

Kansas City Area Teachers of Mathematics
2012 KCATM Contest

**GEOMETRY AND MEASUREMENT TEST
GRADE 4**

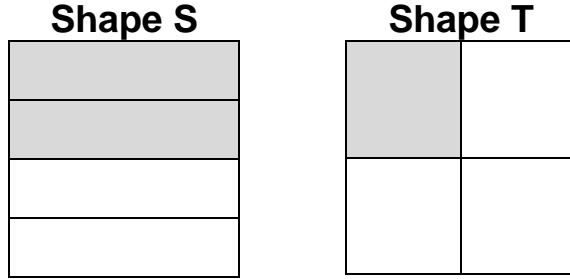
INSTRUCTIONS

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

Student Name _____ Student Number _____

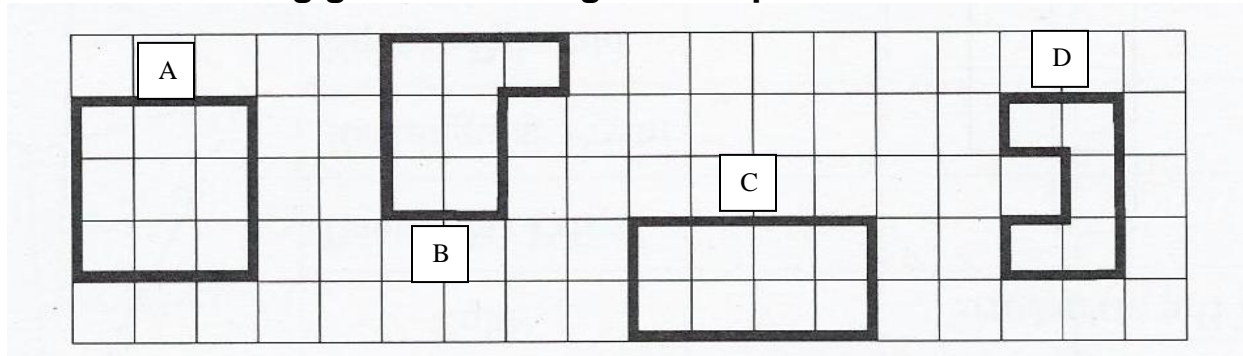
School _____

Use the two congruent squares below for problems #1, #2, and #3.



- What fractional part of the square is shaded in Shape S?
 A. $1/4$ B. $1/2$ C. $2/3$ D. $3/4$ E. None of the above
- What fractional part of the square is **NOT** shaded in Shape T?
 A. $1/4$ B. $1/2$ C. $2/3$ D. $3/4$ E. None of the above
- If you were to throw a marker on each of the squares, which shape would have the greater probability (chance) that it would land on a shaded section?
 A. Shape S B. Shape T C. Both shapes have an equal chance.
 D. neither E. None of the above

Use the following grid with the figures for problems #4-#7.



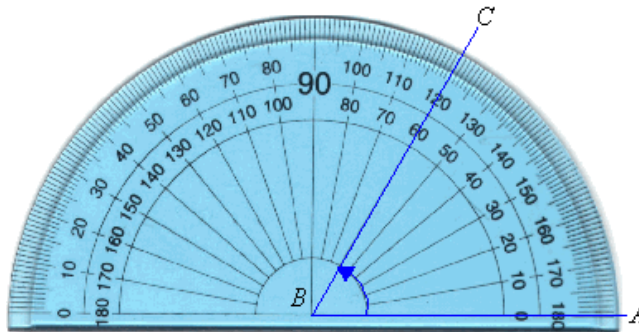
- Which shape has the largest area?
 A. B. C. D. E. None of the above
- Which shape has the largest perimeter?
 A. B. C. D. E. None of the above
- How many lines of symmetry does shape **A** have?
 A. 1 B. 2 C. 3 D. 4 E. None of the above
- How many lines of symmetry does shape **D** have?
 A. 1 B. 2 C. 3 D. 4 E. None of the above

8. What is the geometric name for the entire figure shown?



- A. ray AB B. line AB C. line segment AB
 D. ray BA E. not given

Use the protractor and $\angle ABC$ for problems 9 and 10.



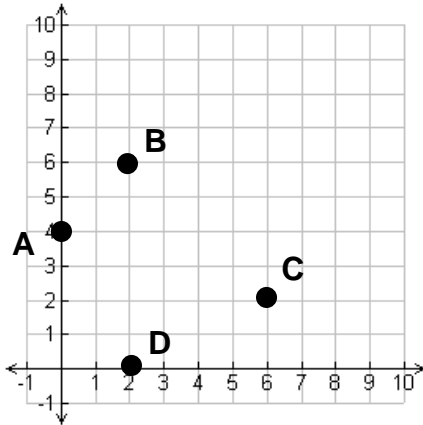
9. What type of angle is $\angle ABC$?
 A. acute B. right C. obtuse D. straight E. None of the above
10. What is the degree measure of $\angle ABC$?
 A. 50° B. 60° C. 70° D. 120° E. None of the above

Use rectangle ABCD for problems 11, 12 and 13.



11. Which two line segments are parallel to each other?
 A. $\overline{AB}, \overline{AD}$ B. $\overline{AD}, \overline{BC}$ C. $\overline{AD}, \overline{DC}$
 D. $\overline{DC}, \overline{BC}$ E. None of the above
12. Name the type of angle $\angle A$ is.
 A. acute B. right C. obtuse D. straight E. None of the above
13. How many lines of symmetry does the rectangle ABCD have?
 A. 1 B. 2 C. 3 D. 4 E. 5

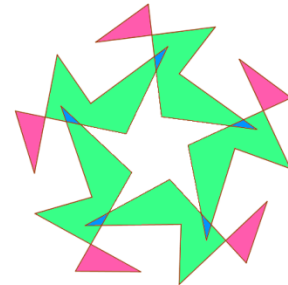
Use the coordinate graph of Quadrant 1 for problems 14, 15, and 16.



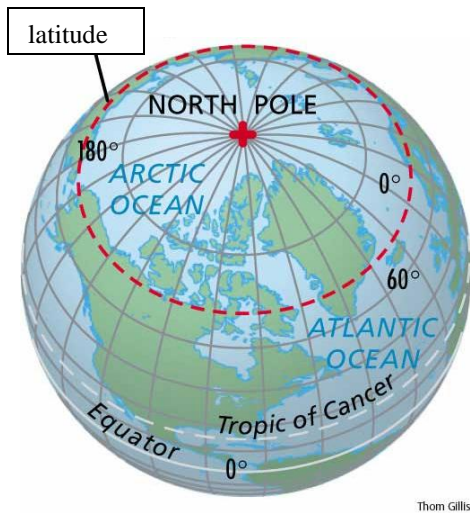
14. Which point has the coordinates of (6, 2)?
A. B. C. D. E. None of the above
15. Which point is on the x-axis?
A. B. C. D. E. None of the above
16. Connect points B and C. What is the name of the figure?
A. parallelogram B. line segment
C. line D. quadrilateral
E. None of the above

17. What type of symmetry does this picture have?

- A. line B. translation (slide)
C. reflection (flip) D. rotation (turn)
E. None of the above



Use the image of Earth (<http://www.yourdictionary.com/arctic-circle>) for problems 18 and 19.

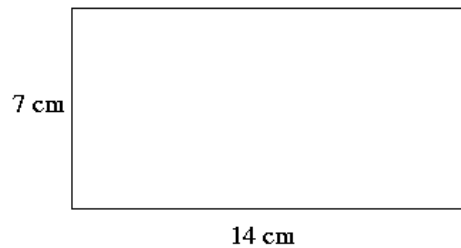


Thom Gillis

18. The Equator is a line of latitude that is what shape?
A. line B. line segment
C. circle D. ellipse
E. None of the above
19. The diameter of the earth is approximately 7,900 miles. If the circumference formula is: $C = \pi \times \text{diameter}$, what is the approximate circumference of earth?
A. 24, 806 miles B. 36,408 miles
B. 12,410 miles C. 48,112 miles

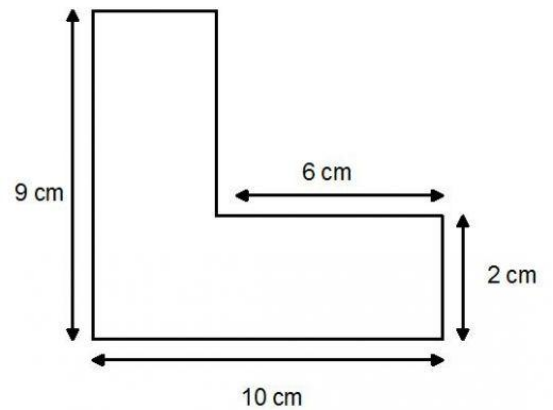
20. Find the area of the rectangle:

- A. 21 cm
- B. 98 sq. cm
- C. 42 cm
- D. 49 sq. cm
- E. None of the above

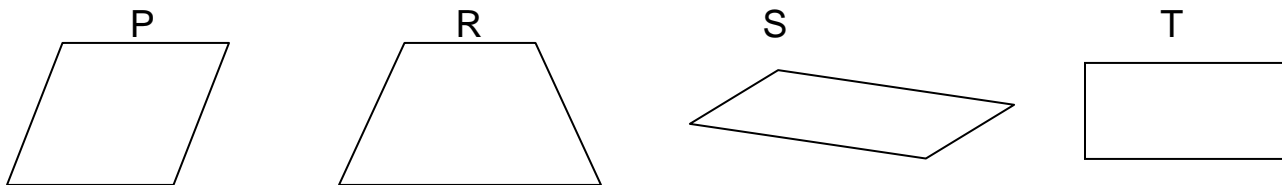


21. Find the perimeter of the L-shaped figure:

- A. 27 cm
- B. 90 sq. cm
- C. 38 cm
- D. 29 cm
- E. None of the above



22. Which shape or shapes are parallelograms?



- A. Figure S only
- B. Figures P and S only
- C. Figure R only
- D. Figures P, S, and T only
- E. None of the above

23. How many sides does an octagon (*stop sign*) have?

- A. 6
- B. 7
- C. 8
- D. 10
- E. None of the above

24. If the radius of a circle is 8 inches, what is the length of the diameter?

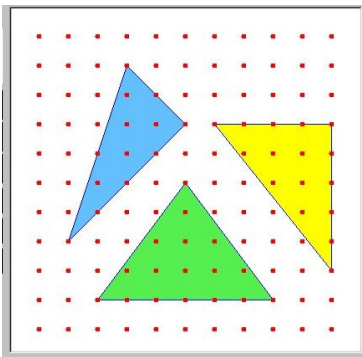
- A. 2 inches
- B. 4 inches
- C. 6 inches
- D. 16 inches
- E. None of the above

25. If the area of a rectangle is 24 sq. meters, which values are **NOT** possible side lengths of the rectangle?

- A. 4m x 6m
- B. 8m x 3m
- C. 9m x 3m
- D. 2m x 12m
- E. None of the above

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26. Which statement is **NOT ALWAYS** true?
- A. A square is always a rectangle.
 - B. A square is always a rhombus.
 - C. A square is always a parallelogram.
 - D. A square is always a quadrilateral.
 - E. All of the above are true.
27. If you ran the length of an American football field (100 yards), how many feet did you run?
- A. 100 ft. B. 200 ft. C. 300 ft. D. 400 ft. E. None of the above
28. How many quarts are in a gallon?
- A. 1 B. 2 C. 3 D. 4 E. None of the above
29. You should drink from 6 to 8 glasses of water each day. How much water is this in ounces if there are two glasses in 1 pint?
- A. 36-48 ounces of water B. 48-64 ounces of water
C. 60-80 ounces of water D. 72-96 ounces of water
E. None of the above
30. How many centimeters are in 45 meters?
- A. 4.5cm B. 45cm C. 450cm D. 4,500cm E. None of the above
31. Which of the following is the closest to the length of a meter?
- A. length of a pencil B. thickness of a dime
C. height of a soup can D. height of a doorknob
E. None of the above
32. Which of the following **is NOT reasonable**?
- A. A TV screen measures 35 inches.
 - B. An elephant weighs 1 pound.
 - C. A summer temperature in Kansas and Missouri is 95° F.
 - D. A marathon is 26 miles.
 - E. None of the above
33. Which of the following **is reasonable**?
- A. An earthworm is 4 centimeters in length.
 - B. You run 10 kilometers in physical education class.
 - C. Your grandma is 4 meters tall.
 - D. One dime is 800 millimeters in diameter.
 - E. None of the above

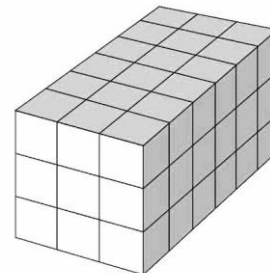
34. Your family drove from Kansas City to Orlando, Florida to go to Disney World on a vacation. The drive took a total of 21 hours. The distance is 1,239 miles. How many miles per hour did your family average?
 A. 70 miles per hour B. 65 miles per hour C. 60 miles per hour
 D. 59 miles per hour E. None of the above
35. How much time were you at a sleepover if you arrived at 7:30pm and left at 10:00am?
 A. 2 ½ hr. B. 12 ½ hr. C. 14 ½ hr. D. 16 ½ hr. E. None of the above
36. What is the area of the **largest triangle** on the Geoboard? The area formula for a triangle is: $A = \frac{1}{2} \times \text{base} \times \text{height}$



- A. 15 sq. units
 B. 12 sq. units
 C. 10 sq. units
 D. 8 sq. units
 E. None of the above

37. How many faces does a square pyramid have?
 A. 3 B. 4 C. 5 D. 6 E. None of the above
38. You have a bag with 4 red marbles, 7 blue marbles, 10 green marbles and 19 yellow marbles. What is the probability of pulling out a red one?
 A. 4/21 B. 1/10 C. 2/25 D. 1/7 E. None of the above

39. What is the **volume** of the three dimensional solid if the formula is $V = l \times w \times h$?
 A. 54 cubic units B. 45 cubic units
 C. 90 cubic units D. 18 cubic units
 E. None of the above



40. How many different outfits could you wear by selecting one of each from 3 t-shirts, 2 pair of jeans, and 2 pair of shoes?
 A. 7 B. 8 C. 10 D. 12 E. None of the above

Shade the correct answer!

Example: A ● C D E

Name _____

School _____

- 1. A B C D E
- 2. A B C D E
- 3. A B C D E
- 4. A B C D E
- 5. A B C D E
- 6. A B C D E
- 7. A B C D E
- 8. A B C D E
- 9. A B C D E
- 10. A B C D E
- 11. A B C D E
- 12. A B C D E
- 13. A B C D E
- 14. A B C D E
- 15. A B C D E
- 16. A B C D E
- 17. A B C D E
- 18. A B C D E
- 19. A B C D E
- 20. A B C D E

- 21. A B C D E
- 22. A B C D E
- 23. A B C D E
- 24. A B C D E
- 25. A B C D E
- 26. A B C D E
- 27. A B C D E
- 28. A B C D E
- 29. A B C D E
- 30. A B C D E
- 31. A B C D E
- 32. A B C D E
- 33. A B C D E
- 34. A B C D E
- 35. A B C D E
- 36. A B C D E
- 37. A B C D E
- 38. A B C D E
- 39. A B C D E
- 40. A B C D E

Shade the correct answer!

Name _____

Example: A ● C D E

School _____

ANSWER KEY

- 1. A ● C D E
- 2. A B C ● E
- 3. A ● C D E
- 4. ● B C D E
- 5. A B C D ●
- 6. A B C ● E
- 7. ● B C D E
- 8. ● B C D E
- 9. ● B C D E
- 10. A ● C D E
- 11. A ● C D E
- 12. A ● C D E
- 13. A ● C D E
- 14. A B ● D E
- 15. A B C ● E
- 16. A ● C D E
- 17. A B C ● E
- 18. A B ● D E
- 19. ● B C D E
- 20. A ● C D E

- 21. A B ● D E
- 22. A B C ● E
- 23. A B ● D E
- 24. A B C ● E
- 25. A B ● D E
- 26. A B C D ●
- 27. A B ● D E
- 28. A B C ● E
- 29. A ● C D E
- 30. A B C ● E
- 31. A B C ● E
- 32. A ● C D E
- 33. ● B C D E
- 34. A B C ● E
- 35. A B ● D E
- 36. A ● C D E
- 37. A B ● D E
- 38. A ● C D E
- 39. ● B C D E
- 40. A B C ● E