Student Name: _____

Ohio Achievement Tests

Mathematics Student Test Booklet

May 2007

This test was originally administered to students in May 2007.

Not all items from the May 2007 administration will be released in this document. According to Ohio Revised Code (ORC) 3301.07.11:4(b) . . . not less than forty percent of the questions on the test that are used to compute a student's score shall be a public record. The department (of education) shall determine which questions will be needed for reuse on a future test and those questions shall not be public records and shall be redacted from the test prior to its release as public record.

This publicly released material is appropriate for use by Ohio teachers in instructional settings. This test is aligned with Ohio's Academic Content Standards for Mathematics.

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Ohio Grade 8 Mathematics Achievement Test Reference Sheet

Information that may be needed to solve problems on the Mathematics Test:

Area Formulas

parallelogram	$A = bh$
rectangle	$A = lw$
trapezoid	$A = \frac{1}{2} h (b_1 + b_2)$
triangle	$A = \frac{1}{2} bh$

Circle Formulas

$C = 2\pi r$

$A = \pi r^2$

$\pi \approx 3.14$ or $\frac{22}{7}$

Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Volume Formulas

cone	$V = \frac{1}{3} \pi r^2 h$
cylinder	$V = \pi r^2 h$
pyramid	$V = \frac{1}{3} Bh$ (B = area of base)
rectangular prism	$V = lwh$
right prism	$V = Bh$ (B = area of base)
sphere	$V = \frac{4}{3} \pi r^3$

Directions:

Today you will be taking the Ohio Grade 8 Mathematics Achievement Test. Three different types of questions appear on this test: multiple choice, short answer and extended response.

There are several important things to remember:

1. Read each question carefully. Think about what is being asked. Look carefully at graphs or diagrams because they will help you understand the question.

2. You may use the blank areas of your Student Test Booklet to solve problems. You may also use the optional grid paper in the answer document to solve problems.

3. For short-answer and extended-response questions, use a pencil to write your answers neatly and clearly in the gridded space provided in the answer document. Any answers you write in the Student Test Booklet will not be scored.

4. Short-answer questions are worth two points. Extended-response questions are worth four points. Point values are printed near each question in your Student Test Booklet. The amount of gridded space provided for your answer is the same for all two- and four-point questions.

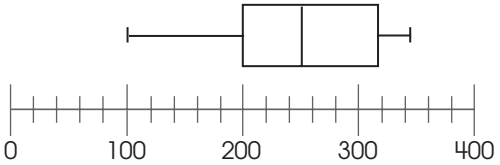
5. For multiple-choice questions, shade in the circle next to your choice in the answer document for the test question. Mark only one choice for each question. Darken completely the circles on the answer document. If you change an answer, make sure that you erase your old answer completely.

6. Do not spend too much time on one question. Go on to the next question and return to the question skipped after answering the remaining questions.

7. Check over your work when you are finished.

Items 1–3 have not been slated for public release in 2007.

4. Which box-and-whisker plot represents a situation where 75% of the data is 200 or less?

A.


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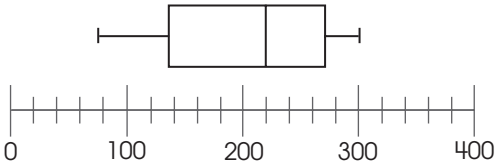

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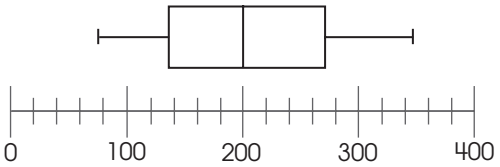

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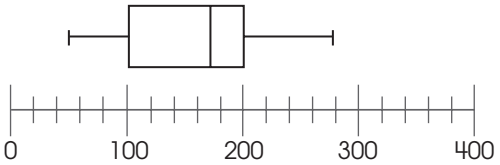


5. The County Fair charges a \$3 entrance fee. The cost of each ride is \$2.

Which equation represents the cost (y) of getting into the fair and going on x number of rides?

A. $y = 3 + 2 + x$

B. $y = (3 + 2)x$

C. $y = 3 + 2x$

D. $y = 3x + 2$

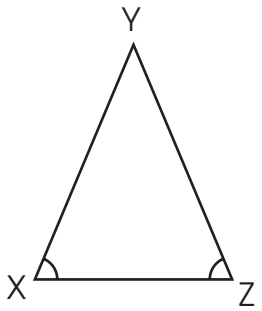
Item 6 has not been slated for public release in 2007.

7. The product of a number and seven is 322.

   Which method can be used to find the value of this number?

   A. Multiply the number by 322.
   B. Divide 322 by the number.
   C. Multiply the number by 7.
   D. Divide 322 by 7.

8. Triangle XYZ is shown.



Angles X and Z are congruent.

Which statement is always true?

A. $m\angle Y = 90°$

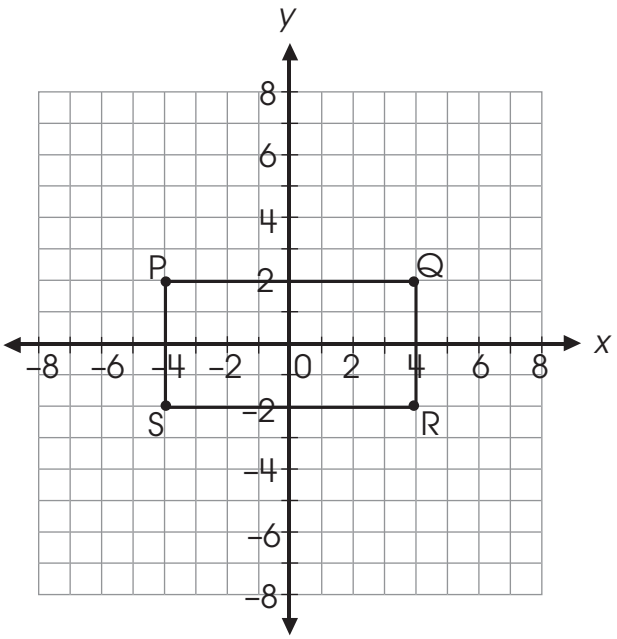
B. $\overline{YZ} \cong \overline{ZX}$

C. $ZX > XY$

D. $\overline{XY} \cong \overline{YZ}$

Items 9–10 have not been slated for public release in 2007.

11. Rectangle PQRS is shown on the coordinate plane.



In your **Answer Document**, sketch rectangle ABCD centered at the origin to represent a dilation of rectangle PQRS by a scale factor of 1.5.

Then, state one characteristic of rectangle PQRS that does not change as a result of the dilation.

For question 11, respond completely in your **Answer Document**. (2 points)

Items 12–13 have not been slated for public release in 2007.

14. The chart shows the number of cars sold per week at a car dealership during the month of June.

Salesperson	Week One	Week Two	Week Three	Week Four
Tim	4	8	2	1
Geena	1	2	7	1
Rafael	2	1	5	4
Sonny	4	1	1	10

How should the data be displayed to make the most convincing argument that sales improved each week?

A. a bar graph of the total car sales per week

B. a box-and-whisker plot of Sonny's sales per week

C. a line graph of each salesperson's sales per week

D. a circle graph showing how many cars each person sold during the month

Items 15–16 have not been slated for public release in 2007.

17. A cone has a height of 4 inches and a circumference at the base of 12π inches.

    What is the approximate volume of the cone?

    A. 150 inches^3
    B. 200 inches^3
    C. 450 inches^3
    D. 600 inches^3

18. The distance between Earth and the Sun is approximately 150,000,000 kilometers.

    What is this distance written in scientific notation?

    A. 1.5×10^6
    B. 1.5×10^7
    C. 1.5×10^8
    D. 1.5×10^9

19. Which equation represents a direct variation?

    A. $y = 5x$
    B. $y = \frac{5}{x}$
    C. $y = 5$
    D. $y = 5 - x$

Items 20–21 have not been slated for public release in 2007.

On the May 2007 Grade 8 Mathematics Achievement Test, items 22–27 are field-test items, which are not released.

28. The $\sqrt{183}$ is between which two integers?

A. 12 and 13

B. 13 and 14

C. 45 and 46

D. 91 and 92

Item 29 has not been slated for public release in 2007.

30. Two points (–1, 1) and (3, –2) are graphed on a coordinate plane.

What is the shortest distance between the points?

A. 3

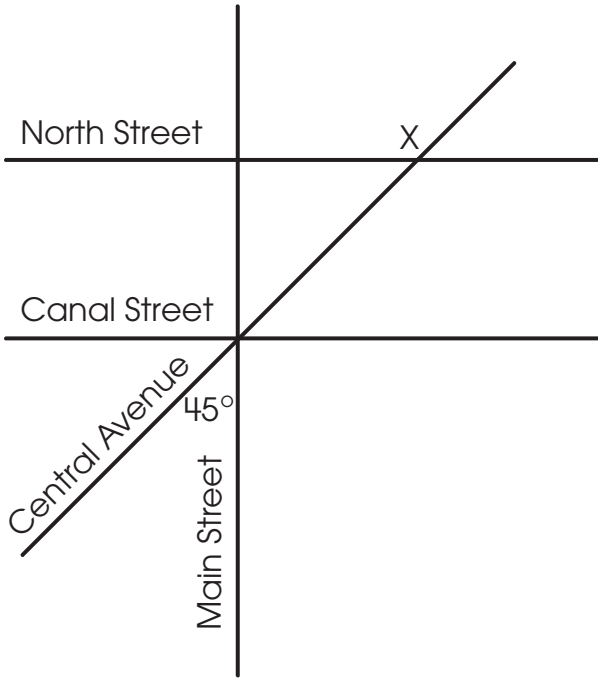
B. 4

C. 5

D. 7

Item 31 has not been slated for public release in 2007.

32. A map of downtown Centerville shows North Street parallel to Canal Street.



Main Street is perpendicular to both North and Canal streets. The angle between Central Avenue and Main Street is 45°.

What is the measure of angle X?

A. 45°

B. 120°

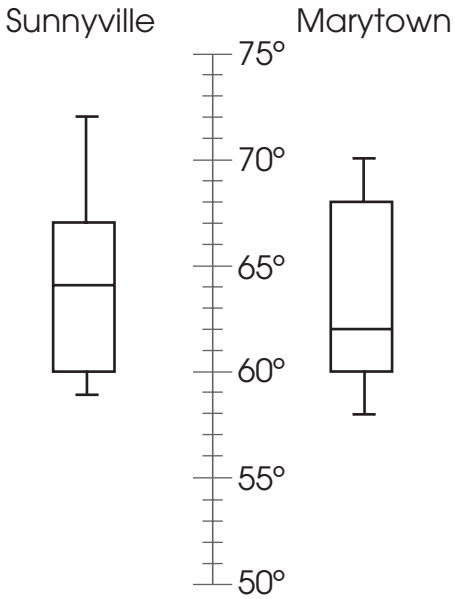
C. 135°

D. 150°

Item 33 has not been slated for public release in 2007.

34. The daily noon temperatures for two cities were collected over a one-month period. The data were used to create the box-and-whisker plots shown.

Daily Noon Temperatures (°F)



Which statement is supported by the data?

A. Sunnyville has the lowest noon temperature.

B. Marytown has a greater interquartile range.

C. The median temperature is the same for both towns.

D. Marytown has a greater range of noon temperatures.

Items 35–36 have not been slated for public release in 2007.

37. Sabrina rides her bike 2 miles to school each day. She leaves her house at 7:30 and arrives at 7:50.

What is Sabrina´s average speed in miles per hour?

A. 1 mile per hour

B. 6 miles per hour

C. 10 miles per hour

D. 40 miles per hour

38. Which expression represents the *n*th term in the sequence 1, 3, 5, 7, 9, *n* . . . ?

A. $n - 2$

B. $2n^2 - 1$

C. $2n - 1$

D. $2^n - 1$

Items 39–41 have not been slated for public release in 2007.

42. What is the measure of one interior angle of a regular pentagon?

A. 108°

B. 72°

C. 54°

D. 36°

Item 43 has not been slated for public release in 2007.

44. The table shows the relationship between the number of minutes and the cost of a phone call.

Time (in minutes)	Cost (in dollars)
15	0
30	0.75
45	1.50
60	2.25
75	3.00

Which describes the relationship between the number of minutes and the cost of a phone call?

A. The cost of a phone call is $0.15 per minute after the first 25 minutes.

B. The cost of a phone call is $0.03 per minute.

C. The cost of a phone call is $0.05 per minute after the first 15 minutes.

D. The cost of a phone call is $1.00 per 25 minutes.

STOP