In order to be successful in Algebra I, you must have certain prerequisite skills mastered. You will be assessed on the content of this packet during the first week of school.

Please make your best effort as you work on this packet. You can work with another person, but keep in mind that each person has to take the quiz. Please show all of your work.

Enjoy your summer!! We look forward to meeting you and working with you when return to school in the fall.
Algebra I – Summer Packet Multiple Choice Questions

Order of Operations: Simplify the following expressions Without a Calculator.

1. \(5 - 3 \times 7 + 4 + 2\)
   a. 9
   b. -14
   c. 16
   d. -18

2. \(-|4| + 5\)
   a. 9
   b. -1
   c. 1
   d. 20

3. \(-5 + 1 - 13\)
   a. -17
   b. -7
   c. 7
   d. 9

4. \(20 + 12 - 7\)
   a. 35
   b. -25
   c. 15
   d. 25

5. \((2)(-4)(-5)(-1)\)
   a. 40
   b. -40
   c. -8
   d. -41

6. \(|9 - (-5) + 8| - 2\)
   a. -20
   b. -24
   c. 20
   d. 22

7. \(\frac{2}{4} + \frac{4}{5}\)
   a. \(\frac{7}{9}\)
   b. \(\frac{3}{5}\)
   c. \(\frac{31}{20}\)
   d. \(\frac{4}{3}\)

8. \(-\frac{3}{4} \div \frac{2}{7}\)
   a. \(\frac{3}{14}\)
   b. \(-\frac{3}{14}\)
   c. \(\frac{21}{8}\)
   d. \(-\frac{21}{8}\)

9. \(-\frac{1}{a} \div \frac{3}{5}\)
   a. \(-\frac{1}{5}\)
   b. \(-\frac{5}{6}\)
   c. \(-\frac{5}{9}\)
   d. -5
Evaluating Expressions: Simplify the following expressions *Without a Calculator.*

10. $x + 13 - 9$ when $x = -4$
   
   a. 0  
   b. $-26$  
   c. $-18$  
   d. 8

11. $2x - 4 - y$ when $x = 5$ and $y = -4$
   
   a. 2  
   b. 10  
   c. $-17$  
   d. 6

12. $|10a - 3b|$ when $a = \frac{1}{2}$ and $b = 2$
   
   a. $-21.5$  
   b. $-1$  
   c. 11  
   d. 1

13. $\frac{y - 3x}{2}$ when $y = -2$ and $x = 6$
   
   a. $-18$  
   b. $-15$  
   c. $-10$  
   d. $-8$

14. $a + \frac{4b}{2} - 1$ when $a = -4$ and $b = 3$
   
   a. 1  
   b. $-6$  
   c. 9  
   d. $-9$
Algebraic Expressions: Simplify the expression Without a Calculator.

15. $8x - 5y + 7x - 3y$
   a. $x + 2y$
   b. $15x - 8y$
   c. $56x^2 + 15y^2$
   d. $15x^2 - 8y^2$

16. $6(f - 5)$
   a. $6f - 5$
   b. $6f - 1$
   c. $6f + 1$
   d. $6f - 30$

17. $(-3)^2$
   a. $-9$
   b. $6$
   c. $9$
   d. $-6$

18. $\frac{15}{2} + \frac{5}{4}$
   a. $\frac{10}{2}$
   b. $\frac{2}{2}$
   c. $6$
   d. $\frac{7}{2}$

19. $3x(x + 5)$
   a. $3x + 15$
   b. $3x^2 + 5$
   c. $3x^2 + 15x$
   d. $15x^2$

20. $-2k(-6k - 3)$
   a. $12k^2 + 6k$
   b. $-12k^2 - 5k$
   c. $12k^2 - 6k$
   d. $12k^2 - 3$

21. $x^2(3x + 4)$
   a. $7x^2$
   b. $3x^2 + 4$
   c. $3x^2 + 4x^2$
   d. $7x^2$

22. $(8x^2 - 3x + 5)6$
   a. $8x^2 - 18x + 30$
   b. $48x^2 - 18x + 30$
   c. $32x^2 - 18x + 30$
   d. $14x^2 + 3x + 11$

23. $-(2y + 3) - 4x - 3$
   a. $-y + 3 - 4x$
   b. $-5y + 3 - 4x$
   c. $-2y - 4x - 3$
   d. $-2y - 4x - 6$

24. $2 + 6(5 - 2c)$
   a. $40 - 16c$
   b. $32 - 2c$
   c. $30 - 12c$
   d. $32 - 12c$

25. $\frac{16x + 12}{4}$
   a. $\frac{16x}{4}$
   b. $4x + 3$
   c. $4x + 12$
   d. $16x + 3$

26. $-3(3y - 5) + 8y$
   a. $-9y + 5$
   b. $-y - 5$
   c. $-y + 15$
   d. $-y - 15$

27. $-2(7 - 4x) - 3$
   a. $-14 + 8x$
   b. $8x - 17$
   c. $-17 - 4x$
   d. $8x - 11$
**Solving Equations:** Solve for the indicated variable *Without a Calculator.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
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</thead>
</table>
| 28. \( a - 9 = 17 \) | a. 8  
b. 26  
c. -26  
d. -8 |
| 29. \( \frac{x}{5} = -3 \) | a. \( -\frac{3}{5} \)  
b. \( \frac{3}{5} \)  
c. 15  
d. -15 |
| 30. \( 32 = -4x + 8 \) | a. 6  
b. -6  
c. -10  
d. 10 |
| 31. \( \frac{4}{5}x - 5 = 15 \) | a. 16  
b. 17  
c. 23.75  
d. 25 |
| 32. \( 2(x + 4) + 4x = 32 \) | a. 4  
b. \( 4 \frac{1}{2} \)  
c. 6  
d. 7 |
| 33. \( 9x - 2 = 4x + 13 \) | a. 3  
b. \( \frac{11}{5} \)  
c. 1  
d. \( \frac{13}{15} \) |
| 34. \( 5x = 6x + 75 \) | a. \( \frac{75}{12} \)  
b. 25  
c. -25  
d. \( \frac{-75}{12} \) |
| 35. \( 3x + x - 7 = 6x - 5 \) | a. -1  
b. \( -\frac{2}{3} \)  
c. -\( \frac{5}{6} \)  
d. -4 |
| 36. \( 3(x - 4) = 3x + 12 \) | a. 0  
b. 16  
c. No Solution  
d. All real numbers |
| 37. \( 12x - 12 = 12(x - 1) \) | a. 12  
b. 1  
c. No Solution  
d. All Real Numbers |
| 38. \( 3(4x + 8) = 12x + 16 + 8 \) | a. 0  
b. 8  
c. No Solution  
d. All Real Numbers |
Algebra I – Summer Packet Open-Ended Questions

Simplify/Evaluate the following expressions \textit{Without a Calculator}.

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1. $</td>
<td>-15</td>
</tr>
<tr>
<td>3. $-8 + 2 \times 3 - 4 \div 2 - 1$</td>
<td>4. $2x^2 - x + 1$ when $x = -3$</td>
</tr>
<tr>
<td>5. $5(2x + 4) + 2(7x - 8)$</td>
<td>6. $2^2 - 3^2 + (-4)^2$</td>
</tr>
</tbody>
</table>

Solve the equation for the indicated variable \textit{Without a Calculator}.

7. $9x - 4 - 7x = 5x + 17$

8. Write and simplify an expression for the perimeter and area of the figure below.

\[
\begin{array}{c}
5 \\
\hline
x + 3
\end{array}
\]

Perimeter: ________________________  Area: ________________
**Verbal expression:** Translate the verbal phrase into an expression or equation.

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<tbody>
<tr>
<td>9.</td>
<td>Twice the sum of a number ( x ) and 4.</td>
</tr>
<tr>
<td>10.</td>
<td>5 less than a number ( x ).</td>
</tr>
<tr>
<td>11.</td>
<td>The product of 16 and ( x ) is less than 32.</td>
</tr>
<tr>
<td>12.</td>
<td>The sum of six and a number.</td>
</tr>
<tr>
<td>13.</td>
<td>A number ( x ) decreased by nine.</td>
</tr>
<tr>
<td>14.</td>
<td>The quotient of a number ( x ) and 2 is greater than 9.</td>
</tr>
<tr>
<td>15.</td>
<td>The square of a number ( x ) plus 3.</td>
</tr>
<tr>
<td>16.</td>
<td>A number ( x ) greater than 12 is equal to 17.</td>
</tr>
<tr>
<td>17.</td>
<td>Three more than the difference of five and a number ( n ).</td>
</tr>
<tr>
<td>18.</td>
<td>Six less than four times a number ( y ).</td>
</tr>
<tr>
<td>19.</td>
<td>A number ( y ) decreased by the sum of eight and the square of another number ( x ).</td>
</tr>
</tbody>
</table>

**Calculator allowed**

**Word Problems:** Write the equation and then solve the following word problems.

20. During the move to his new house, Seth rented a U-Haul truck for $39.95 plus a mileage charge of $1.08 per mile. If Seth spent $97.19 for the rental, how many miles did he drive the truck?

   EQUATION: ________________________  X represents: ________________________

   ANSWER: __________

21. A Health Club charges nonmembers $8 per day and $5 per day for aerobics classes. Members pay a yearly fee of $200 plus $3 per day for aerobics classes. Write and solve an equation to find the number of days you must use the club to justify a yearly membership.

   EQUATION: ________________________  X represents: ________________________

   ANSWER: __________
22. A parking garage charges $3.00 plus $1.50 per hour. You have $11 to spend for parking. Write and solve an equation to find the number of hours that you can park.

EQUATION: ___________________________  X represents: ______________________

ANSWFR: ______________

23. You make $8.50 per hour. If you have $125 saved, how many hours do you have to work to have $1000 in your bank account?

EQUATION: ___________________________  X represents: ______________________

Calculator allowed

Mixed Review: Answer the following questions.

24. Write the prime factorization of 72

25. Find the greatest common factor (GCF) of 24 and 40.

26. Write the fraction in simplest form:

\[
\frac{25}{40}
\]

27. Write the multiplication expression using exponents. \(6 \cdot 6 \cdot 6 \cdot 6 \cdot 6\)

28. Express \(\frac{6}{10}\) as a fraction in simplest form, as a decimal, and as a percent.

<table>
<thead>
<tr>
<th>Fraction:</th>
<th>Decimal:</th>
<th>Percent:</th>
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</table>
### Calculator allowed

<table>
<thead>
<tr>
<th>29. Solve for c. $\frac{c}{35} = \frac{3}{7}$</th>
<th>30. Express $\frac{9}{16}$ as a percentage.</th>
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<tbody>
<tr>
<td>31. Express $\frac{15}{4}$ as a percentage.</td>
<td>32. Write the 16% as a fraction in simplest form.</td>
</tr>
<tr>
<td>33. What is 60% of 900?</td>
<td>34. What is 8% of $558$?</td>
</tr>
<tr>
<td>35. 15 is what percent of 125?</td>
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### Calculator allowed

**Slope:** Calculate the slope of the line passing through the given points. $m = \frac{y_2 - y_1}{x_2 - x_1}$

| 36. (2, 1) and (3, 4) | 37. (−2, 1) and (1, −3) | 38. (−3, 0) and (−1, 6) |
Graphing Equations: Use any method to graph the following equations.

39. $y = 2x - 3$

40. $y = -\frac{4}{3}x + 5$

41. $2x - 4y = 8$

42. $x = 3$ and $y = -4$ (Please label each line)

Calculator allowed

Pythagorean Theorem: Find the missing length in the triangle. Round to the nearest hundredth if necessary. Calculator Friendly!

43. $x$

44. $x$