

Name _____

ALGEBRA 1 — FINAL EXAM 2004 —Part 2

Overall instructions:

- There is a mix of easier and harder problems. Don't give up if you see some questions that you don't know how to answer. Try moving on to other problems.
- Everyone is allowed $1\frac{1}{2}$ hours, plus $\frac{1}{2}$ hour of extra time. Use your time well. Don't stop working before you're done.
- You may use a calculator anytime that it is helpful. Sharing of calculators is forbidden.
- Use the back of any page for scratch work. Only the fronts of the pages will be graded.
- You are permitted to use the Final Exam Note Sheet we made in class as long as it is *in your own handwriting*. These notes must be handed in along with your test.

Part A. Multiple choice questions

(2 points each)

Directions: Circle the letter (A, B, C, or D) next to the correct answer.

1. Which of these is equal to $6(x - 3)$?

- (A) $6x - 3$
- (B) $6x + 3$
- (C) $6x - 18$
- (D) $x^6 - 3^6$

2. Suppose $y = 5 - x$. When $y = 7$, what is the value of x ?

- (A) -12
- (B) -2
- (C) 2
- (D) 12

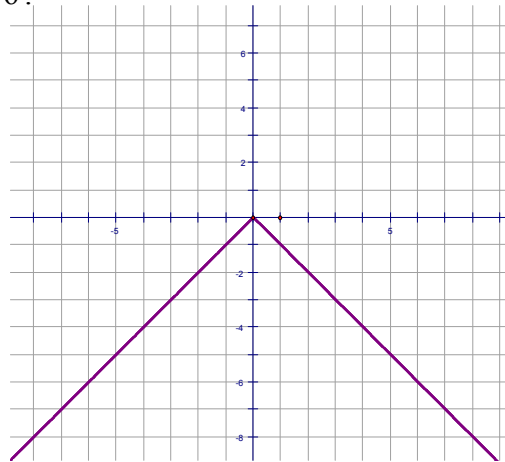
3. A car, driven at a steady speed of 65 miles per hour, travels 325 miles. How much time does this trip take?

- (A) 0.2 hours
- (B) 4.5 hours
- (C) 5 hours
- (D) 6 hours

4. Solve the inequality $-2x + 3 < 11$.
- (A) $x < -4$
 - (B) $x < 4$
 - (C) $x > -4$
 - (D) $x > 4$
5. Which of the following is equal to $n^{-4} \cdot n^4$?
- (A) 0
 - (B) 1
 - (C) n
 - (D) n^{-16}
6. Which of the following is equal to $(x^2y)^3$?
- (A) x^2y^3
 - (B) x^5y^3
 - (C) x^5y^4
 - (D) x^6y^3
7. Which of the following is equivalent to $(5a^2b^{-3}c^{-4})^2$ if it is expressed using positive exponents?
- (A) $\frac{25a^4}{b^6c^8}$
 - (B) $\frac{5a^4}{b^6c^8}$
 - (C) $\frac{25a^4}{b^9c^{16}}$
 - (D) $\frac{10a^2}{bc^2}$
8. Find the solution to $|x + 2| = 5$.
- (A) 3
 - (B) -3 and 7
 - (C) 3 and -7
 - (D) -3 and -7

9. Given the graph of $f(x) = -|x|$, tell me where $-|x| = 6$.

- (A) 6 and -6
- (B) 6
- (C) -6
- (D) No Solution



10. Which of the following is a “like term” to $-9x^2y^3$

- (A) $-9x^2x^3$
- (B) $-9x^3y^2$
- (C) $\frac{2}{3}x^2y^3$
- (D) None of the above

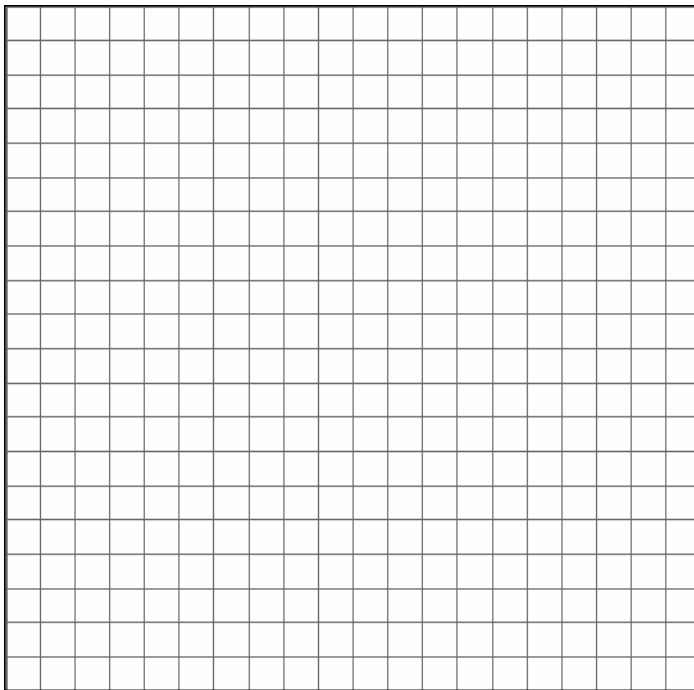
Part B. Scatter Plots

(6 points each)

1. The table below gives the average number of takeout meals per person purchased at restaurants in selected years. Let $x = 0$ correspond to 1980 (therefore $x = 4$ corresponds to 1984)

Year	Average number of annual take-out meals per person
1984	43
1986	48
1988	53
1990	55
1992	57
1994	61
1996	67

- a. Use the data in the table to make a scatter plot on the grid below.



- b. Draw a line of best fit and describe the correlation of the data.

Part C. Solving problems — show your work

(5 points each)

Directions: Show your work. If you use a calculator table or graph as part of your solution, copy it down onto your test paper.

1. Using any method, solve this equation.

$$13x - 12 = -7x + 38$$

Show work here:

Check your answer here

Write your solution here:

2. Given $F = \frac{9}{5}C + 32$ is the formula to convert Celsius temperature to Fahrenheit temperature.

- a. Solve the equation for C

Show work here:

- b. The temperature in Alaska is 5° F, what is the temperature in Celsius?

- c. Do you think you should wear a winter coat when the temperature is 25°C? Show your work, answer that simply state **yes or no** will receive no credit.

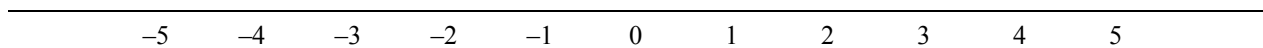
3. Solve this inequality, then make a number line graph of the solution.

$$-8 < 2x - 6 \leq -2$$

Show work here:

Write your solution:

Graph your solution:



4. Using any method, solve this equation.

$$|3x + 9| = 15$$

Show work here:

Write your solution here:

Part D. You make them up

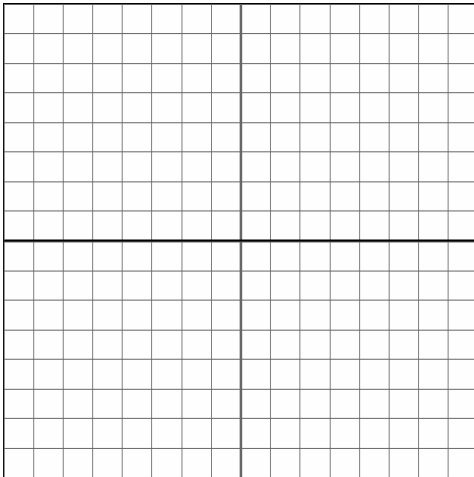
(3 points)

Directions: These problems ask you to make up equations, tables, and graphs that meet certain conditions.

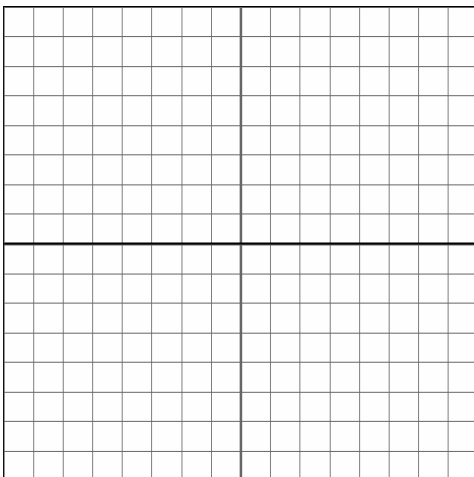
1. Make up an input-output table that is **not a function**.

input (x)	output (y)

2. Make up a graph that has a **negative correlation**.



3. Make up a graph **that is a function**



Part E. Real world problems — show your work (8 points each)

Directions: Show your work. If you use a calculator table or graph as part of your solution, copy it down onto your test paper.

1. Read this problem situation:

A restaurant sells sandwiches and individual pizzas for lunch.
The people at one table buys 3 sandwiches and 1 pizza, and pay \$17.50.
The people at another table buys 1 sandwiches and 2 pizzas, and pay \$12.50.
What are the selling prices for sandwiches and pizzas?

- a. Identify the two variables that are needed to answer the question.
Make up a letter name for each variable.
- b. Write two equations that represent the given information.
- c. Using a method of your choice, to determine the selling prices for sandwiches and pizzas.
- d. Check your answer to part c. Show your work.
- e. Write a **full sentence** that answers the question, “What are the selling prices for sandwiches and pizzas?”