Algebra 1 Honors 2025 Summer Packet   *Name* _____
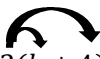
Please bring in a hard copy of this packet on the first day of school.

Calculators: Although students enrolled in any algebra course should have a graphing calculator (a **_TI -84 or 84+_**), these problems should be solved without using a calculator, except where noted.

Directions: Show your work for all problems on these pages!

PART 1: This packet is to help you review topics that are prerequisite knowledge upon entering Honors Algebra 1. To ensure that the good skills you developed this year in your course prior do not disappear this summer, working on this packet is a requirement to be completed over the summer. It is **NOT** recommended to complete immediately following school dismissal in June or the night before the packet is due. Student learning is most effective if the packet is completed over the months of July and August. Algebra 1 Honor students will be tested on the materials covered in this packet within the first few weeks of school once the teacher has discussed the packet in the classroom.

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1. Evaluate without a calculator (PEMDAS):

   a) $(8 + 5) \cdot \frac{35}{5} - 6$

   b) $(3^3 - 9 \cdot 2) + \left(2 - \frac{10}{2}\right) \cdot 2$

   c) $3 + 2(9 + 10) - 8 + 4 \cdot 3$

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2. Combine like terms:

   a) $-5n + 3(6 + 7n)$

   b) $2x + 2y + x^2 - 4x + 8y + x^2$

   c) $-10((1 - 9x) + 6(x - 10)$

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3. Distribute the following:

   Example: $3(b + 4)$
   $3b + 12$

   a) $-4(-8n + 8)$

   b) $5x(2x - 3) - 4(x + 4)$

   c) $\frac{3}{4}(p - 4) - \frac{1}{4}p$

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4. Solve the following two step equations:

   Example: $(6) - 1 = \frac{5+y}{6} (6)$
   $-6 = 5 + y$
   $-5 \quad -5$
   $-11 = y$

   a) $\frac{m}{9} - 1 = -2$

   b) $7y + 4 = 32$

   c) $-6 + 8x = 42$

5. Evaluate the following expressions when $a = 5, b = 2,$ and $c = -4$:

Example: $2ac = 2(5)(-4) = -40$

a) $ab - c$

b) $\dfrac{4ab}{c}$

c) $\dfrac{a^2 - 1}{a + 3}$

6. Write an algebraic expression for each of the following:

Example: $Twenty - five \; divided \; by \; a \; number \; q \rightarrow$ written as $\dfrac{25}{q}$

a) $The \; difference \; of \; a \; number \; p \; and \; five$

b) $Four \; less \; than \; the \; quantity \; six \; times \; a \; number \; n$

c) $The \; quotient \; of \; a \; number \; k \; and \; two$

d) $Eight \; more \; than \; the \; number \; x$

e) $The \; product \; of \; seven \; and \; a \; number \; y$

7. Write an algebraic equation or inequality for each of the following:

Example: *The sum of forty − two and a number n is eqial to fifty − one* $42 + n = 51$
The product of four and a number x is at most fifty − one $4x \leq 51$

a) *The difference of a number z and eleven is equal to thirty − five*

b) *The sum of twelve and the quantity eight times a number k is equal to forty − eight*

c) *The product of nine and the quantity of five more than a number t is less than six*

d) *The quotient of z and three is no less than twelve*

8. Tell whether the pairing is a function, then identify the domain (x) and range (y) of each:
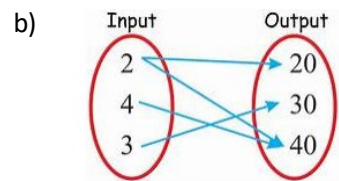
Hint: *Domain, x values, inputs, independent variable*
       Range, y values, outputs, dependent values

a) $\{ (-1, -2), (3, -3), (8, 9), (-6, -3), (-5, -1) \}$

Domain:_____

Range:_____

Function: yes   or   no

b)

Input	Output
2	20
4	30
3	40

Domain: _____

Range: _____

Function: yes   or   no

9. Make a table and identify the range of the function for the following:

a) $y = x - 5$

Domain: 10, 12, 15, 20, 21

Range: _____

Input	10	12	15		
Output					

b) $y = 3x + 1$

Domain: 0, 2, 3, 5, 10

Range: _____

Input					
Output					

10. Write a function rule that models a real-world situation and then identify the independent variable and the dependent variable.

   Example: A gym charges a sign-up fee of $100 and then $30 per month.

   Function rule: $y = 30x + 100$ Independent variable (x):   is the number of months.
   Dependent variable (y):   is the total cost.

a) A car rental charge is $50 per day plus $0.30 per mile travelled.

b) A plumber charges $25 for a service call plus $50 per hour of service

c) A water tank already contains 55 gallons of water when Baxter begins to fill it. Water flows into the tank at a rate of 8 gallons per minute

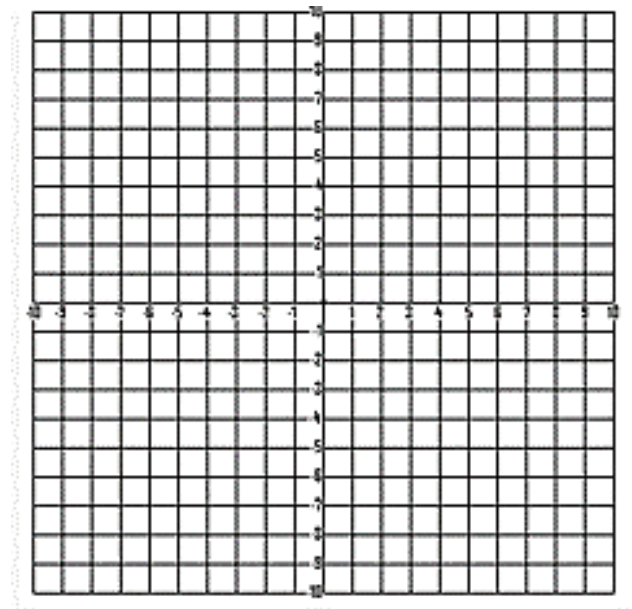11. Plot each coordinate on the given graph:

A. $(1, 2)$

B. $(4, -3)$

C. $(-1, -5)$
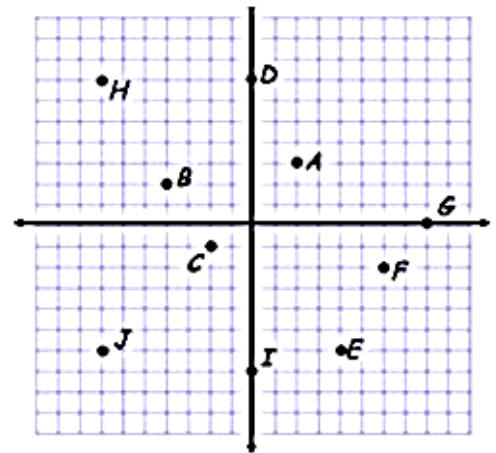
D. $(-2, 0)$

E. $(0, 8)$

F. $(-3, 9)$

12. Name the coordinates of the points on the following graph:

1) A (,)   2) B (,)   3) C (,)

4) D (,)   5) E (,)   6) F (,)

7) G (,)   8) H (,)   9) I (,)

PART 2: This part of the packet is basic math skills all students should know how to do. Part two of the packet is due by the end of July and instructions on how to do that will be forthcoming. Also, bring in a hard copy on the first day of school as we will go over it.

1. Find the least common multiple of each set of numbers:

Example: 6 *and* 8
    multiples of 6 *are*: 6, 12, 18, 24, 30, 36
    multiples of 8 *are*: 8, 16, 24, 32,
    so, the LCM of 6 *and* 8 is **24**

a)   5 *and* 9

b)   3 *and* 13

c)   2 *and* 30

2. Find the greatest common factor for each set of numbers:

example: 32 *and* 48
    factors of 32 *are*: 1, 2, 4, 8, 16, 32
    factors of 48 *are*: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
    so, the GCF of 32 *and* 48 is **16**

a)   16 *and* 24

b)   18 *and* 45

c)   36 *and* 60

d)   42 *and* 56

3. Write each fraction in simplest form:

Example: $\frac{12}{40} = \frac{3}{10}$ both 12 *and* 40 were divisible by 4

a) $\frac{14}{21} =$ b) $\frac{15}{45} =$ c) $\frac{81}{18} =$ d) $\frac{22}{2} =$ e) $\frac{24}{108} =$

4. Convert the following to a mixed number:

   Example: $\frac{15}{8} = 1\frac{7}{8}$

   8 *goes into* 15 1 *time with* 7 *left over*

   a) $\frac{28}{3} =$

   b) $\frac{85}{9} =$

   c) $\frac{48}{11} =$

   d) $\frac{89}{12} =$

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5. *(Remember: You must have common denominators when adding and subtracting fractions).*
   Perform the indicated operation for the following and write all answers in simplest form:

   Example: $\frac{3}{4} - \frac{1}{5} = \frac{15}{20} - \frac{4}{20} = \frac{11}{20}$

   A number both 4 and 5 have in common (LCM) is 20 so,

   4 goes into 20   5 times and 5 times 3 is 15 $\rightarrow \frac{3}{4} = \frac{15}{20}$

   And 5 goes into 20   4 times and 4 times 1 is 4 $\rightarrow \frac{1}{5} = \frac{4}{20}$

   a) $\frac{2}{9} + \frac{4}{5} =$

   b) $\frac{7}{8} - \frac{1}{6} =$

   c) $\frac{7}{12} + \frac{3}{24} =$

   d) $\frac{4}{3} - \frac{5}{2} =$

   e) $\frac{9}{10} - \frac{6}{15} =$

   f) $\frac{8}{12} + \frac{5}{15} =$

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6. Perform the indicated operation for the following and write all answers in simplest form:

   Example: $\frac{8}{9} \cdot \frac{4}{5} = \frac{32}{45}$

   Example: $\frac{1}{8} \div \frac{1}{3} = \frac{1}{8} \cdot \frac{3}{1} = \frac{3}{8}$
   *when dividing fractions, you multiply the first fraction
   by the reciprocal of the second fraction **(Keep Change Flip)**

   a) $\frac{2}{3} \cdot \frac{5}{6} =$

   b) $\frac{3}{8} \div \frac{2}{3} =$

   c) $\frac{1}{2} \div \frac{3}{4} =$

   d) $\frac{8}{9} \cdot 3 =$

   e) $\frac{3}{5} \div 6 =$

   f) $\frac{7}{10} \div \frac{1}{5} =$

7. Round the following numbers to the indicated place:

To round off decimals:

1. Find the place value you want (the "rounding digit") and look at the digit just to the right of it.
2. If that digit is less than 5, do not change the rounding digit but drop all digits to the right of it.
3. If that digit is greater than or equal to five, add one to the rounding digit and drop all digits to the right of it.

a)   Round to the nearest hundredths $20.737 =$

b)   Round to the nearest thousandths $49.0545 =$

c)   Round to the nearest whole number $299.98 =$

d)   Round to the nearest tenths $8.43 =$

e)   Round to the nearest whole number $0.59 =$

f)   Round to the nearest hundredths $0.995 =$

g)   Round to the nearest thousandths $0.4703 =$

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8. Write the following percents as decimals *(to change a percent to a decimal we divide by 100)*.

   a. 90%   b. 0.3%   c. 445%

9. Write each decimal to a percent *(to convert a decimal to a percentage, multiply by 100)*.

   a. 0.452   b. 4.78   c. 0.1

10. Write each percent as a fraction in lowest terms (to change a percent to a fraction, put the percentage over 100 (after removing the % sign) and simplify if necessary).

   a. 70%   b. 58%   c. 5%

11. Write each fraction as a percentage. Use proper notation for repeating decimals $\left(\frac{4}{9} = 0.4\overline{4}\right)$.

   a. $\frac{1}{20}$ b. $\frac{2}{3}$ c. $\frac{1}{4}$

12. Fill in the chart of **perfect squares.**

$1^2 =$			$9^2 =$	
$2^2 =$			$10^2 =$	
$3^2 =$			$11^2 =$	
$4^2 =$			$12^2 =$	
$5^2 =$			$13^2 =$	
$6^2 =$			$14^2 =$	
$7^2 =$			$15^2 =$	
$8^2 =$				

13. Application:

A cell phone company is offering 2 different monthly plans. Each plan charges a monthly fee plus an additional cost per minute.

Plan A: $40.00 fee plus $0.45 per minute
Plan B: $70.00 fee plus $0.35 per minute

a. Write an expression to represent the cost of Plan A.

_____

b. Write an expression to represent the cost of Plan B.

_____

c. Which plan would be least expensive for a total of 100 minutes?

_____

Looking forward to a great year!