Department of Education

Student Name: _____

Ohio Achievement Tests

Mathematics Student Test Booklet

May 2009

This test was originally administered to students in May 2009.

Not all items from the May 2009 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.

Copyright © 2009 by Ohio Department of Education. All rights reserved.

The Ohio Department of Education does not discriminate on the basis of race, color, national origin, sex, religion, age, or disability in employment or the provision of services.

The Ohio Department of Education acknowledges that copyrighted material may contain information that is not currently accurate and assumes no responsibility for material reproduced in this document that reflects such inaccuracies.

Directions:

Today you will be taking the Ohio Grade 7 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 answers 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.

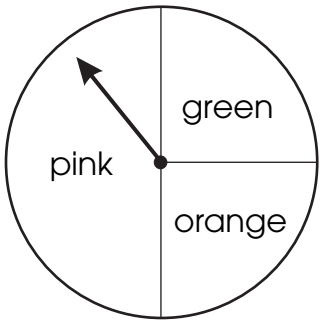
6. Do not spend too much time on one question. Go on to the next question and return to the question skipped after answering the remaining questions.

7. Check over your work when you are finished.

8. When you finish the test, you may <u>not</u> go on to, or back to, any other section of the Student Test Booklet.

Items 1–2 have not been slated for public release in 2009.

3. The spinner shown is spun twice.



What is the probability of landing on pink and then landing on orange?

A. $\frac{1}{9}$

B. $\frac{1}{8}$

C. $\frac{1}{6}$

D. $\frac{1}{4}$

4. Which is an example of a linear pattern?

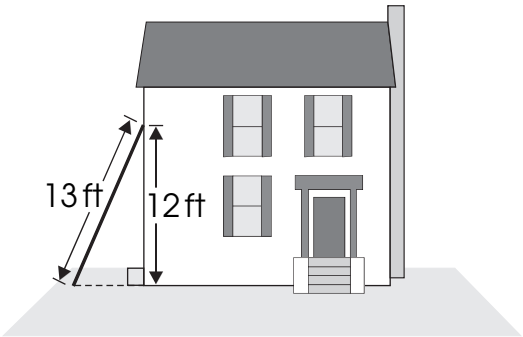
A. $\frac{1}{9}$, $\frac{2}{9}$, $\frac{4}{9}$, $\frac{8}{9}$

B. –5, –1, 3, 7

C. 2.3, 6.3, 9.3, 13.3

D. 1, 2, 4, 8, 16

5. A painter leans a 13-foot ladder against a building.



The top of the ladder rests against the side of the building at a point 12 feet above ground level.

How far is the base of the ladder from the building?

A. 1 foot

B. 2 feet

C. 5 feet

D. 8 feet

6. During a sale, the price of all televisions in a store is being reduced by 20%. Abe is interested in a television with an original cost of $575.

Two weeks later, the sale price of this television is reduced by an additional 5%. Abe thinks he can now get the television for 25% off the original price.

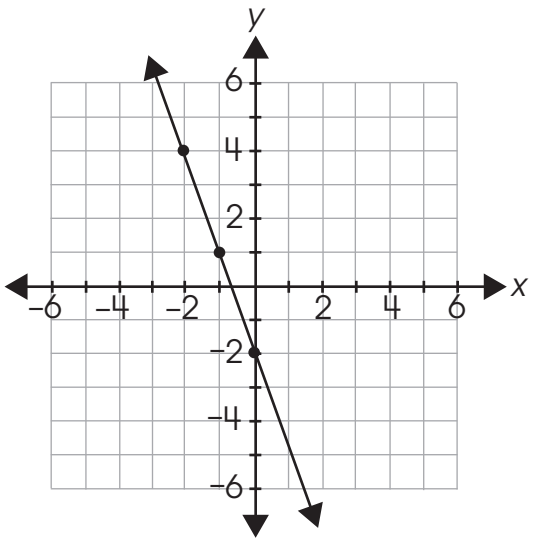
In your **Answer Document**, describe how the sale price with the additional 5% reduction is different than a single reduction of 25%. Use mathematics to justify your answer.

For question 6, respond completely in your **Answer Document**. (4 points)

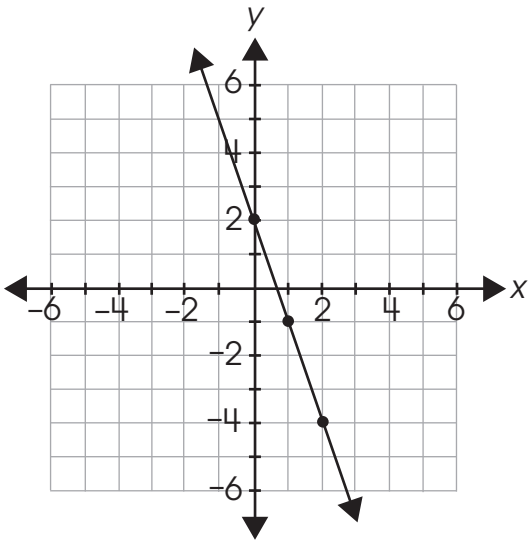
Item 7 has not been slated for public release in 2009.

8. Which shows a graph of the equation $y = -3x - 2$?

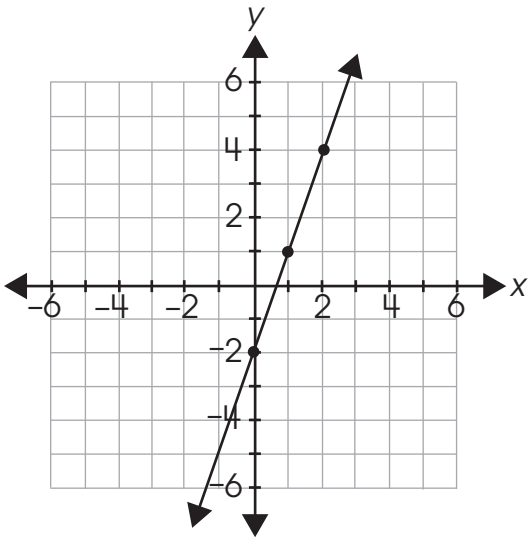
A.



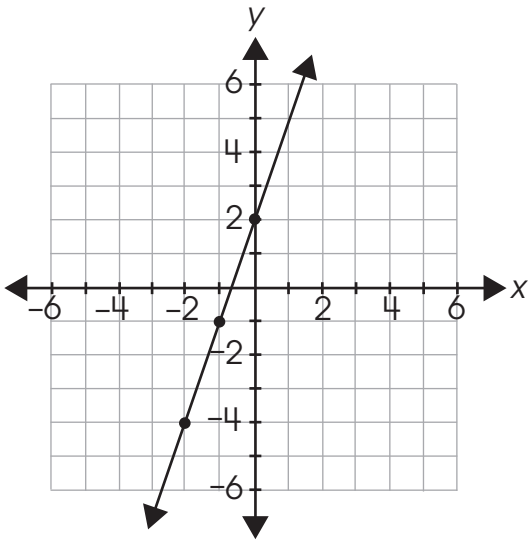
B.



C.



D.



9. Simplify the expression. $-2 + |-5|$

A. -7

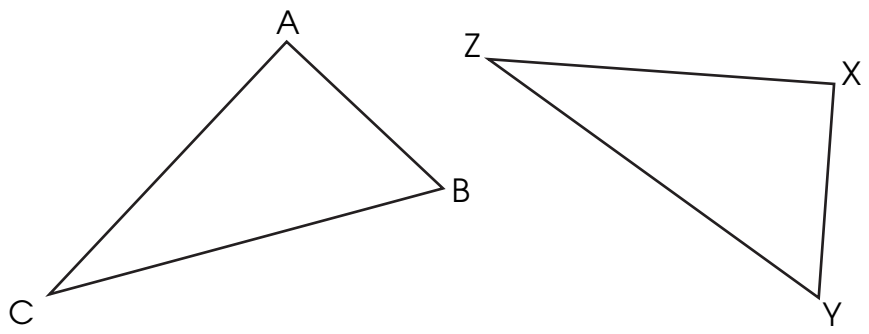
B. -3

C. 3

D. 7

Item 10 has not been slated for public release in 2009.

11. Caleb drew two congruent triangles as shown.



Jan asks Caleb to prove that the triangles are congruent.

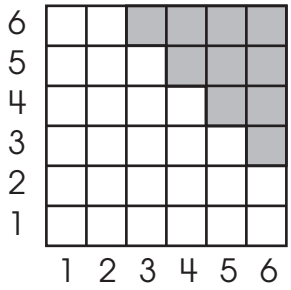
In your **Answer Document**, explain how Caleb can prove to Jan that triangle ABC is congruent to triangle XYZ.

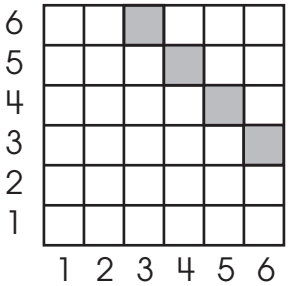
For question 11, respond completely in your **Answer Document**. (2 points)

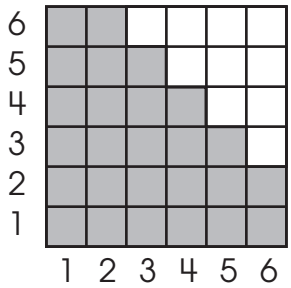
Item 12 has not been slated for public release in 2009.

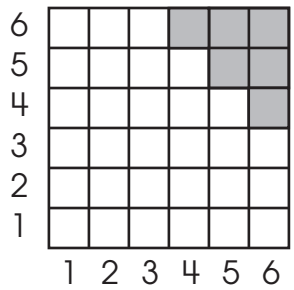
13. Jane is playing a game and rolls two number cubes. The faces of the cube are numbered 1 through 6. To win, she needs to roll two numbers that have a sum greater than or equal to 9.

Which model has a shaded area that represents the probability of winning?

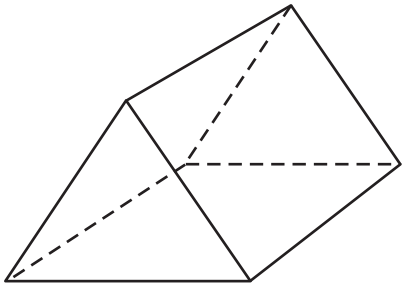
A.


B.


C.


D.


14. This three-dimensional object has three rectangular faces and two triangular faces.



Which describes this object?

A. rectangular pyramid

B. rectangular prism

C. triangular prism

D. triangular pyramid

15. Ellen organized a phone chain in her school so that each student would be called in case of an emergency. The first round starts by Ellen calling 3 students. In the second round, those students each call 3 more students. In the third round, those students each call 3 more students, and so on.

How many students are called in the fifth round?

A. 3

B. 15

C. 81

D. 243

Item 16 has not been slated for public release in 2009.

On the May 2009 Grade 7 Mathematics Achievement Test, items 17–22 are field-test items, which are not released.

Item 23 has not been slated for public release in 2009.

24. Simplify the expression: $3y + x - 2x + y^3 + x + x$

A. $x^3 - 2x + 4y^4$

B. $x + 3y^4$

C. $5x + y + 3y$

D. $x + y^3 + 3y$

Item 25 has not been slated for public release in 2009.

26. The table shows the number of games won by each of five teams in the Women's National Basketball Association during the 2002 and 2003 seasons.

WNBA Team Wins

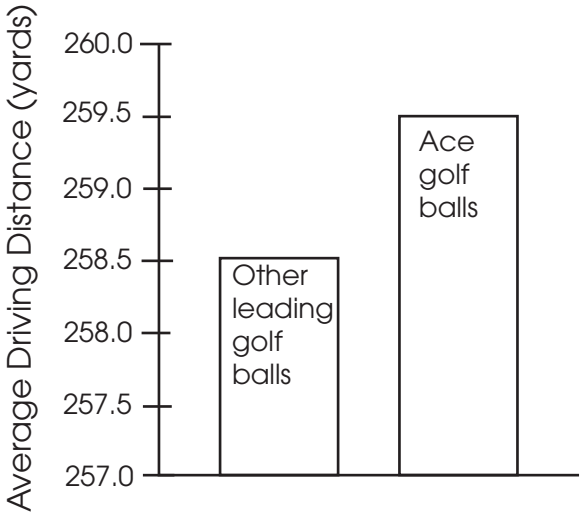
Team	2002	2003
Detroit Shock	9	25
Houston Comets	24	20
Indiana Fever	16	16
Los Angeles Sparks	25	24
New York Liberty	18	16

In your **Answer Document**, create a double-bar graph to display these data. Be sure to title and label your graph appropriately and include a key.

For question 26, respond completely in your **Answer Document**. (2 points)

Item 27 has not been slated for public release in 2009.

28. An ad claims that Ace golf balls travel much farther than other leading golf balls. The ad includes the graph shown.



Which statement describes why this ad is misleading?

A. The Ace golf balls did not go farther.

B. The intervals on the scale are incorrect.

C. The Ace golf balls actually went about 50% farther.

D. The scale used makes the difference in driving distances look greater than it is.

29. Ashton is solving the equation $3x + 7 = 16$.

Which shows a step Ashton can use to solve the equation?

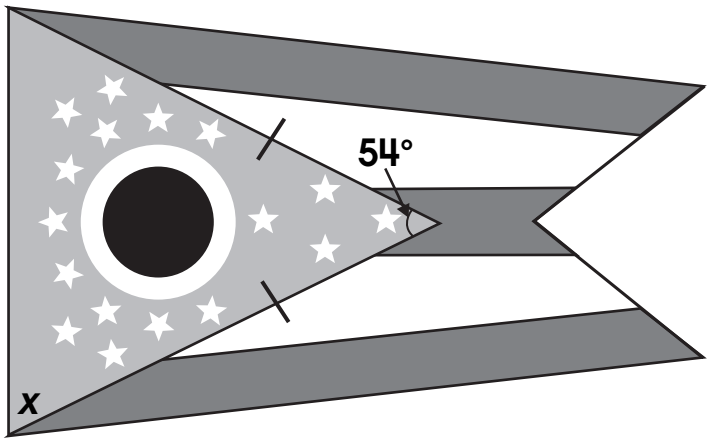
A. $3x + 7 = 16 - 7$

B. $3x + 7 - 7 = 16 - 7$

C. $3x + 7 = 16 + 7$

D. $3x + 7 + 7 = 16 + 7$

30. The Ohio state flag contains an isosceles triangle.



What is the measure of angle *x*?

A. 36°

B. 54°

C. 63°

D. 126°

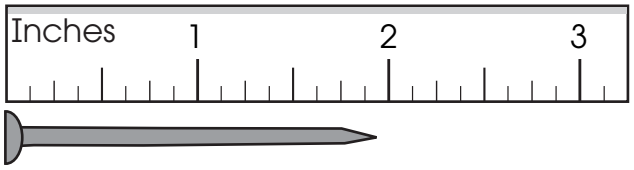
31. After exercising, two students checked their pulses to see how fast their hearts were beating. Marit's heart beat 13 times in 10 seconds. Coleman's heart beat 18 times in 15 seconds.

In your **Answer Document**, state a unit that can be used to compare the students' heart rates. Identify which student has the faster heart rate. Show work to support your comparison.

For question 31, respond completely in your **Answer Document**. (2 points)

Item 32 has not been slated for public release in 2009.

33. Sally needs to purchase more nails to finish her project. She wants all the nails to be the same length.



What is the length of the nails she needs to purchase?

A. $1\frac{3}{4}$ inches

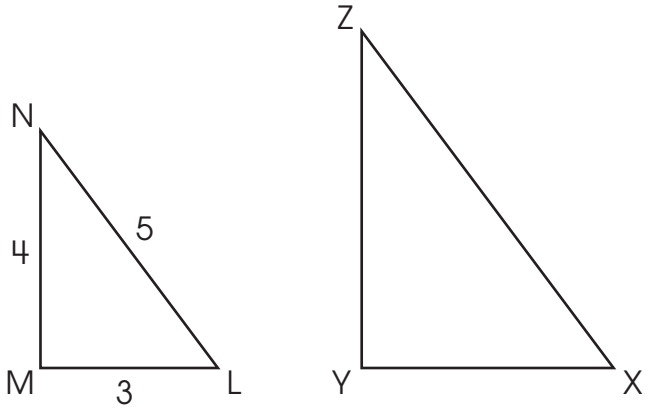
B. $1\frac{7}{8}$ inches

C. $1\frac{15}{16}$ inches

D. $2\frac{1}{16}$ inches

Items 34–39 have not been slated for public release in 2009.

40. Triangle LMN is similar to triangle XYZ.



The scale factor of triangle LMN to triangle XYZ is 2:5.

What is the length of $\overline{ZX}$?

A. 2 units

B. 5 units

C. 7.5 units

D. 12.5 units

Items 41–42 have not been slated for public release in 2009.

43. There are 3 red, 2 blue and 5 green marbles in a bag. William randomly chooses a marble and puts it back into the bag. He repeats this process 70 times.

How many times should William expect to draw a red marble?

A. 3

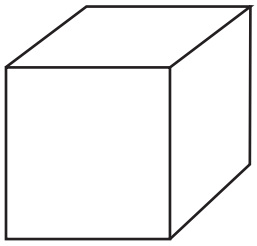
B. 21

C. 23

D. 30

Item 44 has not been slated for public release in 2009.

45. The surface area of a certain cube is 600 square inches.



What is the new surface area of the cube if the length of each edge is reduced by half?

A. 75 square inches

B. 100 square inches

C. 150 square inches

D. 300 square inches

STOP

M