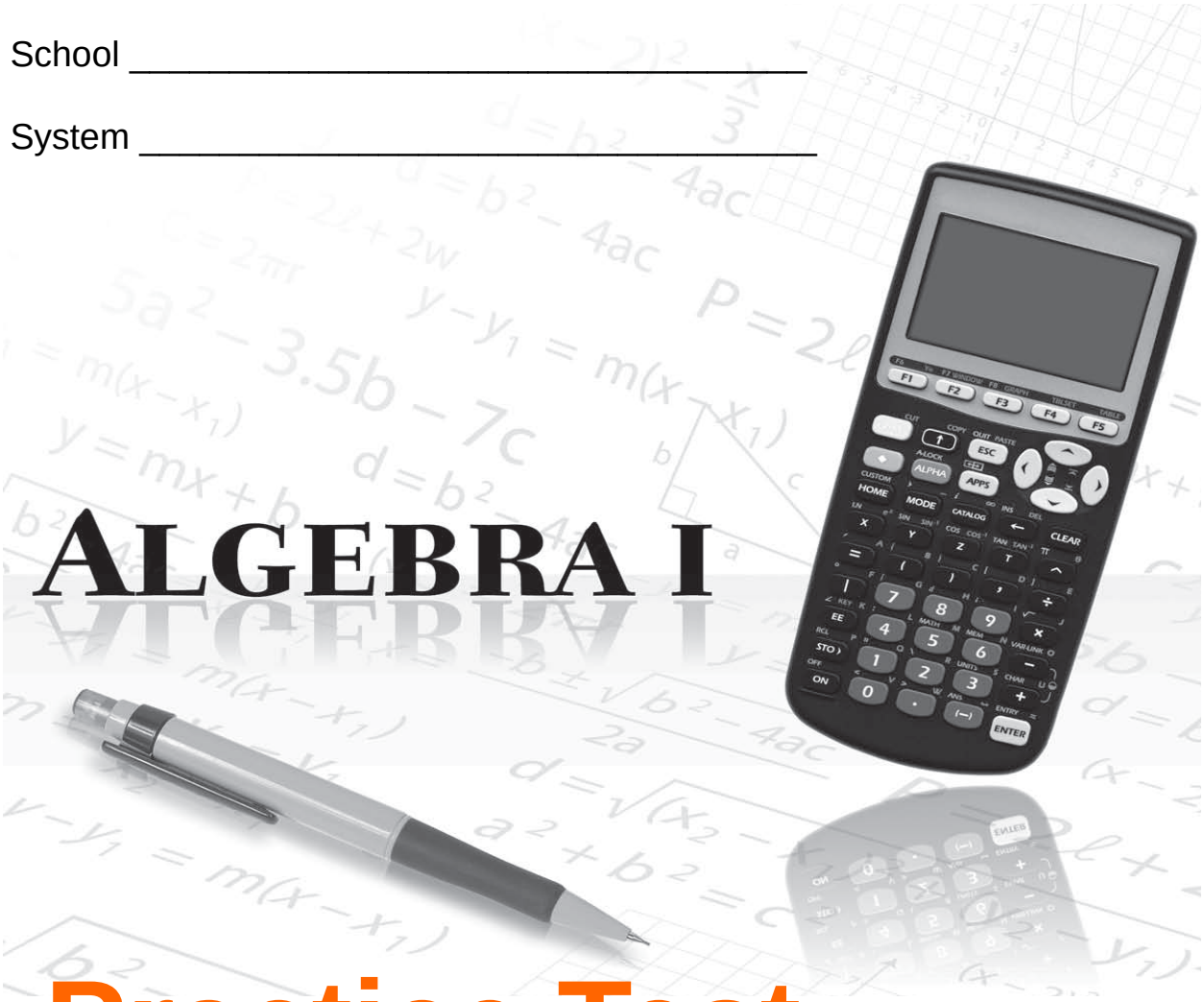
Student Name _____

Teacher Name _____

School _____

System _____



Practice Test

Tennessee End of Course Assessment

Algebra I
Form 2

PEARSON

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Algebra I Reference Page

Abbreviations for Geometric Formulas

A = area	d = diameter	r = radius
B = area of base	h = height	s = length of side
b = base	ℓ = length	V = volume
C = circumference	P = perimeter	w = width

Perimeter (P) and Circumference (C)

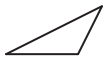
Any Polygon: P = sum of side lengths

Rectangle: $P = 2\ell + 2w$

Circle: $C = 2\pi r$ or πd

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

Plane Figures — Area (A)

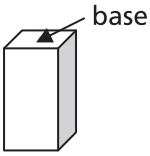
Triangle:  $A = \frac{1}{2}bh$

Rectangle: $A = \ell w$

Circle: $A = \pi r^2$

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

Solid Figures — Volume (V)

Right Rectangular Prism 

$V = Bh$ or $V = \ell wh$

Cube $V = s^3$

Algebraic Formulas and Equations

$d = rt$ — distance = rate × time

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

d = distance between two points

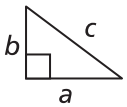
Midpoint Formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Slope Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Standard Form of a Linear Equation: $Ax + By = C$

Slope-Intercept Equation: $y = mx + b$

Point-Slope Equation: $y - y_1 = m(x - x_1)$

Pythagorean Theorem: $a^2 + b^2 = c^2$ 

Quadratics

For $ax^2 + bx + c = 0$: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Discriminant: $b^2 - 4ac$

Measurement Conversions

LENGTH

1 foot (ft) = 12 inches (in.)
1 yard (yd) = 3 feet
1 yard = 36 inches
1 mile = 1,760 yards
1 mile = 5,280 feet

CAPACITY

1 cup (c) = 8 fluid ounces (fl oz)
1 pint (pt) = 2 cups
1 quart (qt) = 2 pints
1 quart = 4 cups
1 gallon (gal) = 4 quarts

WEIGHT

1 pound (lb) = 16 ounces (oz)
1 ton (T) = 2,000 pounds

CONVERSION BETWEEN CUSTOMARY AND METRIC MEASUREMENT

1 yard = 0.9144 m	1 quart = 0.946 L
1 foot = 0.3048 m	1 ounce = 28.35 g
1 inch = 2.54 cm	1 lb = 0.45 kg

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Introduction to Algebra I

Content of tests

The testing program titled the *Tennessee End of Course Assessment* was established to meet the Tennessee mandate for end of course assessments in Tennessee secondary schools. These tests measure the Tennessee State Performance Indicators. Subject areas covered by the end of course assessments include Mathematics, Language Arts, History, and Science.

Test development

For the *Tennessee End of Course Assessment,* professional item writers experienced in each of the content areas researched and wrote the items. Professional editors and test developers carefully reviewed all items and test directions for content and accuracy. To provide a large pool of items for final test selection, the test developers created approximately 50% more items as were needed in the final editions of the tests.

After items were field tested, student responses were analyzed. Professional content editors and researchers carefully reviewed items, their data, and test directions for content, suitability, and accuracy before including certain items and test directions in operational tests.

Test administration

Tennessee End of Course Assessments are given to students as they are completing courses that are included in the program. Tests may be given midyear for block schedules or at the end of the school year.

This test contains 65 multiple-choice questions.

You will have ample time to read each of the questions. The Algebra I test has been designed to be administered in one session and is not timed. The first 15 minutes are set aside to complete identifying data on the answer sheet.

A reference page, similar to the one located in this Practice Test, will be in the front of the actual test. This page includes a list of formulas, equations, and tables for use during testing.

Calculator use is optional. Sharing calculators during testing is not permitted.

The following types of calculators/devices may **NOT** be used during the test:

- pocket organizers
- electronic writing pads or input devices
- Some examples of prohibited calculators are:
    - Casio models: CFX-9970G, Algebra FX 2.0
    - Hewlett-Packard models: HP-40G, HP-49G
    - Texas Instruments models: TI-89, TI-92, Voyage 200, TI-NSPIRE – the CAS version (The non-CAS version of TI-NSPIRE is allowable.)
- calculators that can communicate (transfer data or information) wirelessly with other student calculators/devices
- cell phones, PSPs, and/or iPods
- Students may use any four-function, scientific, or graphing calculator does not have any of the above features. The use of units that have a Computer Algebra System (CAS) is NOT allowed.

Tips for Taking the Test

Preparing for the test

- Take this Practice Test several times
- Review the Tennessee End of Course Item Sampler for Algebra I located at http://tennessee.gov/education/assessment/sec_samplers.shtml on the Tennessee Department of Education Web site.
- Become familiar with the correct way to mark answers on the answer sheet. There is a sample answer sheet in this Practice Test.

Before the test

- Get a good night's sleep. To do your best, you need to be rested.

During the test

- Relax. It is normal to be somewhat nervous before the test. Try to relax and not worry.
- Listen. Listen to and read the test directions carefully. Ask for an explanation of the directions if you do not understand them.
- Plan your time. Do not spend too much time on any one question. If a question seems to take too long, skip it and return to it later. First answer all questions that you are sure about.
- Think. If you are not sure how to answer a question, read it again and try your best to answer the question. Rule out answer choices that you know are incorrect and choose from those that remain.

Answer Sheet for the Practice Test

1 Ⓐ Ⓑ Ⓒ Ⓓ	14 Ⓐ Ⓑ Ⓒ Ⓓ	27 Ⓐ Ⓑ Ⓒ Ⓓ	40 Ⓐ Ⓑ Ⓒ Ⓓ	53 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ	15 Ⓐ Ⓑ Ⓒ Ⓓ	28 Ⓐ Ⓑ Ⓒ Ⓓ	41 Ⓐ Ⓑ Ⓒ Ⓓ	54 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ	16 Ⓐ Ⓑ Ⓒ Ⓓ	29 Ⓐ Ⓑ Ⓒ Ⓓ	42 Ⓐ Ⓑ Ⓒ Ⓓ	55 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ	17 Ⓐ Ⓑ Ⓒ Ⓓ	30 Ⓐ Ⓑ Ⓒ Ⓓ	43 Ⓐ Ⓑ Ⓒ Ⓓ	56 Ⓐ Ⓑ Ⓒ Ⓓ
5 Ⓐ Ⓑ Ⓒ Ⓓ	18 Ⓐ Ⓑ Ⓒ Ⓓ	31 Ⓐ Ⓑ Ⓒ Ⓓ	44 Ⓐ Ⓑ Ⓒ Ⓓ	57 Ⓐ Ⓑ Ⓒ Ⓓ
6 Ⓐ Ⓑ Ⓒ Ⓓ	19 Ⓐ Ⓑ Ⓒ Ⓓ	32 Ⓐ Ⓑ Ⓒ Ⓓ	45 Ⓐ Ⓑ Ⓒ Ⓓ	58 Ⓐ Ⓑ Ⓒ Ⓓ
7 Ⓐ Ⓑ Ⓒ Ⓓ	20 Ⓐ Ⓑ Ⓒ Ⓓ	33 Ⓐ Ⓑ Ⓒ Ⓓ	46 Ⓐ Ⓑ Ⓒ Ⓓ	59 Ⓐ Ⓑ Ⓒ Ⓓ
8 Ⓐ Ⓑ Ⓒ Ⓓ	21 Ⓐ Ⓑ Ⓒ Ⓓ	34 Ⓐ Ⓑ Ⓒ Ⓓ	47 Ⓐ Ⓑ Ⓒ Ⓓ	60 Ⓐ Ⓑ Ⓒ Ⓓ
9 Ⓐ Ⓑ Ⓒ Ⓓ	22 Ⓐ Ⓑ Ⓒ Ⓓ	35 Ⓐ Ⓑ Ⓒ Ⓓ	48 Ⓐ Ⓑ Ⓒ Ⓓ	61 Ⓐ Ⓑ Ⓒ Ⓓ
10 Ⓐ Ⓑ Ⓒ Ⓓ	23 Ⓐ Ⓑ Ⓒ Ⓓ	36 Ⓐ Ⓑ Ⓒ Ⓓ	49 Ⓐ Ⓑ Ⓒ Ⓓ	62 Ⓐ Ⓑ Ⓒ Ⓓ
11 Ⓐ Ⓑ Ⓒ Ⓓ	24 Ⓐ Ⓑ Ⓒ Ⓓ	37 Ⓐ Ⓑ Ⓒ Ⓓ	50 Ⓐ Ⓑ Ⓒ Ⓓ	63 Ⓐ Ⓑ Ⓒ Ⓓ
12 Ⓐ Ⓑ Ⓒ Ⓓ	25 Ⓐ Ⓑ Ⓒ Ⓓ	38 Ⓐ Ⓑ Ⓒ Ⓓ	51 Ⓐ Ⓑ Ⓒ Ⓓ	64 Ⓐ Ⓑ Ⓒ Ⓓ
13 Ⓐ Ⓑ Ⓒ Ⓓ	26 Ⓐ Ⓑ Ⓒ Ⓓ	39 Ⓐ Ⓑ Ⓒ Ⓓ	52 Ⓐ Ⓑ Ⓒ Ⓓ	65 Ⓐ Ⓑ Ⓒ Ⓓ

Directions for Taking the Practice Test

In this Practice Test, you will answer various mathematical operations. You may use your calculator and Reference Page located in the front of this book to help you solve the problems. You may write in the open spaces in this book to work the problems, but remember to fill in the circle on your answer sheet that goes with the answer you choose for each question. Fill in the circle completely and make your mark heavy and dark. If you want to change an answer, erase the mark you made and make a new mark.

You will do the items in this Practice Test by yourself. Remember to read all the directions carefully. When you have finished, you may check for answers.

On your answer sheet, find Number 1. Mark your answers beginning with Number 1.

You may begin.

Stop when you have finished the test.

At the end of the Practice Test, make sure that all your marks are heavy and dark and that you have completely erased any marks that you do not want.

Turn to Page 75 and locate the Answer Key. Check your answers and review those items that you marked incorrectly.

1. **Which transformation causes the graph of $y = 5x + 12$ to change to $y = 5x + 8$?**

A The line is shifted up 4 units.

B The line is shifted down 4 units.

C The line is shifted to the left 4 units.

D The line is shifted to the right 4 units.

2. **Which set of numbers is arranged from least to greatest?**

A $\left\{4.098, \sqrt{26}, 5.2009, \frac{125}{24}\right\}$

B $\left\{4.098, \sqrt{26}, \frac{125}{24}, 5.2009\right\}$

C $\left\{\frac{125}{24}, 5.2009, \sqrt{26}, 4.098\right\}$

D $\left\{\frac{125}{24}, \sqrt{26}, 5.2009, 4.098\right\}$

3. What is the value of the expression $\frac{3xy^2}{4} - \frac{x^2y}{2}$ when $x = -\frac{1}{2}$ and $y = \frac{1}{2}$?

A $-\frac{1}{32}$

B $-\frac{5}{32}$

C $\frac{5}{32}$

D $\frac{1}{32}$

4. **The cost of production, C, of producing x number of electronic goods in one year is modeled by the equation $C = 145x + 1{,}250$. What does the slope in this situation represent?**

A the cost of production per unit

B the number of units produced

C the total cost of production

D the initial setup cost

5. **The mean number of books sold at a bookstore in a two-week period is 34. If the number of books sold each day is increased by 4 for the next two weeks, what is the new mean for the books sold in the four-week period?**

A 34

B 35

C 36

D 38

6. **A rectangular piece of land is 55 yards long and 48 yards wide. To the nearest yard, what is the length of a diagonal path across the land?**

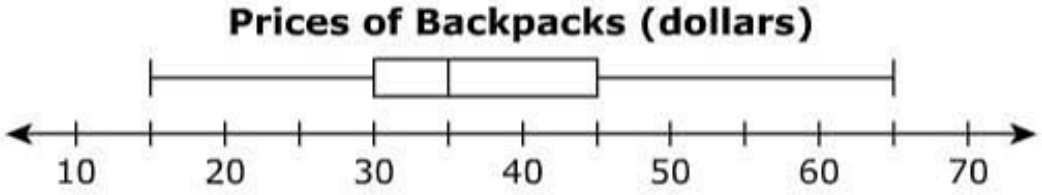
A 103 yards

B 73 yards

C 52 yards

D 27 yards

7. The box-and-whisker graph below represents the prices of 20 different brands of backpacks.



Which statement is supported by the graph?

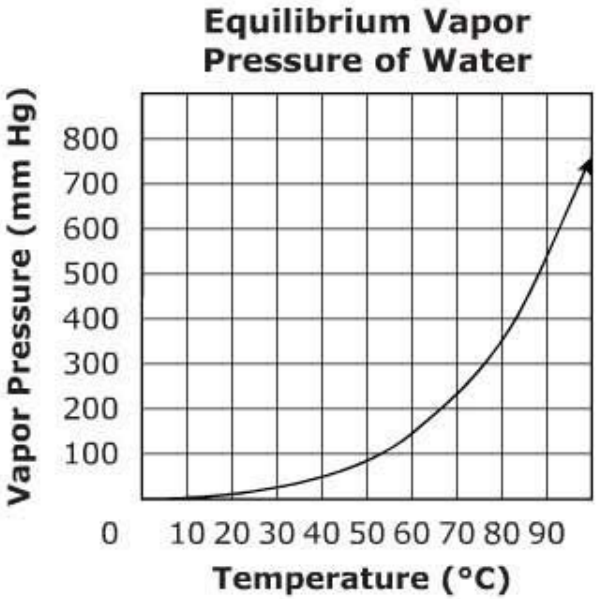
A The least price is $30.

B The greatest price is $45.

C The median price is $35.

D The prices are between $35 and $45.

8. **The graph below shows the equilibrium vapor pressure of water, in millimeters of mercury (mm Hg), measured at different temperatures, in degrees Celsius (°C).**



If the equilibrium vapor pressure decreases from 525 mm Hg to 300 mm Hg, by how many degrees Celsius does the temperature decrease?

A about 15°C

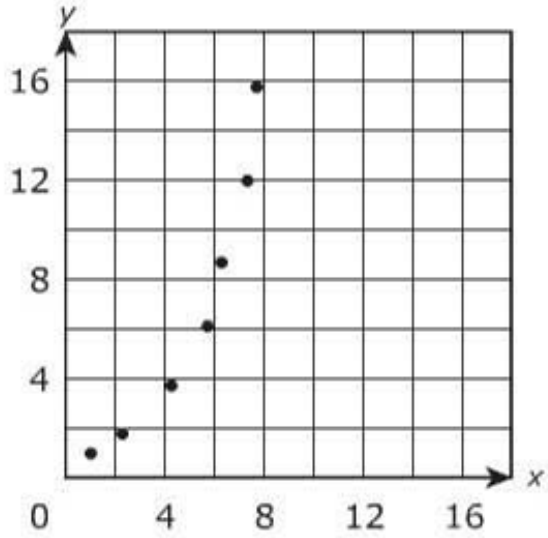
B about 75°C

C about 90°C

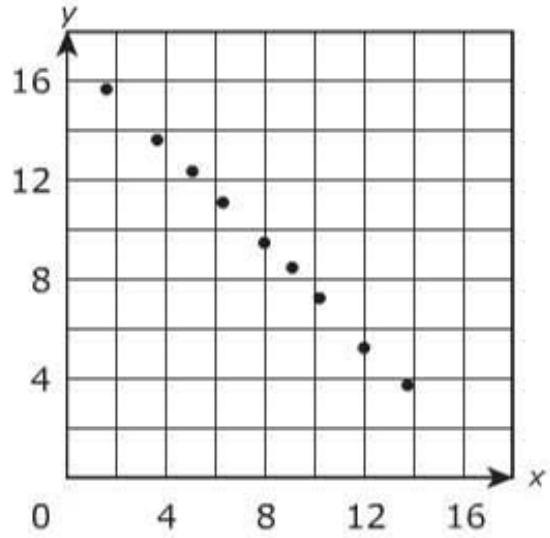
D about 225°C

9. **Which graph shows a positive linear relationship between the variables *x* and *y*?**

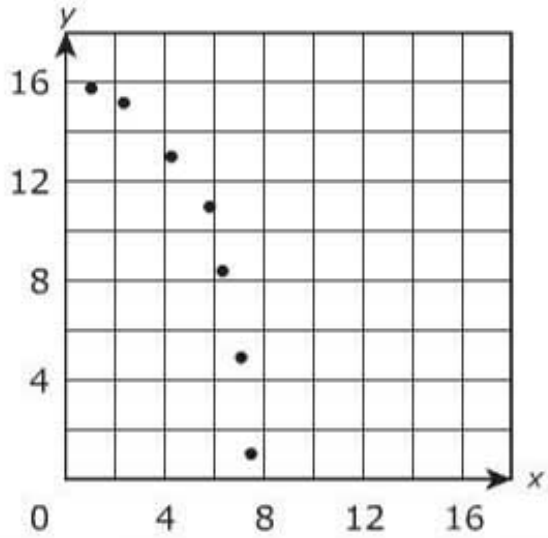
A



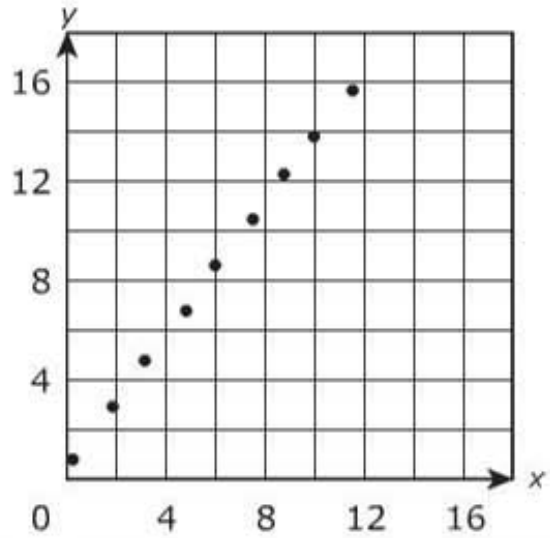
C



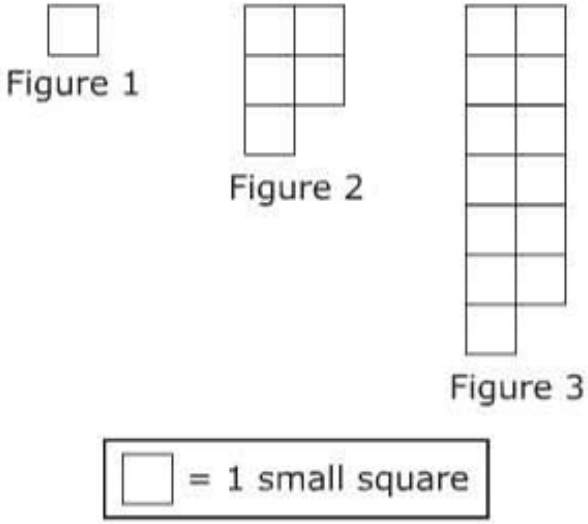
B



D



10. **The first three figures in a pattern are shown below.**



Which expression represents the number of small squares in Figure *n*?

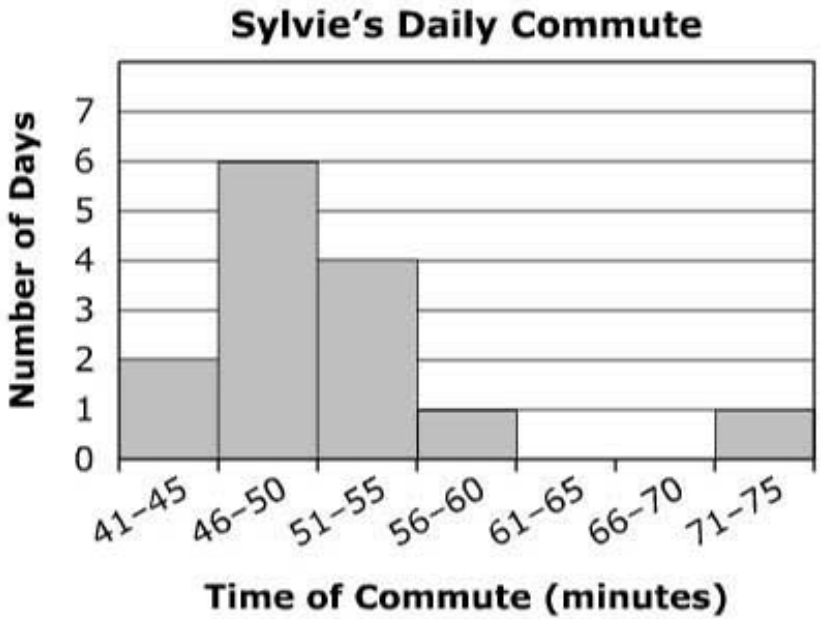
A $2(n-1)^4+3$

B $n^2+(n-1)^2$

C $(n+1)^2-3$

D $2n^2-3$

11. **Sylvie recorded the total time of her daily commute each day for the last two weeks. She made the graph of her data shown below.**



Which statement is supported by the data in the graph?

A The mean time Sylvie took to commute is 58 minutes.

B The mode time Sylvie took to commute is between 46 and 50 minutes.

C Sylvie took between 71 and 75 minutes commuting for $\frac{1}{5}$ of the total number of days.

D Sylvie took between 46 and 50 minutes commuting for more than $\frac{2}{5}$ of the total number of days.

12. **The number of phone calls made by ten employees in one day are listed below.**

4, 1, 2, 2, 3, 2, 3, 2, 3, 1

When the number of phone calls of the eleventh employee was recorded, the mode number of phone calls did not change. Which could <u>not</u> be the number of calls the employee made?

A 0

B 2

C 3

D 5

13. **What are the coordinates of the midpoint of a line segment with endpoints (9, 2) and (−5, 0)?**

A (7, 1)

B (4, 2)

C (2, 2)

D (2, 1)

14. **Simplify $\frac{x^2-2x}{x^2+2x-8}$ and state all restrictions on the domain.**

A $\frac{x}{x+4}$; $x \neq -4$ and $x \neq 2$

B $\frac{x}{x+4}$; $x \neq 0$ and $x \neq 2$

C $\frac{x}{x-4}$; $x \neq 0$ and $x \neq 2$

D $\frac{x}{x-4}$; $x \neq 2$ and $x \neq 4$

15. **A farmer sows 16 grams of seeds per square meter. Which is closest to 16 grams per square meter in grams per square foot (g/ft^2)?**

A 52.49 g/ft^2

B 4.88 g/ft^2

C 1.78 g/ft^2

D 1.49 g/ft^2

16. **Which expression is equivalent to $\frac{x^2-14x+49}{x-7}$ for all $x \neq 7$?**

A $x + 7$

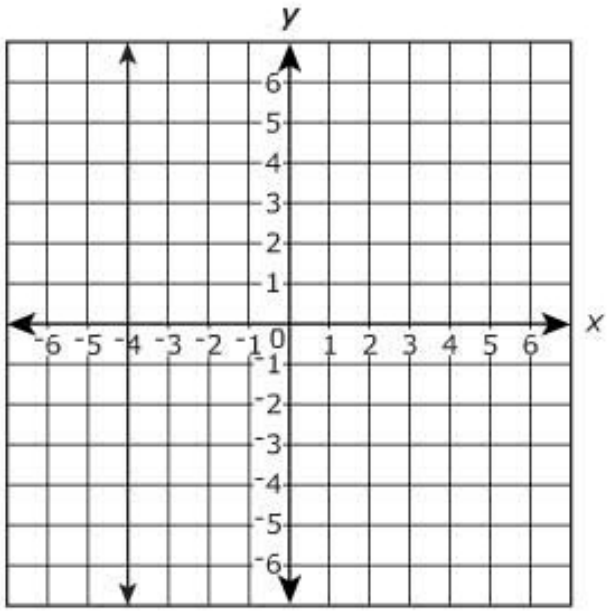
B $x - 7$

C $x + 2$

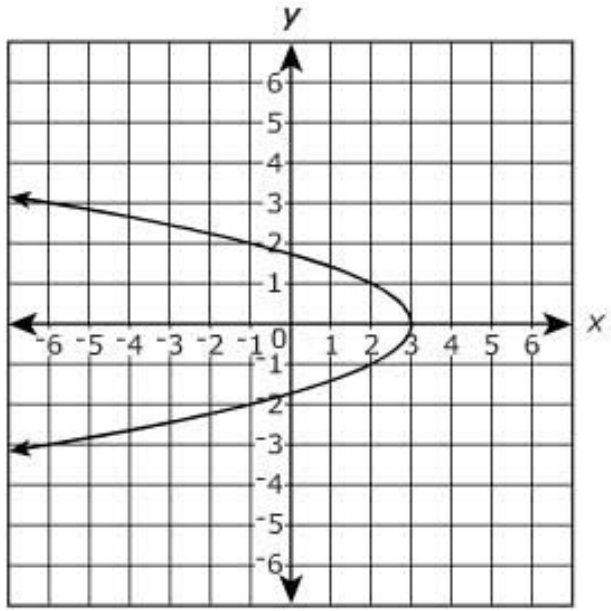
D $x - 2$

17. **Which graph represents a relation that is also a function?**

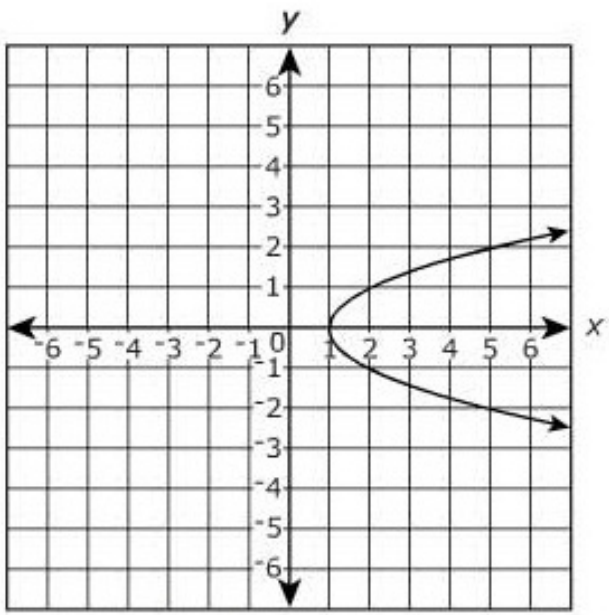
A



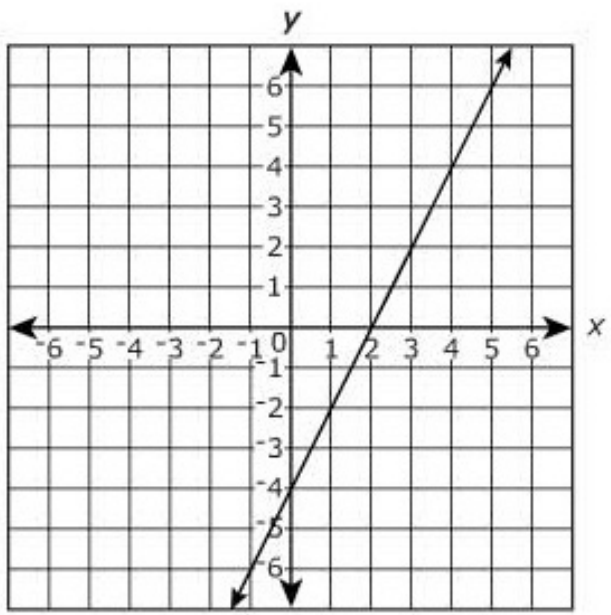
C



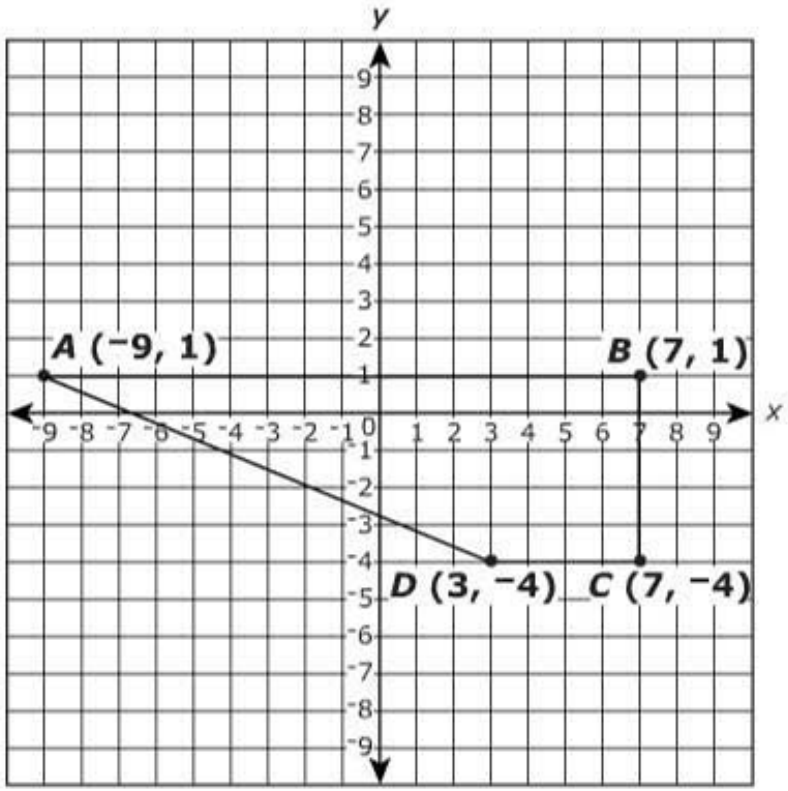
B



D



18. **Which is the perimeter of trapezoid *ABCD*?**



A 33 units

B 38 units

C 50 units

D 80 units

19. **The table below shows shoe sales each month for six months.**

Shoe Sales

Month	1	2	3	4	5	6
Pairs Sold	73	82	105	97	112	142

Using the line of best fit, which is the <u>best</u> prediction for the number of pairs of shoes sold in the eighth month?

A 202

B 170

C 157

D 136

20. **On a science test, Susan's score was 12 more than two times Jennifer's score. The sum of Susan's and Jennifer's scores is 78. How much did Jennifer score?**

A 22

B 30

C 33

D 56

21. **The age, in years, of employees working in a company are given below.**

24, 28, 23, 35, 55, 45, 47, 51, 29, 33

If the eldest employee resigns, how will this affect the median age of the employees of the company?

A The median age decreases by 1 year.

B The median age decreases by 2 years.

C The median age decreases by 5 years.

D The median age remains unchanged.

22. **Solve:** $|3x - 5| \leq 10$

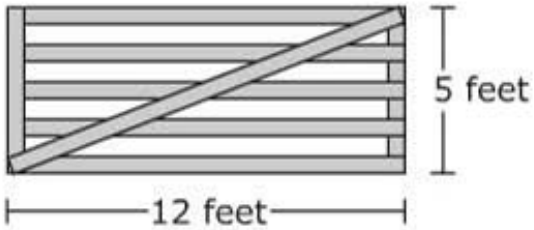
A $-5 \leq x \leq \frac{5}{3}$

B $-\frac{5}{3} \leq x \leq 5$

C $\frac{5}{3} \leq x \leq 5$

D $-5 \leq x \leq -\frac{5}{3}$

23. **Joel attaches a diagonal board to a rectangular gate as shown below.**



Which is the length of the diagonal board?

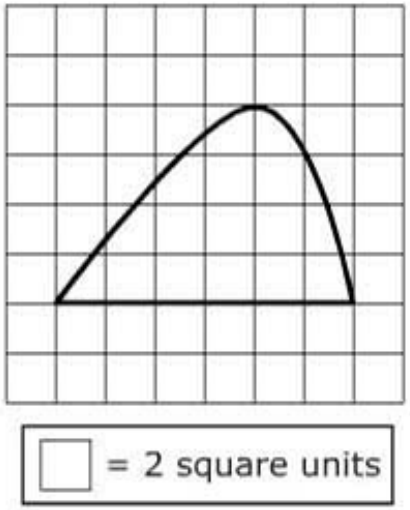
A 7 feet

B 11 feet

C 13 feet

D 17 feet

24. **Which is closest to the area of the figure?**



A 16 square units

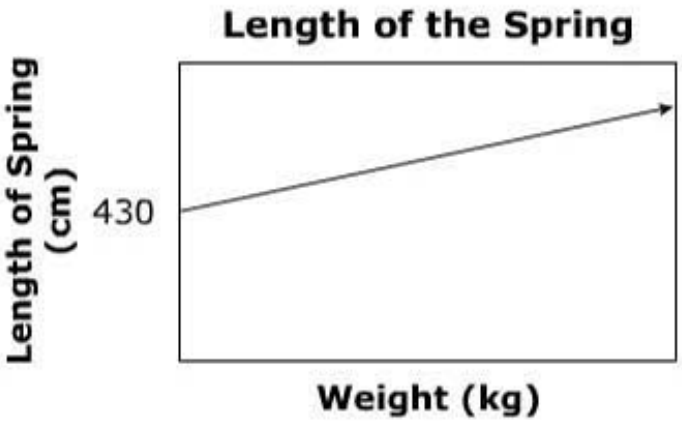
B 24 square units

C 28 square units

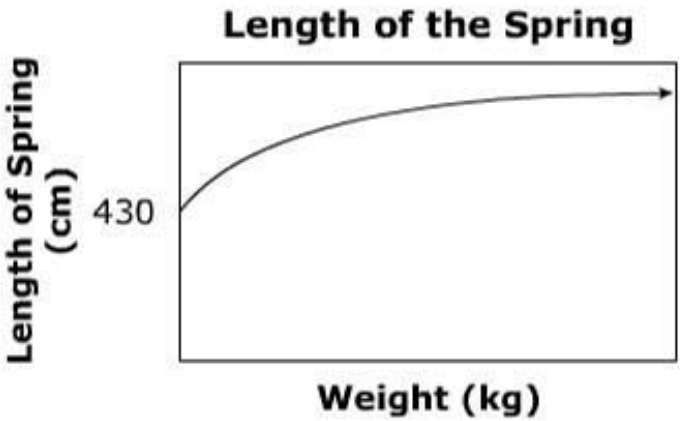
D 32 square units

25. **A student conducts an experiment by suspending *x* kilograms of weight on a vertical spring 430 centimeters in length. The student finds that the spring stretches 0.5 centimeter per kilogram. Which graph <u>best</u> represents the relationship between the weight on the spring, in kilograms, and the length of the spring, in centimeters?**

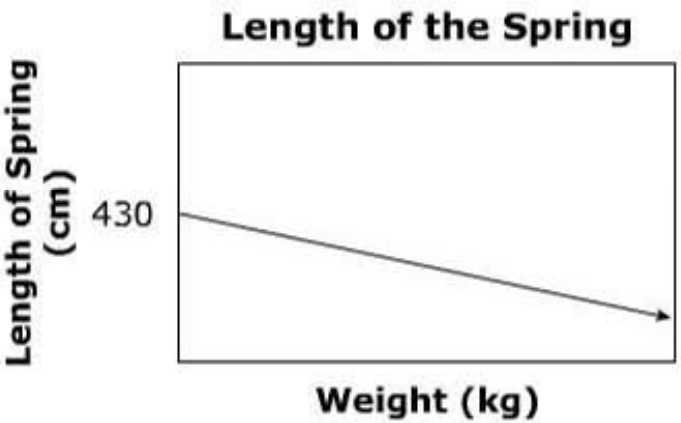
A



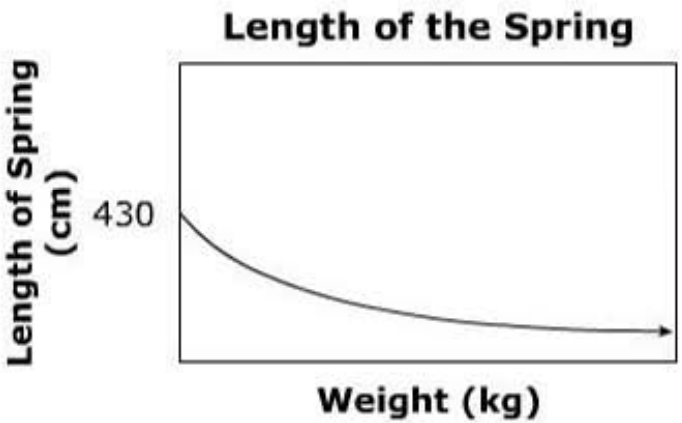
C



B



D



26. **The first four terms of a sequence are shown below.**

1, 3, 9, 27, . . .

Which expression represents the *n*th term of the sequence?

A $3n$

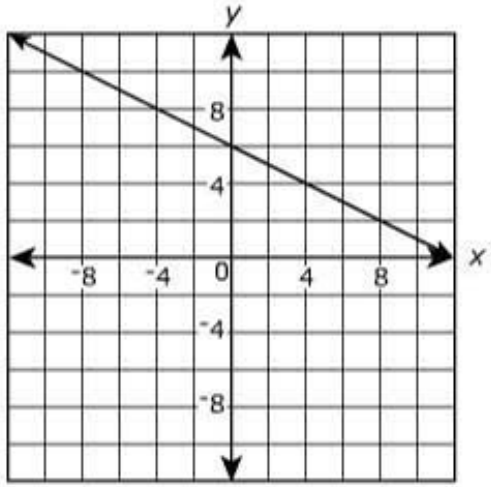
B 3^n

C 3^{n-1}

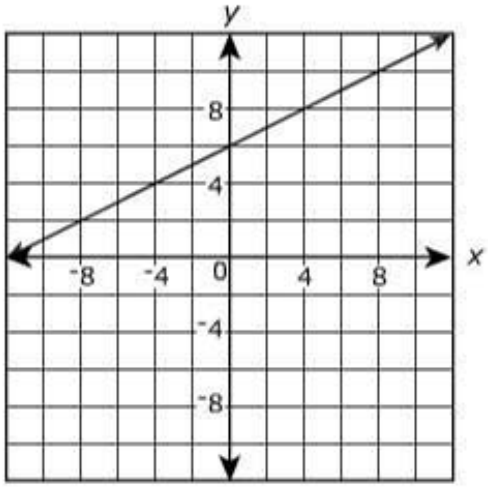
D 3^{n+1}

27. **Which graph <u>best</u> represents the equation $2.5x + 5y = -30$?**

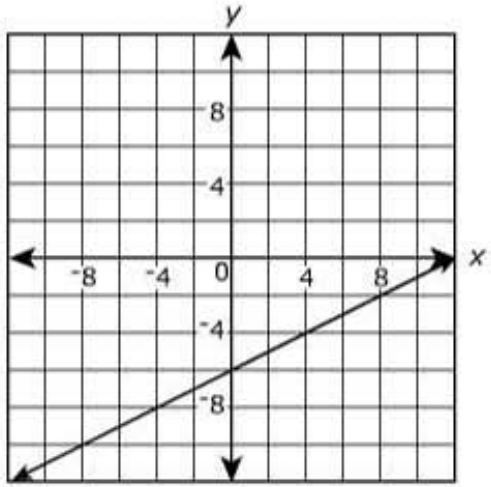
A



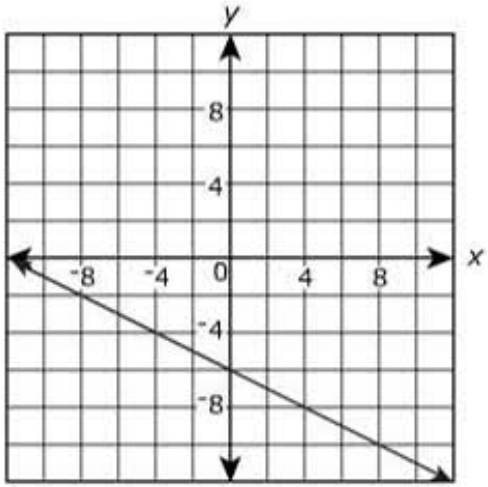
C



B



D



28. **Which quadratic function has the zeros −7 and 9?**

A $y = x^2 + 2x - 63$

B $y = x^2 - 2x - 63$

C $y = x^2 + 16x + 63$

D $y = x^2 - 16x + 63$

29. **Which expression is equivalent to $(5x + 2)(2x - 3)$?**

A $10x^2 - 5$

B $10x^2 - 6$

C $10x^2 - 11x - 6$

D $10x^2 - 19x - 6$

30. **Factor:** $x^2 + 7x - 30$

A $(x - 10)(x + 3)$

B $(x - 6)(x + 5)$

C $(x - 5)(x + 6)$

D $(x - 3)(x + 10)$

31. **Sarah rents a banquet hall for her catered dinner party. The equation $y = 32x + 400$ represents her charges, y, for x number of guests. What is represented by the slope in this equation?**

A the number of guests

B the catering charge per guest

C the rental fee of the banquet hall

D the total charge for the dinner party

32. **Factor completely:** $6xy^2 - 18x^2y + 12xy$

A $6xy(y - 3x + 2)$

B $6xy(y + 3x + 2)$

C $6\left(xy^2 - 3x^2y + 2xy\right)$

D $6\left(xy^2 + 3x^2y + 2xy\right)$

33.

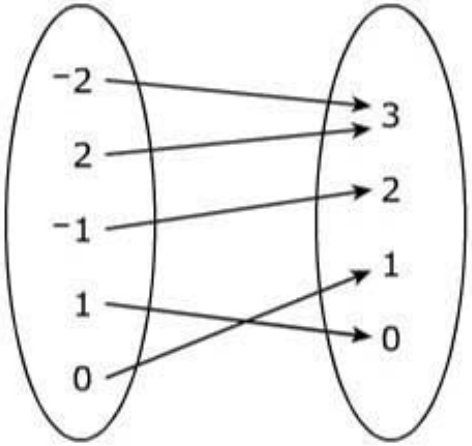
Which is <u>not</u> an equivalent representation for the relation below?

x	−2	−1	0	1	2
y	3	2	1	0	1

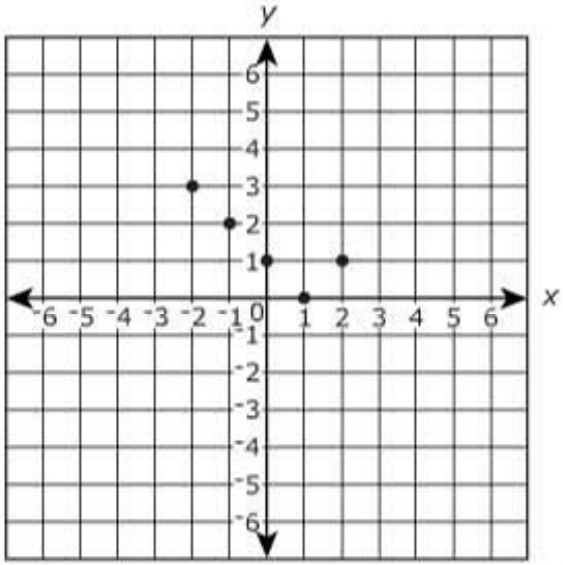
A $\{(x, y)$ such that $y = |x - 1|$ for all integers x: $-2 \le x \le 2\}$

B $\{(-2, 3), (-1, 2), (0, 1), (1, 0), (2, 1)\}$

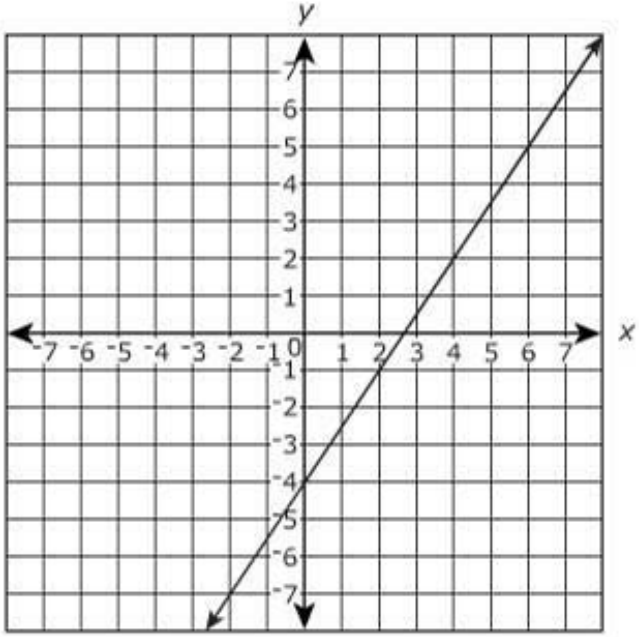
C



D



34. **Which equation <u>best</u> represents the graph of the line?**



A $y = -\frac{3}{2}x + 4$

B $y = -\frac{3}{2}x - 4$

C $y = \frac{3}{2}x + 4$

D $y = \frac{3}{2}x - 4$

35. **Which statement <u>best</u> describes the values of the numbers in this set?**

$$\left\{\sqrt{\frac{169}{11}}, \sqrt{\frac{196}{13}}, \sqrt{\frac{225}{16}}\right\}$$

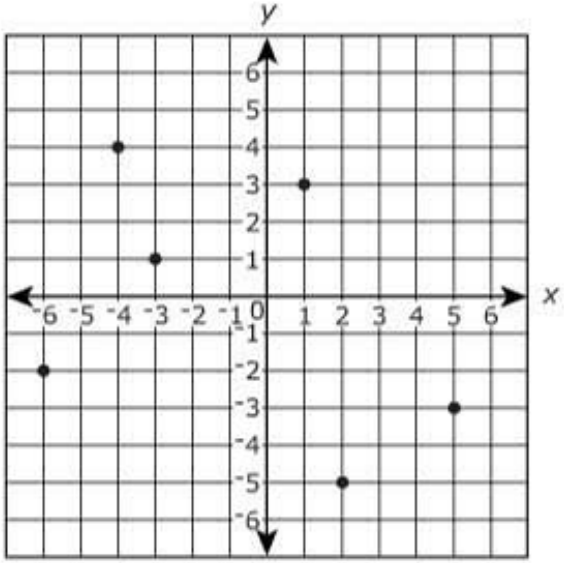
A They are between 2 and 3.

B They are between 3 and 4.

C They are between 3.8 and 4.5.

D They are between 3.7 and 3.8.

36. **Which set represents the relation shown on the graph below?**



A $\{-6, -4, -3, 1, 2, 5\}$

B $\{-2, 4, 1, 3, -5, -3\}$

C $\{(-6, -2), (-4, 4), (-3, 1), (1, 3), (2, -5), (5, -3)\}$

D $\{(-2, -6), (4, -4), (1, -3), (3, 1), (-5, 2), (-3, 5)\}$

37. **The table below shows the amount, *A*, earned by John for tutoring *h* hours.**

Amount Earned Tutoring

Hours, *h*	Amount earned, *A*
1	$12
3	$36
7	$84
10	$120

On a particular week, he tutored for 15 hours. How much did he earn that week?

A $170

B $180

C $200

D $225

38. **Which number <u>best</u> completes the equation below?**

35 square inches = _____ square centimeters

A 88.9

B 112.9

C 177.8

D 225.8

39. **State the domain and range of the relation below.**

$$\{(1, -2), (4, 5), (2, -4), (6, 5), (2, 2)\}$$

A domain = $\{1, 2, 4, 6\}$ and range = $\{-4, -2, 2, 5\}$

B domain = $\{-4, -2, 2, 5\}$ and range = $\{1, 2, 4, 6\}$

C domain = $\{-2, 1, 2, 4, 5\}$ and range = $\{-4, 2, 2, 5, 6\}$

D domain = $\{-4, 2, 2, 5, 6\}$ and range = $\{-2, 1, 2, 4, 5\}$

40. **Subtract:** $(y^3 + 5y^2 - 3y) - (2y^2 - 4y + 1)$

A $-y^3 + y^2 - 2y$

B $-y^3 + 9y^2 - 4y$

C $y^3 + 3y^2 - 7y + 1$

D $y^3 + 3y^2 + y - 1$

41. Simplify $\frac{4x^2}{x^2-25} \cdot \frac{x-5}{8x^2+12x}$ completely for all values of x for which the expression is defined.

A $\frac{1}{(x-5)(2x+3)}$

B $\frac{1}{(x+5)(2x+3)}$

C $\frac{x}{(x-5)(2x+3)}$

D $\frac{x}{(x+5)(2x+3)}$

42.

The table below shows the relationship between the number of years since 2006 and the amount of money collected for an annual community fundraiser.

Community Fundraiser

Years Since 2006	Amount Collected
0	$185
1	$325
2	$270
3	$295
4	$450
5	$515

Using the line of best fit, which is the <u>best</u> prediction of the amount of money that will be collected in 2013?

A $604

B $662

C $955

D $1,014

43. **Two coins are tossed 450 times. The results are shown below.**

Results of Tossing Two Coins

Outcome	Frequency
0 heads	135
1 head	125
2 heads	190

What is the experimental probability of getting 1 head?

A $\frac{5}{18}$

B $\frac{3}{10}$

C $\frac{1}{3}$

D $\frac{1}{2}$

44. **Which expression is an equivalent form of $\frac{64p^4q^6r^4}{112p^8q^2r^{12}}$ for all values of p, q, and r for which the expression is defined?**

A $\frac{4p^{12}q^8r^{16}}{7}$

B $\frac{4p^4q^4r^8}{7}$

C $\frac{4q^4}{7p^4r^8}$

D $\frac{4q^3}{7p^2r^3}$

45. **Solve $x^2 + 17x = 16x + 342$ for x.**

A −38 and 9

B −19 and 18

C 19 and −18

D 38 and −9

46. **Which statement represents the solution to this compound inequality?**

$$-2x + 28 > 66 \text{ or } -8x + 20 < -4$$

A $x < -47$ or $x > -2$

B $x < -2$ or $x > -47$

C $x < -19$ or $x > 3$

D $x < 3$ or $x > -19$

47. **The radius of Jupiter is about 7.1492×10^7 meters and the radius of Mars is about 3.397×10^6 meters. The radius of Jupiter is approximately how many times as great as the radius of Mars?**

A 2.10×10^1

B 6.81×10^7

C 7.49×10^7

D 2.43×10^{14}

48. **Which ordered pair, (x, y), represents the solution for the system of equations?**

$$-0.5x + y = 25$$
$$x - 0.5y = 10$$

A (−15, −50)

B (−2, 24)

C (12, 4)

D (30, 40)

49. Which expression is equivalent to $\left(\frac{\sqrt{25x^4y^8}}{\sqrt{81x^8}}\right)^3$ for all $x > 0$?

A $\frac{5y^4}{9x^2}$

B $\frac{5y^{12}}{9x^6}$

C $\frac{125y^7}{729x^5}$

D $\frac{125y^{12}}{729x^6}$

50. **Which number has the greatest value?**

A $\frac{6}{5}$

B $\sqrt{\frac{49}{16}}$

C 1.21

D $\sqrt{3}$

51. **Olivia buys three necklaces for $85 each and three pairs of earrings for $40 each. She receives the bill showing $255 + $120. Olivia calculates the total cost of the jewelry by multiplying the sum of $85 and $40 by 3. Which property did Olivia use to justify that these two amounts are the same?**

A distributive property

B associative property

C commutative property

D addition property of equality

52. What is the value of $f(t) = 4t^2 - 2t - 7$ when $t = -\frac{1}{4}$?

A $-\frac{27}{4}$

B $-\frac{13}{2}$

C $-\frac{25}{4}$

D $-\frac{11}{2}$

53. **Simplify:** $(1.67 \times 10^{-27})^2$

A 2.7889×10^{-54}

B 3.34×10^{-54}

C 3.34×10^{-25}

D 2.7889×10^{-25}

54. **Simplify:** $5xy^2(x^3y^4 - x^2y - x^4y^3)$

A $5x^3y^8 - x^2y - x^4y^3$

B $5x^4y^6 - x^3y^3 - x^5y^5$

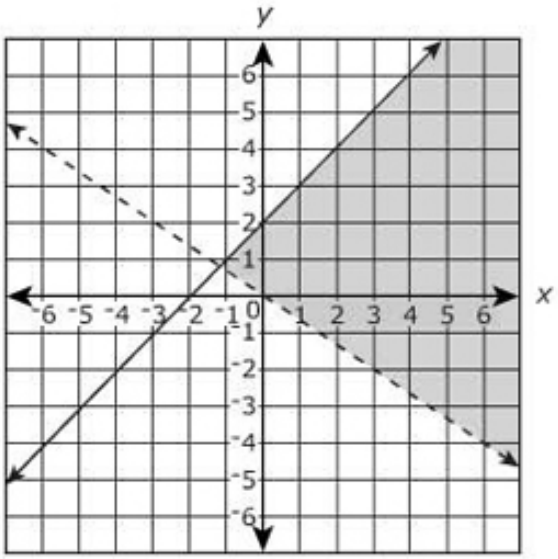
C $5x^3y^8 - 5x^2y^2 - 5x^4y^6$

D $5x^4y^6 - 5x^3y^3 - 5x^5y^5$

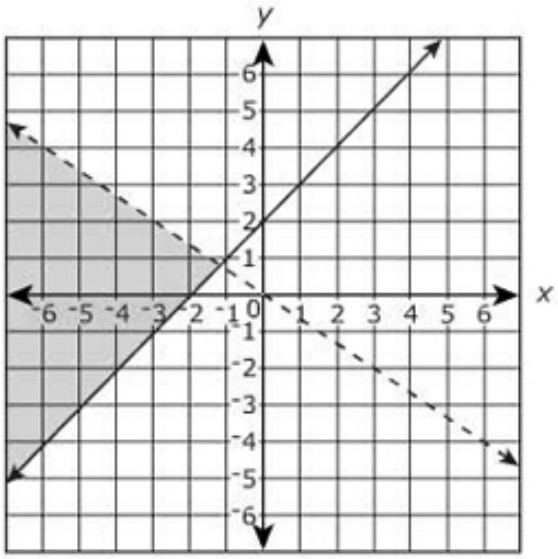
55. **Which graph <u>best</u> represents the system of inequalities below?**

$$-x + y \geq 2$$
$$2x + 3y < 0$$

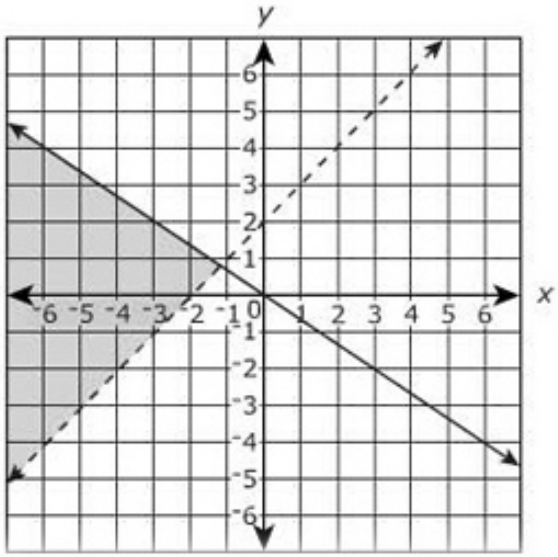
A



C



B



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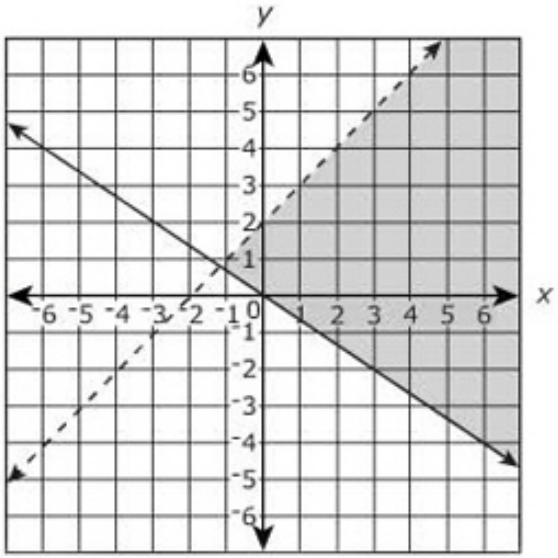


56. **The first two terms of a sequence are −7 and −2. The sequence then follows the rule $f(x) = 5x - 12$, where x represents the position of the term in the sequence. Which list represents the next five terms of the sequence?**

A 3, 8, 13, 18, 23

B 3, 15, 20, 32, 37

C 10, 15, 27, 32, 44

D 10, 22, 34, 46, 58

57. **What happens to the graph of $y = 12x + 5$ when the equation of the line becomes $y = 4x + 5$?**

A The line is 4 times as steep.

B The line is $\frac{1}{4}$ as steep.

C The line is 3 times as steep.

D The line is $\frac{1}{3}$ as steep.

58. **Which expression is closest to $(7.085 \cdot 10^{25})(7.002 \cdot 10^{-12})$?**

A $1.41 \cdot 10^{13}$

B $4.96 \cdot 10^{13}$

C $1.41 \cdot 10^{14}$

D $4.96 \cdot 10^{14}$

59. **Which table <u>best</u> describes the function $y = -3x + 7$?**

A

x	y
0	7
2	−6
4	−12
6	−18

B

x	y
0	7
2	1
4	−5
6	−11

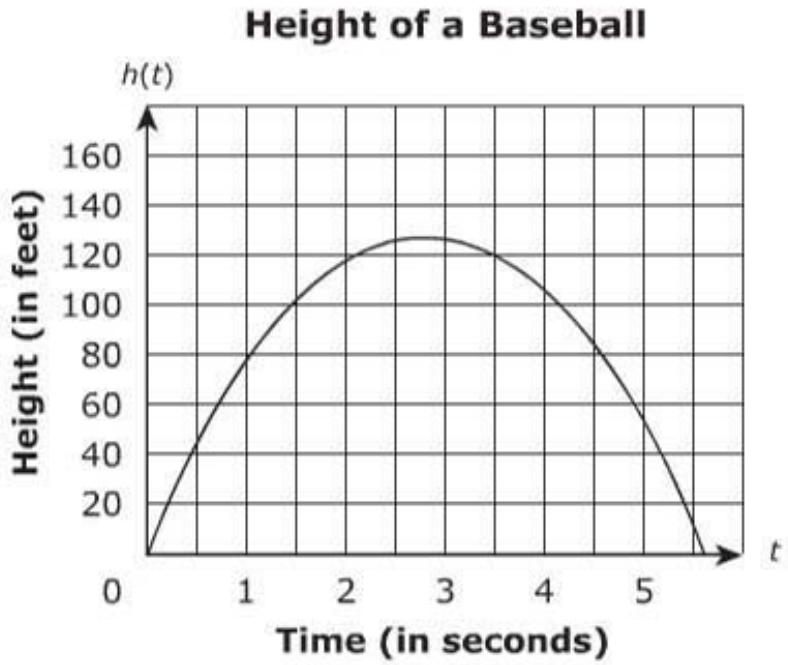
C

x	y
0	7
2	4
4	1
6	−2

D

x	y
0	7
2	13
4	19
6	25

60. **The height of a baseball hit into the air is modeled by a quadratic function, where $h(t)$ represents the height of the ball in feet and t represents time in seconds.**



Which is closest to the total time the baseball is above 80 feet?

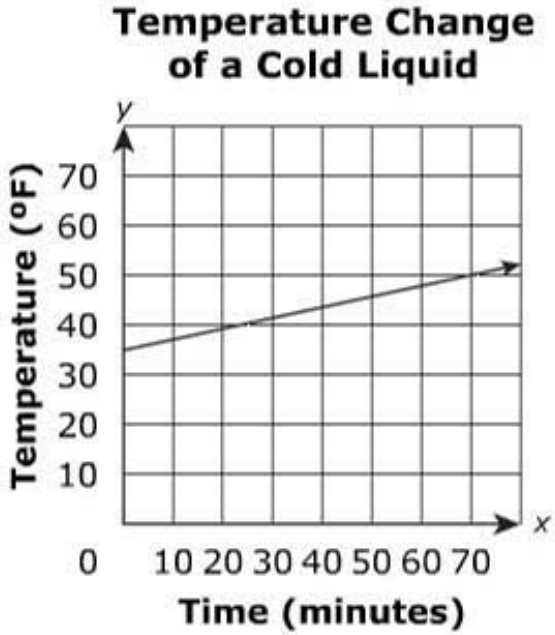
A 2.5 seconds

B 3 seconds

C 3.5 seconds

D 4 seconds

61. **A researcher recorded data on the temperature change, in degrees Fahrenheit, of a cold liquid placed in a drinking glass. The graph below shows the result.**



To the nearest tenth, what is the rate of change of the temperature of the liquid?

A 0.2°F per minute

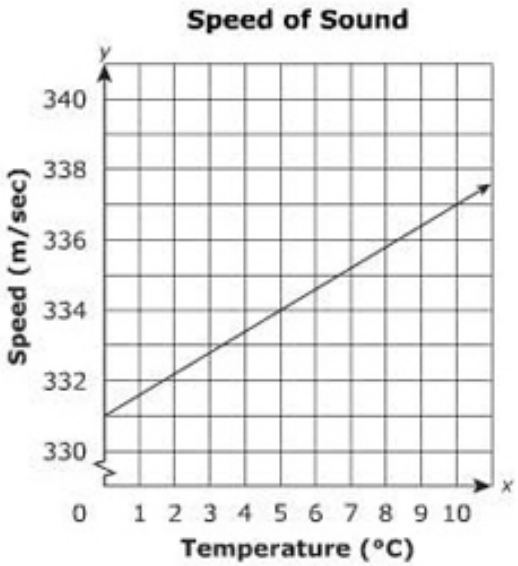
B 0.5°F per minute

C 1.2°F per minute

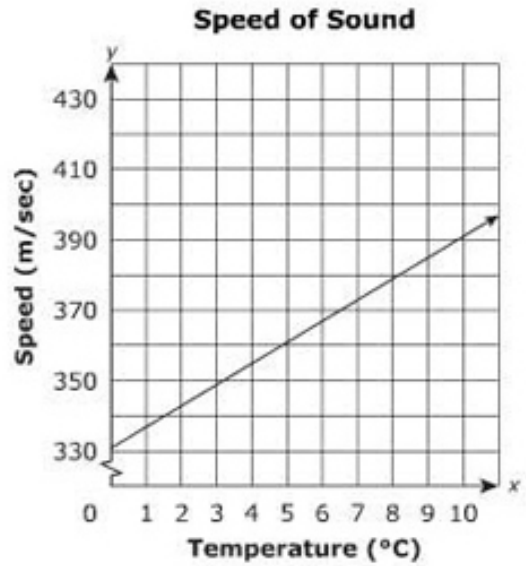
D 2.0°F per minute

62. **The speed of sound through dry air, in meters per second, is represented by the equation $y = 0.6x + 331$, where x represents the temperature of the air in degrees Celsius. Which graph <u>best</u> represents this relationship?**

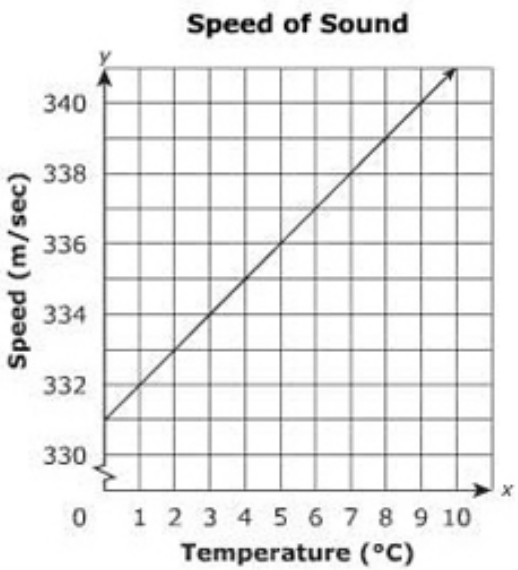
A



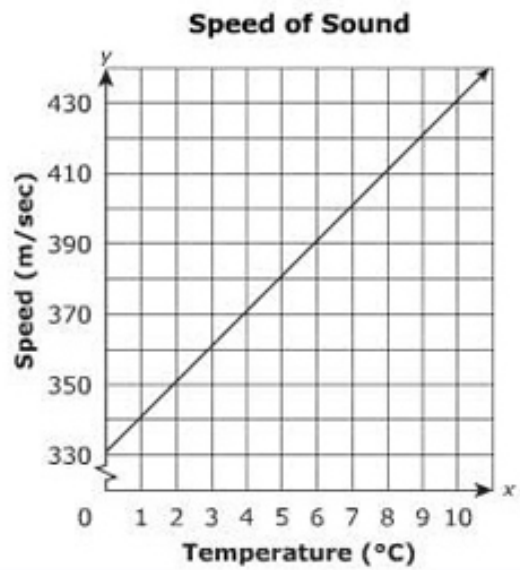
C



B



D



63. What is the simplified form of $\sqrt{\frac{625x^4}{169}} - \sqrt{\frac{144x^4}{676}}$ for all $x \geq 0$?

A $\frac{37x^2}{26}$

B $\frac{31x^2}{13}$

C $\frac{19x^2}{13}$

D $\frac{x^2}{2}$

64. **Chris and Jasmine are packing a bushel's worth of tomatoes into containers that hold 10 tomatoes each. The remaining number of tomatoes in the bushel is modeled by the equation $y = 285 - 10x$, where x represents the number of containers filled with tomatoes. Which table <u>best</u> represents the relationship between x and y?**

A

A Bushel of Tomatoes

Number of Containers, x	Remaining Number of Tomatoes, y
2	265
4	245
6	225
8	205

B

A Bushel of Tomatoes

Number of Containers, x	Remaining Number of Tomatoes, y
2	281
4	277
6	273
8	269

C

A Bushel of Tomatoes

Number of Containers, x	Remaining Number of Tomatoes, y
2	283
4	281
6	279
8	277

D

A Bushel of Tomatoes

Number of Containers, x	Remaining Number of Tomatoes, y
2	285
4	275
6	265
8	255

65. **A toy manufacturer takes approximately 15 minutes to make a batch of toys and 12 minutes to package the toys. Which equation can be used to determine the total time, *t*, taken to make and package *n* batches of toys?**

A $t = 12n$

B $t = 12n + 15$

C $t = (15 + 12)n$

D $t = 15n + 12$

Algebra 1 Form 2
Answer Key

Item Number	Correct Answer
1	B
2	A
3	B
4	A
5	C
6	B
7	C
8	A
9	D
10	B
11	D
12	C
13	D
14	A
15	D
16	B
17	D
18	B
19	C
20	A
21	A
22	B

Item Number	Correct Answer
23	C
24	C
25	A
26	C
27	D
28	B
29	C
30	D
31	B
32	A
33	C
34	D
35	B
36	C
37	B
38	D
39	A
40	D
41	D
42	A
43	A
44	C

Item Number	Correct Answer
45	B
46	C
47	A
48	D
49	D
50	B
51	A
52	C
53	A
54	D
55	C
56	A
57	D
58	D
59	B
60	C
61	A
62	A
63	C
64	A
65	C

Reporting Categories

Below you will find that each item has been linked to its corresponding Reporting Category. These five Reporting Categories will be used to report scores from the actual test.

You can find the Reporting Categories and their Performance Indicators grouped together in the Tennessee End of Course Item Sampler for Algebra I located on the Tennessee Department of Education Web site at http://tennessee.gov/education/assessment/sec_samplers.shtml.

Item	Reporting Category
1	1 - Mathematical Processes
2	2 - Number and Operations
3	1 - Mathematical Processes
4	1 - Mathematical Processes
5	5 -Data Analysis, Statistics, and Probability
6	4- Geometry and Measurement
7	5 -Data Analysis, Statistics, and Probability
8	3 -Algebra
9	5 -Data Analysis, Statistics, and Probability
10	3 -Algebra
11	5 -Data Analysis, Statistics, and Probability
12	5 -Data Analysis, Statistics, and Probability
13	4- Geometry and Measurement
14	3 -Algebra
15	4- Geometry and Measurement
16	3 -Algebra
17	3 -Algebra
18	4- Geometry and Measurement
19	5 -Data Analysis, Statistics, and Probability
20	3 -Algebra
21	5 -Data Analysis, Statistics, and Probability
22	3 -Algebra

Item	Reporting Category
23	4- Geometry and Measurement
24	4- Geometry and Measurement
25	1 - Mathematical Processes
26	3 -Algebra
27	3 -Algebra
28	3 -Algebra
29	3 -Algebra
30	3 -Algebra
31	1 - Mathematical Processes
32	3 -Algebra
33	3 -Algebra
34	3 -Algebra
35	2- Number and Operations
36	3 -Algebra
37	1 - Mathematical Processes
38	4- Geometry and Measurement
39	3 -Algebra
40	3 -Algebra
41	3 -Algebra
42	5- Data Analysis, Statistics, and Probability
43	5- Data Analysis, Statistics, and Probability
44	3 -Algebra
45	3 -Algebra
46	3 -Algebra
47	2- Number and Operations
48	3 -Algebra
49	2- Number and Operations
50	2- Number and Operations
51	1 - Mathematical Processes
52	3 -Algebra
53	2- Number and Operations

Item	Reporting Category
54	1 - Mathematical Processes
55	3 -Algebra
56	1 - Mathematical Processes
57	1 - Mathematical Processes
58	2 - Number and Operations
59	1 - Mathematical Processes
60	3 -Algebra
61	1 - Mathematical Processes
62	1 - Mathematical Processes
63	2 - Number and Operations
64	1 - Mathematical Processes
65	1 - Mathematical Processes