

Kansas City Area Teachers of Mathematics
2014 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 the π **key** on your calculator **or 3.14** as the approximation for pi.
- Mark your answer on the Scantron sheet by **FILLING in the circle**.
- You **may not use rulers, protractors, or other measurement devices** on this test.

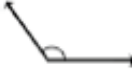


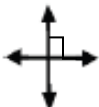
Student Name _____ Student Number _____

School _____





51. Which figure shows parallel lines?

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

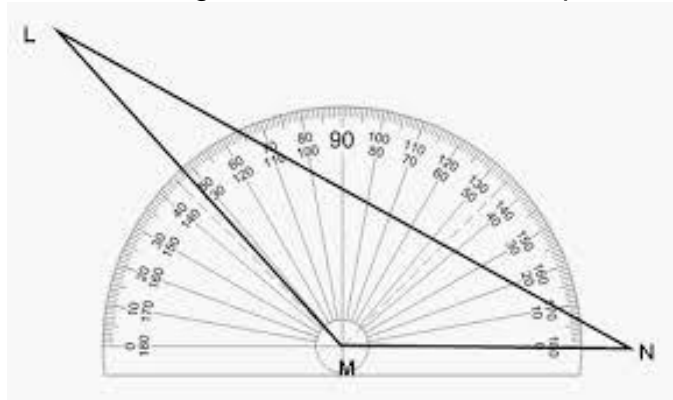
52. Which figure shows an obtuse angle?

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

53. Which figure shows perpendicular lines?

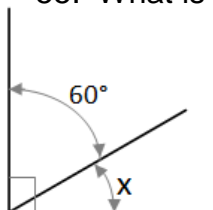
- A.  B. 
- C.  D. 
- E. None of the above

54. What is the measure of the angle $\angle LMN$ marked on the protractor?



- A. 48° B. 52° C. 147° D. 132° E. Not given

55. What is the measure of the missing angle, x° ?



- A. 30° B. 40°
 C. 90° D. 130°
 E. None of the above

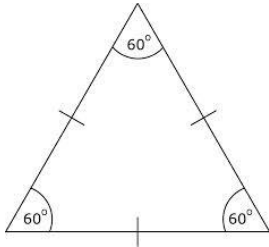
56. What is the name that describes all four-sided figures that have opposite sides parallel?

- A. quadrilaterals
- B. rhombi
- C. parallelograms
- D. trapezoids
- E. Not given

57. The Trans-Alaska Pipeline was built to move oil 800 miles, or 1287 kilometers, from Prudhoe Bay in the northern region of Alaska to Valdez. What would be the length of the pipeline in meters?

- A. 1,287
- B. 12,870
- C. 128,700
- D. 1,287,000
- E. Not given

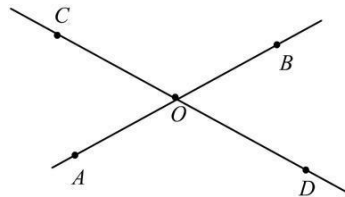
58. How could you classify this triangle?



- A. Isosceles right triangle
- B. Scalene right triangle
- C. Obtuse isosceles triangle
- D. Acute scalene triangle
- E. None of the above

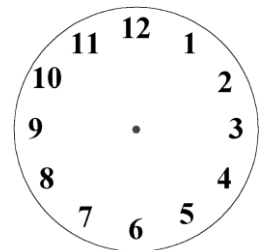
59. What is the measure of $\angle COB$ if the measure of $\angle BOD$ is 72° ?

- A. 18°
- B. 110°
- C. 180°
- D. 108°
- E. None of the above

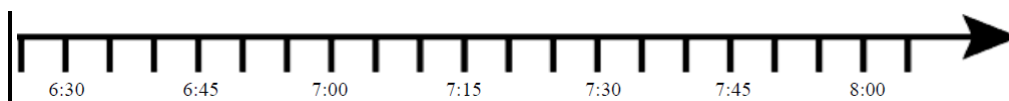


60. If the hands on a clock are at exactly 12 and 1, there are 30 degrees between them. What is the measure if the hands on the clock are at exactly 1 and 5?

- A. 90°
- B. 120°
- C. 135°
- D. 80°
- E. Not given



61. Your dad gets up at 6:25 a.m., takes a shower and gets ready for work in 20 minutes. Then he wakes you up and spends 23 minutes fixing breakfast. You both sit down to breakfast and spend 17 minutes eating before heading out the door to school and work. What time did you and your dad leave the house? (Use the number line to help.)



- A. 7:00 a.m.
- B. 7:25 a.m.
- C. 7:30 a.m.
- D. 7:45 a.m.
- E. Not given

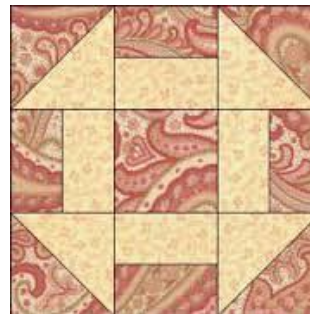
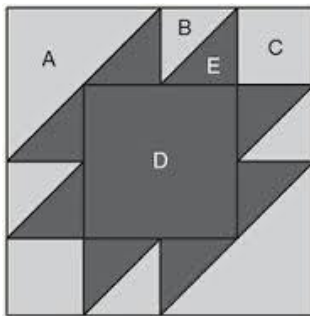
Use the table pictured at the right for problems 62-65.

62. Which word describes the shape of the table top?
 A. Octagonal B. Hexagonal
 C. Trapezoidal D. Rhomboid E. Not given
63. If all sides and angles are congruent, then the table top is considered what type of shape?
 A. Scalene B. Irregular
 C. Isosceles D. Regular E. Not given
64. What would the measurement of an angle formed by two sides be?
 A. 60° B. 90°
 C. 100° D. 120° E. Not given
65. How many lines of symmetry does the table have?
 A. 1 B. 2 C. 6 D. 36 E. Not given



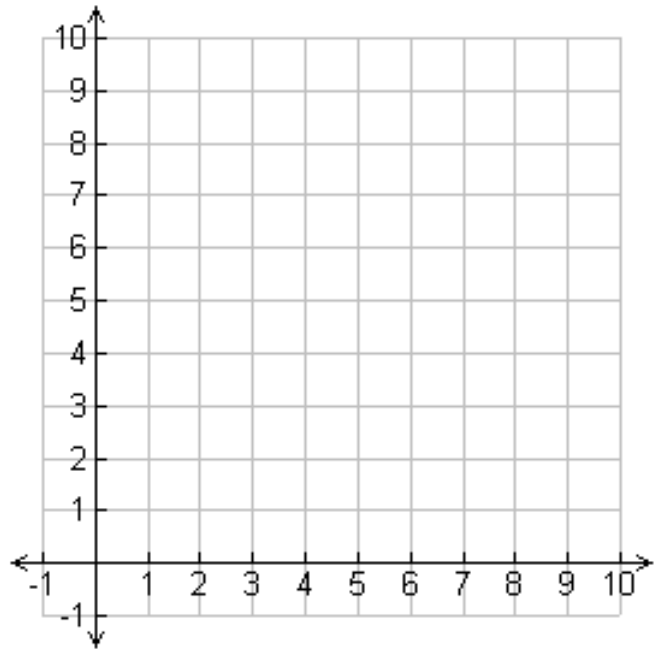
66. Fold a piece of paper in half. If you fold it in half three more times, how many rectangular sections will have been formed when it is unfolded?
 A. 6 B. 8 C. 12 D. 16 E. Not given

Problems 67 and 68: *The Quilt-Block History of Pioneer Days* tells the story of how quilts fit into the lives of the pioneers who settle America. Two of the quilt patterns are shown below. The pattern on the left is called the Anvil, which is based on the shape of a blacksmith’s anvil. The one on the right is called the Churn Dash, based on a particular piece of a wooden butter churn.



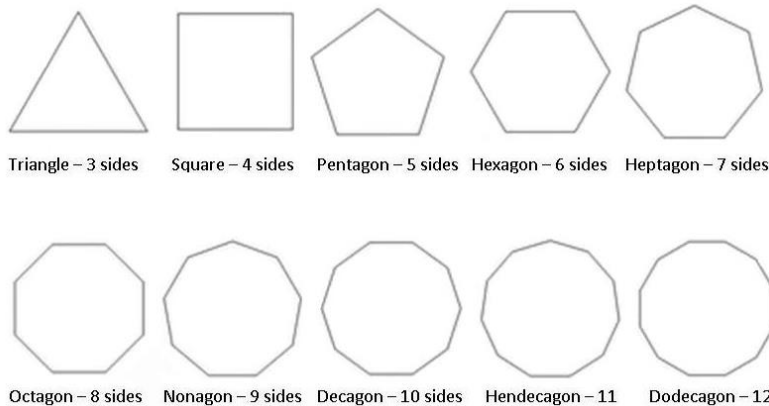
67. Which decimal can be used to express the portion with darker gray fabric in the Anvil?
 A. 0.50 B. 0.75 C. 0.33 D. 0.66 E. Not given
68. What fractional part of the area of the Churn Dash is shown in paisley (in this case, the relatively darker swirly fabric)?
 A. 1/2 B. 6/18 C. 9/18 D. 5/9 E. Not given

69. On the coordinate plane, draw a continuous line from the starting point to each coordinate. Start at (2,1), and move to (0, 3), (2, 3), (4, 3), (4, 7), (7, 4), (5, 4), (5, 3), (10, 3), (8, 1), (6, 1), (2, 1). Which child's toy might your figure resemble?



- A. Car
- B. House
- C. Bus
- D. Boat
- E. None of the above

Use the regular polygons for problems 70 and 71.



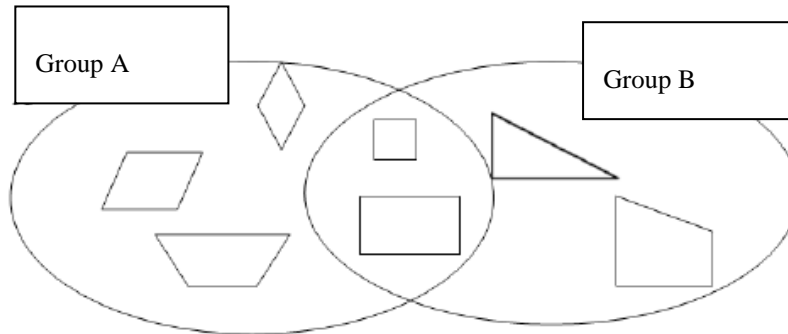
70. As the number of sides of a polygon increase, the shape gets closer to the appearance of a _____ and each interior angle becomes more _____.

- A. Stop sign, 135°
- B. Circle; obtuse
- C. Line, 180°
- D. Circle; acute
- E. Not given

71. Which regular shape would **NOT** tessellate (cover a surface with no overlap and no empty spaces)?

- A. Hexagon
- B. Equilateral triangle
- C. Pentagon
- D. Square
- E. Not given

72. What would be the best description for the intersection of the groups in the Venn Diagram below?



- A. quadrilaterals with parallel sides
- B. quadrilaterals with at least one set of parallel sides
- C. regular polygons
- D. quadrilaterals with 2 pair of parallel sides and all right angles
- E. None of the above

73. If the perimeter of a rectangle is 16 units and the area is 16 sq. units, which of the following could be the dimensions of the rectangle (in units)?

- A. 1 x 7 B. 2 x 8 C. 1 x 16 D. 4 x 4 E. Not given

74. A mile is 5,280 feet. How many inches are in a mile?

- A. 63,360 B. 1,680 C. 440 D. 15,840 E. Not given

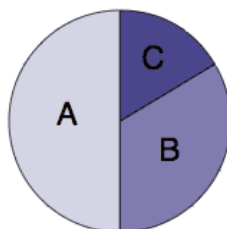
75. How many quarts are in one gallon?

- A. 2 B. 4 C. 8 D. 16 E. Not given

76. How many 8 ounce cups are in one half gallon?

- A. 4 B. 8 C. 12 D. 16 E. Not given

77. Approximately what percent of the circle is section B?



- A. 17% B. 67%
 C. 33% D. 50%
 E. None of the above

78. How many centimeters are in 54.8 meters?

- A. 5.48 B. 54.8 C. 548 D. 54,800 E. Not given

Use the figure to the right for problems 79-83.

79. Based on the number of sides, what would be the name of the figure ABCDEFGHIJKL below? (See list on problem 70)

- A. Octagon
- B. Hexagon
- C. Dodecagon
- D. Decagon
- E. None of the above

80. There are 6 smaller figures outlined, what is the best name for those figures?

- A. Equilateral triangles
- B. Rhombi
- C. Parallelogram
- C. Rectangles
- E. None of the above

81. How many lines of symmetry does the figure have?

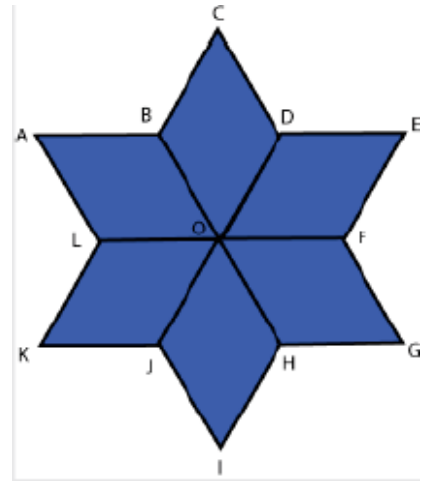
- A. 6
- B. 12
- C. 18
- D. 24
- E. Not given

82. What is the most specific name for the a line segment joining points B and L?

- A. Diameter
- B. Radius
- C. Diagonal
- D. Star
- E. Not given

83. How many degrees are located around point O?

- A. 30°
- B. 180°
- C. 360°
- D. 720°
- E. Not given



84. What would be the best measure for the length of a pencil?

- A. 10 mm
- B. 10 cm
- C. 10 m
- D. 10 km
- E. Not given

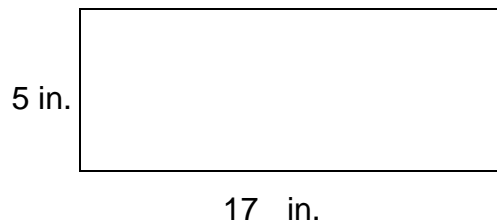
85. Which of the following would **NOT** be the measure of an acute angle?

- A. 20°
- B. 35°
- C. 50°
- D. 70°
- E. Not given

86. If you traveled to Sochi, Russia for the 2014 Winter Olympics, the currency would be the Ruble. The current exchange rate is 1 US Dollar = 35.8 Rubles. How many Rubles would you need to rent a condo for the Olympics if it costs \$1000 for the length of time you are there?

- A. 358 Rubles
- B. 3,580 Rubles
- C. 35,800 Rubles
- D. 358,000 Rubles
- E. Not given

87. What is the area of a rectangle below?



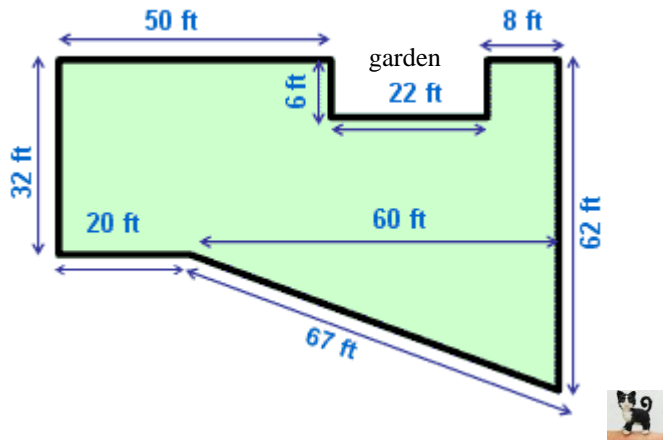
- A. 22 in.
- B. 44 in.
- C. 44 sq. in.
- D. 85 sq. in.
- E. Not given

88. Which of the following line plots could show the graph of the number of hours that twenty students at your school read during the first 4 weeks of 2014 based on the data set provided?

14, 14, 8, 6, 10, 20, 16, 8, 8, 14, 12, 16, 20, 6, 10, 12, 20, 16, 20, 8

- A.
- | | | | | | | | |
|---|---|----|----|----|----|----|----|
| | X | | | | | | X |
| | X | | | X | X | | X |
| X | X | X | X | X | X | | X |
| X | X | X | X | X | X | | X |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
- B.
- | | | | | | | | |
|---|---|----|----|----|----|----|----|
| | X | | | | | | X |
| | X | | X | X | X | | X |
| | X | X | X | X | X | | X |
| X | X | X | X | X | X | | X |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
- C.
- | | | | | | | | |
|---|---|----|----|----|----|----|----|
| | X | | | | | | |
| | X | | X | X | X | | X |
| X | X | X | X | X | X | | X |
| X | X | X | X | X | X | | X |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
- D.
- | | | | | | | | |
|---|---|----|----|----|----|----|----|
| | | | | X | | | X |
| | X | | | X | X | | X |
| X | X | X | X | X | X | | X |
| X | X | X | X | X | X | | X |
| 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
- E. Not of the above

Use this figure of a back yard for problems 89-90.



89. If the cat at the bottom right corner walks around the entire outside of the yard, how far does it walk?
 A. 273 ft. B. 333 ft. C. 327 ft. D. 261 ft. E. Not given
90. If the cat goes in a straight horizontal line across the top instead of going around the garden, how far would the cat walk around the perimeter using this path?
 A. 273 ft. B. 267 ft. C. 251 ft. D. 261 ft. E. Not given

Shade the correct answer!

Example: A ● C D E

Name _____

School _____

51. A B C D E

52. A B C D E

53. A B C D E

54. A B C D E

55. A B C D E

56. A B C D E

57. A B C D E

58. A B C D E

59. A B C D E

60. A B C D E

61. A B C D E

62. A B C D E

63. A B C D E

64. A B C D E

65. A B C D E

66. A B C D E

67. A B C D E

68. A B C D E

69. A B C D E

70. A B C D E

71. A B C D E

72. A B C D E

73. A B C D E

74. A B C D E

75. A B C D E

76. A B C D E

77. A B C D E

78. A B C D E

79. A B C D E

80. A B C D E

81. A B C D E

82. A B C D E

83. A B C D E

84. A B C D E

85. A B C D E

86. A B C D E

87. A B C D E

88. A B C D E

89. A B C D E

90. A B C D E

Shade the correct answer!

Example: A ● C D E

Name _____

School _____

ANSWER KEY

51. A B C ● E

52. ● B C D E

53. ● B C D E

54. A B C ● E

55. ● B C D E

56. A B ● D E

57. A B C ● E

58. A B C D ●

59. A B C ● E

60. A ● C D E

61. A ● C D E

62. A ● C D E

63. A B C ● E

64. A B C ● E

65. A B ● D E

66. A B C ● E

67. ● B C D E

68. A B C ● E

69. A B C ● E

70. A ● C D E

71. A B ● D E

72. A B C ● E

73. A B C ● E

74. ● B C D E

75. A ● C D E

76. A ● C D E

77. A B ● D E

78. A B C D ●

79. A B ● D E

80. A B C ● E

81. ● B C D E

82. A B ● D E

83. A B ● D E

84. A ● C D E

85. A B C D ●

86. A B ● D E

87. A B C ● E

88. ● B C D E

89. ● B C D E

90. A B C ● E