Summer Math Packet – Entering ALGEBRA 1 HONORS

How should you use the materials provided?

1. ALL STUDENTS must prepare for MULTIPLICATION FACT FLUENCY. Complete at least 3 pages to show your fluency and prove to yourself you can get the required score for your grade level.

2. Take the PRETEST and use the attached answer key to check your work.
   - If you DID WELL, use the portions of the summer math packet you need to help you prepare. QR codes and sample problems are available to help you practice.
   - If you DID NOT do well, complete the whole summer math packet and use this as an opportunity to STRENGTHEN your foundation. QR codes and sample problems are available to help you practice.

3. Upon returning to school, you will have a brief review of these concepts with your teacher and then take a SUMMER MATH QUIZ. This will be your first quiz grade of the year.

Please use this summer to freshen up your math skills! Come ready for a great year of learning!

Sincerely,

PBS Middle Math Department

Pretest

Student: _____	**Instructor:** Holly LeBlanc	**Assignment:** Summer Math Practice
Date: _____	**Course:** Algebra Honors 2026-2027	

1. Simplify the given expression.

$$\frac{7}{9} \cdot \frac{6}{7} - \frac{1}{4}$$

$\frac{7}{9} \cdot \frac{6}{7} - \frac{1}{4} =$ ☐ (Type an integer or a fraction. Simplify your answer.)

2. Simplify the given expression and enter your answer in numerical terms.

$$\frac{1+|2-1|+9^2}{7-3}$$

$\frac{1+|2-1|+9^2}{7-3} =$ ☐ (Type an integer or a fraction. Simplify your answer.)

3. Add.

$$-18+(-5)$$

$-18+(-5) =$ ☐

4. Evaluate the expression.

$$-97+51$$

$-97+51 =$ ☐

5. Add.

$$6.5+(-2.2)$$

$6.5+(-2.2) =$ ☐ (Type an integer or a decimal.)

6. Subtract.

$$-14-(-5)$$

$-14-(-5) =$ ☐

7. Subtract.

$$-11-(-13)$$

$-11-(-13) =$ ☐

8. Evaluate.

$$24.8-27.1$$

$24.8-27.1 =$ ☐

9. Multiply.

$$-6 \cdot 3$$

$-6 \cdot 3 =$ ☐

10. Multiply.

$$-\frac{1}{6}\left(-\frac{7}{9}\right)$$

$-\frac{1}{6}\left(-\frac{7}{9}\right) =$ ☐ (Type a simplifed fraction.)

11. Choose the property illustrated by the following statement.

$4 \cdot 8 = 8 \cdot 4$

- ○ **A.** associative property of multiplication
- ○ **B.** commutative property of multiplication
- ○ **C.** distributive property
- ○ **D.** identity element of multiplication

12. Choose the property illustrated by the following statement.

$2(7+8) = 2 \cdot 7 + 2 \cdot 8$

- ○ **A.** associative property of addition
- ○ **B.** associative property of multiplication
- ○ **C.** commutative property of multiplication
- ○ **D.** distributive property

13. Choose the property illustrated by the following statement.

$(4 \cdot y) \cdot 9 = 4 \cdot (y \cdot 9)$

- ○ **A.** associative property of multiplication
- ○ **B.** commutative property of multiplication
- ○ **C.** distributive property
- ○ **D.** identity element of multiplication

14. Solve the equation for r.

$r - 1.9 = 2.9$

$r =$ ☐ (Type a decimal.)

15. Solve the equation for y.

$4y + 2 = 5y$

$y =$ ☐

16. Solve the equation. Check the solution.

$6y - 2 = 6y - y$

$y =$ ☐

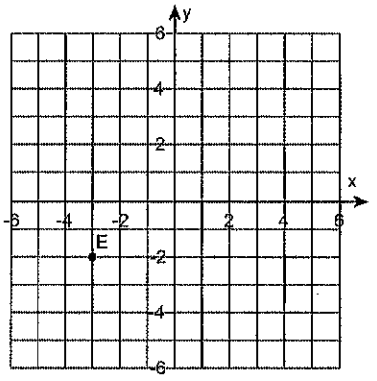
17. Solve the equation for x.

$-5(x-3)+7=22$

$x =$ [ ] (Type an integer or a fraction. Simplify your answer.)

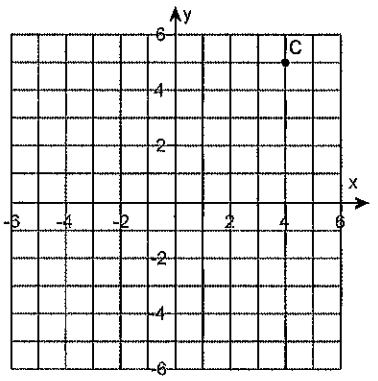
18. Find the x- and y-coordinates of the point E.

The coordinates of E are [ ].
(Type an ordered pair.)



19. Find the x- and y-coordinates of the point C.

The coordinates of C are [ ].
(Type an ordered pair.)



20. The following table shows ethanol fuel production in a country.

Year	Ethanol Fuel Production (in billions of gallons)
1993	3
1995	6
1997	8
1999	12
2001	17

a. Write each pair of data as an ordered pair of the form (year, billions of gallons produced).

What is the ordered pair that corresponds to the first row of data given in the table?

[ ] (Type an ordered pair.)

What is the ordered pair that corresponds to the second row of data given in the table?

[ ] (Type an ordered pair.)

What is the ordered pair that corresponds to the third row of data given in the table?

[ ] (Type an ordered pair.)

What is the ordered pair that corresponds to the fourth row of data given in the table?

[ ] (Type an ordered pair.)

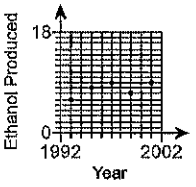
What is the ordered pair that corresponds to the fifth row of data given in the table?

[ ] (Type an ordered pair.)

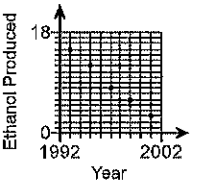
b. Create a scatter diagram of the paired data.

Choose the correct scatter diagram below.

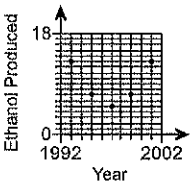
○ **A.**



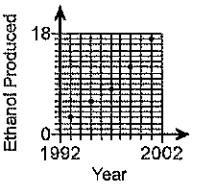
○ **B.**



○ **C.**



○ **D.**



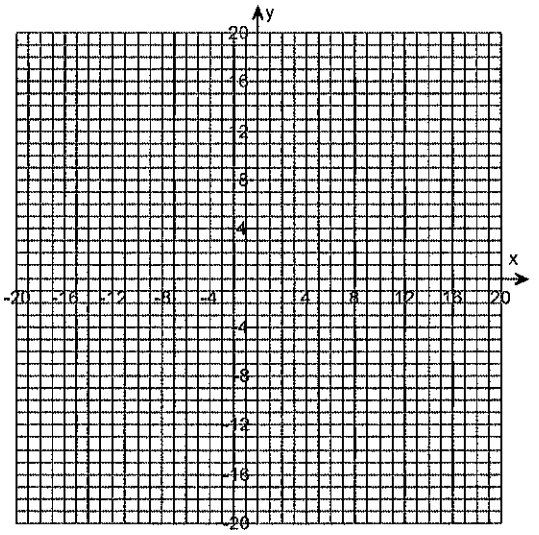
c. What trend in the paired data does the scatter diagram show?

- ○ The ethanol production is increasing as the years increase.
- ○ The ethanol production is decreasing as the years increase.
- ○ There is no trend in the data.
- ○ The ethanol production dropped significantly in 1997.

21. Graph the equation.

$y = 3x + 3$

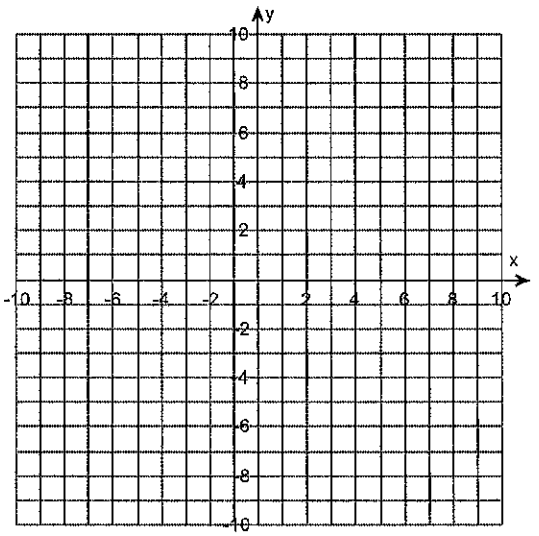
Use the graphing tool to graph the line.



22. Graph the linear equation.

$y = 2x$

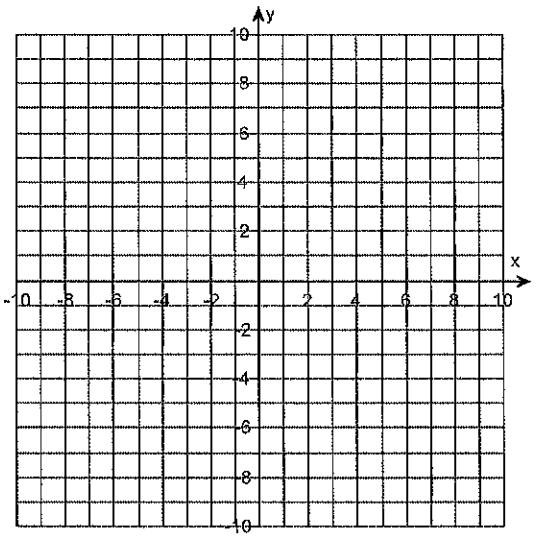
Use the graphing tool to graph the linear equation.



23. Graph the linear equation.

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

Use the graphing tool to graph the linear equation.

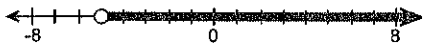


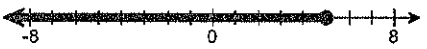
24. Solve the inequality. Graph the solutions.

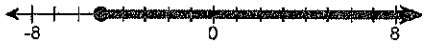
$2x - 14 < 8(x + 2)$

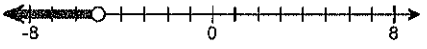
The solutions are [ ]. (Simplify your answer. Type an inequality.)

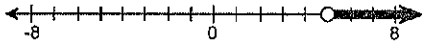
Choose the correct graph below.

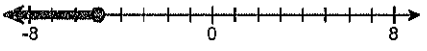
○ A. 

○ B. 

○ C. 

○ D. 

○ E. 

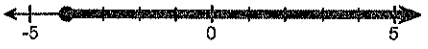
○ F. 

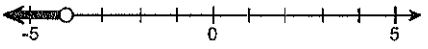
25. Solve the inequality. Graph the solutions.

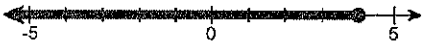
$-4x + 2 \geq 2(5 - x)$

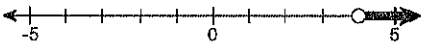
The solutions are [ ]. (Simplify your answer. Type an inequality.)

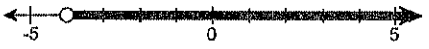
Choose the correct graph below.

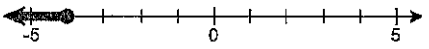
○ A. 

○ B. 

○ C. 

○ D. 

○ E. 

○ F. 

26. Solve the following compound inequality.

$2 < x - 9 < 18$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. The solutions are [ ].
(Simplify your answer. Type an inequality or a compound inequality.)

○ B. The solutions are all real numbers.

○ C. There is no solution.

27. Solve the following compound inequality.

$-1 \leq 3x - 10 \leq 8$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. The solutions are [ ].
(Simplify your answer. Type an inequality or a compound inequality.)

○ B. The solutions are all real numbers.

○ C. There is no solution.

28. Solve the following compound inequality.

$$2 \le \frac{4}{5}x + 6 \le 7$$

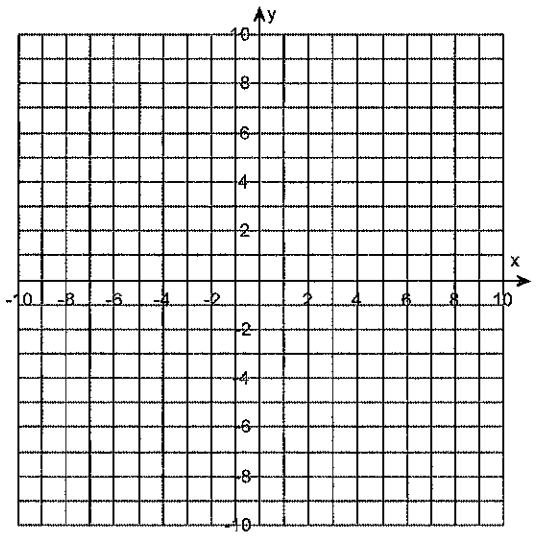
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ○ **A.** The solutions are [ ].
  (Simplify your answer. Type an inequality or a compound inequality.)
- ○ **B.** The solutions are all real numbers.
- ○ **C.** There is no solution.

29. Graph the linear inequality.

$y \ge 6x$

Use the graphing tool to graph the inequality.



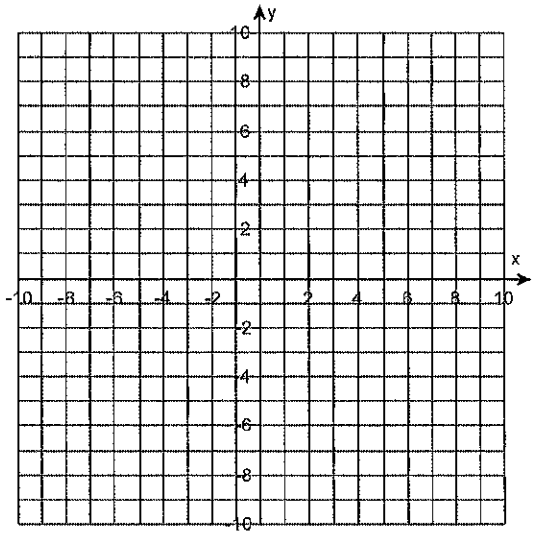
30. Solve the system of equations by graphing.

$$\begin{cases} x + y = 8 \\ x - y = -2 \end{cases}$$

Use the graphing tool to graph the system.

Select the correct choice below and fill in any answer boxes present in your choice.

- ○ **A.** The solution of the system is [ ].
  (Type an ordered pair.)
- ○ **B.** There are infinitely many solutions.
- ○ **C.** There is no solution.



31. Solve the system of equations by the substitution method.

$$\begin{cases} x + y = 8 \\ y = -3x \end{cases}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ○ **A.** The solution is [ ]. (Simplify your answer. Type an ordered pair.)
- ○ **B.** There are infinitely many solutions.
- ○ **C.** There is no solution.

32. Solve the system of equations by the addition method.

$$\begin{cases} 2x - y = 6 \\ 5x + y = 1 \end{cases}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ○ **A.** The solution is [ ]. (Simplify your answer. Type an ordered pair.)
- ○ **B.** There are infinitely many solutions.
- ○ **C.** There is no solution.

33. Simplify the given polynomial by combining like terms.

$20x^2 - 5x^2 - y$

$20x^2 - 5x^2 - y =$ [ ]

34. Simplify the polynomial by combining like terms.

$8x - 3x + 6x$

$8x - 3x + 6x =$ [ ] (Simplify your answer.)

*35. Simplify.

$$\frac{7(7-2)+5}{5^2-5}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ○ **A.** $\frac{7(7-2)+5}{5^2-5} =$ [ ]
- ○ **B.** The expression is undefined.

*36. Simplify.

$$\frac{2+8^2}{5(18-14)-3^2-8}$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ **A.** $\frac{2+8^2}{5(18-14)-3^2-8} =$ ☐

○ **B.** The expression is undefined.

*37. Add the polynomials.

$(5x+3)+(-7x-14)$

$(5x+3)+(-7x-14) =$ ☐

*38. Subtract the polynomials.

$(4a-6)-(a+9)$

$(4a-6)-(a+9) =$ ☐

*39. Multiply.

$(9ab)\left(5a^3b^4\right)$

$(9ab)\left(5a^3b^4\right) =$ ☐

*40. Simplify.

$(2xy)^3\left(3x^5y^5\right)^2$

$(2xy)^3\left(3x^5y^5\right)^2 =$ ☐ (Simplify your answer. Evaluate the coefficient.)

*41. Multiply.

$9r(-8r+6)$

$9r(-8r+6) =$ ☐
(Simplify your answer.)

*42. Factor.

$4x^3+12x^2+20x$

$4x^3+12x^2+20x =$ ☐

*43. Factor.

z^3-6z

$z^3-6z =$ ☐

*44. Solve the equation.

$23 - 6x = 12 + 5x$

$x =$ ☐

*45. Solve the equation.

$16 + 8(z - 2) = 7z + 1$

$z =$ ☐

*46. Translate the following sentence into an equation. Then solve the equation.

Five times a number, added to 6, is 46. Find the number.

Translate the sentence into an equation.

☐ (Type an equation using x as the variable. Do not simplify.)

The unknown number is ☐.

*47. Use the quotient rule for exponents to simplify.

$$\frac{a^{15}}{a^{7}}$$

$\frac{a^{15}}{a^{7}} =$ ☐

(Type your answer using exponential notation. Use positive exponents only.)

*48. Evaluate the expression.

$(-3)^{0}$

$(-3)^{0} =$ ☐

*49. Simplify. Use positive exponents for any variables. Assume that all bases are not equal to 0.

$-7x^{-1}$

$-7x^{-1} =$ ☐ (Simplify your answer.)

*50. Simplify the following expression. Write the result using positive exponents only.

$\left(-7x^{4}y^{-4}\right)\left(3x^{-5}y^{6}\right)$

$\left(-7x^{4}y^{-4}\right)\left(3x^{-5}y^{6}\right) =$ ☐

1. $\frac{5}{12}$

2. $\frac{83}{4}$

3. -23

4. -46

5. 4.3

6. -9

7. 2

8. -2.3

9. -18

10. $\frac{7}{54}$

11. B. commutative property of multiplication

12. D. distributive property

13. A. associative property of multiplication

14. 4.8

15. 2

16. 2

17. 0

18. $(-3, -2)$

19. (4,5)

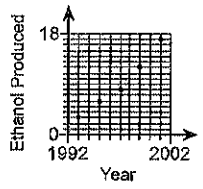
20. (1993,3)

(1995,6)

(1997,8)

(1999,12)

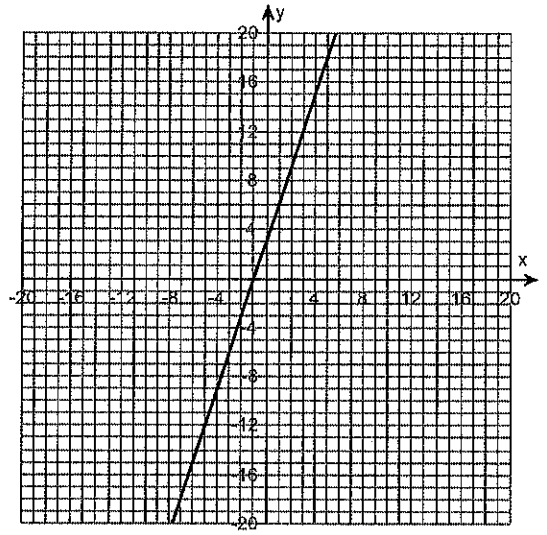
(2001,17)



D.

The ethanol production is increasing as the years increase.

21.



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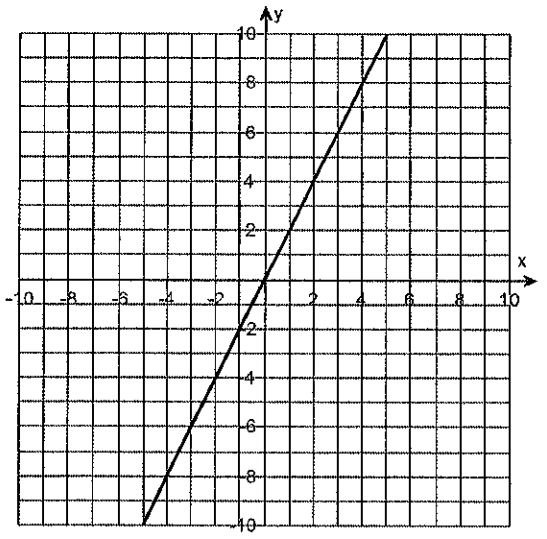

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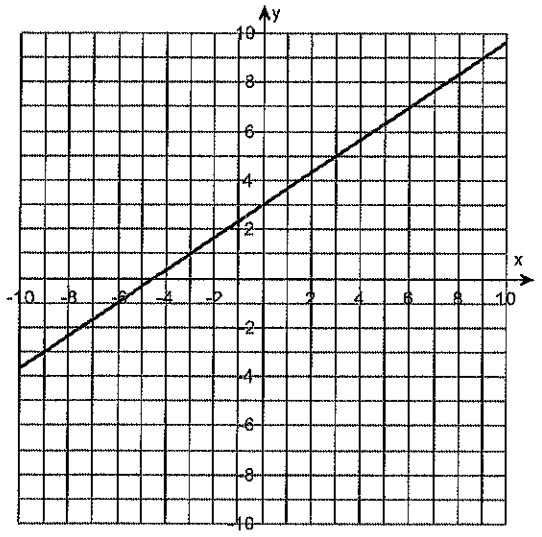

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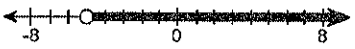
24. $x > -5$

A. 

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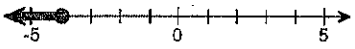
25. $x \leq -4$

F. 

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26. A. The solutions are $\boxed{11 < x < 27}$.(Simplify your answer. Type an inequality or a compound inequality.)

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27. A. The solutions are $\boxed{3 \leq x \leq 6}$.(Simplify your answer. Type an inequality or a compound inequality.)

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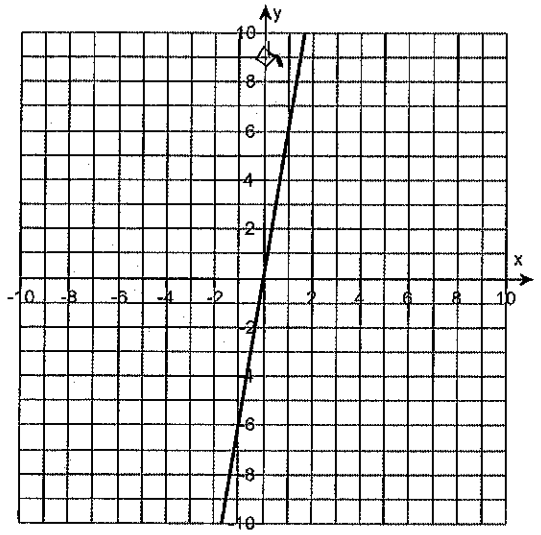
28. A. The solutions are $\boxed{-5 \leq x \leq \frac{5}{4}}$.(Simplify your answer. Type an inequality or a compound inequality.)

29.



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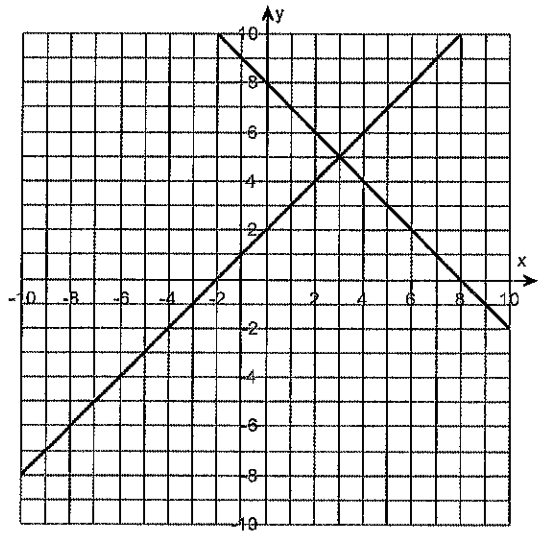


A. The solution of the system is **(3,5)** .(Type an ordered pair.)

31. A. The solution is **(−4,12)** . (Simplify your answer. Type an ordered pair.)

32. A. The solution is **(1,−4)** . (Simplify your answer. Type an ordered pair.)

33. $15x^2 - y$

34. $11x$

35. A. $\dfrac{7(7-2)+5}{5^2-5} =$ **2**

36. A. $\dfrac{2+8^2}{5(18-14)-3^2-8} =$ **22**

37. $-2x-11$

38. $3a-15$

39. $45a^4b^5$

40. $72x^{13}y^{13}$

41. $-72r^2+54r$

42. $4x\left(x^2+3x+5\right)$

43. $z\left(z^2-6\right)$

44. 1

45. 1

46. $6+5x=46$

8

47. a^8

48. 1

49. $-\dfrac{7}{x}$

50. $-\dfrac{21y^2}{x}$

Summer Packet 2026

Students Entering Algebra 1 Honors

Purpose: This packet is designed to help students stay on track over the summer and enter 8th grade Algebra 1 confident and prepared for a great school year. Math teachers have selected the 6 skills that are important for the students' success in 8th grade Algebra 1. If a student struggles with these concepts, I highly recommend that they watch the instructional videos provided. The instructional videos are available by scanning the QR code with a smart phone. After watching the video that is linked, students can choose to continue watching videos on Khan Academy for extra help or work problems live on the site and get immediate feedback to see if their solution is correct. Watching videos and online practice is not required but may prove beneficial for students that often struggle in math or lose skills over the summer.

*****Further optional practice is attached to help students prepare for the summer math quiz. An additional key is provided to show how to solve similar problems.**

*****Students are expected to complete the math fact fluency attached. Please read instructions.**

Concept 1: Integer Operations/Order of Operations

Directions: Solve each problem showing all steps and circle your answer. Evaluate each expression. NO CALCULATOR ALLOWED.

1. $68 + 22 + 50 - 36$

2. $84 + 80 - 67 + 68$

3. $96 + (-1) - 45 - 98$

4. $-10 \times 5 \times -7$

5. $\frac{4+|6-2|+8^2}{4+6 \cdot 4}$

6. $5[3(2 + 5) - 5]$

7. $\frac{-3-2(-9)}{-15-3(-4)}$

8. $5 + 2[(7 - 5)^2 + (1 - 3)]$

Concept 2: Writing and Solving Two-Step Equations and Inequalities

Directions: Solve the equation or inequality. Isolate the variable. Show all steps and circle your answers. NO CALCULATOR ALLOWED.

1. $18 = -3(m - 6)$

2. $-8(8n + 2) = 112$

3. $-20 = -4x - 6$

4. $12 = -4(-6x - 3)$

5. $5(n - 3) = 7 + 3n$

6. $6x + 3 - (-x) = -20 + 5x - 7$

7. $-6 - b < 2(b - 3)$

8. $3b + 15 \leq 8b - 5$

Write each sentence as an algebraic equation and SOLVE.

9. Twice a number minus 8 is 40.

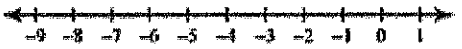
10. The product of a number and 6 is equal to the sum of the number and 20.

Concept 3: Graphing Inequalities

Directions: Solve each inequality and circle the answer. Then graph the solution on the given number line. Remember to isolate the variable first. NO CALCULATOR ALLOWED.

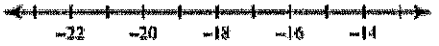
1. $-11 \geq -(-4 + r)$

2. $-25 \geq 2 + 9n$



3. $\frac{n}{4} + 1 \leq 3$

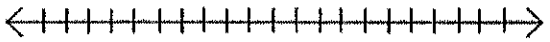
4. $16(8 + x) < -144$



5. $5 + \frac{r}{2} \geq 9$

6. $-4(x - 3) \leq 12$

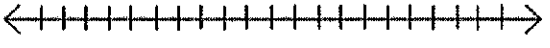
7. $-2y > -4$



8. $4x + 2 \leq 10$ *or* $3x > 9$

9. $0 < 4 + 2x \leq 10$

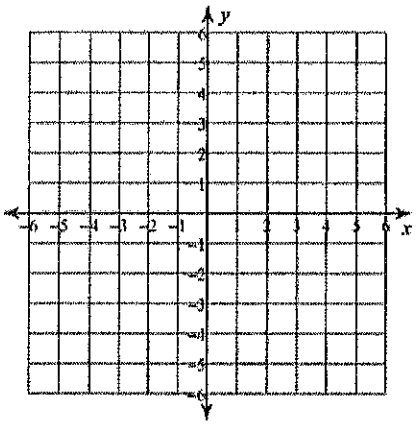
10. $1 \leq \frac{2}{3}x + 3 \leq 4$



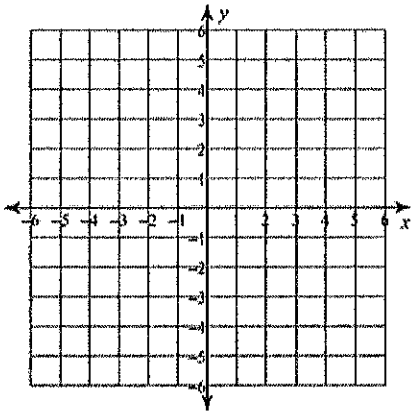
Concept 4: Graphing Linear Equations and Inequalities

Directions: Sketch the graph of each line. Isolate the "y" first. Remember to use the y-intercept and the slope.

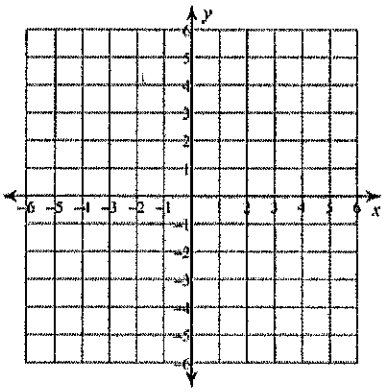
1. $y = \frac{7}{4}x - 2$ m= b=



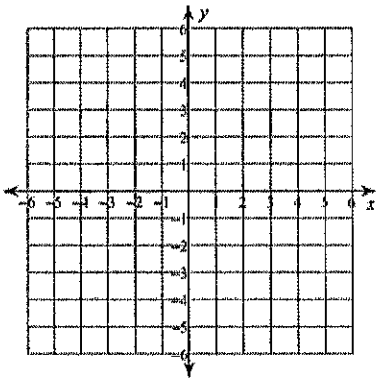
2. $y = -\frac{4}{3}x + 3$ m= b=



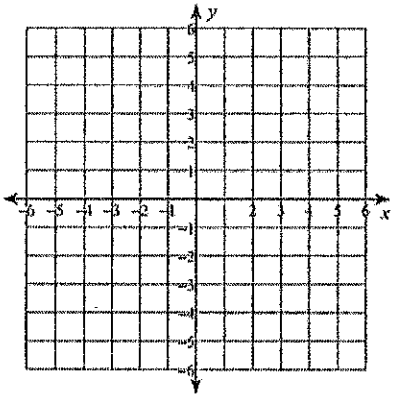
3. $y = -3$ m= b=



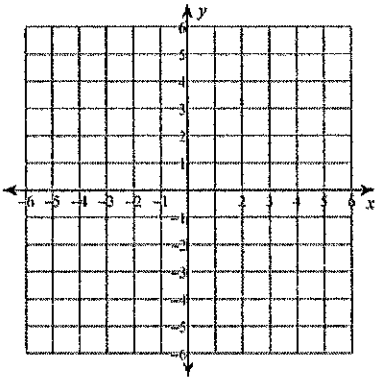
4. $y = 4x + 5$ m= b=



5. $y \geq \frac{2}{5}x - 1$ m= b=



6. $y < -\frac{3}{2}x + 2$ m= b=



Concept 5: Exponents

Directions: Solve each problem by showing all steps and circle your answer. Simplify your answer if possible. NO CALCULATOR ALLOWED.

1. $x^5 \cdot x^9$

2. $a \cdot 4a^{11} \cdot 3a^5$

3. $(-5x^2y^3)(-5x^4y)$

4. $(x^2)^9 \cdot (x^5)^3$

5. $(2a^5b)^4(3a^9b^4)^2$

6. $\frac{n^3 \cdot n^5}{n^2}$

7. $\frac{x^5y^5}{x^2y^7}$

8. $\frac{2a^4h^7}{42a^4h^2}$

9. 12^0

10. $-3x^0$

11. $\frac{y^{-3}}{y}$

12. $(-9x^4y^{-5})(3x^{-8}y^4)$

Concept 6: Polynomials

Directions: Simplify. Perform the specified operation. NO CALCULATOR ALLOWED ON THIS SECTION.

1. $(2h^7)(6h)$

2. $(x+4)(x-2)$

3. $18x^2 - 7x + 5x^2 + 3x$

4. $(3x+2) + (5x-7)$

5. $(2x+5) - (-3x-7)$

6. $3(2-5y)$

Find the GCF: Find the greatest common factor of the list of polynomials.

7. y^7, y^2, y^{10}

8. $6y^7, 9y^6, 15y^5$

Factor the GCF: Factor out the GCF from each polynomial.

9. $3y^2 + 18y$

10. $4x^3 + 12x^2 + 20x$

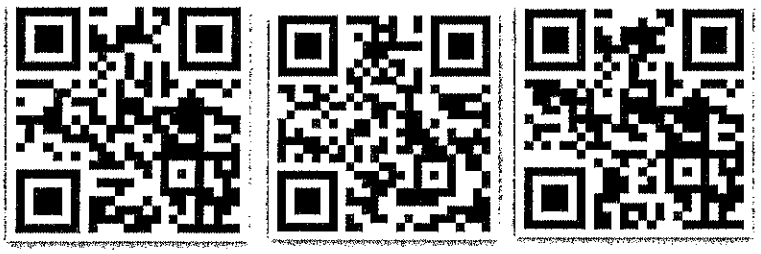
11. $z^7 - 6x^5$

12. $-20x + 4x^2 - 2$

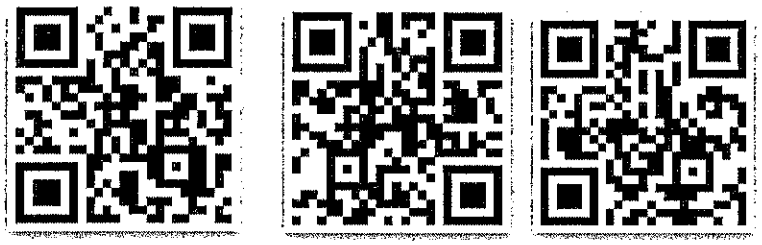
QR CODES:

Each QR code links to a video lesson. Some are on YouTube, and others are on Khan Academy. Watching the videos is not mandatory, but they can be used to review the material on this review.

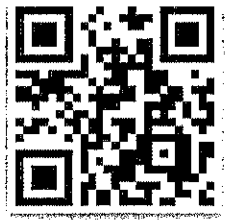
Concept 1: Integer Operations/Order of Operations



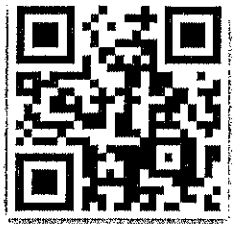
Concept 2: Writing and Solving Two-Step Equations and Inequalities



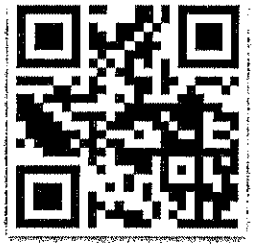
Concept 3: Graphing Inequalities

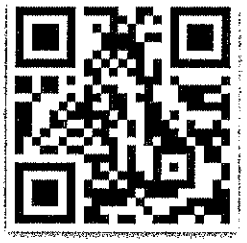


Concept 4: Graphing Linear Equations and Inequalities



Concept 5: Exponents





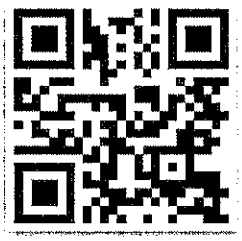
Concept 6: Polynomials

Adding and Subtracting Polynomials

Multiplying Monomials

Dividing Monomials

Factoring GCF with Polynomials



Examples/Key

Student: _____ **Instructor:** Holly LeBlanc **Assignment:** Summer Math Practice
Date: _____ **Course:** Algebra Honors 2026-2027

1. Simplify the given expression.

$\frac{5}{6} \cdot \frac{7}{9} - \frac{1}{9}$

$\frac{5}{6} \cdot \frac{7}{9} - \frac{1}{9} =$ ☐ (Type an integer or a fraction. Simplify your answer.)

$\frac{5}{6} \cdot \frac{7}{9} - \frac{1}{9} = \frac{35}{54} - \frac{1}{9} = \frac{35}{54} - \frac{6}{54} = \boxed{\frac{29}{54}}$

↑ common denominator

2. Simplify the given expression and enter your answer in numerical terms.

$\frac{2+|3-2|+1^2}{5-3}$ $\quad \frac{2+|1|+1^2}{2} = \frac{2+1+1}{2} = \frac{4}{2} = \boxed{2}$

$\frac{2+|3-2|+1^2}{5-3} =$ ☐ (Type an integer or a fraction. Simplify your answer.)

3. Add.

$-12+(-2)$

$-12+(-2) =$ ☐ $= \boxed{-14}$

★ same sign → add + keep sign

4. Evaluate the expression.

$-98+53$

$-98+53 =$ ☐ $\boxed{-45}$

★ Different signs → subtract

$\begin{array}{r} 98 \\ -53 \\ \hline 45 \end{array}$

5. Add.

$5.3+(-6.1)$

$5.3+(-6.1) =$ ☐ (Type an integer or a decimal.) $\boxed{-0.8}$

$\begin{array}{r} 5 \quad 11 \\ 6.1 \\ -5.3 \\ \hline 0.8 \end{array}$

6. Subtract.

$-19-(-4)$ $= -19+4$

$-19-(-4) =$ ☐ $\boxed{-15}$

7. Subtract.

$-15-(-9)$ $\quad -15+9 = \boxed{-6}$

$-15-(-9) =$ ☐

8. Evaluate.

$37.1-44.2$

$37.1-44.2 =$ ☐ $\boxed{-7.1}$

$\begin{array}{r} {}^{3}\cancel{4}.2 \\ -37.1 \\ \hline 7.1 \end{array}$

9. Multiply.

$-8 \cdot 3$ $\boxed{-24}$

$-8 \cdot 3 =$ ☐

10. Multiply.

$-\frac{1}{8}\left(-\frac{3}{5}\right)$ $\frac{3}{40}$

$-\frac{1}{8}\left(-\frac{3}{5}\right) =$ ☐ (Type a simplifed fraction.)

11. Choose the property illustrated by the following statement.

$3 \cdot 8 = 8 \cdot 3$ Changing order of terms

- A. associative property of multiplication
- B. commutative property of multiplication
- C. distributive property
- D. identity element of multiplication

12. Choose the property illustrated by the following statement.

$3(5+9) = 3 \cdot 5 + 3 \cdot 9$

- A. associative property of addition
- B. associative property of multiplication
- C. commutative property of multiplication
- D. distributive property

13. Choose the property illustrated by the following statement.

$(8 \cdot y) \cdot 5 = 8 \cdot (y \cdot 5)$ changing order of parentheses

- A. associative property of multiplication
- B. commutative property of multiplication
- C. distributive property
- D. identity element of multiplication

14. Solve the equation for r.

$r - 1.9 = -9.7$

$r - 1.9 = -9.7$
$+1.9 \quad +1.9$
$r = -7.8$

$\begin{array}{r} 8.17 \\ 9.7 \\ -1.9 \\ \hline 7.8 \end{array}$

r = −7.8 (Type a decimal.)

15. Solve the equation for x.

$3x - 3 = 4x$

$3x - 3 = 4x$
$-3x \quad -3x$
$-3 = x$

x = −3

16. Solve the equation. Check the solution.

$3z - 7 = 5z - 3z$

$3z - 7 = 5z - 3z$
$-3z \quad -3z$
$-7 = -1z$
$-1 \quad -1$
$z = 7$

z = 7

17. Solve the equation for x.

$6(x-2)+4=-8$

$6(x-2)+4=-8$

$6x-12+4=-8$

$6x-8=-8$

$+8 \quad +8$

$\frac{6x}{6}=\frac{0}{6}$

$x=0$

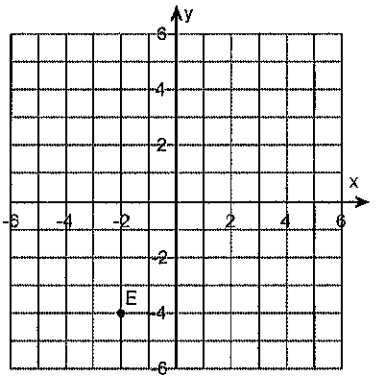
$x=$ [0] (Type an integer or a fraction. Simplify your answer.)

18. Find the x- and y-coordinates of the point E.

The coordinates of E are [ ].
(Type an ordered pair.)

(x, y)

(-2, -4)

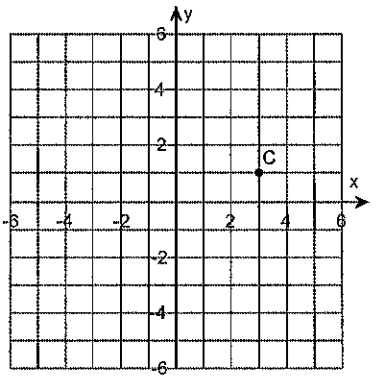


19. Find the x- and y-coordinates of the point C.

The coordinates of C are [ ].
(Type an ordered pair.)

(x, y)

(3, 1)



20. The following table shows ethanol fuel production in a country.

Year	Ethanol Fuel Production (in billions of gallons)
1993	2
1995	6
1997	8
1999	12
2001	17

a. Write each pair of data as an ordered pair of the form (year, billions of gallons produced).

What is the ordered pair that corresponds to the first row of data given in the table?

[ ] (Type an ordered pair.) (1993, 2)

What is the ordered pair that corresponds to the second row of data given in the table?

[ ] (Type an ordered pair.) (1995, 6)

What is the ordered pair that corresponds to the third row of data given in the table?

[ ] (Type an ordered pair.) (1997, 8)

What is the ordered pair that corresponds to the fourth row of data given in the table?

[ ] (Type an ordered pair.) (1999, 12)

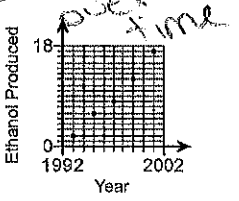
What is the ordered pair that corresponds to the fifth row of data given in the table?

[ ] (Type an ordered pair.) (2001, 17)

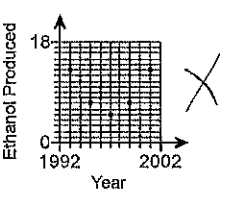
b. Create a scatter diagram of the paired data.

Choose the correct scatter diagram below.

● **A.** increases over time

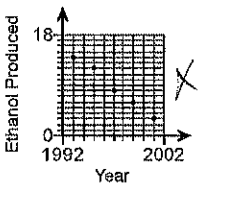


○ **B.**



X

○ **C.**



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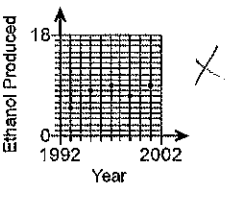
○ **D.**



X

c. What trend in the paired data does the scatter diagram show?

○ The ethanol production is decreasing as the years increase.

○ The ethanol production dropped significantly in 1997.

● The ethanol production is increasing as the years increase.

○ There is no trend in the data.

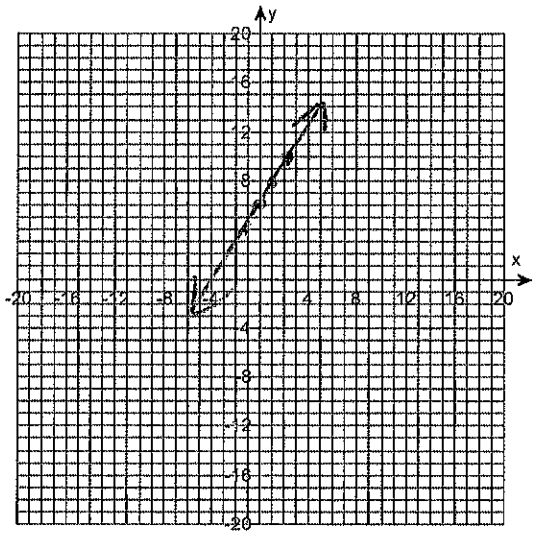
21. Graph the equation.

$y = 2x + 6$

Use the graphing tool to graph the line.

slope $m = 2$ ← go up 2, right 1

y-intercept $b = 6$ ↑ plot this first at $(0, 6)$



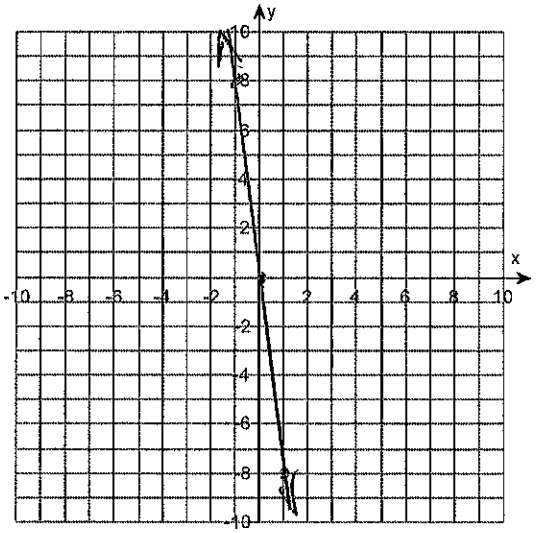
22. Graph the linear equation.

$y = -8x$

Use the graphing tool to graph the linear equation.

y-intercept = 0

slope = -8



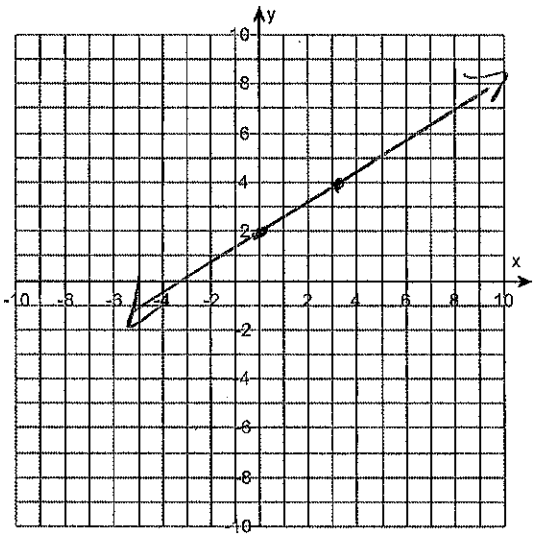
23. Graph the linear equation.

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

Use the graphing tool to graph the linear equation.

y-intercept: $(0, 2)$

slope = $\frac{2}{3}$



24. Solve the inequality. Graph the solutions.

$x - 19 < 6(x + 1)$

$x - 19 < 6x + 6$

$-6x \quad -6x$

$-5x - 19 < 6$

$+19 \quad +19$

$\frac{-5x}{-5} < \frac{25}{-5}$

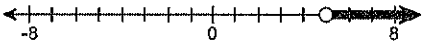
reverse the sign when multiplying or dividing by a negative number

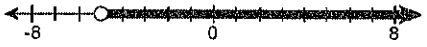
$x > -5$

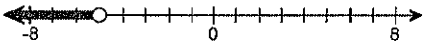
The solutions are $x > -5$. (Simplify your answer. Type an inequality.)

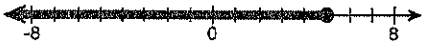
Choose the correct graph below.

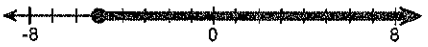
○ A. 

○ B. 

● C. 

○ D. 

○ E. 

○ F. 

25. Solve the inequality. Graph the solutions.

$-3x + 6 \geq 2(4 - x)$

$-3x + 6 \geq 8 - 2x$

$+2x \quad +2x$

$-x + 6 \geq 8$

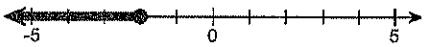
$-6 \quad -6$

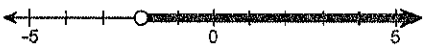
$\frac{-x}{-1} \geq \frac{2}{-1}$

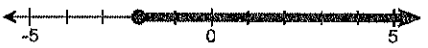
$x \leq -2$

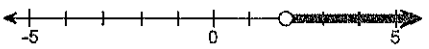
The solutions are $x \leq -2$. (Simplify your answer. Type an inequality.)

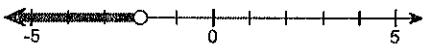
Choose the correct graph below.

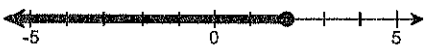
● A. 

○ B. 

○ C. 

○ D. 

○ E. 

○ F. 

26. Solve the following compound inequality.

$6 < x - 7 < 18$

$+7 \quad +7 \quad +7$

$13 < x < 25$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

● A. The solutions are $13 < x < 25$
(Simplify your answer. Type an inequality or a compound inequality.)

○ B. The solutions are all real numbers.

○ C. There is no solution.

* Isolate the variable in the middle.

27. Solve the following compound inequality.

$-1 \leq 2x - 9 \leq 5$

$+9 \quad +9 \quad +9$

$\frac{8}{2} \leq \frac{2x}{2} \leq \frac{14}{2}$

$4 \leq x \leq 7$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

● A. The solutions are $4 \leq x \leq 7$.
(Simplify your answer. Type an inequality or a compound inequality.)

○ B. The solutions are all real numbers.

○ C. There is no solution.

28. Solve the following compound inequality.

$4 \le \frac{2}{7}x + 6 \le 7$

$4 \le \frac{2}{7}x + 6 \le 7$
$-6 \quad -6 \quad -6$
$-2 \le \frac{2}{7}x \le 1$
$\times 7 \quad \times 7 \quad \times 7$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- (●) **A.** The solutions are $-7 \le x \le \frac{7}{2}$
  (Simplify your answer. Type an inequality or a compound inequality.)
- ( ) **B.** The solutions are all real numbers.
- ( ) **C.** There is no solution.

$\frac{-14}{2} \le \frac{2x}{2} \le \frac{7}{2}$

$-7 \le x \le \frac{7}{2}$

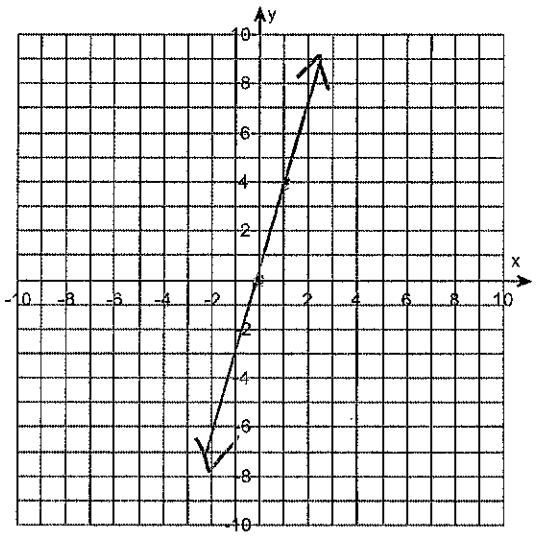
29. Graph the linear inequality.

$y \ge 4x$

Use the graphing tool to graph the inequality.

y-intercept = 0

slope = 4



30. Solve the system of equations by graphing. $y = mx + b$

$\begin{cases} x + y = 7 \\ x - y = 5 \end{cases}$

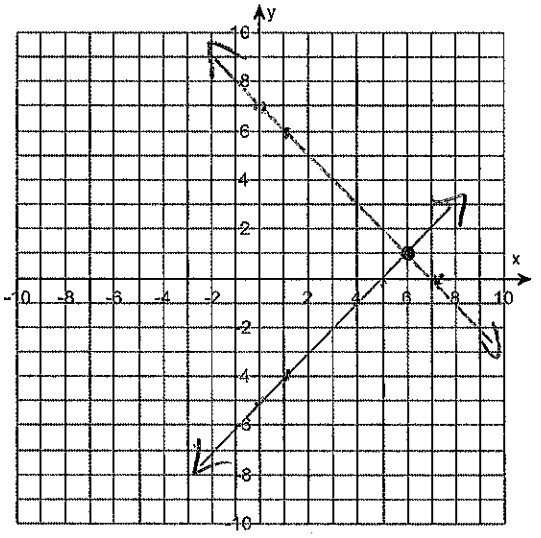
$x + y = 7 \longrightarrow y = -x + 7$

$x - y = 5 \longrightarrow y = x - 5$

Use the graphing tool to graph the system.

Select the correct choice below and fill in any answer boxes present in your choice.

- ( ) **A.** The solution of the system is $(6, 1)$.
  (Type an ordered pair.)
- ( ) **B.** There are infinitely many solutions.
- ( ) **C.** There is no solution.



$x - y = 5$
$-x \quad -x$
$-y = -x + 5$
$-1 \quad -1 \quad -1$

$y = x - 5$

★ Plot both lines. The solution is the coordinate where they intersect.

31. Solve the system of equations by the substitution method.

$\begin{cases} x+y=12 \\ y=-5x \end{cases}$

$x + -5x = 12$

$\frac{-4x}{-4} = \frac{12}{-4}$

$x = -3$

$y = -5(-3)$

$y = 15$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution is $(-3, 15)$. (Simplify your answer. Type an ordered pair.)
- B. There are infinitely many solutions.
- C. There is no solution.

$(-3, 15)$

32. Solve the system of equations by the addition method.

$\begin{cases} 8x-y=-11 \\ 9x+y=-6 \end{cases}$

Add

$8x - y = -11$

$9x + y = -6$

$\frac{17x}{17} = \frac{-17}{17}$

$x = -1$

$8(-1) - y = -11$

$-8 - y = -11$

$+8 \quad +8$

$\frac{-y}{-1} = \frac{-3}{-1}$

$y = 3$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution is $(-1, 3)$. (Simplify your answer. Type an ordered pair.)
- B. There are infinitely many solutions.
- C. There is no solution.

$(-1, 3)$

33. Simplify the given polynomial by combining like terms. → same variable w/ same exponent

$23x^2 - 6x^2 - y$

$23x^2 - 6x^2 - y$

$23x^2 - 6x^2 - y = 17x^2 - y$

$17x^2 - y$

34. Simplify the polynomial by combining like terms.

$3x - 6x + 5x$

$3x - 6x + 5x =$ 2x (Simplify your answer.)

$3x - 6x + 5x$

$-3x + 5x$

$2x$

*35. Simplify.

$\frac{4(7-4)+2}{2^2-2}$

$\frac{4(3)+2}{4-2} = \frac{12+2}{2} = \frac{14}{2} = 7$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. $\frac{4(7-4)+2}{2^2-2} =$ 7
- B. The expression is undefined.

*36. Simplify.

$$\frac{2+10^2}{5(18-14)-3^2-8}$$

$\frac{2+100}{5(4)-9-8} = \frac{102}{20-9-8} = \frac{102}{11-8} = \frac{102}{3}$

11

$3\overline{)102}$ → 34, 9, 12, −12, 0

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ **A.** $\frac{2+10^2}{5(18-14)-3^2-8} =$ 34

○ **B.** The expression is undefined.

*37. Add the polynomials.

$(7x+5)+(-2x-13)$

$(7x+5)+(-2x-13) =$ 5x − 8

*38. Subtract the polynomials.

$(2a-6)-(a+2)$

$(2a-6)-(a+2) =$ a − 8

$(2a-6)-(a+2)$

$2a-6-a-2$

$a-8$

*39. Multiply.

$(5ab)(5a^7b^8)$

when multiplying, add exponents.

$(5ab)(5a^7b^8) = 25a^{1+7}b^{1+8}$

$(5ab)(5a^7b^8) =$ $25a^8b^9$

$25a^8b^9$

*40. Simplify.

$(2xy)^4(4x^8y^5)^2$

Distribute with powers (multiply)

$(2^4x^4y^4)(4^2x^{16}y^{10}) = (16x^4y^4)(16x^{16}y^{10})$

$(2xy)^4(4x^8y^5)^2 =$ $256x^{20}y^{14}$ (Simplify your answer. Evaluate the coefficient.)

$256x^{20}y^{14}$

*41. Multiply.

$7r(-6r+7)$

Distribute

$-42r^2+49r$

$7r(-6r+7) =$ $-42r^2+49r$

(Simplify your answer.)

*42. Factor.

$3x^3+9x^2+15x$

GCF

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

$3x^3+9x^2+15x =$ $3x(x^2+3x+5)$

*43. Factor.

z^3-17z

GCF

$z(z^2-17)$

$z^3-17z =$ $z(z^2-17)$

*44. Solve the equation.

$18 - 4x = 13 + x$

$18 + 4x = 13 + x$

$+4x \quad +4x$

$18 = 13 + 5x$

$-13 \quad -13$

$5 = 5x$

$\frac{5}{5} = \frac{5x}{5}$

$1 = x$

$x =$ 1

*45. Solve the equation.

$10 + 5(z - 2) = 4z + 1$

$10 + 5z - 10 = 4z + 1$

$5z = 4z + 1$

$-4z \quad -4z$

$z = 1$

$z =$ 1

*46. Translate the following sentence into an equation. Then solve the equation.

Three times a number, added to 7, is 25. Find the number.

$3x + 7 = 25$

$-7 \quad -7$

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$

Translate the sentence into an equation.

$3x + 7 = 25$ (Type an equation using x as the variable. Do not simplify.)

The unknown number is 6.

*47. Use the quotient rule for exponents to simplify.

$\frac{a^{18}}{a^7}$

When dividing, subtract exponents.

$a^{18-7} = a^9$

$\frac{a^{18}}{a^7} = a^9$

(Type your answer using exponential notation. Use positive exponents only.)

*48. Evaluate the expression.

$(-8)^0$

$(-8)^0 =$ 1

*49. Simplify. Use positive exponents for any variables. Assume that all bases are not equal to 0.

$8x^{-3}$

$8x^{-3} = \frac{8}{x^3}$

$8x^{-3} = \frac{8}{x^3}$ (Simplify your answer.)

*50. Simplify the following expression. Write the result using positive exponents only.

$(-2x^2y^{-9})(9x^{-3}y^2)$

When multiplying, add exponents.

$(-2x^2y^{-9})(9x^{-3}y^2) =$

$-18x^{2+3}y^{-9+2}$

$= -18x^{-1}y^{-7} = \frac{-18}{xy^7}$

& move anything with a negative exponent to the other side of the fraction to make the exponent positive.