Practice and Standards-Based Assessment for the Next Generation Sunshine State Standards for Mathematics

Algebra 1

Includes:

- Practice worksheet for each benchmark of the Next Generation Sunshine State Standards for Algebra 1
- Standards-Based Practice Assessment to measure mastery progress
Contents

To The Student ....................................................... A1
Practice by Benchmark ............................................. A7
Standards-Based Practice Assessment—Student Answer Document .... A43
Standards-Based Practice Assessment ................................ A45
To The Student

In this practice workbook, you will be solving problems covering the Next Generation Sunshine State Standards, or NGSSS, for Algebra 1 Mathematics. There are several types of questions that can be used to determine how well you have learned these mathematics standards.

- Most of the questions in this NGSSS workbook are *multiple-choice* questions. A multiple-choice question can be the easiest kind of problem to answer because you know that one of the answer choices is the right answer.

- Another type of question in this NGSSS workbook is *gridded-response* questions. There are no choices given to select from for these types of questions. You must figure out the answer on your own and then record your answer in the grid provided.

- It is important to check over your work. These pages teach you how to check over your work so that you do your best to master the NGSSS.
How do I answer multiple-choice questions?

Read the question and circle the letter of the answer you choose.

What is the solution for the equation below?

\[ 3x - 2(5 + 4x) = 2 - 3x \]

A. 6
B. \( \frac{6}{7} \)
C. \(-6\)
D. \(-24\)

• Read the question carefully.
• Do any work in your NGSSS workbook beside or below the question.
• Work carefully so as not to make any calculation errors.
• Solve the problem.
• Look for your answer in the choices. If you do not find your answer, check your work.
• Use a pencil to record your answer in your workbook.
To The Student (continued)

How do I fill in the bubble?

Did you find your answer among the choices given?
If not, go back and work the problem again.

• If your answer is one of the choices, use a pencil to fill in the answer bubble with the letter of your choice.

• Make sure you fill in the bubble completely. The chart below shows you how to do this best.

• Make your marks dark.

- If you make a mistake be sure to erase your first mark completely before marking the correct choice.
How do I answer gridded-response questions?

Gridded-response questions ask you to solve a problem and record your answer in a grid like the one shown at the right.

This symbol appears next to the questions that require you to fill in your answer on a grid in your answer book. You MUST fill in the bubbles accurately to receive credit for your answer.

Parts of a Response Grid
Response grids for Algebra 1 have these parts.

Follow these steps to help you answer gridded-response questions:

• Read the problem carefully.
• Make sure you understand what the question is asking.
• Decide which facts you need to solve the problem.
• Decide which operation you would use.
• Work the problem and find an answer.
• Check that the answer makes sense.
• Write your answer in answer boxes at the top of the grid. If your answer is negative, put a negative sign in the first box. If your answer is positive, skip the first box.
• Print your answer with the first digit in the next box OR with the last digit in the last answer box.
• Print only one digit or symbol in each answer box. Do NOT leave a blank answer box in the middle of an answer.
• Be sure to write a decimal point or fraction bar in the answer box if it is part of the answer.
• Fill in the proper bubble under each answer box that matches what you wrote in the answer box. Do NOT fill in a bubble under an unused answer box.

You can practice filling in a grid for a gridded-response question on the next page.
To The Student (continued)

Use the space to do your work. Then mark the grid for the answer you have chosen. If you change your answer, be sure to erase completely.

The line shown on the graph is represented by the equation $3x - 5y = 15$.

What is the slope of this line?
To The Student (continued)

How can I check my work?

Ask yourself these questions:
• Did I use the right information from the problem?
• Did I answer the question that was asked?
• When solving the problem, did I copy the correct numbers from the problem?
• Did I do the math correctly?
• Does my answer make sense?
• Did I fill in the bubbles correctly for the multiple-choice question?
• Did I fill in the bubbles correctly for the gridded-response question?
Practice by Benchmark
MA.912.A.1.8

Circle the letter of the answer you choose.

1. What is the solution set for the equation \( n(n - 8) = 0 \)?
   - A. \{8\}
   - B. \{0, 8\}
   - C. \{-8, 8\}
   - D. \{-8, 0, 8\}
   [Lesson 8-2]

2. What are the solutions of the equation shown below?
   \((x + 1)(x - 4) = 0\)
   - F. \(-4, -1\)
   - H. \(-1, 4\)
   - G. \(-4, 1\)
   - I. \(1, 4\)
   [Lesson 8-2]

3. A rock falls from a cliff 125 meters above ground. The equation \( h = 125 - 5t^2 \) represents the height \( h \) of the rock after \( t \) seconds. How many seconds does it take for the rock to land on the ground?

4. Which is a possible equation for the graph shown below?

   - A. \( y = (x + 2)(x + 3) \)
   - B. \( y = (x + 3)(x - 2) \)
   - C. \( y = (x - 2)(x - 3) \)
   - D. \( y = (x + 2)(x - 3) \)
   [Lesson 9-2]

5. What are the solutions of the equation shown below?
   \((x + 3)(5x - 1) = 0\)
   - F. \(-3, 2\)
   - G. \(2, 6\)
   - H. \(3, 5\)
   - I. \(-3, \frac{1}{5}\)
   [Lesson 8-2]

6. What are the solutions of the equation \( t^2 - 4t - 21 = 0 \)?
   - A. \(3, 7\)
   - B. \(3, -7\)
   - C. \(-3, 7\)
   - D. \(-3, -7\)
   [Lesson 8-2]
Practice by Benchmark
MA.912.A.2.3

Circle the letter of the answer you choose.

1. Which relation is a function?
   A. \{(4, 5), (–4, 5), (7, 9), (9, 7)\}
   B. \{(4, 5), (4, –5), (7, 9), (9, 7)\}
   C. \{(-4, 5), (-4, –5), (-7, 9), (7, 9)\}
   D. \{(4, 5), (5, 4), (5, 9), (9, 7)\}

2. Which relation is not a function?
   F. \[
   \begin{array}{c|c}
   x & y \\
   \hline
   -2 & 2 \\
   -1 & 3 \\
   0 & 5 \\
   3 & 9 \\
   \end{array}
   \]
   G. Domain \ Range
   \[
   \begin{array}{c|c|c|c|c}
   x & y & z & w & v \\
   \hline
   1 & 2 & 3 & 4 & 5 \\
   6 & 7 & 8 & 9 & 10 \\
   11 & 12 & 13 & 14 & 15 \\
   \end{array}
   \]
   H. \[
   \begin{array}{c|c|c|c|c}
   x & y \\
   \hline
   -4 & 4 \\
   -3 & 3 \\
   2 & 4 \\
   5 & 5 \\
   \end{array}
   \]
   I. \[
   \begin{array}{c|c|c|c|c|c|c|c|c|c}
   x & y \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 \\
   \end{array}
   \]

3. The Hillsborough State Park in Thonotosassa, Florida, charges an admission fee of $4 plus a camping fee of $20 per night. This can be represented by the function \( f(x) = 20x + 4 \), where \( f(x) \) is the total cost and \( x \) is the number of nights. What is \( f(5) \)?
   F. 80
   G. 100
   H. 104
   I. 120

4. The equation \( f(x) = 2x + 5 \) represents the table of values below. What is the missing value in the table?
   \[
   \begin{array}{c|c|c|c|c}
   x & -2 & -1 & 0 & 3 \\
   f(x) & 1 & 3 & 5 & 9 & 11 \\
   \end{array}
   \]
Practice by Benchmark
MA.912.A.2.4

Circle the letter of the answer you choose.

1. What is the range of the relation given by
   \{ (0, 2), (0, 3), (3, 0), (5, 0) \}?
   A. \{0, 2, 3, 5\}
   B. \{0, 2, 3\}
   C. \{2, 3\}
   D. \{0, 3, 5\}

   [Lesson 1-6]

2. What is the domain of the relation given in the table?
   \begin{array}{|c|c|}
     \hline
     x & y \\
     \hline
     -2 & 1 \\
     0 & 5 \\
     2 & 6 \\
     4 & 2 \\
     \hline
   \end{array}
   F. \{-2, 0, 2, 4, 5, 6\}
   G. \{1, 2, 5, 6\}
   H. \{-2, 2, 4\}
   I. \{-2, 0, 2, 4\}

   [Lesson 1-6]

3. Given the function \( y = -1.5x + 2 \) for \( x \in \{-2, 3, 6\} \), which shows the range of the function?
   A. \{-7, -2.5, 5\}
   B. \{-7, -5, -2.5\}
   C. \{-2, -3, 6\}
   D. \{2.5, 5, 7\}

   [Lesson 1-6]

4. What is the range of the relation shown in the graph?

   -2 -1 0 1 2 3 4
   1 2 3 4
   \begin{align*}
   y &= 4 \\
   x &= 0 \\
   y &= -1 \\
   x &= 3
   \end{align*}
   F. \{-2, -1, 1, 2\}
   G. \{-2, -1, 1, 3\}
   H. \{-2, -1\}
   I. \{-2, 2\}

   [Lesson 1-6]

5. What is the domain of the function in the graph shown below?

   -2 -1 0 1 2 3 4 5
   1 2 3 4
   \begin{align*}
   y &= 5 \\
   x &= -4 \\
   y &= 2 \\
   x &= 2
   \end{align*}
   A. \( x \geq 0 \)
   B. \( y \geq 0 \)
   C. \(-2.5 \leq x \leq 2.5 \)
   D. all real numbers

   [Lesson 9-1]
Practice by Benchmark
MA.912.A.2.13

Circle the letter of the answer you choose.

1. In 1953, the sabal palm became the state tree of Florida. The approximate growth of a sabal palm is given by the function $f(x) = 5.5x + 262$, where $x$ is the number of years after 2006 and $f(x)$ is the height in centimeters. What will be the height in centimeters of the tree in 2011?

2. Manuela is trying to decide between three video stores. Video Mania charges $5.50 per video. Videos & More charges $20.00 per year plus $3.00 per video. Vid-E-O charges $40.00 per year plus $1.50 per video. Which statement is not a valid conclusion?
   A. Video Mania is the most cost effective for less than 8 rentals per year.
   B. Videos & More is the most cost effective for 9 to 13 rentals per year.
   C. Vid-E-O is the most cost effective for more than 13 rentals per year.
   D. Videos & More is always less than Vid-E-O.

3. The graph below shows the relationship between the number of Fun Pass tickets sold and the total value of the sales. Which is a true statement about the relation?
   - 80 Fun Pass tickets equal $1,600.
   - Each Fun Pass is worth $25.
   - More than 60 Fun Pass tickets must be sold to earn $1,000 in sales.
   - More than $2,000 is earned when 90 Fun Pass tickets are sold.

4. The distance that a trolley car travels can be modeled by the function shown in the graph below. What is the speed of the trolley in feet per second?
   - 5.5
   - 9.5
   - 19.5
   - 29.5
Practice by Benchmark
MA.912.A.3.1

Circle the letter of the answer you choose.

1. What is the solution for the equation $11 - (x + 4) = 6$?
   - A. $-1$
   - B. $0$
   - C. $1$
   - D. $9$

2. Steps for solving $4(x + 3) = 8x - 2(x + 1)$ are shown below.
   
   **Step 1:** $4x + 12 = 8x - 2x + 2$
   **Step 2:** $4x + 2 = 6x$
   **Step 3:** $2 = 2x$
   **Step 4:** $1 = x$

   Which is the first **incorrect** step in the solution?
   - F. Step 1
   - G. Step 2
   - H. Step 3
   - I. Step 4

3. What value of $n$ makes this equation true?
   
   $$7 + 3(6 - 4n) = -2n$$

4. Hima is paid time and a half for all hours over 40 worked each week. The table shows her total earnings for each of the last 4 weeks.

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours Worked</td>
<td>40</td>
<td>42</td>
<td>45</td>
<td>48</td>
</tr>
<tr>
<td>Earnings</td>
<td>480</td>
<td>516</td>
<td>570</td>
<td>624</td>
</tr>
</tbody>
</table>

   The total, $T$, that Hima earns in a week if she works $h$ hours of overtime is given by the equation $T = 480 + 18h$. If Hima works 55 hours this week, how much does she earn?
   - A. $660$
   - B. $750$
   - C. $990$
   - D. $1,470$

5. Pedro picks two index cards displaying rational algebraic expressions. What value of $r$ would make them equal?

   $$\frac{2}{3}r - 8 \quad \quad \quad \quad \quad 3\left(\frac{1}{6}r + 2\right) - \frac{1}{3}r$$
Practice by Benchmark
MA.912.A.3.2

Circle the letter of the answer you choose.

1. Which of the following does not show the correct use of the distributive property?
   A. \(4(5 - x) = 4(5) - 4x\)
   B. \((3 + x)(7) = 21 + 7x\)
   C. \(-8(2x^2 + x + 5) = -16x^2 - 8x - 40\)
   D. \(9(x^2 + 4x - 1) = 9x^2 + 4x - 1\)

2. Paolo’s solution to an equation is shown below. Which property of real numbers did Paolo use for Step 3?
   Given: \(3(2 - m) = 18\)
   Step 1: \(6 - 3m = 18\)
   Step 2: \(-3m = 12\)
   Step 3: \(m = -4\)
   F. Addition Property of Equality
   G. Distributive Property
   H. Division Property of Equality
   I. Subtraction Property of Equality

3. Miguel picked two index cards shown below. What is the simplified form for the sum of the algebraic expressions on these two cards?
   \[4(x^2 - 3x)\]
   \[(x^2 + 5x - 2)\]
   A. \(5x^2 + 7x - 2\)
   B. \(5x^2 - 7x - 2\)
   C. \(5x^2 + 2x - 2\)
   D. \(4x^2 - 5x - 2\)

4. Which property best explains why \(h + (h + 5h^2)\) can be written as \((h + h) + 5h^2\)?
   F. Addition Property of Equality
   G. Associative Property of Addition
   H. Commutative Property of Addition
   I. Distributive Property

5. Which of the following shows the results of an incorrect use of the Addition Property of Equality to the statement \(5x - 3 = 3x\)?
   A. \(-3 = 8x\)
   B. \(5x + 2 = 3x + 5\)
   C. \(5x = 3x + 3\)
   D. \(2x - 3 = 0\)

6. Which property of real numbers justifies Step 1 shown in the solution below?
   Given: \(9a + 36 + 5a = -6 - 7a\)
   Step 1: \(9a + 5a + 36 = -6 - 7a\)
   Step 2: \(14a + 36 = -6 - 7a\)
   Step 3: \(21a = -42\)
   Step 4: \(a = -2\)
   F. Addition Property of Equality
   G. Associative Property of Addition
   H. Distributive Property of Addition
   I. Commutative Property of Addition
### Practice by Benchmark

**MA.912.A.3.3**

Circle the letter of the answer you choose.

1. Which shows the equation \( n = 8 + 5m \) solved for \( m \)?
   - A. \( m = \frac{n - 5}{8} \)
   - B. \( m = \frac{n - 8}{5} \)
   - C. \( m = \frac{n + 8}{5} \)
   - D. \( m = \frac{5n}{8} \)

2. The formula for the volume of a cylinder is \( V = \pi r^2 h \), where \( r \) is the radius and \( h \) is the height. What is the equation solved for \( h \)?
   - F. \( h = \frac{V}{\pi r^2} \)
   - G. \( h = \frac{\pi r^2}{V} \)
   - H. \( h = \frac{V}{r^2} \)
   - I. \( h = V \pi r^2 \)

3. Which shows the equation \( 3x - 4y = xz \) solved for \( x \)?
   - A. \( x = \frac{xz - 4y}{3} \)
   - B. \( x = \frac{xz + 4y}{3} \)
   - C. \( x = \frac{4y}{3 + z} \)
   - D. \( x = \frac{4y}{3 - z} \)

4. The formula for the perimeter of a rectangle is \( P = 2\ell + 2w \), where \( \ell \) is the length and \( w \) is the width. What is the equation solved for \( w \)?
   - F. \( w = 4P\ell \)
   - G. \( w = P - 2\ell \)
   - H. \( w = \frac{P - 2\ell}{2} \)
   - I. \( w = \frac{P + 2\ell}{2} \)

5. The area of the trapezoid shown is given by \( A = \frac{1}{2}h(b_1 + b_2) \). Which shows how to find the value of \( b_1 \)?
   - A. \( b_1 = 2Ah - b_2 \)
   - B. \( b_1 = \frac{2A}{h} - b_2 \)
   - C. \( b_1 = \frac{2Ah}{b_2} \)
   - D. \( b_1 = \frac{A}{2h - b_2} \)
Practice by Benchmark
MA.912.A.3.4

Circle the letter of the answer you choose.

1. What is the solution of the inequality 
   \(-4x + 13 < 2x + 3\)?
   A. \(x > \frac{5}{3}\)
   B. \(x < \frac{5}{3}\)
   C. \(x > -8\)
   D. \(x < -8\)

2. Which property of real numbers justifies Step 2 in the solution below?

   Given: \(7(2b + 1) > -5\)
   Step 1: \(14b + 7 > -5\)
   Step 2: \(14b > -12\)
   Step 3: \(b > -\frac{6}{7}\)

   F. Distributive Property
   G. Multiplication Property of Inequality
   H. Division Property of Inequality
   I. Subtraction Property of Inequality

3. What is the solution of the inequality 
   \(-5 \leq 2w + 1 \leq 15\)?
   A. \(-6 \leq w \leq 14\)
   B. \(-3 \leq w \leq 7\)
   C. \(-2 \leq w \leq 8\)
   D. \(-1 \leq w \leq 4\)

4. If \(x\) is an element of the set shown below, 
   which names the solutions of \(9 \geq 8 - \frac{4}{3}x\)?
   \(-\{1, 0, 1, 2, 3\}\)
   F. \(-1\)
   G. \(-\frac{3}{4}\)
   H. \(-1, 0\)
   I. \(0, 1, 2, 3\)

5. Which graph represents the solution of the inequality shown below?
   \(10 < 4 - 3k \leq 19\)
   A. [Graph A]
   B. [Graph B]
   C. [Graph C]
   D. [Graph D]

6. The graph below represents the solution for which inequality?

   F. \(x + 3 \leq 4\)
   G. \(5 - 3x < 2\)
   H. \(-4x > -4\)
   I. \(-3 + x > -2\)
Practice by Benchmark
MA.912.A.3.5

Circle the letter of the answer you choose.

1. A library provides a faxing service, as shown in the chart.

<table>
<thead>
<tr>
<th>Description</th>
<th>Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Fee</td>
<td>$1.00</td>
</tr>
<tr>
<td>Fee Per Page</td>
<td>$0.20</td>
</tr>
</tbody>
</table>

Which equation describes this linear function, where \( y \) is the total cost and \( x \) is the number of pages faxed?

A. \( y = 0.2x \)
B. \( y = 1.2x \)
C. \( y = 0.2x + 1 \)
D. \( y = x + 0.2 \)

[Lesson 2-3]

2. A car is traveling from Pensacola to Key West, a distance of about 792 miles. If the car travels at a rate of 60 miles per hour, which equation describes its distance from Key West after \( x \) hours?

F. \( y = 792 + 60x \)
G. \( y = 792 - 60x \)
H. \( y = 60 + 792x \)
I. \( y = 60 - 792x \)

[Lesson 2-3]

3. Erin purchased a beach chair for $8 and some cold beverages for a trip to the beach. The maximum price of a beverage is $1.25. Which inequality could be used to determine \( C \), the total cost of the chair and \( n \) beverages?

A. \( C \leq 8 + 1.25n \)
B. \( C < 8 + 1.25n \)
C. \( C \geq 8 + 1.25n \)
D. \( C > 8 + 1.25n \)

[Lesson 2-3]

4. The table below shows the cost of a monthly gym membership.

<table>
<thead>
<tr>
<th>Number of Months</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$15</td>
</tr>
<tr>
<td>1</td>
<td>$45</td>
</tr>
<tr>
<td>2</td>
<td>$75</td>
</tr>
<tr>
<td>3</td>
<td>$105</td>
</tr>
</tbody>
</table>

Which equation would you use to find the total cost, \( T \), of the gym membership for \( m \) months?

F. \( T = 15m \)
G. \( T = 45m \)
H. \( T = 30m + 15 \)
I. \( T = 30m + 25 \)

[Lesson 2-3]

5. Ms. Holliday has $300 to take her science class to the zoo. It will cost $200 to rent a bus and $4 per student for admission to the zoo. What is the **most** number of students she can afford to take to the zoo?

[Lesson 2-3]
Practice by Benchmark
MA.912.A.3.7

Circle the letter of the answer you choose.

1. What is the following linear equation written in standard form?
   \[4y = 8 - 3x\]
   A. \(3x - 4y = 8\)
   B. \(3x + 4y = 8\)
   C. \(3x + 4y - 8 = 0\)
   D. \(y = -\frac{3}{4}x + 2\)

   [Lesson 4-2]

2. What is the linear equation \(2x + 5y = 15\) written in slope-intercept form?
   F. \(y = -\frac{5}{2}x + 5\)
   G. \(y = -2x + 10\)
   H. \(y = -\frac{2}{5}x + 3\)
   I. \(y = -\frac{2}{5}x + 3\)

   [Lesson 4-2]

3. Which is the equation of the following line written in slope-intercept form?
   \[y - 6 = \frac{1}{4}(x + 12)\]
   A. \(y = \frac{1}{4}x + 9\)
   B. \(y = \frac{1}{4}x + 18\)
   C. \(-x + 4y = 36\)
   D. \(x - 4y = -36\)

   [Lesson 4-2]

4. The American alligator is the official state reptile of Florida. A baby alligator, shown below, grows approximately 12 inches per year.

   ![Alligator growth diagram]

   This growth can be represented by the linear equation \(y = 6 + 12x\), where \(y\) is the length in inches and \(x\) is the number of years. What is this equation written in standard form?
   F. \(-12x + y = 6\)
   G. \(-12x + y = -6\)
   H. \(12x - y = -6\)
   I. \(12x + y = 6\)

   [Lesson 4-2]

5. The double intercept form of a line is given by \(\frac{x}{a} + \frac{y}{b} = 1\), where \(a\) is the \(x\)-intercept and \(b\) is the \(y\)-intercept.

   ![Double intercept form graph]

   The line above would have the equation \(\frac{x}{3} - \frac{y}{2} = 1\). What is this equation in slope-intercept form?
   A. \(y = -\frac{x}{3} + 1\)
   B. \(y = -\frac{2}{3}x + 2\)
   C. \(y = \frac{2}{3}x + 1\)
   D. \(y = \frac{2}{3}x - 2\)

   [Lesson 4-2]
Practice by Benchmark
MA.912.A.3.8

Circle the letter of the answer you choose.

1. Which is a graph of the equation $3x + 5y = 15$?

   A. 
   B. 
   C. 
   D. 

   [Lesson 3-1]

2. Which pair of $x$- and $y$-intercepts was used to graph the line below?

   - F. $x$-intercept: 3, $y$-intercept: $-6$
   - G. $x$-intercept: $-3$, $y$-intercept: $-6$
   - H. $x$-intercept: 6, $y$-intercept: 3
   - I. $x$-intercept: $-6$, $y$-intercept: 3

   [Lesson 3-1]

3. Which table of values was used to graph the line below?

   - A. $x$ $y$
     | -1 | 1 |
     | 0  | 1 |
   - B. $x$ $y$
     | -1 | -1 |
     | 1  | 2 |
   - C. $x$ $y$
     | -2 | -3 |
     | 2  | 5 |
   - D. $x$ $y$
     | -1 | 3 |
     | 2  | 4 |

   [Lesson 3-1]
Practice by Benchmark
MA.912.A.3.9

Circle the letter of the answer you choose.

1. What is the slope of the line graphed below?

A. \(-\frac{4}{3}\)
B. \(-\frac{3}{4}\)
C. \(\frac{3}{4}\)
D. \(\frac{4}{3}\)

2. Since 2005, the production of Florida oranges has followed a linear model. What is the slope of this line if the table below shows the production for 2006 and 2008?

<table>
<thead>
<tr>
<th>Years After 2005, x</th>
<th>Boxes of Oranges (millions), y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>75.0</td>
</tr>
<tr>
<td>3</td>
<td>83.5</td>
</tr>
</tbody>
</table>

F. \(-8.5\)  
G. \(-4.25\)  
H. \(4.25\)  
I. \(8.5\)

3. What is the \(x\)-intercept of this line?

4. What is the \(y\)-intercept of the line that passes through \((-8, -3)\) and \((4, -12)\)?
Practice by Benchmark
MA.912.A.3.10

Circle the letter of the answer you choose.

1. Which equation represents the line that is graphed below?

   ![Graph of a line](image)

   A. \( y = -3x + 2 \)
   B. \( y = -2x + 3 \)
   C. \( y = 2x + 3 \)
   D. \( y = 3x + 2 \)

   [Lesson 4-2]

2. What is an equation of the line that passes through the point \((-4, 3)\) and has a slope of \(-1\)?

   A. \( y + 3 = -(x - 4) \)
   B. \( y + 3 = (x - 4) \)
   C. \( y - 3 = -(x + 4) \)
   D. \( y - 3 = (x + 4) \)

   [Lesson 4-3]

3. Which is an equation of a line that passes through the point \((-6, 8)\) and is perpendicular to the line \(y = -2x + 5\)?

   A. \( y = -2x - 4 \)
   B. \( y = \frac{1}{2}x + 5 \)
   C. \( y = 2x - 5 \)
   D. \( y = \frac{1}{2}x + 11 \)

   [Lesson 4-4]

4. The table below shows the coordinates for the vertices of \(\triangle RST\). What is an equation of the line that contains side \(RS\)?

<table>
<thead>
<tr>
<th>Point</th>
<th>Coordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R )</td>
<td>((-2, 6))</td>
</tr>
<tr>
<td>( S )</td>
<td>((3, 3))</td>
</tr>
<tr>
<td>( T )</td>
<td>((0, -3))</td>
</tr>
</tbody>
</table>

   F. \( y = -\frac{3}{5}x + \frac{24}{5} \)
   G. \( y = 2x - 3 \)
   H. \( y = -\frac{9}{2}x - 3 \)
   I. \( y = \frac{3}{5}x + \frac{6}{5} \)

   [Lesson 4-2]

5. Which is an equation of a line that passes through the point \((4, 2)\) and is parallel to the line shown below?

   ![Graph of a line](image)

   A. \( y = \frac{1}{4}x + 1 \)
   B. \( y = \frac{1}{4}x + 5 \)
   C. \( y = -4x + 1 \)
   D. \( y = -4x + 5 \)

   [Lesson 4-4]
Practice by Benchmark
MA.912.A.3.11

Circle the letter of the answer you choose.

1. In the ordered pairs shown below, \(x\) is the number of hours that Shandra rents a personal watercraft, and \(y\) is the total rental cost. Which equation models the data set? \(\{(1, 85), (3, 205), (5, 325)\}\)
   - A. \(y = x + 84\)
   - B. \(y = 60x + 25\)
   - C. \(y = 80x + 5\)
   - D. \(y = 100x - 15\)

2. The graph shows the distance that a Florida panther can travel. Which of the following best describes the slope of the graph?

3. Samuel jogs around a 100-meter track at a steady pace. The linear equation \(y = 5x\) describes how many meters he has run after \(x\) seconds. Which of the following best describes the meaning of the slope of this equation?
   - A. Samuel runs at a rate of 1 meter every 5 seconds.
   - B. Samuel runs at a rate of 5 meters per second.
   - C. Samuel runs at a rate of 5 laps per second.
   - D. Samuel runs at a rate of 20 meters per second.

4. The table below shows the number of liters of water remaining in a tank as it is draining at a constant rate.

<table>
<thead>
<tr>
<th>Time (min)</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume (L)</td>
<td>50</td>
<td>44</td>
<td>38</td>
<td>32</td>
</tr>
</tbody>
</table>

How many liters will remain in the tank after 16 minutes?
Circle the letter of the answer you choose.

1. Which shows the graph of \( y \leq \frac{2}{3}x - 2 \)?

   - A.
   - B.
   - C.
   - D.

2. Which shows the graph of \( 3x - 2y \leq -8 \)?

   - F.
   - G.
   - H.
   - I.
Practice by Benchmark
MA.912.A.3.13

Circle the letter of the answer you choose.

1. The linear equations \(-2x + y = -4\) and \(3x + y = 5\) are graphed below. Which is the best estimate of the solution of the system of equations?

   - A. (0, -4)
   - B. (0, 5)
   - C. (1.8, -0.4)
   - D. (1.8, 0.4)

2. The linear equations \(y = 3 + 2x\) and \(y = 2 - 3x\) are graphed below. Which is the approximate value of \(x\) in the solution of the system of equations?

   - F. \(-2\frac{3}{5}\)
   - G. \(-\frac{1}{5}\)
   - H. \(\frac{1}{5}\)
   - I. \(\frac{3}{5}\)

3. Which is the best estimate for the point of intersection for the graphs of \(2x - 4y = 10\) and \(4 - 6x = 2y\)?

   - A. (0, 2.4)
   - B. (0.2, 2.6)
   - C. (1.3, -1.9)
   - D. no intersection

4. Which is a solution to the system of inequalities \(y < 2 - 4x\) and \(6y - 9x > 15\)?

   - F. \((-2, 1)\)
   - G. \((-1, -3)\)
   - H. (0, 5)
   - I. (2, 4)

5. The solution of which system of inequalities is graphed below?

   - A. \(y < x + 3\)
   - B. \(y > x + 3\)
   - C. \(y \geq x + 3\)
   - D. \(y \leq 2x + 6\)
   - E. \(y \geq 3x - 5\)
Practice by Benchmark
MA.912.A.3.14

Circle the letter of the answer you choose.

1 What is the solution to the system of equations \(-x + 4y = 20\) and \(x + 2y = 4\)?
   A. (4, 4)
   B. (4, -4)
   C. (-4, 4)
   D. (-4, -4)

[Lesson 6-3]

2 What is the solution to the following system of equations?
   \[
   \begin{align*}
   3x + 5y &= 5 \\
   4x + 9y &= 2 
   \end{align*}
   \]
   F. (5, -2)
   G. \(\left(2, \frac{-1}{5}\right)\)
   H. (-2, 5)
   I. \(\left(\frac{-1}{5}, 2\right)\)

[Lesson 6-4]

3 The equations below approximate the populations of New York and Florida, where \(y\) is the population in millions and \(x\) is the number of years since 2005. Which is the best estimate for the year in which the populations of New York and Florida will be equal?

<table>
<thead>
<tr>
<th>Rank: State</th>
<th>Population Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3: New York</td>
<td>(y = 0.02x + 19.3)</td>
</tr>
<tr>
<td>4: Florida</td>
<td>(y = 0.28x + 17.8)</td>
</tr>
</tbody>
</table>

A. 2010
B. 2011
C. 2025
D. 2030

[Lesson 6-8]

4 Which graph represents the solution to this system of inequalities?
   \[
   \begin{align*}
   -5x + 2y &\leq 18 \\
   -x + y &\leq 2 
   \end{align*}
   \]
   F.
   G.
   H.
   I.

[Lesson 6-2]
Practice by Benchmark
MA.912.A.3.15

Circle the letter of the answer you choose.

1. Fiona owns 76 action and comedy DVDs. The number of action DVDs, \(a\), is 8 less than twice the number of comedy DVDs, \(c\). How many action DVDs does Fiona own?
   - A. 26
   - B. 28
   - C. 42
   - D. 48

2. Pizza Pizzazz sells the items shown in the table. During lunch, the restaurant sold 35 more pizza slices than pizza pockets and made $825.50. Which system of equations could be used to find the number of pizza slices, \(s\), and pizza pockets, \(p\), that were sold?
   - F. \(s + p = 35\)
     \[2.5s + 3.5p = 825.5\]
   - G. \(s = 35 + p\)
     \[2.5s + 3.5p = 825.5\]
   - H. \(s = 35 - p\)
     \[3.5s + 2.5p = 825.5\]
   - I. \(s = 35 + p\)
     \[3.5s + 2.5p = 825.5\]

3. Marcus is buying $8 caps and $5 key chains. He must buy at least 6 gifts, but he cannot spend more than $45. If \(x\) is the number of caps and \(y\) is the number of key chains, which system of inequalities represents this situation?
   - A. \(x + y \leq 6; 8x + 5y \leq 45\)
   - B. \(x + y \leq 6; 8x + 5y \geq 45\)
   - C. \(x + y \geq 6; 8x + 5y \leq 45\)
   - D. \(x + y \geq 6; 8x + 5y \geq 45\)

4. The Central Florida Zoo has a Zoo Friend animal adoption program that includes a stuffed animal and a photo of the animal. The Kingdom Keeper program also includes two zoo passes. The table shows the number of memberships in each program sold in the past two weeks and the total money collected. How many dollars did each Zoo Friend membership cost?

<table>
<thead>
<tr>
<th>Membership Type</th>
<th>Money Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoo Friend</td>
<td>$400</td>
</tr>
<tr>
<td>Kingdom Keeper</td>
<td>$560</td>
</tr>
</tbody>
</table>

- F. \(s + p = 35\)
  \[2.5s + 3.5p = 825.5\]
- G. \(s = 35 + p\)
  \[2.5s + 3.5p = 825.5\]
- H. \(s = 35 - p\)
  \[3.5s + 2.5p = 825.5\]
- I. \(s = 35 + p\)
  \[3.5s + 2.5p = 825.5\]
Practice by Benchmark
MA.912.A.4.1

Circle the letter of the answer you choose.

1. Which is \( \frac{6x^{10}}{4x^2} \) written in simplified form (for \( x \neq 0 \))?
   A. \( \frac{3}{2}x^3 \)
   B. \( \frac{3}{2}x^8 \)
   C. \( 2x^5 \)
   D. \( 2x^8 \)

   [Lesson 7-2]

2. What is \((2x^3)^4\) written in simplified form?
   F. \( 8x^7 \)
   G. \( 8x^{12} \)
   H. \( 16x^7 \)
   I. \( 16x^{12} \)

   [Lesson 7-1]

3. Which expression best represents the volume of the cube shown below?
   A. \( 9ab^2 \)
   B. \( 9a^2b^4 \)
   C. \( 27a^2b^6 \)
   D. \( 27a^3b^8 \)

   [Lesson 7-1]

4. What is the area of the rectangle?
   - \( 15x^3y^2 \) in.
   - \( 3xy^2 \) in.
   - \( 5x \) in
   - \( 12x \) in
   - \( 45x^3y^2 \) in
   - \( 45x^3y^4 \) in

   [Lesson 7-1]

5. Which is the expression \( 4rs(2r^3s^2)\) written in simplified form?
   A. \( 16r^7s^3 \)
   B. \( 16r^6s^3 \)
   C. \( 8r^7s^3 \)
   D. \( 8r^6s^3 \)

   [Lesson 7-1]

6. Ciara selected the numerator and denominator cards shown below.

   Numerator: \( 81b^3c^{-3} \)
   Denominator: \( 27bc^2 \)

   What is the simplified form of the fraction formed by these expressions if \( b \) and \( c \) are not equal to 0?
   F. \( 3b^2c^{-5} \)
   G. \( \frac{3b^2}{c^5} \)
   H. \( \frac{3b^3}{c^5} \)
   I. \( \frac{9b^3}{bc^{-3}} \)

   [Lesson 7-2]
Practice by Benchmark
MA.912.A.4.2

Circle the letter of the answer you choose.

1. Which expression best represents the area of the square in simplest terms?

   ![Square diagram]

   A. $16x^2 - 24x + 9$
   B. $16x^2 + 24x - 9$
   C. $16x^2 - 12x + 9$
   D. $16x^2 + 12x + 9$

   [Lesson 7-7]

2. What is the simplified form of the following difference?

   $$(3x^2 - 4x - 6) - (5x^2 - 5x + 3)$$

   F. $8x^2 + x + 3$
   G. $2x^2 + x + 3$
   H. $-2x^2 + x - 9$
   I. $-2x^2 + x + 9$

   [Lesson 7-5]

3. The length and width of a rectangle are shown in the table. Which expression best represents the area of the rectangle?

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>$x + a$</td>
</tr>
<tr>
<td>Width</td>
<td>$x - a$</td>
</tr>
</tbody>
</table>

   A. $x^2 + a^2$
   B. $x^2 - a^2$
   C. $x^2 + 2ax - a^2$
   D. $x^2 - 2ax + a^2$

   [Lesson 7-8]

4. What is the perimeter of the quadrilateral?

   ![Quadrilateral diagram]

   F. $16n^2 + 15n - 5$
   G. $19n^2 + 16n + 5$
   H. $19n^2 + 16n$
   I. $27n - 10$

   [Lesson 7-5]

5. Which expression best represents the area of the triangle in simplest terms?

   ![Triangle diagram]

   A. $4x^2 - 5x - 3$
   B. $4x^2 - 5x - \frac{3}{2}$
   C. $8x^2 - 10x - \frac{3}{2}$
   D. $8x^2 - 10x - 3$

   [Lesson 7-7]
Practice by Benchmark
MA.912.A.4.3

Circle the letter of the answer you choose.

1. What are the factors of the trinomial $x^2 + x - 6$?
   - A. $(x + 3)(x - 2)$
   - B. $(x - 3)(x + 2)$
   - C. $(x + 3)(x + 2)$
   - D. $(x - 3)(x - 2)$

   [Lesson 8-3]

2. Which are possible dimensions of the rectangle shown below?
   - Area $= (12x^2 + x - 16)$ cm²

   - F. $(4x - 3)$ cm, $(3x + 2)$ cm
   - G. $(4x + 3)$ cm, $(3x - 2)$ cm
   - H. $(6x - 3)$ cm, $(x + 6)$ cm
   - I. $(6x + 1)$ cm, $(x - 6)$ cm

   [Lesson 8-5]

3. Which is the factored form of $15r^3s^2 - 21rs^4 + 30s^3$?
   - A. $3rs(5r^2s - 7s^3 + 10s^2)$
   - B. $3rs(5r^2 - 7s^2 + 10s)$
   - C. $3rs(5r^3 - 21s^2 + 30s)$
   - D. $3s^2(5r^3 - 7rs^2 + 10s)$

   [Lesson 8-2]

4. Which of the following could be the base and height of a parallelogram whose area is $9w^2 - 16$?
   - F. $9w^2 - 16$
   - G. $(3w - 4)^2$
   - H. $(-3w - 4)^2$
   - I. $(3w - 4)(3w + 4)$

   [Lesson 8-6]

5. What is the factored form of the expression $-8x^2 + 22x - 15$?
   - A. $(2x + 3)(5 - 4x)$
   - B. $(2x - 3)(5 - 4x)$
   - C. $(4x + 5)(2x - 3)$
   - D. $(3 - 2x)(5 - 4x)$

   [Lesson 8-4]

6. Ms. Chen’s class is practicing the complete factorization of random polynomials on index cards. What are the correct set of factors for the polynomial on the card below?

   - F. $4(a - 3b)(a - 4b)$
   - G. $4(a - 4b)(a - 7b)$
   - H. $(4a - 3b)(a - 4b)$
   - I. $(4a - 4b)(a - 7b)$

   [Lesson 8-6]
Circle the letter of the answer you choose.

1. Refer to the table of monomials shown below. What is \((II + III) ÷ I\)?

<table>
<thead>
<tr>
<th>Monomials</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>qr</td>
</tr>
<tr>
<td>II.</td>
<td>q^3r</td>
</tr>
<tr>
<td>III.</td>
<td>5q^4r^2</td>
</tr>
</tbody>
</table>

A. \(5q^2r\)  C. \(q^2 + 5q^3r\)  
B. \(5q^2r^2\)  D. \(q + 5q^3r\)

2. What is the following expression written in lowest terms?

\[
\frac{8x^2y - 10x^5y^2}{2x}
\]

F. \(4y - 5x^4y\)  
G. \(4xy - 5x^4y^2\)  
H. \(4xy - 5x^3y\)  
I. \(4x - 5x^4y^2\)

3. What is the quotient below written in simplest form?

\[
\frac{h^5 + 9h^3 + 18h}{h^3}
\]

A. \(h^2 + 9 + \frac{18}{h^2}\)  
B. \(h^2 + 9h + \frac{18}{h}\)  
C. \(h^2 + 9h + \frac{18}{h}\)  
D. \(h^2 + 9 + \frac{18}{h}\)

4. Which expression best represents the missing side of the rectangle shown below?

\[
\text{Area} = 6z^6 - 3z^3 - 12z^2 
\]

F. \(2z^3 - z - 4\)  
G. \(2z^3 - z - 4\)  
H. \(2z^3 - 4z\)  
I. \(2z^3 - 4z\)

5. Which is the following expression written in simplest form?

\[
\frac{15a^2b^2 + 5ab^3 + 20a^2b}{5ab}
\]

A. \(3a^2b + ab^2 + 4a^2\)  
B. \(3ab + b^2 + 4a^2\)  
C. \(5ab + ab^2 + 4a^2b\)  
D. \(5ab + b^2 + 4a^2\)

6. The area of \(\triangle ABC\) is given by

\[
3x^4 + 2x^3 - x^2
\]

What is the length of \(AC\)?

F. \(\frac{3}{4}x^4 + \frac{1}{2}x^3 + \frac{1}{4}x^2\)  
G. \(\frac{3}{4}x^4 + \frac{1}{2}x^3 - \frac{1}{4}x^2\)  
H. \(6x^4 + 4x^3 - 10x\)  
I. \(6x^4 + 4x^3 - 2x^2 - 8x\)
Practice by Benchmark
MA.912.A.5.1

Circle the letter of the answer you choose.

1. Which expression best represents the length of the rectangle?

   Area = y^2 - 4y

   \[ \text{?} \]

   A. \( \frac{y - 4}{2y} \)
   
   B. \( 2y^2 - 8y^2 \)
   
   C. \( \frac{1}{2} - 2y \)
   
   D. \( y - 2 \)

   [Lesson 11-3]

2. Which is the algebraic ratio \( \frac{t^2 - 36}{t^2 - 6t} \) written in simplified form?

   F. \( \frac{t - 6}{t} \)
   
   G. \( \frac{t + 6}{t} \)
   
   H. \( \frac{t + 6}{t(t - 6)} \)

   [Lesson 11-3]

3. Which is the ratio of polynomial I to polynomial II written in simplest form?

<table>
<thead>
<tr>
<th>Polynomials</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. ( xy - 2x + 3y - 6 )</td>
</tr>
<tr>
<td>II. ( 2x^2y - 4x^2 )</td>
</tr>
</tbody>
</table>

   A. \( \frac{x + 3}{2x^2} \)
   
   B. \( xy - 1 \)
   
   C. \( \frac{y - 2}{2x^2} \)
   
   D. \( x^3y \)

   [Lesson 11-3]

4. Which is the following expression written in simplest form?

   \( \frac{18x^4y^2z}{15x^5y^2z} \)

   F. \( \frac{6x^2yz^2}{5} \)
   
   G. \( \frac{6y}{5z^2} \)
   
   H. \( \frac{5x^2y}{6z^2} \)
   
   I. \( \frac{3y}{x^2z^2} \)

   [Lesson 11-3]

5. Refer to the polynomials shown in the table below. Which is the ratio \( I \div II \) written in simplest form?

<table>
<thead>
<tr>
<th>Polynomials</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. ( m^2 - 25 )</td>
</tr>
<tr>
<td>II. ( m^3 + 7m^2 + 10m )</td>
</tr>
</tbody>
</table>

   A. \( \frac{m - 5}{m + 2} \)
   
   B. \( \frac{m + 5}{m^2 + 2m} \)
   
   C. \( \frac{m - 5}{m^2 + 2m} \)
   
   D. \( \frac{m^2 - 25}{m^2 + 7m + 10} \)

   [Lesson 11-3]

6. Which expression is equivalent to \( \frac{5n - 25}{5n} \)?

   F. \( -25 \)
   
   G. \( -24 \)
   
   H. \( \frac{25}{n} \)
   
   I. \( \frac{n - 5}{n} \)

   [Lesson 11-3]
Practice by Benchmark
MA.912.A.5.4

Circle the letter of the answer you choose.

1. What is the solution of \( \frac{x + 3}{2} = \frac{2x + 1}{5} \)?
   A. -13  
   B. -12  
   C. 5  
   D. 17
   [Lesson 2-6]

2. What is the value of \( t \) in the proportion shown below?
   \( \frac{t - 5}{3t} = \frac{4}{7} \)
   F. -7  
   G. -5  
   H. 5  
   I. 7
   [Lesson 2-6]

3. A cylinder similar to the one shown below has a radius of \( x \) centimeters and a height of \( (2x + 9) \) centimeters. The proportion \( \frac{8}{x} = \frac{22}{2x + 9} \) represents this situation. What is the radius of the similar cylinder?
   A. 9 cm  
   B. 12 cm  
   C. 18 cm  
   D. 33 cm
   [Lesson 2-6]

4. What is the solution of the proportion \( \frac{2w + 4}{w - 9} = \frac{6}{5} \)?
   F. 18.5  
   G. 4.4  
   H. -8.5  
   I. -18.5
   [Lesson 2-6]

5. The ratio of height to length of the Florida flag shown below is \( \frac{2}{3} \).
   The proportion relating the height and length of the flag is \( \frac{2}{3} = \frac{6x}{8x + 4} \). What is the length of the flag in inches?
   [Lesson 2-6]
## Practice by Benchmark
### MA.912.A.6.1

**Circle the letter of the answer you choose.**

### 1. What is the length of each side of the square shown below in simple square root form?

- **A.** $4\sqrt{3}$
- **B.** $6\sqrt{3}$
- **C.** $6\sqrt{6}$
- **D.** $9\sqrt{6}$

*Area = 108 in$^2*

### 2. Which is the simplified form of $\sqrt{12x^6}$?

- **F.** $2x^3\sqrt{3}$
- **G.** $2x^4\sqrt{3}$
- **H.** $4x^3\sqrt{3}$
- **I.** $4x^4\sqrt{3}$

### 3. Which is the simplified form of the expression $\frac{9}{\sqrt{48}}$?

- **A.** $3\sqrt{3}$
- **B.** $\frac{\sqrt{3}}{4}$
- **C.** $\frac{3\sqrt{3}}{4}$
- **D.** $\frac{4\sqrt{3}}{3}$

### 4. Who correctly wrote the expression $\sqrt{45q^2rs^2}$ in simplest form?

<table>
<thead>
<tr>
<th>Student</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ava</td>
<td>$3q^2s^2 \sqrt{5r}$</td>
</tr>
<tr>
<td>Ethan</td>
<td>$3q^2s^2 \sqrt{5qr}$</td>
</tr>
<tr>
<td>Madison</td>
<td>$9q^2s^2 \sqrt{5qr}$</td>
</tr>
<tr>
<td>Terrel</td>
<td>$15q^2rs \sqrt{q}$</td>
</tr>
</tbody>
</table>

- **F.** Ava
- **G.** Ethan
- **H.** Madison
- **I.** Terrel

### 5. Four students were asked to simplify the radical expression below.

$$\sqrt{\frac{32c^3}{d^5}}$$

<table>
<thead>
<tr>
<th>Student</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hannah</td>
<td>$\frac{4c \sqrt{2c}}{d^2}$</td>
</tr>
<tr>
<td>Jasmine</td>
<td>$\frac{4c \sqrt{2cd}}{d^3}$</td>
</tr>
<tr>
<td>José</td>
<td>$\frac{16c \sqrt{2c}}{d^2}$</td>
</tr>
<tr>
<td>Matthew</td>
<td>$\frac{16c \sqrt{2cd}}{d^3}$</td>
</tr>
</tbody>
</table>

Which student simplified the expression correctly?

- **A.** Hannah
- **B.** Jasmine
- **C.** José
- **D.** Matthew
Practice by Benchmark
MA.912.A.6.2

Circle the letter of the answer you choose.

1. What is the simplified form of the following difference?
   \[ 7\sqrt{32} - 3\sqrt{2} \]
   A. 8\sqrt{2}  C. 28\sqrt{2}
   B. 25\sqrt{2}  D. 109\sqrt{2}

2. Ninety-five percent of Biscayne National Park in Homestead, Florida, is underwater. The rectangle below represents the total area of the park. Which best describes the total area of Biscayne National Park?
   \[ (2\sqrt{2} + 5\sqrt{3}) \text{ mi} \]
   10\sqrt{3} \text{ mi}
   F. 79 \text{ mi}^2
   G. 90\sqrt{3} \text{ mi}^2
   H. 270 \text{ mi}^2
   I. 1,170 \text{ mi}^2

3. Juan selected three index cards with different radical expressions.
   \[ \sqrt{180} \quad 2\sqrt{20} \quad -3\sqrt{45} \]
   What is the sum of these three terms in simplified form?
   A. \(-13\sqrt{5}\)
   B. \(\sqrt{5}\)
   C. 2\sqrt{20} - 3\sqrt{5}
   D. 5\sqrt{20} - 9\sqrt{5}

4. What is the simplified form of the following sum?
   \[ 5\sqrt{28} + \sqrt{63} \]
   F. 13\sqrt{7}
   G. 29\sqrt{7}
   H. 7\sqrt{7} + 10\sqrt{3}
   I. 10\sqrt{7} + 3\sqrt{21}

5. What is the area of the square in simplified form?
   \[ 4 - 3\sqrt{5} \]
   A. 29
   B. 61
   C. 61 - 12\sqrt{5}
   D. 61 - 24\sqrt{5}

6. Moses drew a rectangle having a length that was 2 inches longer than its width. What is the ratio of the width to the length in simple form if the width of his rectangle is \(\sqrt{3}\) inches?
   F. \(\frac{1}{2}\)
   G. 2
   H. 2\sqrt{3} - 3
   I. \(\frac{2\sqrt{3} + 3}{7}\)
Circle the letter of the answer you choose.

1. Which of the following is the graph of \( y = x^2 - 6x + 8? \)

   A. 
   B. 
   C. 
   D. 

2. Which of the following equations is graphed below?

   A. \( y = x^2 - x - 3 \)
   B. \( y = 4x^2 - x - 3 \)
   C. \( y = x^2 + 2x - 3 \)
   D. \( y = 4x^2 + x - 3 \)

3. Which quadratic equation is represented by the graph below?

   A. \( y = x^2 + x - 12 \)
   B. \( y = x^2 - x - 12 \)
   C. \( y = -x^2 + x + 12 \)
   D. \( y = -x^2 - x + 12 \)
Circle the letter of the answer you choose.

1. What are the solutions to the equation \( x^2 - 18 = 3x \)?
   - A. \(-6, -3\)
   - B. \(-6, 3\)
   - C. \(6, -3\)
   - D. \(6, 3\)

   [Lesson 8-3]

2. In a game, Abigail and Jamar drew the two index cards shown below. For what values of \( x \) are the expressions on their index cards equal?
   - F. \(-1, -12\)
   - G. \(1, 12\)
   - H. \(\frac{4}{3}, 3\)
   - I. \(-\frac{4}{3}, -3\)

   [Lesson 8-4]

3. For what values of \( t \) are the expressions on the index cards shown below equal?
   - A. \(\frac{7 + \sqrt{29}}{10}, \frac{7 - \sqrt{29}}{10}\)
   - B. \(\frac{7 + \sqrt{29}}{5}, \frac{7 - \sqrt{29}}{5}\)
   - C. \(\frac{49 + \sqrt{29}}{10}, \frac{49 - \sqrt{29}}{10}\)
   - D. The expressions are never equal.

   [Lesson 9-5]

4. Which statement is the best indicator that there is no real solution to the quadratic equation \( x^2 + x + 14 = 0 \)?
   - F. The value of \(1^2 - 4(1)(14)\) is negative.
   - G. \(1^2 - 4(1)(14) = 0\)
   - H. The value of \(1^2 - 4(1)(14)\) is positive.
   - I. The value of \(1^2 - 4(1)(14)\) is not a perfect square.

   [Lesson 9-5]

5. The 789-foot-tall Four Seasons Hotel and Tower in Miami is the tallest building in Florida. According to the information in the box, how long to the nearest tenth of a second would it take for a ball dropped from the top to reach the ground?

   \[ d = 16t^2 \] represents the distance \( d \) the ball would drop in \( t \) seconds.
Circle the letter of the answer you choose.

1. The area of the rectangle below is 96 square inches. What is the measure of the length of the rectangle in inches?

   \[(3w - 2) \text{ in.}\]

2. An RV park offers plenty of room for parking and camping. It is divided into 100 equal sized rectangular spaces. Each space is 3x feet long and x + 5 feet wide. What are the dimensions of the space if the area is 3,150 square feet?

   A. 105 ft × 30 ft
   B. 90 ft × 35 ft
   C. 63 ft × 50 ft
   D. 50 ft × 63 ft

3. Florida State’s Morcom Aquatic Center has four diving platforms ranging from 1 meter to 10 meters in height. Suppose a diver jumps off the 10-meter platform with an upward velocity of 6 meters per second. The diver’s height is modeled by the formula \(h = -5t^2 + 6t + 10\) where \(h\) is the height of the dive after \(t\) seconds. How many seconds, to the nearest hundredths, does it take the diver to hit the water?

   F. 0.68  
   H. 2.14  
   G. 0.94  
   I. 9.36

4. The triangle below has an area of 840 square units. What is the value of \(x\)?

   \[2x - 4\]  
   \[5x\]

---

**Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.**
Practice by Benchmark
MA.912.A.7.10

Circle the letter of the answer you choose.

1. Using a graphing calculator, what should be entered for Y1 in order to find the solutions for \(x^2 = 7x - 9\)?

- A. \(\sqrt{7x - 9}\)
- B. \(7x - 9\)
- C. \(x^2 - 7x + 9\)
- D. \(x^2 + 7x + 9\)

2. The graph of \(y = 2x^2 + x - 15\) is shown below. Using a graphing calculator, which best describes the solution to the equation?

- F. \(-3, 2\)
- G. \(-3, 2.5\)
- H. \(-2.5, 3\)
- I. \(-15\)

3. A student was using a graphing calculator to complete the table below.

<table>
<thead>
<tr>
<th>x</th>
<th>(-2x^2 + 3x + 8)</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(-2(1)^2 + 3(1) + 8)</td>
<td>9</td>
</tr>
<tr>
<td>0</td>
<td>(-2(0)^2 + 3(0) + 8)</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>(-2(2)^2 + 3(2) + 8)</td>
<td>6</td>
</tr>
<tr>
<td>-1</td>
<td>(-2(-1)^2 + 3(-1) + 8)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(-2( )^2 + 3( ) + 8)</td>
<td>0</td>
</tr>
</tbody>
</table>

To the nearest tenth, what negative number would be the value of \(x\) if \(y = 0\)?

4. Using a graphing calculator, which are the solutions to the quadratic equation shown below, to the nearest tenth?

\[0 = 0.4x^2 - 10x - 5\]

- A. \(0.5, 25.5\)
- B. \(-0.5, 25.5\)
- C. \(0.5, -25.5\)
- D. \(-0.5, -25.5\)

[Lesson 9-2]
Practice by Benchmark
MA.912.A.10.1

Circle the letter of the answer you choose.

1. The perimeter and area of Candace’s rectangular backyard are shown below.

<table>
<thead>
<tr>
<th>Candace’s Backyard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perimeter</td>
</tr>
<tr>
<td>Area</td>
</tr>
</tbody>
</table>

What are the dimensions of her backyard?
A. 19 ft × 30 ft
B. 25 ft × 24 ft
C. 28 ft × 21 ft
D. 32 ft × 17 ft

[Lesson 2-2]

2. The Kennedy Space Center in Florida sells an All-Access Space Pass, where people can spend two days touring the space center. The costs of tickets, including tax, are shown below.

<table>
<thead>
<tr>
<th>Kennedy Space Center All-access Space Pass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ticket</td>
</tr>
<tr>
<td>Adult</td>
</tr>
<tr>
<td>Child</td>
</tr>
</tbody>
</table>

If tickets are bought online, there is a $5 discount on each adult ticket. There is also a flat fee of $3.95 per group order. What is the total cost for a group of 6 adults and 5 children, if they order their tickets online?
F. $785.79
G. $810.79
H. $814.74
I. $840.79

[Lesson 2-2]

3. If the figures below continue to grow according to the pattern, what figure number will have 27 squares?

A. 11
B. 12
C. 13
D. 14

[Lesson 3-5]

4. The tank of water shown below is being drained at a rate of 24 cubic feet per minute. About how many minutes will it take to empty the tank, to the nearest minute?

[Lesson 3-3]
Practice by Benchmark
MA.912.A.10.2

Circle the letter of the answer you choose.

1. The zebra longwing is the official state butterfly of Florida. Its wingspan is approximately 7.2 centimeters, as shown below.

Which is the largest number of butterfly replicas that will fit in one row of a display case that is 28 centimeters wide?

A. 3
B. 4
C. 9
D. 9 or −9
E. nothing

2. Samantha solved the equation \( \frac{x^2 + 4x}{x} = 1 \) and said that the solutions are 0 and −3. Why is she incorrect?

A. The answer must be positive.
B. The denominator cannot be zero.
C. The denominator cannot be negative.
D. The solutions should be 0 and −4.

3. Juanita is completing the table shown below. What should she put beside −3 if \( x = \sqrt{y} \)?

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>−3</td>
<td></td>
</tr>
</tbody>
</table>

F. 9  
G. −9  
H. 9 or −9  
I. nothing

4. The graph of \( y = −16t^2 + 96t \) describes the path of a ball thrown into the air. After how many seconds will the ball hit the ground?
# Practice by Benchmark
**MA.912.A.10.3**

Circle the letter of the answer you choose.

1. When is this statement true?
   - The square of an odd number is even.
   - **A.** The statement is always true.
   - **B.** The statement is never true.
   - **C.** The statement is true if the number is prime.
   - **D.** The statement is true if the number is greater than 11.

2. When is the following statement true?
   - If $5y - 2 < 0$, then $5 > \frac{2}{y}$.
   - **F.** The statement is always true.
   - **G.** The statement is never true.
   - **H.** The statement is true when $y > 0$.
   - **I.** The statement is true when $y < 0$.

3. For what value(s) of $m$ will the given statement **always** be true?
   - The graph of the line $y = mx + b$ intersects the x-axis exactly once.
   - **A.** any real number value for $m$
   - **B.** no values of $m$
   - **C.** for $m = 0$
   - **D.** for all real numbers except $m = 0$

4. When is the following statement true?
   - $\sqrt{(7 - w)^2} = 7 - w$
   - **F.** The statement is always true.
   - **G.** The statement is never true.
   - **H.** The statement is true if $w \leq 7$.
   - **I.** The statement is true if $w > 7$.

5. Is the following statement **always**, **sometimes**, or **never** true?
   - $(n^2)^{13} < 0$
   - **A.** always
   - **B.** never
   - **C.** sometimes, if $n$ is negative
   - **D.** sometimes, if $n$ is odd

6. If $a \neq 0$, is the following statement **always**, **sometimes**, or **never** true for some integer value of $n$?
   - $\frac{a^m}{a^n} = a^{m-n}$
   - **F.** always
   - **G.** never
   - **H.** sometimes, if $n > 0$
   - **I.** sometimes, if $n < 0$
Practice by Benchmark
MA.912.D.7.1

Circle the letter of the answer you choose.

1. Elba selected two index cards containing sets A and B as shown below.
   \[
   \begin{array}{|c|c|}
   \hline
   A & B \\
   3, 6, 9, 12 & 1, 3, 5, 7, 9 \\
   \hline
   \end{array}
   \]
   Which set should she choose as the intersection of sets A and B?
   A. \{3, 9\}
   B. \{3, 6, 9\}
   C. \{1, 5, 6, 7, 12\}
   D. \{1, 3, 5, 6, 7, 9, 12\}
   [Lesson 12-5]

2. Let \(C = \{10, 13\}\) and \(D = \{10, 12, 13, 14\}\) be two sets in the universal set \(U = \{9, 10, 11, 12, 13, 14, 15\}\). What is the complement of \(C\)?
   F. \{12, 14\}
   G. \{10, 12, 13, 14\}
   H. \{9, 11, 12, 14, 15\}
   I. \{9, 10, 11, 13, 15\}
   [Lesson 12-5]

3. Sets X, Y, and Z are shown below. Which set represents the intersection of sets X, Y, and Z?
   \[
   \begin{align*}
   X &= \{4, 5, 6\} \\
   Y &= \{2, 4, 6\} \\
   Z &= \{1, 2, 3, 4, 5, 6\}
   \end{align*}
   \]
   A. \{4, 6\}
   B. \{4, 5, 6\}
   C. \{1, 2, 3\}
   D. \{1, 2, 3, 4, 5, 6\}
   [Lesson 12-5]

4. Sets R and S are shown below.
   \[
   \begin{array}{|c|c|}
   \hline
   R & S \\
   5 & 4 \\
   10 & 8 \\
   15 & 12 \\
   14 & 16 \\
   \hline
   \end{array}
   \]
   Which shows the union of sets R and S?
   F. \{20\}
   G. \{4, 5, 8, 10, 12, 15, 16\}
   H. \{4, 5, 8, 10, 12, 15, 16, 20\}
   I. \{4, 5, 8, 10, 12, 14, 15, 16, 18, 20\}
   [Lesson 12-5]

5. Let \(M = \{0, 2\}\) and \(N = \{1, 2, 3\}\). The table below can be used to find the cross product, \(M \times N\), where each value in \(M\) is multiplied by each value in \(N\). Which shows the set \(M \times N\)?
   \[
   \begin{array}{|c|c|c|}
   \hline
   & 1 & 2 & 3 \\
   \hline
   M & 0 & \_ & 2 \\
   \hline
   \end{array}
   \]
   A. \{(0, 1), (2, 2)\}
   B. \{(0, 2), (1, 2), (1, 3), (2, 3)\}
   C. \{(0, 1), (0, 2), (0, 3), (2, 1), (2, 2), (2, 3)\}
   D. \{(1, 0), (2, 0), (3, 0), (1, 2), (2, 2), (3, 2)\}
   [Lesson 12-5]
Practice by Benchmark
MA.912.D.7.2

Circle the letter of the answer you choose.

1. Trevor surveyed students in his school about their favorite water park in Orlando. His results are shown in the Venn diagram below.

How many students surveyed preferred both Blizzard Beach and Wet 'n Wild, but not Typhoon Lagoon?

The Venn diagram below shows the relationship among quadrilaterals.

Which statement is not correct?

F. All rectangles are parallelograms.
G. Some rhombi are squares.
H. Some trapezoids are parallelograms.
I. No rectangles are trapezoids.

Refer to the Venn diagram in Exercise 3. Which is a subset of the union of rhombi and rectangles?

A. parallelograms
B. quadrilaterals
C. rectangles
D. squares

Refer to the Venn diagram in Exercise 1. How many students surveyed preferred Typhoon Lagoon or Wet 'n Wild?

A. 6 C. 48
B. 46 D. 52

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.
Practice by Benchmark
MA.912.G.1.4

Circle the letter of the answer you choose.

1. Which statement about lines \( r \) and \( s \) described in the table below is true?

<table>
<thead>
<tr>
<th>Line</th>
<th>Points on Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>( r )</td>
<td>((2, -1), (-4, 0))</td>
</tr>
<tr>
<td>( s )</td>
<td>((-3, -25), (4, 17))</td>
</tr>
</tbody>
</table>

A. Lines \( r \) and \( s \) are parallel.
B. Lines \( r \) and \( s \) are perpendicular.
C. Lines \( r \) and \( s \) have the same \( x \)-intercept.
D. Lines \( r \) and \( s \) have the same \( y \)-intercept.

[Lesson 4-4]

2. Line \( j \) passes through the points \((7, -4)\) and \((-9, 12)\). Line \( k \) is parallel to line \( j \) and passes through \((5, 6)\). Which is the equation of line \( k \)?

A. \( x = y = 11 \)
B. \( x = y = 1 \)
C. \( x = y = 1 \)
D. \( x = y = 11 \)

[Lesson 4-4]

3. What is the slope of a line perpendicular to \( \overrightarrow{PQ} \) if \( P = (3, -1) \) and \( Q = (-2, -4) \)?

[Lesson 3-2]

4. Lines \( \ell \) and \( m \) pass through the points shown in the table below. Which is a true statement?

<table>
<thead>
<tr>
<th>Line</th>
<th>Points on Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \ell )</td>
<td>((9, -3), (-3, 1))</td>
</tr>
<tr>
<td>( m )</td>
<td>((2, 3), (17, -2))</td>
</tr>
</tbody>
</table>

A. Lines \( \ell \) and \( m \) are parallel.
B. Lines \( \ell \) and \( m \) are perpendicular.
C. Lines \( \ell \) and \( m \) have the same \( x \)-intercept.
D. Lines \( \ell \) and \( m \) have the same \( y \)-intercept.

[Lesson 4-4]

5. Which equation represents a line that is perpendicular to the line shown below and passes through the point \((3, -1)\)?

F. \( y - 1 = \frac{2}{3}(x + 3) \)
G. \( y - 1 = \frac{3}{2}(x + 3) \)
H. \( y + 1 = \frac{2}{3}(x - 3) \)
I. \( y + 1 = \frac{3}{2}(x - 3) \)

[Lesson 4-4]
Standards-Based Practice Assessment

Use the space in the Test Book to do your work. Then mark the space in your Answer Document for the answer you have chosen. If you change your answer, be sure to erase completely.

1. What is the domain of this function?

-4 < x < 1.5

2. Ramon is replacing a shutter at The Little House.

He has a 6-meter extension ladder. If the ladder is 1 meter from the wall, which equation can he use to calculate how high up the wall, \( h \), the ladder reaches?

\[ h = \left( \frac{6}{1} \right)^2 \]

3. Which function includes the data set below?

\( \{(2, -2), (6, 10), (13, 31)\} \)

A. \( f(x) = \frac{1}{2^x} - 3 \)
B. \( f(x) = -2x + 2 \)
C. \( f(x) = 3x - 8 \)
D. \( f(x) = 4x - 10 \)

4. In December of 2008, the South Florida Water Management District bought 181,000 acres of land, \( a \), from U.S. Sugar Corporation to restore the Everglades. If the equation \( T = a \times p \) gives the price per acre, \( p \), about how much did they pay per acre if the total amount paid, \( T \), was $1.34 billion?

F. $1.6 \times 10^3$
G. $1.6 \times 10^4$
H. $7.4 \times 10^3$
I. $7.4 \times 10^4$

5. Which expression is equivalent to \( \frac{(3x^3)(6x^5)}{2x^4} \)?

A. \( 18x^7 \)
B. \( 18x^4 \)
C. \( 9x^7 \)
D. \( 9x^4 \)
In simplest terms, what is the area of this rectangle?

\[ 3x + 2 \]
\[ 4x - 1 \]

F. \( 12x^2 + 5x - 2 \)
G. \( 12x^2 + 11x - 2 \)
H. \( 12x^2 - 5x - 2 \)
I. \( 12x^2 - 11x - 2 \)

If \( \triangle ABC \sim \triangle XYZ \), what is the length of the missing side?

What is the slope of the linear function shown in the graph?

Which is the slope-intercept form of \( -3x = 20 - 5y? \)

A. \( x = \frac{5}{3}y - \frac{20}{3} \)
B. \( x = -\frac{5}{3}y - \frac{20}{3} \)
C. \( y = \frac{3}{5}x + 4 \)
D. \( y = \frac{3}{5}x - 4 \)
10. Violeta picked a card containing a radical expression.

\( \sqrt{50a^3c^5} \)

What is the simplified form for the expression on her card?

- **F.** \( 5ac^2\sqrt{2} \)
- **G.** \( 5ac\sqrt{2/ac} \)
- **H.** \( 5a^2c\sqrt{2} \)
- **I.** \( 5a^2\sqrt{2/ac} \)

11. How would the graph of the function \( y = x^2 + 3 \) change if the function was changed to \( y = x^2 - 5 \)?

- **A.** It shifts 8 units down.
- **B.** It shifts 8 units up.
- **C.** It shifts 8 units left.
- **D.** It shifts 8 units right.

12. Which is the solution to the compound inequality \( 3 \leq 2x - 1 < 7 \)?

- **F.** \( 1 \leq x < 4 \)
- **G.** \( 2 \leq x < 3 \)
- **H.** \( 1 \leq x < 3 \)
- **I.** \( 2 \leq x < 4 \)

13. What is the slope of side \( XZ \)?

14. Which proportion gives the solution of \( x = -1 \)?

- **A.** \( \frac{x - 5}{6} = \frac{x + 6}{5} \)
- **B.** \( \frac{5 - x}{6} = \frac{x + 6}{5} \)
- **C.** \( \frac{5 - x}{6} = \frac{6 - x}{5} \)
- **D.** \( \frac{x - 5}{6} = \frac{x - 6}{5} \)
15 Which equation best represents the graph?

F. \( y = 3 + 2x \)
G. \( y = 3 - 2x \)
H. \( y = 2 + 3x \)
I. \( y = 2 - 3x \)

16 What is the y-intercept of the following graph?

17 Two West Indian Manatees at the Blue Spring State Park eat 10 percent and 15 percent of their body weight in aquatic plants daily. On Monday they ate 260 pounds. What is the weight of the larger manatee if together they weigh 2,000 pounds?

A. 500 pounds  
B. 800 pounds  
C. 1,200 pounds  
D. 1,500 pounds

18 What property is illustrated by the following simplification?

\[ 6m^2 + (5m^2 + 4m) = 11m^2 + 4m \]

F. Associative Property of Addition  
G. Associative Property of Multiplication  
H. Distributive Property of Addition  
I. Distributive Property of Multiplication

19 What is the length, in centimeters, of the base of a triangle that has an area of 20 square centimeters if its base is \( x \) and its height is \( x + 6 \)?

A. \(-10, 4\)  
B. \(10\)  
C. \(-4, 10\)  
D. \(4\)
Standards-Based Practice Assessment (continued)

20. Which of the following equations has the solution $x = 1$?
   F. $3x + 4 = 5(2x + 1)$
   G. $3x + 4 = 5(x + 1)$
   H. $3(x + 4) = 5(x + 1)$
   I. $3(x + 4) = 5(2x + 1)$

21. What is the value of $h$ in $V = \pi r^2 h$?
   A. $h = \frac{V}{\pi r^2}$
   B. $h = V \pi r^2$
   C. $\frac{V}{\pi r^2}$
   D. $\frac{\pi r^2}{V}$

22. Each student in Mrs. Bevan’s Algebra class was given a card containing a rational algebraic expression. Rashid got the card below.

\[
\frac{2a^4 - 2b^4}{4a^2 - 4b^2}
\]

What is the simplified form for the expression on his card?
   F. $2(a^2 + b^2)$
   G. $a^2 + b^2$
   H. $\frac{a^2 + b^2}{2}$
   I. $\frac{a^2 + b^2}{4}$

23. The graph below represents which system of linear inequalities?

A. $y > x + 3$ and $y > -2x - 4$
B. $y < x + 3$ and $y < -2x - 4$
C. $y \leq x + 3$ and $y \leq -2x - 4$
D. $y < x + 3$ and $y > -2x - 4$

24. The lines $y = ax + b$ and $y = cx + d$ are parallel. Which is always true?
   F. $a = c$ and $b = d$
   G. $a = c$ and $b \neq d$
   H. $a \neq c$ and $b = d$
   I. $a \neq c$ and $b \neq d$
25. Which equation or inequality is represented by the graph?

A. \( y = -3x - 2 \)
B. \( y \leq -3x - 2 \)
C. \( y > -3x - 2 \)
D. \( y \geq -3x - 2 \)

26. What are the solutions of \( 9x^2 - 16 = 0 \)?

F. \( x = \pm \frac{3}{4} \)
G. \( x = \pm \frac{4}{3} \)
H. \( x = \frac{3}{4}, \frac{4}{3} \)
I. \( x = 3, 4 \)

27. Which ordered pair is a solution to the system \( x + y < 4 \) and \( 2x - y \geq 6 \)?

A. \((-1, 8)\)
B. \((1, 5)\)
C. \((3, 1)\)
D. \((4, -2)\)

28. According to the Venn diagram below, how many students surveyed did not like sports?

![Venn diagram showing the number of students who like sports, music, and both.]

- Sports: 15
- Music: 4
- Both: 3

- Students who like neither: \( 3 \)
29. At Semi-Gator-Cane High School, 225 students participate only in athletics and 80 students are only in the band. Fifty-five other students participate in athletics and band. How many students participate in athletics or band?

30. Four students have factored the expression $a^2x - a^2b + cx - bc$ as shown.

<table>
<thead>
<tr>
<th>Student</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robbie</td>
<td>$a^2c(x - b)$</td>
</tr>
<tr>
<td>Sasha</td>
<td>$a^2(x - c)b$</td>
</tr>
<tr>
<td>Nina</td>
<td>$(a^2 + c)(x - b)$</td>
</tr>
<tr>
<td>Jereme</td>
<td>$a^2(b - c)(x - 1)$</td>
</tr>
</tbody>
</table>

Who has the correct factoring?

F. Robbie
G. Sasha
H. Nina
I. Jereme

31. Della was given two cards containing expressions to form an algebraic fraction.

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6m^3 + 12m^2 - 9m$</td>
<td>$3m^2$</td>
</tr>
</tbody>
</table>

Which quotient is equivalent to her fraction?

A. $2m + 1 - \frac{3}{m}$
B. $2m + 4 - \frac{3}{m}$
C. $\frac{2m + 1}{m}$
D. $2m^5 + 4m^4 - 3m^3$

32. Diego chose two cards containing the binomials shown below.

\[
\left(4x - \sqrt{18}\right) \quad \left(\sqrt{50} + 3x\right)
\]

What is the product of his two binomials?

F. $7x^2 + 11x - 15\sqrt{2}$
G. $12x^2 - 7x\sqrt{2} - 30$
H. $12x^2 + 11x\sqrt{2} - 30$
I. $12x^2 - 30$
A quadrilateral has sides that are contained by the lines shown in the table.

<table>
<thead>
<tr>
<th>Side</th>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>2x = 4</td>
</tr>
<tr>
<td>b</td>
<td>x - 3y = -1</td>
</tr>
<tr>
<td>c</td>
<td>y + 3 = 0</td>
</tr>
<tr>
<td>d</td>
<td>x + y = -4</td>
</tr>
</tbody>
</table>

What are the coordinates of the vertex joining sides $a$ and $b$?

A. (5, 2)
B. $\left(2, -\frac{1}{3}\right)$
C. (2, 1)
D. (2, -1)

What is the value of $n$ if $(2x + m)$ and $(3x + n)$ are factors of the trinomial $6x^2 - x - 15$?

A 6-sided number cube is thrown 100 times. The results are shown in the table below.

<table>
<thead>
<tr>
<th>Results of Throws</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

For which number on the cube is the experimental probability closest to the theoretical probability?

For what values of $m$ and $n$ is $x^m \cdot x^n = x^{2m}$?

F. all $m$ and $n$
G. all $m = n$
H. no $m$ and $n$
I. all $m$ when $n = 2$
37 The Lourdes Orchards of Lakeland sells lemons on their website. The table below shows the amount of lemons, \( x \), purchased during one business day and the total price per order, \( y \), including shipping and handling.

<table>
<thead>
<tr>
<th>Number of Lemons</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>$12.50</td>
</tr>
<tr>
<td>26</td>
<td>$24.50</td>
</tr>
<tr>
<td>58</td>
<td>$48.50</td>
</tr>
</tbody>
</table>

Which equation best represents the data in the table?

A. \( y = \frac{-3}{4}x + 20 \)
B. \( y = \frac{4}{3}x - \frac{5}{6} \)
C. \( y = \frac{3}{4}x + 5 \)
D. \( y = \frac{-4}{3}x - \frac{155}{6} \)

38 What equation is represented by the graph?

F. \( 2x + y = 1 \)
G. \( 2x - y = 1 \)
H. \( 2x - y = -1 \)
I. \( 2x + y = -1 \)

39 The students in Mr. Anthony’s Algebra class are practicing simplifying radical expressions. He has a deck of index cards with random radical expressions. Ines selected the radical card shown.

\[ \sqrt{4m^3n^2} \]

What is the simplified form for the radical she selected?

A. \( 2\sqrt{m^3n^2} \)
B. \( 2m\sqrt{mn^2} \)
C. \( 2mn\sqrt{m} \)
D. \( 2m^2n \)

40 Which is the best estimate for the solution to the system shown?

F. \((-3, 0)\)
G. \((1, 4)\)
H. \((0, 3)\)
I. \((1, 8)\)

Go on
Which graph best represents the relationship between the height of a kite and the amount of time that passes as the kite is being reeled in?

A. 
\[
\begin{array}{c}
\text{Height} \\
\text{Time}
\end{array}
\]

B. 
\[
\begin{array}{c}
\text{Height} \\
\text{Time}
\end{array}
\]

C. 
\[
\begin{array}{c}
\text{Height} \\
\text{Time}
\end{array}
\]

D. 
\[
\begin{array}{c}
\text{Height} \\
\text{Time}
\end{array}
\]

If \( A = \{2, 3, 4\} \) and \( B = \{5, 6\} \), what is \( A \times B \)?

A. \( \emptyset \)
B. \( \{10, 12, 15, 18, 24\} \)
C. \( \{(2, 5), (2, 6), (3, 6)\} \)
D. \( \{(2, 5), (2, 6), (3, 5), (3, 6), (4, 5), (4, 6)\} \)

The change in the concentration of nitrates in Florida springs in milligrams per liter is shown over a 30-year period.

What is the slope of the graph in milligrams per liter per year from 1980 to 2000?

Which equation is the slope-intercept form of \( 5x + y = 1 \)?

F. \( 5x = 1 - y \)
G. \( 5x - 1 = y \)
H. \( y = -5x + 1 \)
I. \( 5y = 1 - x \)
Includes:
• 4 pages of NGSSS practice for each chapter of Glencoe Algebra 1
Contents

Florida Algebra 1 Commonly-Used Mathematics Formulas. ............... Biii

Chapter Practice

Chapter 1  Foundations for Functions ........................................... B1
Chapter 2  Linear Equations ......................................................... B5
Chapter 3  Linear Functions ......................................................... B9
Chapter 4  Linear Functions and Relations ................................. B13
Chapter 5  Linear Inequalities ....................................................... B17
Chapter 6  Systems of Linear Equations and Inequalities ............ B21
Chapter 7  Polynomials ............................................................... B25
Chapter 8  Factoring and Quadratic Equations ............................. B29
Chapter 9  Quadratic and Exponential Functions ......................... B33
Chapter 10 Radical Functions and Geometry ............................... B37
Chapter 11 Rational Functions and Equations ............................. B41
Chapter 12 Statistics and Probability .......................................... B45
**Commonly-Used Mathematics Formulas**

**Algebra 1**

<table>
<thead>
<tr>
<th><strong>Pythagorean Theorem</strong></th>
<th><strong>Quadratic Formula</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$a^2 + b^2 = c^2$</td>
<td>If $ax^2 + bx - c = 0$, then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Slope-intercept form of an equation of a line:</strong></th>
<th><strong>Slope of the line through two points $P_1 (x_1, y_1)$ and $P_2 (x_2, y_2)$:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$y = mx + b$ where $m = \text{slope and } b = \text{the } y\text{-intercept.}$</td>
<td>$m = \frac{y_2 - y_1}{x_2 - x_1}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Distance, rate, time formula:</strong></th>
<th><strong>Midpoint between two points $P_1 (x_1, y_1)$ and $P_2 (x_2, y_2)$:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$d = rt$ where $d = \text{distance, } r = \text{rate, } t = \text{time.}$</td>
<td>$(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2})$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Point-slope form of an equation of a line containing point $(x_1, y_1)$ having a slope, $m$:</strong></th>
<th><strong>Distance between two points $P_1 (x_1, y_1)$ and $P_2 (x_2, y_2)$:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$y - y_1 = m(x - x_1)$</td>
<td>$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$</td>
</tr>
</tbody>
</table>

**Common Area Formulas**

<table>
<thead>
<tr>
<th><strong>Triangle</strong></th>
<th>$A = \frac{1}{2} bh$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rectangle</strong></td>
<td>$A = \ell w$</td>
</tr>
<tr>
<td><strong>Parallelogram</strong></td>
<td>$A = bh$</td>
</tr>
<tr>
<td><strong>Circle</strong></td>
<td>$A = \pi r^2$</td>
</tr>
</tbody>
</table>

**Common Volume/Capacity Formulas**

| **Rectangular Prism** | $V = \ell wh$ |
| **Right Circular Cylinder** | $V = \pi r^2 h$ |

**KEY**

| $b$ = base | $r$ = radius |
| $h$ = height | $A$ = area |
| $\ell$ = length | $V$ = volume |
| $w$ = width | |

Use 3.14 or $\frac{22}{7}$ for $\pi$. 

---

*NGSSS Practice, Algebra 1  Biii*
Chapter 1 Practice
Expressions, Equations, and Functions

Circle the letter of the answer you choose.

1. Which answer goes in the blank beside Step 1?

<table>
<thead>
<tr>
<th>Equation</th>
<th>20(k + 1) = 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>20(k) = -15</td>
</tr>
<tr>
<td>Step 3</td>
<td>(k = \frac{-4}{3})</td>
</tr>
</tbody>
</table>

A. \(20k + 1 = 5\)  
B. \(20k + 20 = 5\)  
C. \(21k = 5\)  
D. \(21k = 15\)

[Lesson 1-1] MA.912.A.3.1

2. Which equation is equivalent to \(m = 1\)?

F. \(-4m + 3 = 7m\)  
G. \(-4m - 3 = 7m\)  
H. \(4m + 3 = 7m\)  
I. \(4m - 3 = 7m\)

[Lesson 1-2] MA.912.A.3.1

3. Which property is used to rearrange the expression \(5x + 3 + n\) to give \(n + 3 + 5x\)?

A. Associative Property of Addition  
B. Commutative Property of Addition  
C. Distributive Property  
D. Identity Property of One

[Lesson 1-3] MA.912.A.3.2

4. Why is the scatter plot not a function?

F. Two values of \(x\) are equal.  
G. There are two values of \(x\) for a \(y\) value.  
H. Two values of \(y\) are equal.  
I. There are two values of \(y\) for an \(x\) value.

[Lesson 1-7] MA.912.A.2.3

5. The table shows the price per box of four types of Florida citrus fruit for 2007–2008.

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Boxes</th>
<th>Price per Box 2007–2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valencia Oranges</td>
<td>87,000</td>
<td>$6.86</td>
</tr>
<tr>
<td>All Grapefruit</td>
<td>27,000</td>
<td>$4.25</td>
</tr>
<tr>
<td>All Tangelos</td>
<td>1,500</td>
<td>$2.57</td>
</tr>
<tr>
<td>All Tangerines</td>
<td>5,500</td>
<td>$6.86</td>
</tr>
</tbody>
</table>

If boxes are plotted on the \(y\)-axis and prices are plotted on the \(x\)-axis, which pairs of values would keep the data from being a function?

A. grapefruit and oranges  
B. grapefruit and tangerines  
C. oranges and tangerines  
D. tangelos and tangerines

[Lesson 1-7] MA.912.A.2.3
Chapter 1 Practice (continued)
Expressions, Equations, and Functions

6 Which equation illustrates the way the Distributive Property “distributes” a factor across other terms?

F. \(0.5n + (m - 4) = (0.5n + m) - 4\)
G. \(0.5n + (m - 4) = (m - 4) + 0.5n\)
H. \(0.5n(m - 4) = 0.5mn - 2n\)
I. \(0.5n(m - 4) = (m - 4)0.5n\)

[Lesson 1-4] MA.912.A.3.2

7 What is the solution for \(t\)?

\[
\frac{2}{3}(t - 4) = 5
\]

A. \(-\frac{23}{2}\)
B. \(-\frac{7}{2}\)
C. \(\frac{7}{2}\)
D. \(\frac{23}{2}\)

[Lesson 1-5] MA.912.A.3.1

8 What would be represented by \(~A \cap B\) in the Venn diagram shown below?

F. \(\{1, 4, 5, 6, 10\}\)
G. \(\{1, 4, 5, 6, 9, 10, 12\}\)
H. \(\{2, 3, 7, 8, 11\}\)
I. \(\{9, 12\}\)

[Lesson 1-8] MA.912.D.7.2

9 Which graph is a function over the set of real numbers?

A. 
B. 
C. 
D. 

[Lesson 1-7] MA.912.A.2.3
Chapter 1 Practice (continued)
Expressions, Equations, and Functions

10 Which equation is equivalent to
\[ 0.5x + 0.25x^2 - 1.05 = 0.25x \]?
F. \[ 1.25x + 0.25x^2 - 1.05 = 0 \]
G. \[ 0.75x + 0.25x^2 - 1.05 = 0 \]
H. \[ 5x^2 + 5x - 21 = 0 \]
I. \[ 5x^2 + 15x - 21 = 0 \]

[Lesson 1-3] MA.912.A.3.2

11 The equation \( W = \frac{2}{3} T \) gives the
number of acres, \( W \), of the Canaveral
National Seashore total acreage, \( T \), not
covered in water. What is \( T \) to the nearest
whole number of acres if 19,333 acres are
not covered in water?
A. 9,667 acres
B. 29,000 acres
C. 38,667 acres
D. 58,000 acres

[Lesson 1-1] MA.912.A.3.1

12 Which values of \( a \), \( b \), and \( c \) would make the
relation a function?

<table>
<thead>
<tr>
<th>Domain</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-3</td>
</tr>
<tr>
<td>a</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>b</td>
</tr>
<tr>
<td>5</td>
<td>-3</td>
</tr>
<tr>
<td>8</td>
<td>c</td>
</tr>
</tbody>
</table>

F. 1, 1, −7
G. 2, −3, 9
H. 3, 7, 15
I. 4, 1, −3

[Fair Game] MA.8.A.1.1

13 What is the missing property below?

<table>
<thead>
<tr>
<th>Equation</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>( (4x - 5)2 = 2 )</td>
<td>(original equation)</td>
</tr>
<tr>
<td>( 8x - 10 = 2 )</td>
<td>Distributive Property</td>
</tr>
<tr>
<td>( (8x - 10) - 2 = 0 )</td>
<td>Subtraction Property of Equality</td>
</tr>
<tr>
<td>( 8x + (-10 - 2) = 0 )</td>
<td></td>
</tr>
</tbody>
</table>

A. Associative Property of Addition
B. Commutative Property of Addition
C. Distributive Property
D. Multiplicative Identity

[Lesson 1-4] MA.912.A.3.2

14 If \( f(x) = 100 - 20x \) and \( x \in \{0, 10, 20\} \),
which of the following is not in the range of
the function?
F. −300
G. −100
H. 100
I. 300

[Lesson 1-6] MA.912.A.2.4

15 If \( C \times D = \{(0, 1), (0, 3), (0, 5), (0, 7)\} \),
what are \( C \) and \( D \)?
A. \( C: \{0\}; D: \{1, 3, 5, 7\} \)
B. \( C: \{0, 0, 0, 0\}; D: \{1, 3, 5, 7\} \)
C. \( C: \{1, 3, 5, 7\}; D: \{0\} \)
D. \( C: \{1, 3, 5, 7\}; D: \{0, 0, 0, 0\} \)

[Lesson 1-8] MA.912.D.7.1
16. Petrick picked two algebraic expression cards. What is the difference of the first and second card?

\[ 4(2j + 1) \quad \quad \quad j(2 - j) \]

F. \(-j^2 + 6j + 4\)  \quad H. \(j^2 + 6j + 1\)
G. \(j^2 + 2j + 4\)  \quad I. \(j^2 + 6j + 4\)

[Lesson 1-3] MA.912.A.3.2

18. What is the domain of the function?

\[ A. \{x \mid x < 0\} \quad B. \{x \mid x > 0\} \quad C. \{x \mid x > 2.1\} \quad D. \{x \mid x < 2.1\} \]

[Lesson 1-5] MA.912.A.3.1

19. Which expression results from using the Commutative Property of Multiplication on \((z + 23)z^2 + z^3\)?

F. \(z + (z + 23)z^2\)  \quad G. \(z^2 + 23z^2 + z\)
H. \(z^2(z + 23) + z^3\)  \quad I. \(z^3 + 23z + z\)

[Lesson 1-3] MA.912.A.3.2

20. The table below shows the elements for three sets.

<table>
<thead>
<tr>
<th>Set</th>
<th>Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(-1, 0, 1,...)</td>
</tr>
<tr>
<td>B</td>
<td>(0, 1,...)</td>
</tr>
<tr>
<td>C</td>
<td>(1, 2,...)</td>
</tr>
</tbody>
</table>

What set is \(A \cap (B \cap C)\)?

A. \(\emptyset\)  \quad C. \(\{0, 1,...\}\)
B. \(\{-1, 0\}\)  \quad D. \(\{1, 2,...\}\)

[Lesson 1-8] MA.912.D.7.1
Chapter 2 Practice
Linear Equations

Circle the letter of the answer you choose.

1. Which equation represents “four less than twice a number is 45 more than the number”?
   A. \(4 - 2n = n + 45\)
   B. \(4(1 - 2n) = 45 + n\)
   C. \(2n - 4 = n + 45\)
   D. \(2(n - 4) = 45 + n\)

   [Lesson 2-3] MA.912.A.3.5

2. What is the solution for the equation below?
   \[-9(10 - x) = 32\]
   F. \(-13\frac{5}{9}\)
   G. \(-6\frac{4}{9}\)
   H. \(6\frac{4}{9}\)
   I. \(13\frac{5}{9}\)

   [Lesson 2-2] MA.912.A.3.1

3. What equation goes in the blank space in the table?

<table>
<thead>
<tr>
<th>Equation</th>
<th>(5(x - 0.2) = 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>(5x = 7)</td>
</tr>
<tr>
<td>Step 3</td>
<td>(x = 1.4)</td>
</tr>
</tbody>
</table>

   A. \(x - 0.2 = 1\)
   B. \(x - 0.2 = 6\)
   C. \(5x - 0.2 = 6\)
   D. \(5x - 1 = 6\)

   [Lesson 2-3] MA.912.A.3.5

4. Which equation has the solution \(x = -2\)?
   F. \(4x + 5 = x + 1\)
   G. \(4x + 5 = x - 1\)
   H. \(4x - 5 = x + 1\)
   I. \(4x - 5 = x - 1\)

   [Lesson 2-4] MA.912.A.3.1

5. Which equation is equivalent to the statement below?
   Four times three less than a number is 20 plus the number.

   A. \(4(3) - n = 20n\)
   B. \(4(3 - n) = n + 20\)
   C. \(4(n - 3) = n + 20\)
   D. \(4(n - 3) + 20 = n\)

   [Lesson 2-2] MA.912.A.3.5

6. Which monomial is equivalent to the expression on the card below?

   \[\frac{2b^2 - ab}{a - 2b}\]

   F. \(-a\)
   G. \(-b\)
   H. \(a\)
   I. \(b\)

   [Lesson 2-6] MA.912.A.5.1
Chapter 2 Practice (continued)
Linear Equations

7 Miguel walks 4 miles in 75 minutes. His rate for the first part of his walk is shown in the table below.

<table>
<thead>
<tr>
<th>Time</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 min</td>
<td>3\frac{1}{2} \text{ mph}</td>
</tr>
</tbody>
</table>

How fast did he walk the rest of the time?
A. 6 miles per hour
B. 4\frac{1}{2} miles per hour
C. 4\frac{1}{3} miles per hour
D. 3 miles per hour

[Lesson 2-9] MA.912.A.10.1

8 Which is an equivalent equation for the proportion shown below?

\[
\frac{0.07}{0.175} = \frac{1}{b}
\]

F. 0.07b = 0.175
G. 0.07b = 175
H. 0.7b = 0.175
I. 0.7b = 17.5

[Lesson 2-6] MA.912.A.3.1

9 For what value(s) of \( r \) is the equation \( 5r - 1 = 5r + 1 \) never true?
A. any \( r \)
B. no \( r \)
C. only \( r = -r \)
D. only \( r = -5 \)

[Lesson 2-3] MA.912.A.10.3

10 The surface area of the cylinder below is given by \( A = 2\pi r^2 + 2\pi rh \).

What is this equation solved for \( h \)?
F. \( h = A - 2\pi r \)
G. \( h = \frac{A}{2\pi r} - r \)
H. \( h = A - r \)
I. \( h = \frac{A}{2\pi} - r^2 \)

[Lesson 2-8] MA.912.A.3.3

11 Angelina bought 4 boxes of grapefruit and 6 boxes of oranges to sell at her fruit stand. Each box of grapefruit weighed 85 pounds; each box of oranges weighed 90 pounds. What is the weighted average?

[Lesson 2-9] MA.912.A.3.5
Chapter 2 Practice (continued)
Linear Equations

12 The average length of a Florida bonnethead shark is about 42 inches. The average length is 12.5 inches more than 0.5 times the maximum length, \( m \). This is given by the equation \( 42 = 12.5 + 0.5m \). What is the maximum length of a Florida bonnethead shark in inches?

14 Hardee county is shaped like a rectangle with a perimeter of 104 miles. Its east-west width is 10 miles longer than its north-south width.

What is the area of Hardee county in square miles?

13 Which sentence means the same as the equation below?

\[
5x - \frac{4}{9}(x - 1) = 20
\]

A. Five times a number decreased by four-ninths of the number equals twenty.
B. Five times a number decreased by four-ninths of one less than the number is twenty.
C. Twenty is four-ninths of one less a number minus five times the number.
D. Twenty is five times a number decreased by four-ninths of the number.

15 For what values of \( z \) is the equation below true?

\[
2(z + 1) - 2z = -7
\]

F. all \( z \) values
G. no \( z \) values
H. \( z = 2 \)
I. \( z = -3 \)
Quan and Juan caught two batches of stone crabs. Quan caught 6 more crabs than Juan, but the weight of each of their batches was the same. Quan’s crabs averaged 1.5 pounds each and Juan’s crabs averaged 2 pounds each. The equation that models this situation is \((x + 6)1.5 = 2x\), where \(x\) is the number of crabs Juan caught. How many crabs did Quan catch?

Nadine has a $200 debit card that can be used to purchase meals at the college cafeteria. She uses it to buy the lunch special, which costs $8. The table shows her debit card balance for each of the last 4 weeks.

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Meals</td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Debit Card Balance ($)</td>
<td>176</td>
<td>160</td>
<td>128</td>
<td>120</td>
</tr>
</tbody>
</table>

Nadine’s debit card balance after buying a total of \(n\) meals is $64. This is given by the equation \(64 = 200 - 8n\). How many meals did Nadine buy using her debit card?

A. 8
B. 16
C. 17
D. 33

What is the solution to \(\frac{x}{5} = \frac{x + 2}{3}\)?

A. \(\frac{1}{6}\)
B. \(\frac{1}{4}\)
C. \(\frac{1}{3}\)
D. \(\frac{1}{2}\)
Chapter 3 Practice
Linear Functions

Circle the letter of the answer you choose.

1. Which table of values was used to determine the line shown?

   ![Graph of a line]

   A. \[
   \begin{array}{c|c|c}
   x & -5 & 4 \\
   y & 1 & 1 \\
   \end{array}
   \]

   B. \[
   \begin{array}{c|c|c}
   x & -5 & 1 \\
   y & 1 & 4 \\
   \end{array}
   \]

   C. \[
   \begin{array}{c|c|c}
   x & 5 & 4 \\
   y & -1 & 1 \\
   \end{array}
   \]

   D. \[
   \begin{array}{c|c|c}
   x & -5 & 1 \\
   y & 1 & 4 \\
   \end{array}
   \]

   [Lesson 3-1] MA.912.A.3.8

2. Which points are on a direct variation graph with a slope of 4?

   F. \((-1, 4); (3, 12)\)

   G. \((1, -4); (-3, -12)\)

   H. \((1, 4); (3, 12)\)

   I. \((1, 4); (-3, 12)\)

   [Lesson 3-4] MA.912.G.1.4

3. What is the sum of the numbers that are not in the intersection of \(C\) and \(D\)?

   ![Intersection of circles]

   [Fair Game] MA.7.P.7.2

4. Which relation displays an arithmetic sequence with both its domain and range?

   A. \((1, 1), (1, 2), (1, 3), (1, 4)\)

   B. \((1, -2), (2, 0), (3, 2), (4, 4)\)

   C. \((1, 2), (1, 4), (2, 6), (2, 8)\)

   D. \((1, -2), (1, 0), (1, 2), (1, 4)\)

   [Lesson 3-5] MA.912.A.2.13
Chapter 3 Practice (continued)
Linear Functions

5 The Lake Jackson sinkhole is shaped like a cylinder. It has an eight-foot diameter and is about 50 feet deep. Which graph shows the relationship between the amount of water in the sinkhole, \( V \), at any given depth, \( d \)? The formula for the volume of water is \( V = A \times d \), where \( A \) is the area formed by the eight-foot diameter circle.

F. 

G. 

H. 

I. 

6 Which equation is graphed below?


A. \( x - 3y = -11 \)
B. \( x - 3y = 7 \)
C. \( x + 3y = 7 \)
D. \( x + 3y = -11 \)

7 What is the slope of a line passing through the points \((-5, 3)\) and \((3, -5)\)?

F. \(-4\)
G. \(-1\)
H. \(-\frac{1}{4}\)
I. \(1\)

[Lesson 3-3] MA.912.A.3.9

8 What is the slope of the graph of a direct variation that passes through \((1, -4)\) and \((4, -16)\)?

A. \(4\)
B. \(\frac{1}{4}\)
C. \(-4\)
D. \(-\frac{1}{4}\)

[Lesson 3-4] MA.912.A.3.9
Chapter 3 Practice (continued)
Linear Functions

9. What is the slope of the line graphed below expressed in fraction form?

[Diagram of a line graphed on a grid]

10. Students are asked to select a function card and a domain card from two piles and then list the range. Jarod drew the two cards below.

<table>
<thead>
<tr>
<th>Function</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(n) = 10 + 3n )</td>
<td>( n \in {1, 2, 3, \ldots} )</td>
</tr>
</tbody>
</table>

What is the correct range?

F. 1, 2, 3, ...
G. 2, 3, 6, ...
H. 13, 14, 15, ...
I. 13, 16, 19, ...

[Lesson 3-3] MA.912.G.1.4

11. The depth, length, and width of a Polk County, Florida phosphate mine are doubled. How does the volume of phosphate removed from the new mine compare to the amount removed from the original mine?

A. eight times more
B. four times more
C. the same
D. twice as much

[Lesson 3-6] MA.912.A.2.13

12. What is the equation of a line having a slope of \(-1\) and containing the point \((-1, -1)\)?

F. \( x - y = 0 \)
G. \( x + y = 0 \)
H. \( x + y = -1 \)
I. \( x + y = -2 \)

[Lesson 3-1] MA.912.A.3.8

13. What is the slope of the line represented by the equation \( y = -2 \)?

A. \(-2\)
B. 0
C. 2
D. undefined

[Lesson 3-2] MA.912.A.3.9
Chapter 3 Practice (continued)
Linear Functions

14. The table shows the linear relationship between fuel consumption (miles per gallon) and speed (miles per hour). What is the slope of the line that represents this relationship?

<table>
<thead>
<tr>
<th>Speed (mi/h), x</th>
<th>Fuel Consumption (mi/gal), y</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>60</td>
<td>45</td>
</tr>
</tbody>
</table>

F. \(-4\)  
G. \(-\frac{1}{4}\)  
H. \(\frac{3}{4}\)  
I. 4

[Lesson 3-3] MA.912.A.3.9

15. Which direct variation line has a slope that is the opposite of the slope of the line representing \(y = -x\)?

A. \(y = 3x\)  
B. \(y = x\)  
C. \(y = -3x\)  
D. \(y = -\frac{1}{3}x\)

[Lesson 3-4] MA.912.A.3.9

16. What are the next three terms in the arithmetic sequence representing the function \(f(n)\) with values 5, 7, 9, ...?

F. 1, 2, 3  
G. 10, 12, 14  
H. 11, 13, 15  
I. 11, 9, 7

[Lesson 3-5] MA.912.A.2.13

17. Which graph represents the relationship between the circumference of a circle and its diameter?

A. 
B. 
C. 
D.

[Lesson 3-2] MA.912.A.3.8

18. A map of U.S. 27 West Okeechobee Road in Miami is placed overtop a coordinate plane. Two coordinates at either end of the road on the map are shown. What would be the approximate slope of the line?

F. \(-1.25\)  
G. \(-0.8\)  
H. 1  
I. 1.25

[Lesson 3-3] MA.912.G.1.4
Chapter 4 Practice  
Linear Functions and Relations

1. What is the equation of the line that passes through the points \((-1, 5)\) and \((2, -4)\)?  
   - A. \(y = -3x - 2\)  
   - B. \(y = -3x + 2\)  
   - C. \(y = \frac{1}{3}x + \frac{16}{3}\)  
   - D. \(y = \frac{1}{3}x - \frac{14}{3}\)  

   **[Lesson 4-2] MA.912.A.3.10**

2. What is the equation of the line that passes through the point \((1, 4)\) and is parallel to the line on the graph below?  

   ![Graph](image)

   - F. \(2x - y = -2\)  
   - G. \(2x + y = 6\)  
   - H. \(2x - y = 4\)  
   - I. \(x + 2y = 9\)  

   **[Fair Game] MA.8.A.6.4**

3. A sailboat rental company charges a basic fee plus $25 per hour. The total charge for 7 hours was $375. Which equation represents this real-world application?  
   - A. \(y - 7 = 25x - 325\)  
   - B. \(y - 25 = 375(x - 7)\)  
   - C. \(y - 375 = 25x - 7\)  
   - D. \(y - 375 = 25(x - 7)\)  

   **[Lesson 4-3] MA.912.A.3.5**

4. 11,761 square miles of Florida are covered by water. If the area of Florida is 65,758 square miles, about what percent of Florida is land?  

   - F. 82.1%  
   - G. 78.2%  
   - H. 21.8%  
   - I. 17.9%  

   **[Fair Game] MA.8.A.6.4**

5. What is the equation of the line that passes through the point \((3, -1)\) and is perpendicular to the graph of \(2x - 4y = 8\)?  
   - A. \(2x - y = 7\)  
   - B. \(x + 2y = 1\)  
   - C. \(2x + y = 5\)  
   - D. \(x - 2y = 5\)  

   **[Lesson 4-4] MA.912.G.1.4**
Chapter 4 Practice
Linear Functions and Relations (continued)

6 Gayle keeps the statistics for her favorite basketball team. Here is one of her data displays.

Gayle draws a line of fit for her scatterplot. What does the slope of the line represent?

F. As the number of free throws increases, the total points scored decreases.
G. As the number of free throws decreases, the total points scored increases.
H. As the number of free throws increases, the total points scored increases.
I. There is no relationship between the number of free throws and the total points scored.

[Lesson 4-5] MA.912.A.3.11

7 Which is the standard form of the equation of a line having y-intercept of −3 and an x-intercept of 5?

A. $3x + 5y = -15$
B. $y = \frac{-3}{5}x - 15$
C. $3x - 5y = 15$
D. $3x - 5y = -15$

[Lesson 4-3] MA.912.A.3.10

8 Which is the graph for the equation $4x - 3y = 12$?

F.

G.

H.

I.

[Lesson 4-1] MA.912.A.3.8
Chapter 4 Practice
Linear Functions and Relations (continued)

9 What is the standard form of the equation of the line given by the equation \(y = \frac{3}{4}x + 1\)?
   A. \(4x - 3y = 22\)
   B. \(4x + 3y = 10\)
   C. \(3x + 4y = 4\)
   D. \(3x - 4y = -4\)

[Lesson 4-3] MA.912.A.3.7

10 George has saved $40. He plans to save $25 more each month until he has enough for a trip to Dade County. Which equation shows George’s total savings, \(s\), after any number of months, \(m\)?

   F. \(m = 25s + 40\)
   G. \(m = 40s + 25\)
   H. \(s = 25m + 40\)
   I. \(s = 40m + 25\)

[Lesson 4-1] MA.912.A.3.5

11 This double-intercept form of a linear equation shows that the \(x\)- and \(y\)-intercepts of its graph are at 4 and -1.
   \(\frac{x}{4} + \frac{y}{-1} = 1\)

Which of the following is the slope-intercept form of the same equation?
   A. \(y = 4x - 1\)
   B. \(y = -x + 4\)
   C. \(y = \frac{1}{4}x + 1\)
   D. \(y = \frac{1}{4}y - 1\)

[Lesson 4-2] MA.912.A.3.7

12 The table below shows the relationship between the number of miles a truck driver covers and the amount earned.

<table>
<thead>
<tr>
<th>Distance Driven (miles)</th>
<th>Amount Earned (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>12.50</td>
</tr>
<tr>
<td>120</td>
<td>30.00</td>
</tr>
<tr>
<td>260</td>
<td>65.00</td>
</tr>
<tr>
<td>480</td>
<td>120.00</td>
</tr>
</tbody>
</table>

Based on the values given in the table, how much will this driver earn for 1,500 miles?
   F. $350
   G. $375
   H. $480
   I. $600

[Lesson 4-7] MA.912.A.2.13
Chapter 4 Practice
Linear Functions and Relations (continued)

13. What is the equation of the line that passes through the point (3, 2) and has the same slope as the line on the graph below?

- A. \( y - 2 = \frac{2}{3} (x - 3) \)
- B. \( y - 3 = \frac{2}{3} (x - 2) \)
- C. \( y - 2 = -\frac{2}{3} (x - 3) \)
- D. \( y - 3 = -\frac{2}{3} (x - 2) \)

[Lesson 4-3] MA.912.A.3.10

14. What is the equation for the line shown on this graph?

- F. \( y = -2x + 1 \)
- G. \( y = \frac{1}{2} x + 1 \)
- H. \( y = 2x - \frac{1}{2} \)
- I. \( y = 2x + 1 \)

[Lesson 4-1] MA.912.A.3.12

15. Janelle lives in Clearwater. She found this data table showing the monthly average high and low temperatures for her city.

<table>
<thead>
<tr>
<th>Month</th>
<th>High</th>
<th>Low</th>
<th>Month</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>72</td>
<td>50</td>
<td>July</td>
<td>91</td>
<td>74</td>
</tr>
<tr>
<td>Feb</td>
<td>73</td>
<td>52</td>
<td>Aug</td>
<td>92</td>
<td>73</td>
</tr>
<tr>
<td>Mar</td>
<td>77</td>
<td>56</td>
<td>Sept</td>
<td>90</td>
<td>72</td>
</tr>
<tr>
<td>April</td>
<td>81</td>
<td>61</td>
<td>Oct</td>
<td>85</td>
<td>65</td>
</tr>
<tr>
<td>May</td>
<td>87</td>
<td>67</td>
<td>Nov</td>
<td>79</td>
<td>58</td>
</tr>
<tr>
<td>June</td>
<td>90</td>
<td>72</td>
<td>Dec</td>
<td>74</td>
<td>52</td>
</tr>
</tbody>
</table>

Janelle used the temperature data to make a graph of the high temperatures.

Which linear equation is the best approximation to show the rise in average temperature from January to August?

- A. \( y = -3.27x - 68.14 \)
- B. \( y = -3.27x + 68.14 \)
- C. \( y = 3.27x - 68.14 \)
- D. \( y = 3.27x + 68.14 \)

[Lesson 4-6] MA.912.A.3.11
Chapter 5 Practice
Linear Inequalities

Circle the letter of the answer you choose.

1. What is the solution to $x - 4 > 7$?
   A. $x > 3$
   B. $x > 11$
   C. $11 > x$
   D. $3 > x$

   [Lesson 5-1] MA.912.A.3.4

2. Which inequality has the solution $m \leq -2$?
   F. $5 - 2m \leq 6$
   G. $5 - 2m \leq 1$
   H. $5 - 2m \geq 1$
   I. $5 - 2m \geq 9$

   [Lesson 5-2] MA.912.A.3.4

3. Based on the inequality in the table below, what is Step 4?

<table>
<thead>
<tr>
<th>Inequality:</th>
<th>$-3y + 4 &lt; 5y + 6$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1:</td>
<td>$-3y - 5y + 4 - 4 &lt; 5y - 5y + 6 - 4$</td>
</tr>
<tr>
<td>Step 2:</td>
<td>$-8y + 0 &lt; 0 + 2$</td>
</tr>
<tr>
<td>Step 3:</td>
<td>$-8y &lt; 2$</td>
</tr>
<tr>
<td>Step 4:</td>
<td>$\frac{-8y}{-8} &gt; \frac{2}{-8}$</td>
</tr>
<tr>
<td>A.</td>
<td>$\frac{-8y}{8} &gt; \frac{2}{8}$</td>
</tr>
<tr>
<td>B.</td>
<td>$y &lt; -4$</td>
</tr>
<tr>
<td>C.</td>
<td>$y &lt; \frac{1}{4}$</td>
</tr>
<tr>
<td>D.</td>
<td>$y &lt; -4$</td>
</tr>
</tbody>
</table>

   [Lesson 5-3] MA.912.A.3.4

4. Florida long-tailed jackrabbits found near the Miami International Airport vary in length from 18 to 25 inches. If the length of their ears, $\ell$, is related to their body length by the equation $3\ell - 7$, what is the range of their ear lengths?
   F. $\frac{3}{3} < \ell \leq 6$
   G. $\frac{3}{3} < \ell \leq 10\frac{2}{3}$
   H. $6 \leq \ell \leq 8\frac{1}{3}$
   I. $8\frac{1}{3} < \ell \leq 10\frac{2}{3}$

   [Lesson 5-4] MA.912.A.3.5

5. Which is the graph of the compound linear inequality below?

   $x - 2 < -4 \text{ or } x - 2 > 4$

   A.    B.    C.    D.

   [Lesson 5-4] MA.912.A.3.4
6. Which graph shows the solution for the inequality given by $3y - 4x \leq 9$?

   F. 
   
   G. 
   
   H. 
   
   I. 


7. Which inequality does not have a solution of $n > 5$?

   A. $9 - n < 4$
   B. $9 - n > 4$
   C. $n - 4 > 1$
   D. $n + 4 > 9$

   [Lesson 5-1] MA.912.A.3.4

8. Through November 2008, the annual rainfall for Melbourne, Florida, was about 63 inches while the normal rainfall would be 45 inches. If the rainfall rate stays at least the same in December 2008, which inequality gives the total rainfall, $t$, Melbourne will receive for that month if the normal rainfall for December is given by $r$?

   F. $t \geq \frac{7}{5}r$
   G. $t \geq \frac{7}{5}r + 45$
   H. $t \geq \frac{5}{7}r$
   I. $t \geq \frac{5}{7}r - 63$

   [Lesson 5-2] MA.912.A.3.5

9. Nyobi was given the two notecards below. What values of $t$ should she use to make the expression on the first card greater than the value on the second card?

   $-3(t + 1)$  $27$

   A. $t > 26$
   B. $t > -10$
   C. $t < -10$
   D. $t < 10$

   [Lesson 5-3] MA.912.A.3.4
Chapter 5 Practice (continued)

Linear Inequalities

10. Which compound inequality gives the solution \( x > 5 \) and \( x \leq 9 \)?
   - F. \( 9 > 2x - 3 > 5 \)
   - G. \( 12 > 2x - 3 \geq 9 \)
   - H. \( 15 \geq 2x - 3 > 7 \)
   - I. \( 21 \geq 2x - 3 \geq 9 \)

11. One estimate for the length of the underwater caves and passageways at Florida’s Peacock Springs State Park is 33,000 feet. This is no more than 5,000 feet longer than a second estimate. Which inequality represents the second estimate for the length of the caves and passageways?
   - A. \( x \geq 28,000 \)
   - B. \( x \leq 28,000 \)
   - C. \( x \geq 38,000 \)
   - D. \( x \leq 38,000 \)

12. How does the volume of the larger solid compare to the smaller?
   - F. 27 times larger
   - G. 6 times larger
   - H. 3 times larger
   - I. \( \frac{1}{3} \) times larger

13. Which linear inequality is graphed below?
   - A. \( 3x + y < -2 \)
   - B. \( 3x + y > -2 \)
   - C. \( 3x + y \leq -2 \)
   - D. \( 3x + y \geq -2 \)

14. Mr. DiGiustini wants to buy ticket packages to the Fort Myers Miracle baseball team’s special events days. What is the greatest number of Fireworks Packs at $48 per package he can purchase if he also buys two Game Taste packages at $42 per package and he can spend no more than $300?
Chapter 5 Practice (continued)
Linear Inequalities

15 Which property of real numbers justifies Step 3 in the solution below?

<table>
<thead>
<tr>
<th>Step</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given</td>
<td>$8x + 6 \leq 6 + 4x$</td>
</tr>
<tr>
<td>Step 1</td>
<td>$8x + 6 \leq 3(6 + 4x)$</td>
</tr>
<tr>
<td>Step 2</td>
<td>$8x + 6 \leq 18 + 12x$</td>
</tr>
<tr>
<td>Step 3</td>
<td>$8x \leq 12 + 12x$</td>
</tr>
<tr>
<td>Step 4</td>
<td>$-4x \leq 12$</td>
</tr>
<tr>
<td>Step 5</td>
<td>$x \geq -3$</td>
</tr>
</tbody>
</table>

F. Distributive Property  
G. Division Property of Inequalities  
H. Multiplication Property of Inequalities  
I. Subtraction Property of Inequalities  

16 The Fahrenheit temperature range for panther chameleons found in central Florida can be modeled by the compound inequality $125 < 2T - 25 < 165$.

Which inequality gives the temperature range?

A. $50 < T < 75$  
B. $75 < T < 95$  
C. $100 < T < 215$  
D. $150 < T < 190$

17 Which is the solution for the inequality shown below?

$0.5x < -0.15$

F. $x < -0.3$  
G. $x > -0.3$  
H. $x < -0.075$  
I. $x > -0.075$

18 Which graph represents the solution of the inequality shown below?

$8 - 3t > -1$

A.  
B.  
C.  
D.

Which property of real numbers justifies Step 3 in the solution below?

[Lesson 5-3] MA.912.A.3.4

[Lesson 5-2] MA.912.A.3.4

[Lesson 5-4] MA.912.A.3.5
Chapter 6 Practice
Systems of Linear Equations and Inequalities

Circle the letter of the answer you choose.

1. Which graph represents the system of linear equations \( x + 3y = 2 \) and \( x - 2y = 3 \)?

   A. ![Graph A]
   B. ![Graph B]
   C. ![Graph C]
   D. ![Graph D]

2. A football team has scored 150 points. Each touchdown, including the extra point, is worth 7 points, while a field goal is worth 3 points. The number of touchdowns is three times the number of field goals. If they scored the extra point after each touchdown, how many touchdowns have they scored?

   ![Graph of football scores]

   [Lesson 6-1] MA.912.A.3.13

3. What number of square units is the area of the smaller square in the figure below?

   ![Figure with smaller square]

   [Lesson 6-2] MA.912.A.3.15

   F. 16
   G. 25
   H. 48
   I. 49

   [Fair Game] MA.8.G.2.4
Chapter 6 Practice (continued)
Systems of Linear Equations and Inequalities

4 Which of the following would not represent a way to solve the system
\(-3m + n = 8\) and \(m - 6n = -5\) by elimination?

A. Multiply \((-3m + n = 8)\) by 6 and add to \(m - 6n = -5\).
B. Multiply \((m - 6n = -5)\) by 3 and add to \(-3m + n = 8\).
C. Subtract \(m - 6n = -5\) from \((-3m + n = 8)\) times -6.
D. Multiply \((-3m + n = 8)\) times -5 and add to \((m - 6n = -5)\) times -8.

[Lesson 6-4] MA.912.A.3.14

5 The length of a swimming pool is 12 feet longer than \(\frac{1}{2}\) its width, as shown below.

\[
\begin{align*}
\text{w ft} & \\
\left(\frac{1}{2}w + 12\right) & \\
\end{align*}
\]

The perimeter of the pool is 60 feet. What is the length of the pool in feet?


6 Which graph displays the solution to the system of inequalities below?
\[
\begin{align*}
2x + 3y & \leq -4 \\
x - 2y & \geq 5
\end{align*}
\]

F.  
G.  
H.  
I.  

[Lesson 6-5] MA.912.A.3.15
Chapter 6 Practice (continued)
Systems of Linear Equations and Inequalities

**7** The linear equations \( y = 4 + 3x \) and \( y = x - 4 \) are graphed below. Which is the value of \( x \) in the solution of the system of equations?

![Graph of linear equations]

**9** If \( y = x + 1 \) and \( x + y = a \), for what value of \( a \) will \( x = 1 \)?

![Card with linear equations]

**10** The same number of peaches and persimmons were picked at two Alachua county orchards. At one orchard, twice the number of peaches less three times the number of persimmons totaled 120. At the other orchard, two times the number of peaches plus the number of persimmons totaled 360. How many peaches and persimmons were picked at each orchard?

- **F.** 60 peaches; 150 persimmons
- **G.** 120 peaches; 140 persimmons
- **H.** 120 peaches; 360 persimmons
- **I.** 150 peaches; 60 persimmons

![Card with numbers]
11. Restoration efforts in the Picayune Strand State Forest in Collier county have targeted no more than 45 miles of canals and no more than 227 miles of roads for reclamation. The restoration efforts plan to reclaim at least 200 miles of canals and roads. The number of miles of canals, \( x \), and roads, \( y \), to be reclaimed is illustrated by the system of 3 linear inequalities shown on the graph below.

Which ordered pair represents a number of miles of canals and roads that might be reclaimed?

A. (30, 150)  
B. (40, 150)  
C. (55, 150)  
D. (40, 210)

[Lesson 6-8] MA.912.A.3.15

12. Shauna bought oranges that cost $6 per box and tangerines that cost $7 per box. If she paid $177 for 27 boxes of fruit, how many boxes of each type did she buy?

F. 12 of oranges; 15 of tangerines  
G. 13 of oranges; 14 of tangerines  
H. 14 of oranges; 13 of tangerines  
I. 15 of oranges; 12 of tangerines

[Lesson 6-7] MA.912.A.3.15
Chapter 7 Practice
Polynomials

Circle the letter of the answer you choose.

1. What is the product of \(-4a^2b\) and \(3ab^2\)?
   A. \(-12a^3b^2\)
   B. \(-12a^3b^3\)
   C. \(-ab^{-1}\)
   D. \(-a^3b^3\)

   [Lesson 7-1] MA.912.A.4.1

2. Which monomial division gives the quotient \(\frac{x^3y^4}{x^2}\)?
   F. \(\frac{5x^2y^4}{9xy^3}\)
   G. \(\frac{5x^3y^5}{9xy^4}\)
   H. \(\frac{5x^3y^2}{20y}\)
   I. \(\frac{5x^3y^2}{20xy}\)

   [Lesson 7-2] MA.912.A.4.1

3. Which expression represents the area of the trapezoid shown below?

   A. \(3ab^2 - 6ab - 2b^2\)
   B. \(3ab^2 + 6ab - 2b^2\)
   C. \(6ab^2 - 12ab - 4b^2\)
   D. \(6ab^2 + 12ab - 4b^2\)

   [Lesson 7-6] MA.912.A.4.2

4. What number of feet is the length of the other dimension for the rectangle shown?

   [Fair Game] MA.6.G.4.3

5. The Miccosukee Nation Farm Co-op has two soybean fields in north central Florida. What is their total area?

   F. \(10x + 16\)
   G. \(10x + 10\)
   H. \(x^2 + 8x + 16\)
   I. \(x^2 + 8x + 10\)

   [Lesson 7-5] MA.912.A.4.2
Chapter 7 Practice (continued)

Polynomials

6. What is the simplified form of \((4c^3d - 5a^5) - (-2a^2 + 6c^3d)\)?
   A. \(-7a^2 - 2c^3d\)
   B. \(-3a^2 + 2c^3d\)
   C. \(-3a^2 - 2c^3d\)
   D. \(-6a^2 + 11c^3d\)

[Lesson 7-5] MA.912.A.4.2

7. Which multiplication problem has a product of \(4y^2 - 8y + 12xy\)?
   F. \(4x(y - 8y + 3y)\)
   G. \(4y(y - 2 + 3x)\)
   H. \(y(y - 2 + 3x)\)
   I. \(y^2(4 - 8y + 3x)\)

[Lesson 7-6] MA.912.A.4.2

8. Arthur uses rotation sprinklers to water his orange trees. The radius of the circular area of each sprinkler is shown below. Which represents the total area watered by both sprinklers in simplified form? (Hint: The area of a circle = \(\pi r^2\).)

A. \(\pi x^2y + \pi xy^2\)
B. \(\pi x^3y^2 + \pi x^2y^4\)
C. \(2\pi x^3y^2 + 2\pi x^2y^3\)
D. \(2\pi x^4 + 2\pi x^3y^2\)

[Lesson 7-7] MA.912.A.4.2

9. The Lake City Strawberry Patch is taking the small square corner of their larger square field out of production to rest the soil. Which expression represents the area that is left for strawberry production?

\[
\begin{align*}
2x & \\
\hline \\
y & \\
\end{align*}
\]

F. \(y - 2x\)
G. \(y - x^2\)
H. \(y^2 - 2x^2\)
I. \(y^2 - 4x^2\)

[Lesson 7-7] MA.912.A.4.2

10. Which expression best represents the area of the square in simplest terms?

\[
\begin{align*}
3q^2 & \\
\hline \\
\end{align*}
\]

A. \(6q^2r^4\)
B. \(6q^2r^2\)
C. \(9q^2r^2\)
D. \(9q^2r^4\)

[Lesson 7-1] MA.912.A.4.1

11. The volume of Roscoe’s aquarium is \(28ac^2\) cubic centimeters. If the aquarium’s depth is \(2ac\) centimeters, what is the area of its base, in square centimeters?

F. \(14a\)
G. \(14c\)
H. \(26c\)
I. \(56a\)

[Lesson 7-2] MA.912.A.4.1
Chapter 7 Practice (continued)

Polynomials

12. What is the product of \(-k^3l^{-2} \cdot 3k^{-2}l^5\)?
   A. \(-3kl\)  
   B. \(-3k^5l^3\)  
   C. \(\frac{-3k}{l^3}\)  
   D. \(-3k^2l^5\)
   
   [Lesson 7-1] MA.912.A.4.1

13. What is this expression in simplest terms?
   \(-7(a^2 + ab) - 2(ab + a^2)\)
   F. \(-6a^2 - 9ab\)  
   G. \(-6a^2 + 9ab\)  
   H. \(-9a^2 - 9ab\)  
   I. \(-9a^2 + 5ab\)
   
   [Lesson 7-6] MA.912.A.4.2

14. The volume of two natural gas deposits off the Bay county shores can be modeled by the polynomials \(24a^3 + 4a^2b - 8ab^2\) and \(3a^2b - 3ab^2 - 6b^3\). Which expression gives the sum of the two deposits?
   
   A. \(24a^3 - 11a^2b^2 - 6b^3\)  
   B. \(24a^3 + 11a^2b^2 - 6b^3\)  
   C. \(24a^3 + 7a^2b - 11ab^2 - 6b^3\)  
   D. \(24a^3 + 7a^2b^2 - 11a^2b^4 - 6b^3\)
   
   [Lesson 7-5] MA.912.A.4.2

15. What is the perimeter of the triangle?
   \[
   5r^2 + 3 \quad 7r - 8 \\
   4r^2 - 6r + 1
   \]
   F. \(9r^2 + r - 5\)  
   G. \(9r^2 + r - 4\)  
   H. \(9r^2 - r + 4\)  
   I. \(9r^2 - r - 4\)
   
   [Lesson 7-5] MA.912.A.4.2

16. Cave shrimp live in the Blue Springs Cave in the Florida Panhandle. The number of cave shrimp per cubic meter found in three different spaces are represented by the polynomials \(30 - x^2, 2x - 15,\) and \(3x^2 - 4\). If the cave spaces are rectangular solids having volumes represented by the monomials \(4y^3, 2y^3,\) and \(6y^3\) cubic meters, respectively, what is the total number of cave shrimp in all three spaces?

   A. \(48y^3 + 2x^2 + 2x + 11\)  
   B. \(66y^3 + 18x^2 + 4x\)  
   C. \(66y^3 + 14x^2y^3 + 4xy^3\)  
   D. \(120y^3 + 18x^2y^3 + 4xy^3\)
   
   [Lesson 7-6] MA.912.A.4.2
Chapter 7 Practice (continued)

Polynomials

17. The Marion County Llama Cooperative is expanding their square-shaped ranch. Which polynomial represents the area of the new ranch?

- F. $x^2 + 36$
- G. $x^2 + 12x + 36$
- H. $12 + 2x + x^2$
- I. $12x^2 + 36$

[Lesson 7-7] MA.912.A.4.2

18. What is the area of the triangle in simplest form?

- A. $\frac{1}{2}x^2 - \frac{7}{2}x + 6$
- B. $\frac{1}{2}x^2 + \frac{1}{2}x + 6$
- C. $x^2 - 7x + 12$
- D. $x^2 + x + 12$

[Lesson 7-7] MA.912.A.4.2

19. Which monomial represents the volume of the figure if each cube has an edge of $x$?

- F. $16x^3$
- G. $30x^3$
- H. $48x^3$
- I. $90x^3$

[Lesson 7-5] MA.912.A.4.2

20. What is the volume of the larger cube divided by the total surface area of the smaller cube?

- A. $\frac{3n}{2}$
- B. $\frac{9n}{2}$
- C. $\frac{3}{2n}$
- D. $\frac{9}{2n}$

[Lesson 7-3] MA.912.A.4.1
Chapter 8 Practice
Factoring and Quadratic Equations

Circle the letter of the answer you choose.

1. Joshua selected two index cards with different monomial expressions. Which is the greatest common factor of the expressions shown on the index cards?

   \[ 4x^2y^2 \quad \text{and} \quad 14xy^3 \]

   A. \( xy^2 \)  
   B. \( 2xy^2 \)  
   C. \( 4xy \)  
   D. \( 4x^2y^3 \)

[Lesson 8-2] MA.912.A.4.3

2. Which expression below has the same value as \( 16x^4 \)?

   F. \( 2(x)^4 \)  
   G. \( 4x \cdot 4x \)  
   H. \( 2x \cdot 2x \cdot 2x \)  
   I. \( 2x \cdot 2x \cdot 2x \cdot 2x \)

[Fair Game] MA.8.A.6.3

3. Who correctly wrote the polynomial expression below in factored form?

   \[ -4ab^3 + 8ab^2 - 28a^2b^5 \]

<table>
<thead>
<tr>
<th>Student</th>
<th>Factored Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carlos</td>
<td>(-ab^3(b + 2 + 7a^2b^3))</td>
</tr>
<tr>
<td>Chloe</td>
<td>(ab^2(4b + 8 + 28a^2b^3))</td>
</tr>
<tr>
<td>Tamyra</td>
<td>(4ab^2(-b + 2 - 7a^2b^3))</td>
</tr>
<tr>
<td>Ethan</td>
<td>(4ab^2(b + 2 + 7a^2b^3))</td>
</tr>
</tbody>
</table>

   A. Carlos  
   B. Chloe  
   C. Tamyra  
   D. Ethan

[Lesson 8-2] MA.912.A.4.3

4. What are the solutions to the quadratic equation shown below?

   \[ x^2 = 90x - 2,000 \]

   F. 10, 200  
   G. 20, 100  
   H. 25, 80  
   I. 40, 50

[Lesson 8-3] MA.912.A.7.2

5. What are the length and width of the shaded rectangle if its area is represented by \( 8a^2 - 2a - 15 \)?

   \[ \begin{array}{c}
   \text{4a} \\
   \hline
   \text{2a}
   \end{array} \]

   A. \( 4a - 5 \) and \( 2a - 3 \)  
   B. \( 4a + 5 \) and \( 2a - 3 \)  
   C. \( 4a - 5 \) and \( 2a + 3 \)  
   D. \( 4a + 5 \) and \( 2a + 3 \)

[Lesson 8-4] MA.912.A.4.3

6. What is \( 9 - 4a^2b^2 \) in factored form?

   F. \((3 - 2ab)^2\)  
   G. \((3 + 2ab)^2\)  
   H. \((3 - 2ab)(3 + 2ab)\)  
   I. \((9 - ab)(9 + 4ab)\)

[Lesson 8-5] MA.912.A.4.3
Chapter 8 Practice (continued)
Factoring and Quadratic Equations

7. What are the solutions of the quadratic equation shown below?
\[ 3n^2 + 7n + 2 = 0 \]
A. \(-2, -3\)
B. \(-2, -\frac{1}{3}\)
C. \(2, \frac{1}{3}\)
D. \(2, 3\)

[Lesson 8-4] MA.912.A.7.2

8. Which are possible dimensions of the rectangle shown below?

\[ \text{Area} = (4x^2 - 8x - 5) \text{ cm}^2 \]
F. \((2x + 5) \text{ cm}, (2x - 1) \text{ cm}\)
G. \((2x - 5) \text{ cm}, (2x + 1) \text{ cm}\)
H. \((4x + 1) \text{ cm}, (x - 5) \text{ cm}\)
I. \((4x - 1) \text{ cm}, (x + 5) \text{ cm}\)

[Lesson 8-4] MA.912.A.4.3

9. What are the values of \(t\) for which \((t^2 - 4)(2t + 14) = 0\)?
A. \(-2\) and \(-7\)
B. \(-2\) and \(7\)
C. \(-2, 2,\) and \(-7\)
D. \(-2, 2,\) and \(7\)

[Lesson 8-2] MA.912.A.1.8

10. For what values of \(x\) are the expressions on the index cards equal?

\[ x^2 + 8 \quad 6x \]
F. \(-2, 4\)
G. \(8, 1\)
H. \(2, 4\)
I. \(-2, -4\)

[Lesson 8-4] MA.912.A.7.2

11. Reina throws a softball straight up from a height of 4 feet with an initial velocity of 63 feet per second. The equation \(h = -16t^2 + 63t + 4\), where \(h\) is the height and \(t\) is the time in seconds, describes the path of the ball. After how many seconds will the ball hit the ground?

\[ h(t) = -16t^2 + 63t + 4 \]

[Lesson 8-4] MA.912.A.7.2
Chapter 8 Practice (continued)
Factoring and Quadratic Equations

12. The triangular tract of land formed by U.S. 441 and Florida highways 68 and 70 encompasses about 160 square miles as shown. How many miles is it between the intersections of U.S. 441 with 68 and 70?

13. Which expression shows the difference of these two perfect squares, in factor form?

<table>
<thead>
<tr>
<th>Perfect Squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>25y²</td>
</tr>
<tr>
<td>49</td>
</tr>
</tbody>
</table>

A. 25y² – 49  
B. (5y – 7)²  
C. (–5y – 7)²  
D. (5y – 7)(5y + 7)

14. What value of b will make 9x² + bx + 25 the perfect square of a binomial?
   F. 0  
   G. 8  
   H. 15  
   I. 30

15. A large Poinciana tree sits on a fenced lot that has an area of 100 square meters. The lot is surrounded by a graveled boundary as shown in grey. What is the value of a, in meters, if the area of graveled boundary is 300 square meters?

A. 10  
B. 20  
C. 25  
D. 40

16. Which of the following is the solution set of the equation shown below?
   \[ k^2 - 18k + 81 = 0 \]
   F. \{-9, 9\}  
   G. \{-9, 0\}  
   H. \{9\}  
   I. \{-9\}
Chapter 8 Practice (continued)
Factoring and Quadratic Equations

17. A Delta IV rocket launched from Kennedy Space Center reaches a height, \( h \), that is given by the equation shown below.

\[ h = v_0t + \frac{1}{2}at^2 \]

In this equation, \( t \) is the time after launch. What is the factored form of this equation needed to solve for \( t \) by using the quadratic formula?

A. \( at^2 - 2v_0t = h \)
B. \( at^2 + 2v_0t = h \)
C. \( at^2 - 2v_0t - 2h = 0 \)
D. \( at^2 + 2v_0t - 2h = 0 \)

[Lesson 8-4] MA.912.A.7.2

18. A square has an area of \( 64g^2 + 96gh + 36h^2 \), as shown below.

\[ \text{Area} = 64g^2 + 96gh + 36h^2 \]

Which of the following is a binomial for the length of each side of the square?

F. \( 8g + 6h \)
G. \( 8g - 6h \)
H. \( 8g^2 + 6h^2 \)
I. \( 8g^2 - 6h^2 \)

[Lesson 8-6] MA.912.A.4.3

19. What is the greatest common factor of the monomials shown on the index cards below?

- \( ab^2 \)
- \( 4a^3b^3 \)
- \( 2a^2 \)

A. \( a \)
B. \( 2a \)
C. \( ab \)
D. \( 4a \)

[Lesson 8-1] MA.912.A.4.3

20. Which property of real numbers justifies Step 2 in the solution below?

Given: \( x^2 - 2x - 35 = 0 \)
Step 1: \( (x - 7)(x + 5) = 0 \)
Step 2: \( x - 7 = 0 \) or \( x + 5 = 0 \)
Step 3: \( x = 7 \) or \( x = -5 \)

- F. Commutative Property of Multiplication
- G. Distributive Property
- H. Reflexive Property of Equality
- I. Zero Product Property

[Lesson 8-2] MA.912.A.1.8

21. Which is the factored form of \( 8a^2b^4 - 4a^3b^3 + 20ab^6 \)?

- A. \( 4a^2b^2(2b^2 - ab^2 + 5b^4) \)
- B. \( 4ab^3(2ab - a^2 + 5b^4) \)
- C. \( 4ab^2(2ab - a^2 + 5b^4) \)
- D. \( 4a^2b^3(2b - a + 5b^2) \)

[Lesson 8-2] MA.912.A.4.3
Chapter 9 Practice
Quadratic and Exponential Equations

Circle the letter of the answer you choose.

1. Which quadratic equation when graphed on a graphing calculator most closely resembles the graph below?

   ![Graph of a quadratic equation]

   A. \( y = 2x^2 - x - 2 \)
   B. \( y = x^2 + 3 \)
   C. \( y = x^2 - 3x \)
   D. \( y = x^2 - 3 \)

   [Lesson 9-1] MA.912.A.7.1

2. Monetta’s science class is counting alligator hatchlings in an overgrown phosphate-mine settling pond near her school. The area of the rectangular pond is shown below.

   ![Rectangular pond diagram]

   2,100 yd

   If the width is 40 yards less than the length, what is the pond’s width in yards?

   F. 30
   G. 40
   H. 50
   I. 70

   [Lesson 9-5] MA.912.A.7.8

3. The Stovall is a high rise in Tampa, Florida, that is about 256 feet tall. The equation \( d = 16t^2 \) models the distance a ball will travel if it is dropped from the top of the building. In the equation, \( d \) is the distance in feet and \( t \) is the time in seconds. About how many seconds will it take a ball dropped from the top to reach the ground?

   A. 4
   B. 15.5
   C. 16
   D. 16.5

   [Lesson 9-5] MA.912.A.7.8

4. For which value of \( m \) are the expressions shown on the cards below equal?

   \[
   8m + 3 \quad \quad \quad -4m^2
   \]

   F. \( -1 - \sqrt{112} \)
   G. \( -\frac{3}{2} \)
   H. \( \frac{1}{8} \)
   I. \( \frac{1}{24} \)

   [Lesson 9-5] MA.912.A.7.2

5. What are the solutions of the equation \( 0 = 2x^2 + x - 4 \)?

   A. \( x = \frac{-1 \pm \sqrt{17}}{2} \)
   B. \( x = \frac{1 \pm \sqrt{31}}{4} \)
   C. \( x = \frac{-1 \pm \sqrt{31}}{4} \)
   D. \( x = \frac{-1 \pm \sqrt{33}}{4} \)

   [Lesson 9-5] MA.912.A.7.2
Chapter 9 Practice (continued)
Quadratic and Exponential Equations

6. Which diagram represents a translation?
   F. 
   G. 
   H. 
   I. 

[Fair Game] MA.7.G.4.2

7. Why are there no real solutions to the quadratic equation $2x^2 + 2x + 9 = 0$?
   A. The coefficient of $x^2$ is positive.
   B. The sum $2 + 2 + 9$ is positive.
   C. The value of $2^2 - 4(2)(9)$ is negative.
   D. The value of $2^2 - 4(2)(9)$ is not a perfect square.

[Lesson 9-5] MA.912.A.7.2

8. Using a graphing calculator, which are the best estimates of the solutions to $0 = 0.3x^2 + 6.5x - 8$?
   F. $-22.8, -1.2$
   G. $-22.8, 1.2$
   H. $22.8, -1.2$
   I. $22.8, 1.2$

[Lesson 9-2] MA.912.A.7.10

9. The length of the rectangle below is 3 inches less than twice the width. What is the length of the rectangle in inches?

   Area = $77$ in$^2$
   \((2w - 3)\) in.

[Lesson 9-5] MA.912.A.7.8

10. What height will the basketball reach on the fourth bounce?

   \(27\) ft
   \(18\) ft
   \(12\) ft

   A. \(\frac{5}{9}\) ft
   B. \(5\frac{1}{2}\) ft
   C. \(8\) ft
   D. \(9\) ft

Chapter 9 Practice (continued)
Quadratic and Exponential Equations

11. The quadratic equation that models a diver’s height as she jumps off a 5-meter-high platform is \( h = -5t^2 + 7t + 5 \). In the equation, \( h \) is the height in meters and \( t \) is the time in seconds. To the nearest tenth, in about how many seconds will the diver hit the water?

\[ h = -5t^2 + 7t + 5 \]

- F. 0.5
- G. 0.7
- H. 1.2
- I. 1.9

[Lesson 9-5] MA.912.A.7.8

12. What best appears to be the solution(s) for the quadratic function shown on the graph below?

\[ y = \frac{1}{4}x^2 - 8x - 15 \]

- A. \( x = -2 \)
- B. \( x = 0 \)
- C. \( x = 2 \)
- D. \( x = \pm 2 \)

[Lesson 9-2] MA.912.A.7.10

13. Which of the following equations is graphed below?

\[ y = -x^2 - 8x - 15 \]
\[ y = -x^2 + 8x + 15 \]
\[ y = x^2 + 8x + 15 \]
\[ y = x^2 - 8x - 15 \]

- F.
- G.
- H.
- I.

[Lesson 9-1] MA.912.A.7.1

14. The Kennedy Space Center Space Shop sells an inflatable toy shuttle with boosters. The path of the shuttle after it is launched can be modeled by the quadratic equation \( h = -4.9t^2 + 18t + 1 \). In the equation, \( t \) is the number of seconds after it is launched and \( h \) is the height in meters. To the nearest tenth, how many seconds after it is launched will the toy shuttle land on the ground?

\[ h = -4.9t^2 + 18t + 1 \]
Chapter 9 Practice (continued)
Quadratic and Exponential Equations

15 Samuel is plotting points to graph the quadratic equation $y = -4x^2 - 8x + 5$. One of his points has an $x$ value of $-3$. What is the $y$ value of the point?

A. $-55$
B. $-7$
C. $17$
D. $65$

[Lesson 9-1] MA.912.A.7.1

16 What is the value of $b$ in the quadratic equation $y = x^2 + bx - 4$ if $y = 0$ whenever $x$ is 2 or $-2$?

F. 4
G. 2 or $-2$
H. 1
I. 0

[Lesson 9-2] MA.912.A.1.8

17 Which of the following is a solution of the equation $x^2 + 3x = 10$?

A. $-5$
B. $-2$
C. $\frac{3 - \sqrt{37}}{2}$
D. $\frac{9 + \sqrt{37}}{2}$

[Lesson 9-5] MA.912.A.7.2
Chapter 10 Practice
Radical Functions and Geometry

Circle the letter of the answer you choose.

1. What is the radical expression below written in simplest form?
   \[ \sqrt{4 \times 4 \sqrt{9}} \]
   A. 24
   B. 12\sqrt{3}
   C. 12\sqrt{2}
   D. 12

   **[Lesson 10-3] MA.912.A.6.2**

2. What is \(2xy\sqrt{18x^3y^6}\) in simplified form?
   F. \(2x^2y^4\sqrt{2x}\)
   G. \(6xy^3\sqrt{2x}\)
   H. \(6x^2y^4\sqrt{2x}\)
   I. \(16x^3y^6\sqrt{2xy}\)

   **[Lesson 10-2] MA.912.A.6.1**

3. What is the simplified expression for the area of the triangle?

   **[Lesson 10-2] MA.912.A.6.1**

4. The expression \(\sqrt{\frac{2d}{32}}\) represents the approximate time it takes an object to fall \(d\) feet from the top of the Citrus Tower in Clermont. Which shows the expression written in simplest form?

   **[Lesson 10-2] MA.912.A.6.1**

5. When is the following statement true?
   \[ \frac{\sqrt{(x + 3)^2}}{x + 3} = 1 \]
   A. The statement is always true.
   B. The statement is never true.
   C. The statement is always true if \(x > -3\).
   D. The statement is always true if \(x \neq 0\).

   **[Lesson 10-4] MA.912.A.10.3**
Chapter 10 Practice (continued)

Radical Functions and Geometry

6. A large tree in Mrs. Santiago’s yard was struck by lightning and fell, as shown in the diagram below. If the trunk of the tree is perpendicular to the ground, how long is the fallen part of the tree to the nearest tenth of a feet?

[Diagram of a tree showing 8 feet and 13 feet]

F. 8.0 feet G. 9.7 feet H. 10.2 feet I. 10.4 feet

7. What is $5 \sqrt{98} - \sqrt{50}$?

F. $-13\sqrt{2}$ G. $2\sqrt{2}$ H. $10\sqrt{2}$ I. $30\sqrt{2}$

8. Who correctly wrote the expression shown below in simplest form?

$\sqrt{64x^2y^\frac{1}{2}z}$

<table>
<thead>
<tr>
<th>Student</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jonathan</td>
<td>$8xy^2\sqrt{y^\frac{1}{2}z}$</td>
</tr>
<tr>
<td>Nadia</td>
<td>$8xy^2\sqrt{yz}$</td>
</tr>
<tr>
<td>Deshawn</td>
<td>$16xy^2\sqrt{y^\frac{1}{2}z}$</td>
</tr>
<tr>
<td>Grace</td>
<td>$16x^2y^3\sqrt{yz}$</td>
</tr>
</tbody>
</table>

A. Jonathan  C. Deshawn  
B. Nadia  D. Grace

9. The cone below has a height of 24 inches and a volume of $V$ cubic inches. The expression $\sqrt{\frac{3V}{24\pi}}$ represents the radius of the cone, $r$. Which shows this expression written in simplest form?

F. $\frac{\sqrt{2\pi V}}{4\pi}$  
G. $\frac{\sqrt{2\pi V}}{8\pi}$  
H. $\frac{\sqrt{6\pi V}}{4\pi}$  
I. $\frac{\sqrt{18\pi V}}{12\pi}$
### Chapter 10 Practice (continued)

#### Radical Functions and Geometry

**10** Gabriel selected three index cards with different radical expressions.

\[
\sqrt{45} \quad 2\sqrt{20} \quad -\sqrt{5}
\]

What is the sum of these three terms in simplified form?

A. \(2\sqrt{60}\)

B. \(6\sqrt{5}\)

C. \(16\sqrt{5}\)

D. \(60\sqrt{5}\)

*Lesson 10-3* MA.912.A.6.2

**11** The length of the side opposite the 30° angle in a 30°—60°—90° right triangle can be found by dividing the length of the side opposite the 60° angle by \(\sqrt{3}\). What is the length of the sides, in simple square root form, of the equilateral triangle below if its altitude has a measure of 15 meters (m)?

![Equilateral Triangle]

\[15\text{ m}\]

\[30^\circ\]

\[60^\circ\]

F. \(7.5\)

G. \(5\sqrt{3}\)

H. \(10\sqrt{3}\)

I. \(30\)

*Lesson 10-3* MA.912.A.6.2

**12** Which is the simplified form of the expression shown below?

\[\frac{4}{\sqrt{60}}\]

A. \(2\sqrt{15}\)

B. \(4\sqrt{15}\)

C. \(\frac{2\sqrt{15}}{15}\)

D. \(\frac{\sqrt{15}}{15}\)

*Lesson 10-2* MA.912.A.6.1

**13** A ball at the end of a string 48 centimeters long is being swung around in a circle.

![String and Ball]

The expression \(\sqrt{\frac{4\pi^2(48)}{a}}\), where \(a\) is the acceleration of the ball, represents the time it takes the ball to make one complete revolution. Which shows this expression written in simplest form?

F. \(\frac{8\pi\sqrt{3}a}{a}\)

G. \(\frac{32\pi\sqrt{3}a}{a}\)

H. \(8\pi a\sqrt{3}\)

I. \(16\pi\sqrt{3}a\)

*Lesson 10-2* MA.912.A.6.1
### Chapter 10 Practice (continued)

**Radical Functions and Geometry**

14. What is $2\sqrt{5} + 4\sqrt{45} + \sqrt{54}$ in simplified form?
   - **A.** $9\sqrt{5} + 3\sqrt{6}$
   - **B.** $14\sqrt{5} + 3\sqrt{6}$
   - **C.** $14\sqrt{5} + 6\sqrt{6}$
   - **D.** $14\sqrt{10} + \sqrt{54}$

   **[Lesson 10-3] MA.912.A.6.2**

15. What is the area of the square in simplified form?

<table>
<thead>
<tr>
<th>Side Length</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2\sqrt{5} + 3$</td>
<td>$10\sqrt{5} + 9\sqrt{6}$</td>
</tr>
</tbody>
</table>

   - **F.** $19 + 6\sqrt{6}$
   - **G.** $19 + 12\sqrt{6}$
   - **H.** $33 + 6\sqrt{6}$
   - **I.** $33 + 12\sqrt{6}$

   **[Lesson 10-3] MA.912.A.6.2**

16. Which is the simplified form of $\sqrt{27m^n}$?
   - **A.** $3m^{n/2}\sqrt{3}$
   - **B.** $3m^{n/3}\sqrt{3m^{2n}}$
   - **C.** $9m^{n/2}\sqrt{n}$
   - **D.** $9m^{n/3}\sqrt{3n}$

   **[Lesson 10-2] MA.912.A.6.1**

17. Which student correctly wrote the following expression in simplest form?

   $\frac{\sqrt{20a^4}}{\sqrt{b^3}}$

   - Dominic: $\frac{4a^2b\sqrt{5b}}{b^3}$
   - Olivia: $\frac{4a^2\sqrt{5b}}{b^2}$
   - Alejandro: $\frac{2a\sqrt{5b}}{b^2}$
   - Kaitlyn: $\frac{2a\sqrt{5}}{b}$

   - **F.** Dominic
   - **G.** Olivia
   - **H.** Alejandro
   - **I.** Kaitlyn

   **[Lesson 10-2] MA.912.A.6.1**

18. What is the simplest form of the following expression?

   $4\sqrt{60} - 10\sqrt{15}$

   - **A.** $4\sqrt{15} - 2\sqrt{5}$
   - **B.** $4\sqrt{15} - 10\sqrt{5}$
   - **C.** $8\sqrt{15} - 2$
   - **D.** $8\sqrt{15} - 2\sqrt{5}$

   **[Lesson 10-3] MA.912.A.6.2**
Chapter 11 Practice
Rational Functions and Equations

Circle the letter of the answer you choose.

1. Ryan and Victoria each wrote a monomial on an index card. Which shows the ratio of Ryan’s monomial compared to Victoria’s monomial, in simplest form?

<table>
<thead>
<tr>
<th>Ryan</th>
<th>Victoria</th>
</tr>
</thead>
<tbody>
<tr>
<td>$24r^3s$</td>
<td>$6rs^2$</td>
</tr>
</tbody>
</table>

A. $4r^2s$  
B. $4rs^2$  
C. $\frac{4r}{s}$  
D. $\frac{4r^2}{s}$

2. For what value(s) of $x$ is the algebraic ratio $\frac{x^2 - x - 2}{x^3 - x}$ undefined?

F. 0  
H. 0, 1, and -1  
G. 0 and 1  
I. -1 and 1

[Lesson 11-3] MA.912.A.5.1

3. Refer to the polynomials shown in the table below. Which is the ratio of polynomial Y to polynomial Z, written in simplest form?

<table>
<thead>
<tr>
<th>Polynomial Y</th>
<th>Polynomial Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5x^3 - 125x$</td>
<td>$10x^3 + 50x^2$</td>
</tr>
</tbody>
</table>

A. $\frac{1}{2x}$  
B. $\frac{x - 5}{2x}$  
C. $\frac{x + 5}{2x}$  
D. $\frac{x^2 - 25}{2x^2 + 10x}$

[Lesson 11-3] MA.912.A.5.1

4. Which of the following expressions is equivalent to $\frac{8x^2 y}{3y^2}$?

F. $\frac{8}{3}$  
G. $\frac{1}{3}$  
H. 8  
I. $8^0$

[Fair Game] MA.8.A.6.3

5. What is the ratio of the volume of Prism A to the volume of Prism B written in simplest form?

 Prism A  
base area = $(x^2 - 1)$ in$^2$  
2x in.  

 Prism B  
base area = $(x^2 + x)$ in$^2$  
2x in.  

A. $\frac{1}{2}$  
B. $\frac{x - 1}{x}$  
C. $\frac{x - 1}{2x}$  
D. $\frac{x^2 - 1}{x + 1}$

[Lesson 11-3] MA.912.A.5.1

6. Which expression is the quotient for $(28a^2b^3 + 12a^4b) ÷ 4a^2b$?

F. $7a^2b + 3a^3$  
G. $7ab^2 + 3a$  
H. $7a^2b^2 + 3a^3$  
I. $7a^2b + 3a^2b^2$

[Lesson 11-5] MA.912.A.4.4
Chapter 11 Practice (continued)
Rational Functions and Equations

7 Who correctly wrote the algebraic ratio \( \frac{4n^2 - 36}{6n + 18} \) in simplest form?

<table>
<thead>
<tr>
<th>Student</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoai</td>
<td>( \frac{n - 3}{3} )</td>
</tr>
<tr>
<td>Morgan</td>
<td>( \frac{n + 3}{3} )</td>
</tr>
<tr>
<td>Sophia</td>
<td>( \frac{2n - 6}{3} )</td>
</tr>
<tr>
<td>William</td>
<td>( \frac{2n - 6}{3n + 9} )</td>
</tr>
</tbody>
</table>

A. Hoai  
B. Morgan  
C. Sophia  
D. William  

[Lesson 11-3] MA.912.A.5.1

8 What is the solution for the proportion below?
\[ \frac{8}{k + 2} = \frac{10}{k - 5} \]

[Lesson 11-3] MA.912.A.5.1

9 For what value(s) of \( x \) are the expressions on the index cards shown below equal?

\[ \frac{1}{x} \]
\[ \frac{x - 3}{x^2 - 9} \]

F. \( x = -3 \)  
G. \( x = 3 \)  
H. \( x = \pm 3 \)  
I. no values of \( x \)  

[Lesson 11-8] MA.912.A.5.4

10 What is the following expression written in simplified form?
\[ \frac{3a^2(b^3)^4}{2(4ab)^3} \]

A. \( \frac{3b^4}{10a} \)  
B. \( \frac{3b^4}{32a} \)  
C. \( \frac{3b^4}{512a} \)  
D. \( \frac{3b^6}{512a} \)  

[Lesson 11-3] MA.912.A.5.1

11 Which expression represents the length of the rectangle shown below?

\[ \text{Area} = 84c^7d^2 - 52cd^8 - 4cd^2 \]

F. \( 21c^6 - 13d^6 \)  
G. \( 21c^6d - 13cd^6 \)  
H. \( 21c^6d - 13cd^6 \)  
I. \( 21c^6 - 13d^6 \)  

[Lesson 11-5] MA.912.A.4.4
Chapter 11 Practice (continued)
Rational Functions and Equations

12. What is the factored form of the expression $6x^2 - 13x - 28$?
   A. $(3x + 4)(2x - 7)$
   B. $(3x - 4)(2x + 7)$
   C. $(x + 4)(6x - 7)$
   D. $(x - 4)(6x + 7)$

   [Lesson 8-4] MA.912.A.4.3

13. Which of the following is the exact side length, in meters (m), of the square shown below?

   ![Area = 175 m²]

   F. $5\sqrt{7}$ m
   G. $7\sqrt{5}$ m
   H. 35 m
   I. $25\sqrt{7}$ m

   [Lesson 10-2] MA.912.A.6.1

14. The Broadway Bridge in Daytona Beach is 19.9 meters high. Suppose a ball were thrown down from the bridge with an initial velocity of 3 meters per second. The equation $0 = 4.9t^2 + 3t - 19.9$ represents the time in seconds, $t$, that it would take the ball to hit the water below. In about how many seconds would the ball hit the water?
   A. 0.7 second
   B. 1.7 seconds
   C. 2.3 seconds
   D. 3.4 seconds

   [Lesson 9-1] MA.912.A.7.1

15. Which of the following is the graph of $y = x^2 - x - 6$?

   ![Graphs]

   F.
   G.
   H.
   I.

   [Lesson 9-5] MA.912.A.7.8
Rational Functions and Equations

16. Which best represents the solution of the equation \(4n^2 - 81 = 0\)?
   - A. 4.5
   - B. 20.25
   - C. -4.5, 4.5
   - D. -9, 9

   [Lesson 8-5] MA.912.A.1.8

17. Which expression represents the perimeter of the figure shown below?

   \[
   \begin{align*}
   &2x - 7 \\
   &6 + 4x^2 \\
   &5x^2 - 3x \\
   &8x^2 + 12
   \end{align*}
   \]

   - F. \(13x^2 - x + 5\)
   - G. \(17x^2 - x + 11\)
   - H. \(17x^2 + 5x + 11\)
   - I. \(17x^2 + x + 18\)

   [Lesson 7-5] MA.912.A.4.2

18. What is the slope of a line, expressed as a fraction in lowest terms, perpendicular to \(RS\) if \(R = (6, -9)\) and \(S = (0, 5)\)?

   \[
   \begin{array}{c|c|c|c|c|c|c}
   \hline
   & \& \& \& \& \& \& \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6 & 7 \\
   \hline
   1 & 2 & 3 & 4 & 5 & 6 & 7 \\
   \hline
   \end{array}
   \]

   - F. \(2y - 3x < 5\)
   - G. \(2y - 3x > 5\)
   - H. \(2y - 3x < 5\)
   - I. \(2y - 3x > 5\)

   [Lesson 4-4] MA.912.G.1.4

19. The admission prices for a museum are shown in the table below.

<table>
<thead>
<tr>
<th>Ticket</th>
<th>Admission Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>$18.95</td>
</tr>
<tr>
<td>Child</td>
<td>$11.95</td>
</tr>
</tbody>
</table>

   If 425 people attended the museum one day, and the total admission tickets earnings were $7,290.75, how many adults went to the museum that day?

   - A. 109
   - B. 158
   - C. 316
   - D. 354

   [Lesson 6-5] MA.912.A.3.15

20. The solution of which system of inequalities is graphed below?

   - F. \(2y - 3x < 5\)
   - G. \(2y - 3x > 5\)
   - H. \(2y - 3x < 5\)
   - I. \(2y - 3x > 5\)

Chapter 12 Practice
Statistics and Probability

Circle the letter of the answer you choose.

1 Which sets could be represented by the Venn diagram below?

A. Set $A =$ odd integers
   Set $B =$ even integers
B. Set $A =$ rational numbers
   Set $B =$ irrational numbers
C. Set $A =$ integers
   Set $B =$ rational numbers
D. Set $A =$ rational numbers
   Set $B =$ fractions

[Lesson 12-5] MA.912.D.7.2

2 What is the probability that a student selected from the population shown in the Venn diagram would play baseball, soccer, and volleyball?

9th Grade Students

<table>
<thead>
<tr>
<th>Volleyball</th>
<th>Baseball</th>
<th>Soccer</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

F. $\frac{1}{8}$  
G. $\frac{4}{33}$  
H. $\frac{5}{33}$  
I. $\frac{23}{33}$

[Lesson 12-5] MA.912.D.7.2

3 What is the meaning of the slope of the line shown?

A. cups of almonds per cup of flour
B. cups of flour per cup of almonds
C. the number of cups of almonds
D. the number of cups of flour

[Fair Game] MA.8.A.1.2

4 The Venn diagram below shows the relationship among triangles. Which is a true statement?

F. All isosceles triangles are equilateral.
G. Some scalene triangles are isosceles.
H. Some isosceles triangles are equilateral.
I. No equilateral triangles are isosceles.

[Lesson 12-5] MA.912.D.7.2
What is the solution of the equation shown below?

\[ \frac{7}{r-1} = \frac{5}{r+4} \]

Which is the simplified form of \( \frac{6}{\sqrt{72}} \)?

F. \( 3\sqrt{2} \)  
G. \( 6\sqrt{2} \)  
H. \( \frac{\sqrt{2}}{2} \)  
I. \( \frac{6\sqrt{2}}{2} \)

What is the area of the rectangle in simplified form?

A. \( 10\sqrt{6} + 10\sqrt{2} \)  
B. \( 15\sqrt{24} + 20 \)  
C. \( 30\sqrt{6} + 10\sqrt{2} \)  
D. \( 30\sqrt{6} + 20 \)

Which is the factored form of \( 14a^2b^2 + 2ab - 8a^2 \)?

F. \( 2a(7ab^2 + b - 4a^2) \)  
G. \( 2a(7ab^2 + 2b - 4a^2) \)  
H. \( 2ab(7ab + 1 - 4a^2b) \)  
I. \( 2a^2(7ab^2 + 2b - 4a^2) \)
Chapter 12 Practice (continued)
Statistics and Probability

10. If you add \( x^2 \), 16x, and 28, the sum is zero. Which could be a value of \( x \)?
   A. 14
   B. 7
   C. -7
   D. -14

[Lesson 8-3] MA.912.A.7.2

11. Which linear equation is represented by the graph below?

   F. \( 3x - y = -7 \)
   G. \( 3x - y = 7 \)
   H. \( x - 3y = -7 \)
   I. \( x - 3y = 7 \)

[Lesson 4-3] MA.912.A.3.10

13. Which is the ratio of polynomial I to polynomial II written in simplest form?

<table>
<thead>
<tr>
<th>Polynomials</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. ( 2m + 8 - mn - 4n )</td>
</tr>
<tr>
<td>II. ( 3mn + 12n )</td>
</tr>
</tbody>
</table>

   F. \( \frac{2 - n}{3} \)
   G. \( \frac{2 - n}{3n} \)
   H. \( \frac{m + 4}{n} \)
   I. \( \frac{m + 4}{3n} \)

[Lesson 11-3] MA.912.A.5.1

14. The graphs of the system of equations \( x - y = -3 \) and \( 2x - y = -2 \) are shown below. What is the value of \( x \) in the solution to the system?

A. 1
B. 2
C. 3
D. 4

[Lesson 6-1] MA.912.A.3.14

12. The Glacier Ice and Snow Arena in Lighthouse Point, Florida, offers a birthday party package. The cost is a $50 deposit plus $13.95 per guest. This can be represented by the function \( f(x) = 50 + 13.95x \), where \( f(x) \) is the total cost and \( x \) is the number of guests. What is the total cost of a birthday party for 9 people?

   A. $175.55
   B. $125.55
   C. $72.95
   D. $63.95

[Lesson 1-7] MA.912.A.2.3
15 Which graph represents the solution of the inequality shown below?

\[-11 \leq 8t - 3 < 13\]

F. 

G. 

H. 

I. 

[Lesson 5-4] MA.912.A.3.4

16 In mixing some fuel, a scientist combines a 50% ethanol solution with a 90% ethanol solution to get 40 liters of an 80% ethanol solution. How many liters of the 50% solution did the scientist use in the mixture?

[Lesson 2-9] MA.912.A.10.1

17 What is the equation of the line that passes through the point (2, -6) and is perpendicular to the line with the equation shown below?

\[5x - 2y = 14\]

A. \(y = -\frac{2}{5}x + \frac{26}{5}\)

B. \(y = \frac{2}{5}x - \frac{26}{5}\)

C. \(y = \frac{5}{2}x - 11\)

D. \(y = \frac{5}{2}x + 11\)

[Lesson 4-3] MA.912.A.3.10

18 The official marine mammal of Florida is the manatee. The graph below shows the average breathing pattern of a manatee. Which of the following best describes the slope of the graph?

[BREATHING OF MANATEES]

F. A manatee takes a breath about 2 times per minute.

G. A manatee takes a breath about 4 times per minute.

H. A manatee takes a breath about 1 time every 2 minutes.

I. A manatee takes a breath about 1 time every 4 minutes.

[Lesson 3-3] MA.912.A.3.11