Augusta Christian Schools

Algebra II Honors

Summer Packet

Mrs. Stephanie Culpepper

- You must show all of your work for each problem and circle your final answers.
- This is a representation of skills you should already possess prior to starting Algebra II.
- This packet will be collected on Wednesday, August 5, 2026.

- Please sign the following statement after completing your packet:
  "I did this work on my own and did not copy answers from any source, human or electronic."
  Signed: _____
  Date: _____

  Printed Name: _____

  On a scale from 1 to 10 (1 being extremely easy and 10 being extremely difficult), how difficult was this assignment? _____

Algebra 1 Review

QUIZ 1

Name: _____

Date: _____ **Per:** _____

1. Which statement *cannot* be justified by one of the properties of real numbers?

A. $(a + b) + c = a + (b + c)$

B. $a - (b \div c) = (a - b) \div c$

C. $(ab)c = a(bc)$

D. $(a + b) + 0 = 0 + (a + b)$

2. The statement "If $\frac{1}{2}x = 5$, then $x = 10$" is justified by the –

F. Associative property of multiplication

G. Commutative property of multiplication

H. Addition property of equality

J. Multiplication property of equality

3. Which property justifies rewriting

$3x - 5x$
as
$(3 - 5)x$?

A. Associative Property of Multiplication

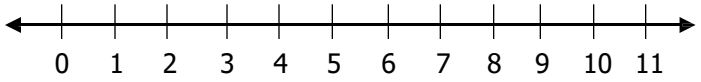
B. Distributive Property

C. Commutative Property of Multiplication

D. Associative Property of Addition

4. Plot the point on the number line that corresponds to the value of the expression below.

$$\sqrt[3]{125}$$



5. Joe, who is the youngest member of the wrestling team at Northwood High School, is 5 years less than one-half the age of the coach. If the coach is n years old, which expression describes Joe's age?

F. $\frac{1}{2}n - 5$

G. $5 - \frac{1}{2}n$

H. $2n + 5$

J. $2n - 5$

6. Simplify the numerical expression below.

$$\frac{72 \div (\sqrt{100} - 4^2)}{\sqrt[3]{27}}$$

ANSWER:

7. Find the value of the expression below when x = -4 and y = 2

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

ANSWER:

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8. The formula for the surface area of a cylinder is $SA = 2\pi r(h + r)$. What is the surface area of a cylinder when $r = 3$ centimeters and $h = 4$ centimeters?

A. 28π cm^2 **C.** 36π cm^2

B. 32π cm^2 **D.** 42π cm^2

9. Find the solution to the equation below.

$$5 - \frac{n}{2} = 12$$

ANSWER:

10. Find the solution to the equation below.

$$5(x + 2) = 7(4 - x)$$

F. -9.0 **H.** 3.2

G. 1.5 **J.** 9.0

11. If $\frac{1}{3}t - 6 = 15$, what is the value of t?

A. 21 **C.** 53

B. 27 **D.** 63

12. Select the values of x that make the following inequality true.

$$-3(x + 1) > 15$$

☐ −9	☐ −7	☐ −5
☐ −8	☐ −6	☐ −4

13. What is the solution to the inequality below?

$$-2x + 6 > 3x - 4$$

ANSWER:

14. The formula for the volume of a pyramid is given below.

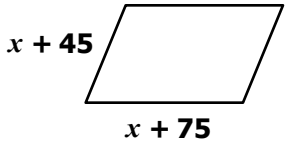
$$V = \frac{1}{3}bh$$

Which equation solves this formula for h?

F. $h = 3Vb$ **H.** $h = \frac{3V}{b}$

G. $h = \frac{3b}{V}$ **J.** $h = \frac{V}{3b}$

15. Tom's property has a shape of a parallelogram with the dimensions shown. If the perimeter of the property is 300 feet, what is the value of x?



A. 90 ft

B. 60 ft

C. 45 ft

D. 15 ft

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Algebra 1 Review

QUIZ 2

Name: _____

Date: _____ **Per:** _____

1. Which of these data sets represents a function?

A.

x	y
2	3
4	5
8	7
16	9

C.

x	y
2	-4
2	4
5	-1
5	1

B.

x	y
-4	16
-2	4
2	4
4	16

D.

x	y
-3	-5
-2	5
-1	-8
0	8

2. Which of the following does not represent a function of x?

F.

x	1	1	1	1
y	1	2	3	4

H.

x	1	2	3	4
y	1	1	2	4

G.

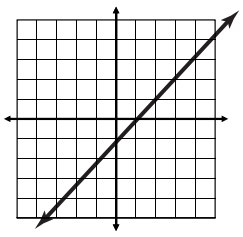
x	1	2	3	4
y	2	2	2	2

J.

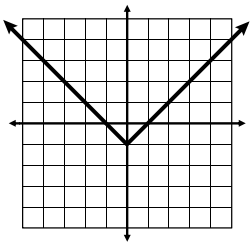
x	0	2	4	6
y	0	1	3	5

3. Which of the following could not be the graph of a function of x?

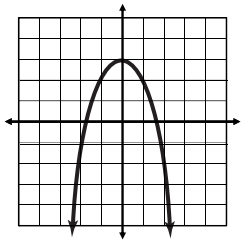
A.



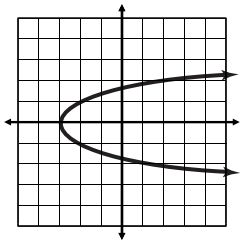
C.



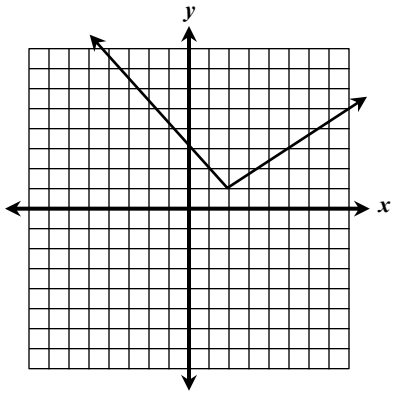
B.



D.



4. What is the apparent range of the function of x shown below?



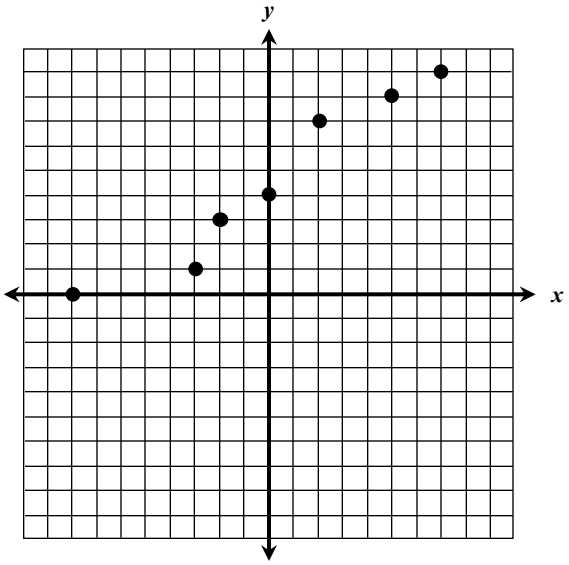
F. $x \geq 1$

G. $y \geq 1$

H. $y \geq 2$

J. all real numbers

5. The following is a graph of a function of x. Which of the following values belong to the domain of the function?



☐ –1	☐ –3	☐ 0
☐ 8	☐ 2	☐ –7

6. If $f(x) = -2x^2 + x - 5$, what is $f(3)$?

ANSWER: _____

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7. What is the range of the function $f(x) = (x - 1)^2$ when the domain is {-5, 0, 5}?

A. {1, 16, 36}
B. {1, 24}
C. {1, 26}
D. {-12, -2, 8}

8. Which is a zero of the function given below?

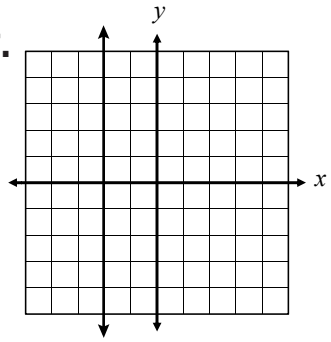
$$f(x) = x^2 - x - 12$$

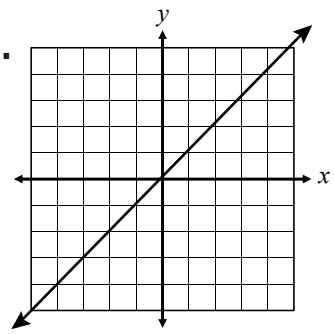
F. 1
G. 2
H. 3
J. 4

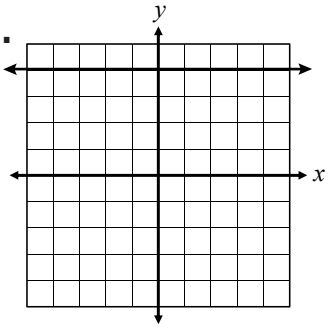
9. What is the slope of the line $4x + 8y = 12$?

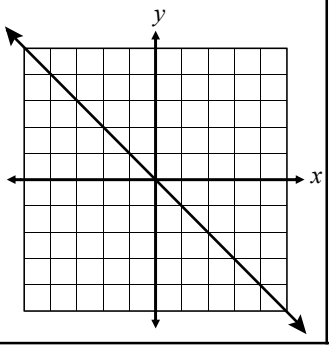
A. 4
B. $\frac{3}{2}$
C. -4
D. $-\frac{1}{2}$

10. What graph best represents a line with an undefined slope?

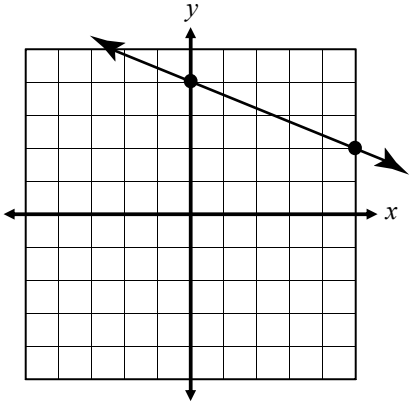
F.


H.


G.


J.


11. What is the apparent slope of the line graphed below?



A. $\frac{5}{2}$
B. $\frac{2}{5}$
C. $-\frac{5}{2}$
D. $-\frac{2}{5}$

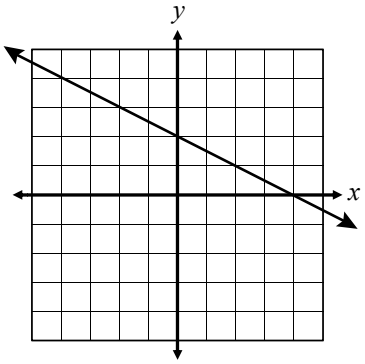
12. What is the slope of the line that passes through the points (5, 0) and (10, 0)?

F. 0
G. 1
H. 5
J. undefined

13. What is the slope of the line that passes through the points (3, 2) and (-1, -4)? Write your answer as a fraction in simplest form

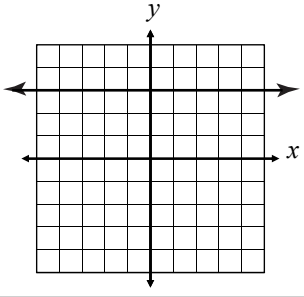
ANSWER:

14. What is the equation of the graphed line?



A. $x + 2y = 4$
B. $x + 2y = -4$
C. $2x + y = 2$
D. $2x - y = 2$

15. What is the equation of the graphed line?



F. $y = x + 3$
G. $y = 3x$
H. $y = 3$
J. $x = 3$

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Algebra 1 Review

QUIZ 3

Name: _____

Date: _____ **Per:** _____

1. Write the equation of the line passing through the point (2, -1) with a slope of -3.

ANSWER:

2. Which is an equation of the line with a slope of $\frac{2}{3}$ passing through the point (4, -1)?

A. $y = -\frac{1}{4}x + \frac{2}{3}$

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

C. $y = \frac{2}{3}x - \frac{5}{3}$

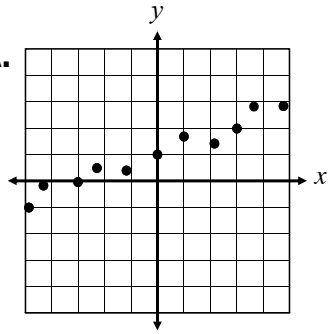
D. $y = \frac{2}{3}x - \frac{11}{3}$

3. Write the equation of the line passing through the points (-4, -7) and (8, -13)

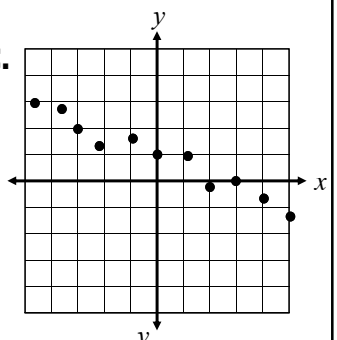
ANSWER:

4. Which scatterplot most likely has a line of best fit represented by $y = 3x + 1$?

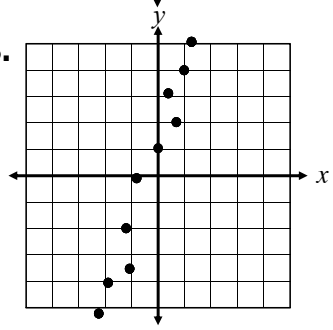
A.



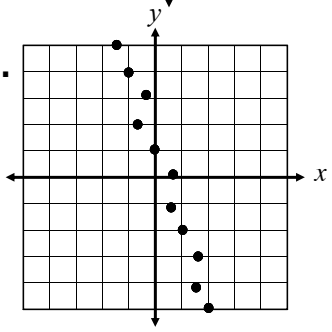
C.



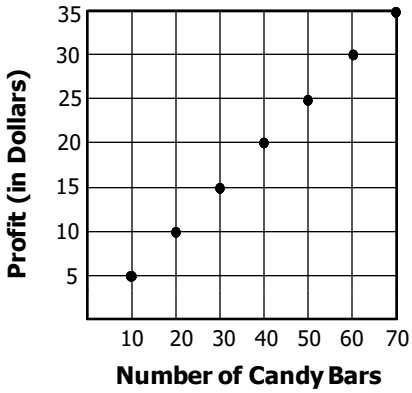
B.



D.



5. The graph represents the relationship between the number of candy bars sold and the amount of profit made during the softball team's candy bar sale.



Which is closest to the minimum number of candy bars that must be sold to make a $400 profit?

A. 650
B. 700
C. 750
D. 800

6. Which table does not show a direct variation?

F.

x	-2	-1	0	1
y	-8	-4	0	4

H.

x	0	3	6	9
y	0	1	2	3

G.

x	1	2	3	4
y	5	10	15	20

J.

x	1	2	3	4
y	1	4	9	16

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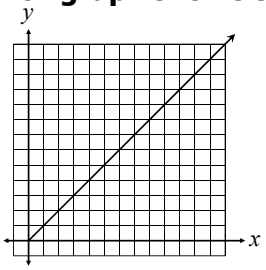
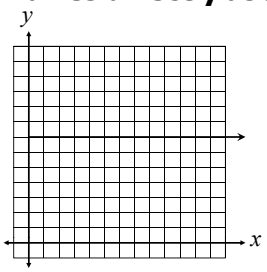
7. Which graph shows that y varies directly as x?

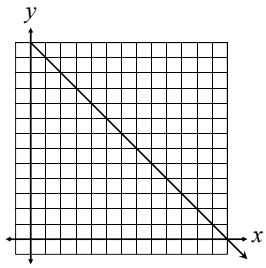
A.



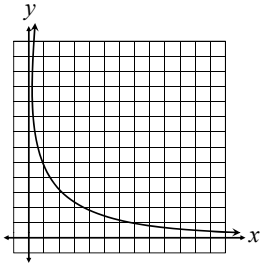
C.



B.



D.



8. Which set of ordered pairs satisfies an inverse variation?

F. (6, 3) and (8, 4)

G. (2, -3) and (4, 5)

H. (4, -2) and (-5, 10)

J. (2, 6) and (-3, -4)

9. In the table below, y varies inversely as x. What is the missing value?

x	y
3	4
6	2
24	?

A. 1

B. 3

C. 0.5

D. 0.25

10. If the point (2, -10) lies on the graph of a direct variation, which represents the direct variation equation?

F. $y = -20x$

G. $y = \frac{-20}{x}$

H. $y = -5x$

J. $y = \frac{-5}{x}$

11. Which equation represents an inverse variation with a constant of 56?

A. $\frac{y}{x} = 56$

B. $\frac{7}{y} = \frac{8}{x}$

C. $\frac{1}{4}y = 14x$

D. $\frac{xy}{2} = 28$

12. The graph of an equation representing a direct variation passes through the point (6, 10). Give another point with integral coordinates that is also on the graph of this equation.

(☐ , ☐)

13. For a group of objects made of the same material, the weight of an object varies directly with its volume. If an object that has a volume of 30 cubic inches weighs 24 ounces, what is the constant of variation?

F. $\frac{4}{5}$

G. 720

H. $\frac{5}{4}$

J. 6

14. The time required to complete a job varies inversely as the number of people working. It takes 4 hours for 7 electricians to wire a building. How long would it take 3 electricians to do the job?

A. 1 hr 43 min

B. 5 hr 15 min

C. 7 hr 30 min

D. 9 hr 20 min

15. Sarah burned 280 calories running 20 minutes. The next day, Sarah burned 490 calories running for 35 minutes.

- **Let c represent the number of calories.**
- **Let t represent time, in minutes, spent running.**

Which equation represents this relationship?

A. $c = 5600t$

B. $ct = 5600$

C. $c = 14t$

D. $t = 14c$

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Algebra 1 Review

QUIZ 4

Name: _____

Date: _____ **Per:** _____

1. What is the solution to the system below?

$$\begin{cases} x + y = 5 \\ x - y = 3 \end{cases}$$

A. (8, -3)
C. (5, 2)
B. (6, -1)
D. (4, 1)

2. What is the solution to the system below?

$$\begin{cases} x + 3y = 0 \\ 2x - y = -7 \end{cases}$$

F. $\left(10\frac{1}{2}, -3\frac{1}{2}\right)$
H. $\left(-3, \frac{1}{3}\right)$
G. (-3, 1)
J. (3, 1)

3. What is the solution to the system below?

$$\begin{cases} -4x + 5y = 27 \\ x - 6y = -2 \end{cases}$$

(☐ , ☐)

4. What is the solution to the system below?

$$\begin{cases} y = 5x - 9 \\ y = x + 3 \end{cases}$$

(☐ , ☐)

5. What is the solution to the system below?

$$\begin{cases} 3x + y = 11 \\ y = x + 3 \end{cases}$$

A. (4, 7)
C. (2, 17)
B. $\left(\frac{1}{2}, 3\frac{1}{2}\right)$
D. (2, 5)

6. What is the solution to the system below?

$$\begin{cases} y = -3x - 2 \\ 6x + 2y = -4 \end{cases}$$

F. (6, 2)
G. (-1, -5)
H. No Solution
J. Infinite Solutions

7. Rob has a collection of nickels and dimes worth $1.65. If there are 25 coins total, how many dimes does he have?

ANSWER: ☐

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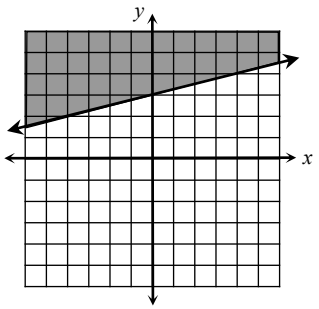
8. Keesha bought 11 binders and notebooks from the store and spent $45. Binders cost $6 each and notebooks cost $2.50 each. Which two equations can be used to find the number of binders, b, and notebooks, n, she purchased?

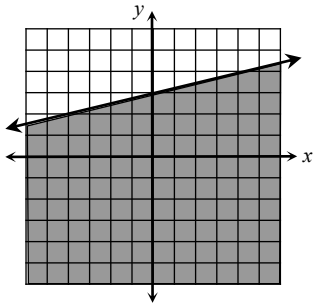
☐ $b+n=11$	☐ $6b+2.5n=11$
☐ $b+n=45$	☐ $6b+2.5n=45$

9. Which graph represents the solution to the inequality $x-4y \le -12$?

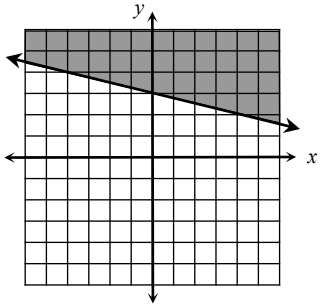
A.



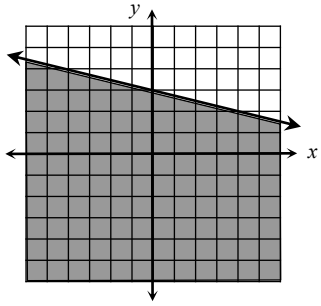
C.



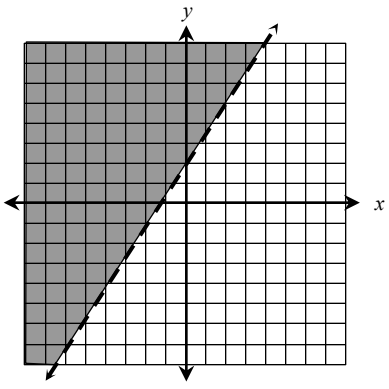
B.



D.



10. Which inequality represents the graph?



F. $y \ge \frac{3}{2}x+2$

G. $y \le \frac{3}{2}x+2$

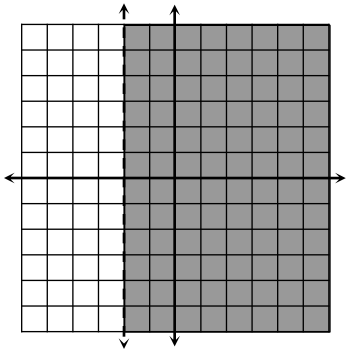
H. $y > \frac{3}{2}x+2$

J. $y < \frac{3}{2}x+2$

11. Which ordered pairs are solutions to the inequality $2x-y > -4$? Check all that apply.

☐ $(-4,-3)$	☐ $(1,-6)$	☐ $(-2,-5)$
☐ $(8, 2)$	☐ $(4, 0)$	☐ $(-3, 5)$

12. Which inequality represents the graph?



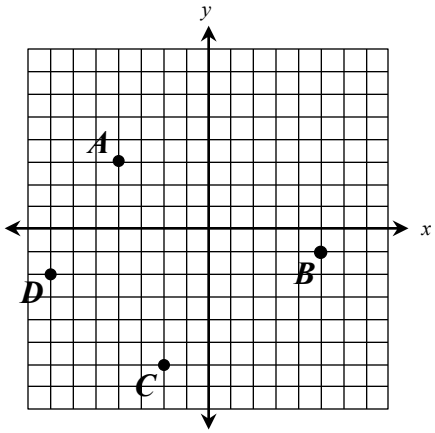
A. $x < -2$

B. $x > -2$

C. $y > -2$

D. $y < -2$

13. Which point on the graph below is included in the solution to the following system of equations?



$$\begin{cases} y \ge \frac{2}{3}x+1 \\ 5x+6y \le -30 \end{cases}$$

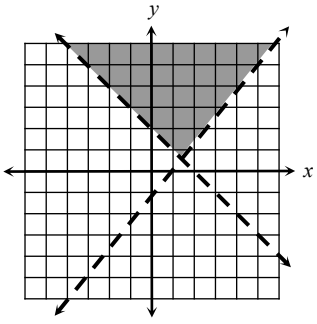
A. A **C.** C

B. B **D.** D

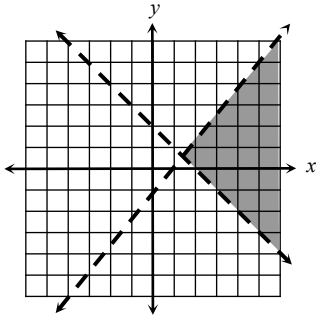
14. Which graph represents the solution to the system of inequalities below?

$$\begin{cases} 5x-4y > 4 \\ x+y < 2 \end{cases}$$

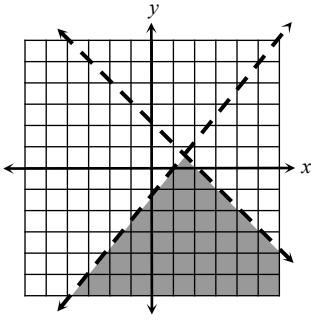
A.



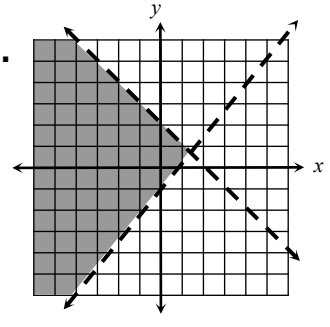
C.



B.



D.



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Algebra 1 Review

QUIZ 5

Name: _____

Date: _____ **Per:** _____

1. Which is equivalent to the expression below?

$$(3x^2 - 2x + 5) - (2x^2 - 5x + 1)$$

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

B. $x^2 - 7x + 6$

C. $x^2 - 3x - 6$

D. $x^2 - 7x + 4$

2. Which is equivalent to $(-2ab^3)(-3a^2b^5)$?

F. $-5ab$

G. $6a^2b^{15}$

H. $6a^3b^2$

J. $6a^3b^8$

3. Which is a simplified form of the following expression?

$$(xy^3)(xy)^4$$

A. x^2y^7

B. x^4y^{12}

C. x^5y^7

D. x^5y^{12}

4. If $ab \neq 0$, which is equivalent to $\frac{-12a^3b^2}{6ab^2}$?

F. $2a^2b$

G. $-2a^2$

H. $-6a^2b$

J. $6a^4b^4$

5. Which is equivalent to $(2x^{-2}y) \cdot (8x^{-3}y^{-3})$?

A. $\frac{16}{x^5y^2}$

B. $\frac{16}{x^6y^2}$

C. $\frac{10}{x^5y^2}$

D. $10x^6y^2$

6. Which is equivalent to $\left(\frac{-2m^2n^3}{m^2n^4}\right)^2$?

F. $\frac{-4m}{n^2}$

G. $\frac{-4}{n^2}$

H. $\frac{4m}{n^2}$

J. $\frac{4}{n^2}$

7. Fill in the boxes with values that make the statement true

$$\frac{p^5q^6}{p^{-3}q^{\square}} = p^{\square}q^3$$

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8. If $x \neq 0$, which expression is equivalent to

$$\frac{10x^{12} - 2x^8 + 2x^4}{2x^4}?$$

A. $8x^3 - x^2$

B. $5x^8 - x^4$

C. $8x^3 - x^2 + 1$

D. $5x^8 - x^4 + 1$

9. Which expression is equivalent to

$$2x^3y(x^2y - 3xy^2)?$$

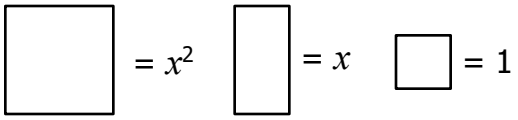
F. $2x^5y^2 - 6x^4y^3$

G. $3x^5y^2 - 5x^4y^3$

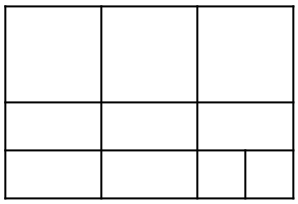
H. $2x^6y^2 - 6x^3y^2$

J. $2x^6y - 6x^3y^3$

10. Consider the following models:



Which expression represents the following diagram?



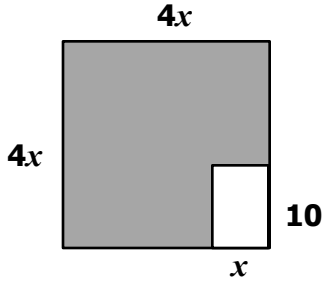
A. $(x + 2)(x + 1)$

B. $(3x + 2)(x + 1)$

C. $(3x^2 + 2)(x + 1)$

D. $(x^2 + x)(3x^2 + 2)$

11. Which expression represents the area of the shaded region below?



F. $8x^2 - 10x$

G. $8x^2 - x - 10$

H. $16x^2 - 10x$

J. $16x^2 - x - 10$

12. What is $\sqrt{192}$ expressed in simplest radical form?

A. $8\sqrt{3}$

B. $6\sqrt{5}$

C. $4\sqrt{12}$

D. $2\sqrt{48}$

13. What is $\sqrt[3]{243}$ expressed in simplest radical form?

F. $6\sqrt[3]{2}$

G. $3\sqrt[3]{9}$

H. $9\sqrt[3]{3}$

J. $9\sqrt[3]{2}$

14. What is $\sqrt{80k^3}$ expressed in simplest radical form?

A. $4k\sqrt{5k}$

B. $4k^2\sqrt{5k}$

C. $2k\sqrt{10k}$

D. $2k^2\sqrt{10k}$

15. Fill in the boxes with values that make the statement true.

$$\sqrt{\square\, m^{17}} = 3m^{\square}\sqrt{7m}$$

16. Which of the following radical expressions simplifies to $6x^4y^2\sqrt{2y}$?

F. $\sqrt{12x^8y^3}$

G. $\sqrt{12x^{16}y^5}$

H. $\sqrt{72x^{16}y^5}$

J. $\sqrt{72x^8y^5}$

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Algebra 1 Review

QUIZ 6

Name: _____

Date: _____ **Per:** _____

1. Which of the following binomials is a factor of $x^2 - 13x - 30$?

A. $(x + 15)$ **C.** $(x - 10)$

B. $(x - 3)$ **D.** $(x + 2)$

2. If the polynomial below is completely factored, which expressions represent its factors? Check all that apply.

$$64x^4y - 36x^2y$$

☐ $4x^4$	☐ $4x - 3$	☐ $4x - 3y$
☐ $4x^2y$	☐ $8x - 6$	☐ $4x + 3$

3. Given Polynomial A and Polynomial B below, which binomial factor do they have in common?

Polynomial A	Polynomial B
$2n^2 + n - 36$	$n^2 - 10n + 24$

F. $(n - 4)$ **H.** $(n - 12)$

G. $(n + 2)$ **J.** $(n - 2)$

4. If the area of a rectangle can be represented by the expression $x^2 + 10x - 24$, which two binomials could represent the length and width of the rectangle?

☐ $(x - 12)$	☐ $(x + 6)$	☐ $(x - 2)$
☐ $(x - 8)$	☐ $(x + 12)$	☐ $(x - 4)$

5. Which polynomials are prime? Check all that apply.

☐ $x^2 - 10x - 35$	☐ $25x^2 + 4$
☐ $18c - 21d$	☐ $2x^2 - 9x - 10$
☐ $8x^2 + 14x + 3$	☐ $x^2 + 7x$

6. Which polynomial is equivalent to the expression below if $w \neq 3$?

$$\frac{3w^2 - w - 24}{w - 3}$$

A. $3w^2 - 8$

B. $3w^2 + 8$

C. $3w - 8$

D. $3w + 8$

7. Which quadratic equation has a vertex located at (4, -3)?

F. $y = 4x^2 + 3$

G. $y = (x + 4)^2 - 3$

H. $y = x^2 - 8x + 13$

J. $y = x^2 + 8x - 3$

8. Which statement is false regarding the quadratic equation below?

$$y = -(x + 1)^2 + 4$$

A. The axis of symmetry is $x = -1$

B. The range is $y \leq 4$.

C. The x-intercepts are (1, 0) and (-3, 0).

D. The y-intercept is (0, 4).

9. Which two transformations can be used to obtain the graph of $y = 3(x - 5)^2$ from the graph of $y = x^2$?

F. A vertical compression and a translation 5 units left.

G. A vertical stretch and a translation 5 units left.

H. A vertical compression and a translation 5 units right.

J. A vertical stretch and a translation 5 units right.

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10. Which of the functions below have exactly two distinct real zeros?

I. $f(x) = -x^2 + 14x - 45$

II. $f(x) = 4x^2 + 4$

III. $f(x) = 2x^2 + 12x + 18$

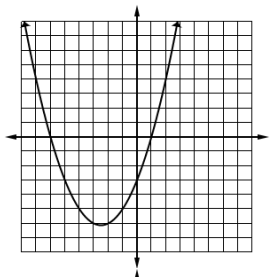
IV. $f(x) = 3x^2 - 4x - 4$

A. I and IV **C.** II and III

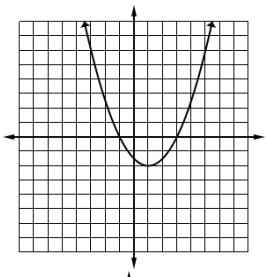
B. I, II, and III **D.** III and IV

11. If a quadratic function has binomial factors of $(x - 3)$ and $(x + 1)$, which graph could represent this function?

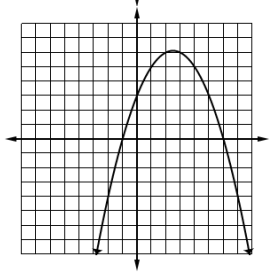
A.



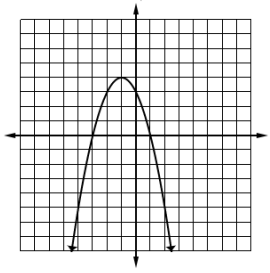
C.



B.



D.



12. Which number is a solution to the quadratic equation below?

$x^2 - 8x - 48 = 0$

F. -12

G. 12

H. -8

J. 6

13. What are the solutions to the equation below?

$3x^2 - 7x = 20$

A. $\left\{-5, \frac{4}{3}\right\}$

B. $\left\{-\frac{4}{3}, 5\right\}$

C. $\left\{-4, \frac{5}{3}\right\}$

D. $\left\{-\frac{5}{3}, 4\right\}$

14. What are the solutions to the equation below?

$16 - 2x^2 = -64$

F. $\{\pm 2\sqrt{6}\}$

G. $\{\pm 2\sqrt{10}\}$

H. $\{\pm 4\sqrt{6}\}$

J. $\{\pm 4\sqrt{10}\}$

15. Write the values in the boxes below to show the solutions the equation $x^2 - 2x - 17 = 0$.

$$x = \square \pm \square \sqrt{\square}$$

16. The width of a rectangle is fifteen feet less than its length. If the area of the rectangle is 54 square feet, find the width.

A. 3 feet

B. 6 feet

C. 9 feet

D. 18 feet

Use for questions 17-18: The table below gives the height h (in feet) of a baseball t seconds after it was thrown by a fan onto the field.

t	0	0.5	1	1.5	2
h	200	212	216	212	200

17. Write an equation for the curve of best fit.

ANSWER:

18. What is the height of the ball 4 seconds after it was thrown?

ANSWER:

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Augusta Christian Schools

Algebra II Honors

Summer Packet

Mrs. Stephanie Culpepper

- You must show all of your work for each problem and circle your final answers.
- This is a representation of skills you should already possess prior to starting Algebra II.
- This packet will be collected on Wednesday, August 5, 2026.

- Please sign the following statement after completing your packet:
  "I did this work on my own and did not copy answers from any source, human or electronic."
  Signed: _____
  Date: _____

  Printed Name: _____

  On a scale from 1 to 10 (1 being extremely easy and 10 being extremely difficult), how difficult was this assignment? _____