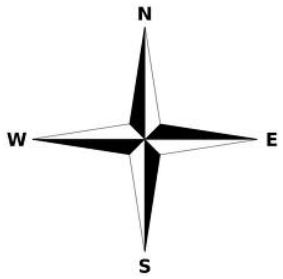
- **Do not open this booklet** until instructed to do so.
- Time limit: **15 minutes**
- You **may use calculators** on this test.
- Use **3.14** as the approximation for pi.
- Mark your answer on the answer sheet by **FILLING in the circle.**
- You **may not use rulers, protractors, or other measurement devices** on this test.

Student Name _____ Student Number _____

School _____

51 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?

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



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

52. Julian and Kiley live the same distance from the neighborhood park. The 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

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53. 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. 32 feet D. 16 feet E. None of the above

54. Mallory is 5 feet tall. Joseph is 58 inches tall. Pete is 1 ½ yards tall.
Who is the taller?

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

55. **How many sides does a hexagon have?**

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

56. The total mass of one student's backpack in middle school is 5.5 kg. How many pounds is the backpack if a kilogram is approximately 2.2 pounds?

A. 12.1 lbs. B. 3.3 lbs. C. 0. 8.8 lbs. D. 10.75 lbs.
E. None of the above

57. 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

58. If the **5 x 5 x 5 Rubik's Cube is painted green for St. Patrick's Day, how many of the small squares (cubes) would have only one face painted green?**

A. 125 B. 54 C. 25

D. 45 E. None of the above

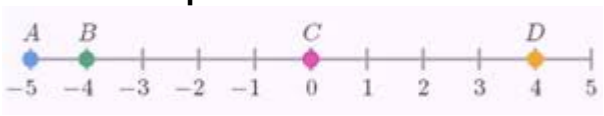
59. **How many rectangles are there in the figure below?** *Hint: You may combine the rectangles to make larger ones.*

A. 6 B. 8 C. 9 D. 10 E. None of the above

60. **How many 1 foot squares make up one square yard?**

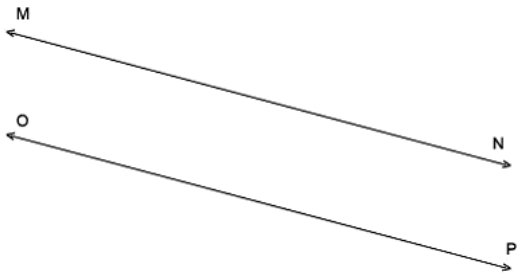
A. 9 B. 12 C. 3 D. 144 E. None of the above

61. **What numeric value of the midpoint of** $\overline{AC}$?



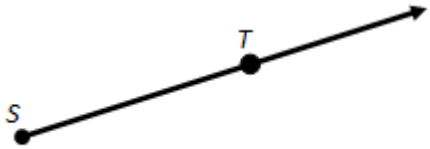
A. -3 B. -2.5 C. -2 D. 0 E. None of the above

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



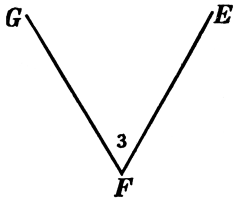
A. Perpendicular
B. Intersecting
C. Parallel
D. Acute
E. None of the above

63. **Name the figure:**



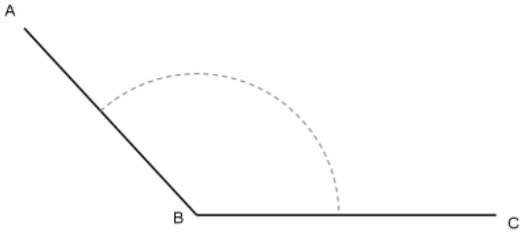
A. Line ST
B. Ray TS
C. Segment TS
D. Ray ST
E. None of the above

64. **Name the angle:**



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

65. If you **bisect** the obtuse angle of 124°, what **type of angles would be formed?**



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

66. 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

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

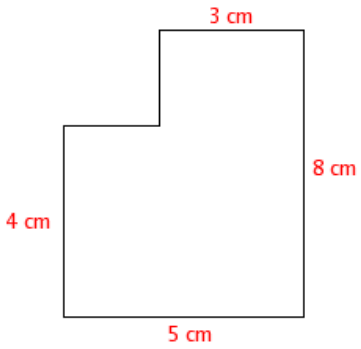
A. 10 B. 5 C. 8 D. 6 E. None of the above

68. What is the **area of a square** with a perimeter of 24 meters?

A. 6 m^2 B. 36 m^2 C. 81 m^2 D. 144 m^2 E. None of the above

69. Find the **area** of the figure:

A. 32 cm^2
B. 20 cm^2
C. 24 cm^2
D. 40 cm^2
E. None of the above



70. 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?**

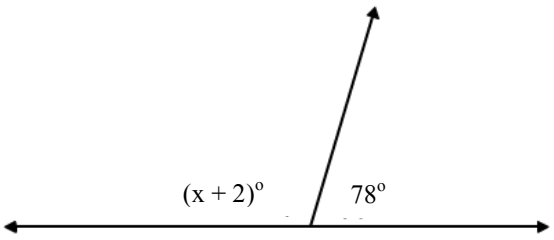
A. 5 B. 6 C. 7 D. 8 E. None of the above

71. 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

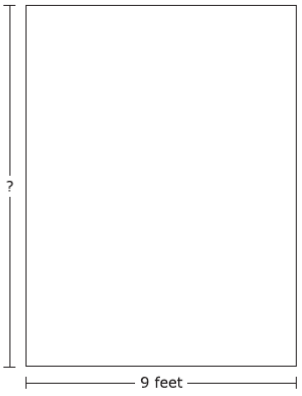
72. **Find the value of x.**

A. 78°
B. 80°
C. 180°
D. 100°
E. None of the above



73. 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. 6 ft.
C. 12 ft.
D. 36 ft.
E. None of the above



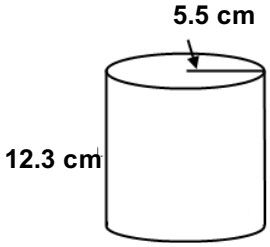
74. What is the **volume** of a cube with side lengths: 6m?

A. 36 m^3 B. 216 m^3 C. 18 m^3
D. 24 m^3 E. None of the above

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

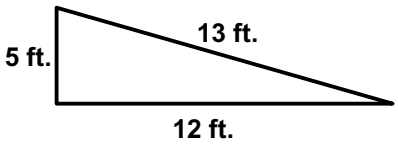
A. 11 ft. by 11 ft. B. 27 ft. by 20 ft. C. 24 ft. by 20 ft.
D. 10 ft. by 9 ft.

76. The volume formula for a cylinder is : $V = \pi r^2 h$ Find the **volume** of the cylinder below to the **nearest hundredth.**



A. 212.53 cm^3 B. 475.29 cm^3
C. 425.06 cm^3 D. 1,168.91 cm^3
E. None of the above

77. What is the **area** of the right triangle?



A. 60 $ft.^2$ B. 78 $ft.^2$
C. 32.5 ft^2 D. 30 $ft.^2$
E. None of the above

78. What is volume of the solid at the right?

A. 30 $units^3$
B. 25 $units^3$
C. 5 $units^3$
D. 60 $units^3$
E. None of the units

#79-81 Convert the following measurements, and then **select the set of answers that is listed correct in order of your answers.**

79. **76,400 m = _____ km**

A. 76.4km B. 7.64km C. 764,000km D. 0.764km E. None of the above

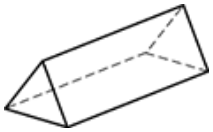
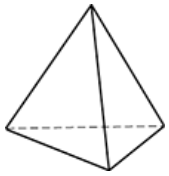
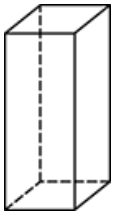
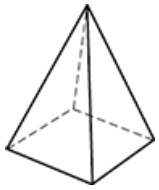
80. **1 quart = _____ cups**

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

81. **1 pound = _____ ounces**

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

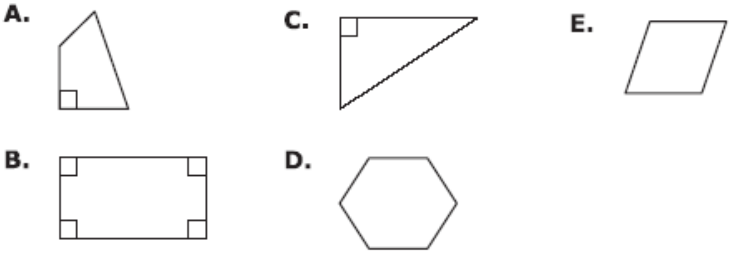
82. **Which shape is a triangular pyramid?**

A.  B.  C.  D. 

E. None of the above

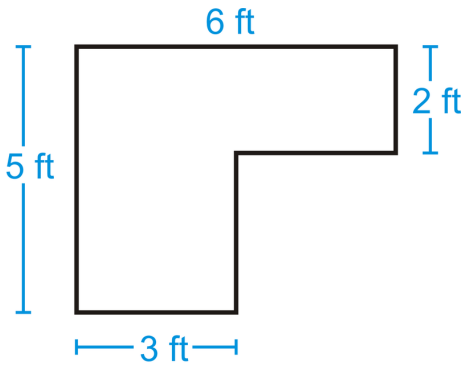
83. Which shape is "regular"?

A. A
B. B
C. C
D. D
E. None of the above

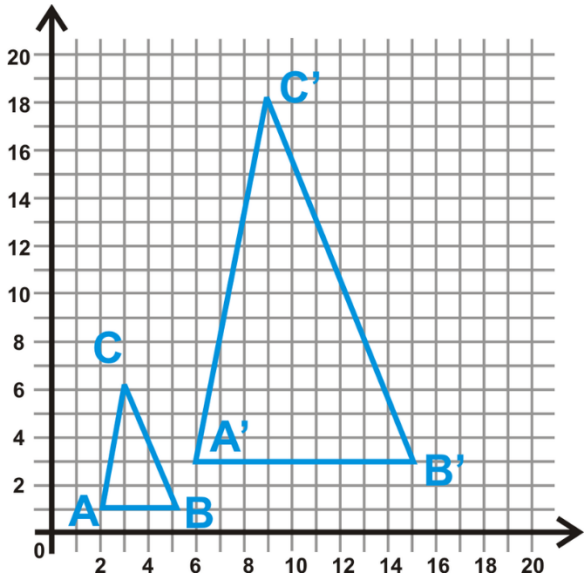


84. What is the **perimeter** of this shape?

A. 16 ft.
B. 19 ft.
C. 22 ft.
D. 30 ft.
E. None of the above



Use the similar triangles in the coordinate plane for problems #85-87.



85. What are the coordinates of A' ?

A. (2, 1) B. (1, 2) C. (6, 3)
D. (3, 6) E. None of the above

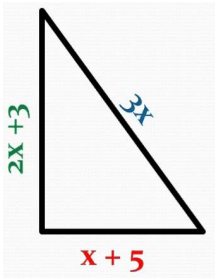
86. What is the **area** of $\Delta A'B'C'$?

A. 67.5 units^2 B. 135 units^2
C. 270 units^2 D. 81 units^2
E. None of the above

87. What is the ratio of $\Delta A'B'C'$ to ΔABC ?

A. 5:1 B. 4:1 C. 3:1 D. 2:1
E. None of the above

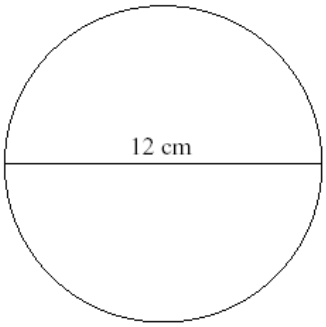
88. The perimeter of the triangle is 50. **Solve for the value of x.**



A. x = 7 B. x = 8 C. x = 9

D. x = 11 E. None of the above

Use the circle to for problems #89-90. Formulas: $C = \pi d$ and $A = \pi r^2$



89. Find the **circumference** of the circle in terms of π.

A. 144 π cm B. 36 π cm
C. 12 π cm D. 24 π cm
E. None of the above

90. Find the **area** of the circle in terms of π.

A. 144 π cm^2 B. 36 π cm^2
C. 12 π cm^2 D. 24 π cm^2
E. None of the above