

Name: \_\_\_\_\_

## Algebra 1 Summer Math Assignment

I. Simplify each expression. Show all work.

1.  $3(4 - 5) - 2^3$

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

3.  $\frac{3 + 4(6)}{2}$

4.  $(4x^3)(3x^2)$

5.  $\sqrt{18}$

6.  $5a - 2b - (3a - b)$

7.  $\frac{3x^2}{6x^3}$

8.  $(3x^2)^4$

**II. Solve for each variable.**

1.  $4x - 3 = 2(x + 1)$

2.  $\frac{x + 4}{6} = \frac{3}{7}$

3.  $8x - 2 = -9 + 7x$

4.  $4m - 4 = 4m$

5.  $-8 = -(x + 4)$

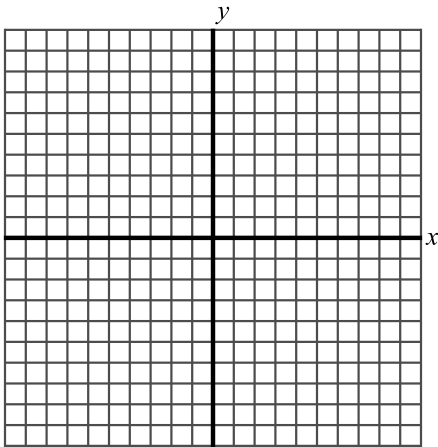
6.  $12 = -4(-6x - 3)$

7.  $-18 - 6k = 6(1 + 3k)$

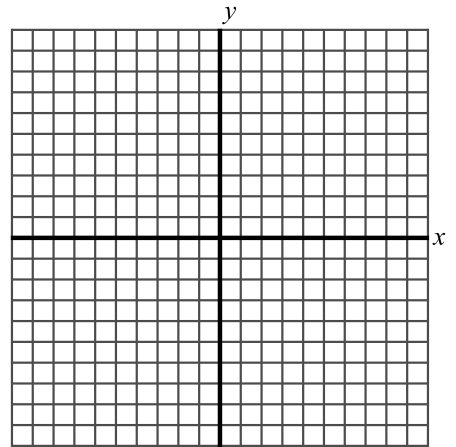
8.  $3n - 5 = -8(6 + 5n)$

III. Graph each of the following.

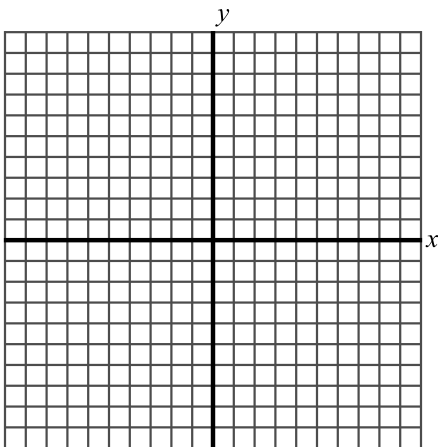
1.  $y = 3x + 5$



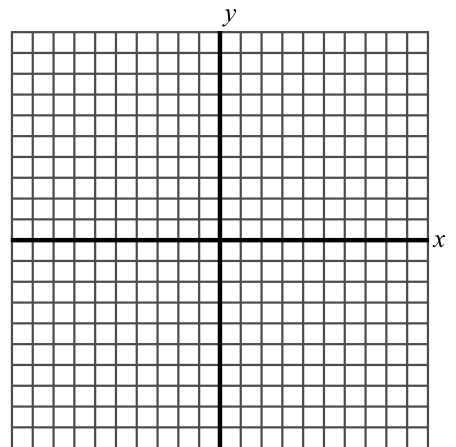
2.  $y = -3x - 5$



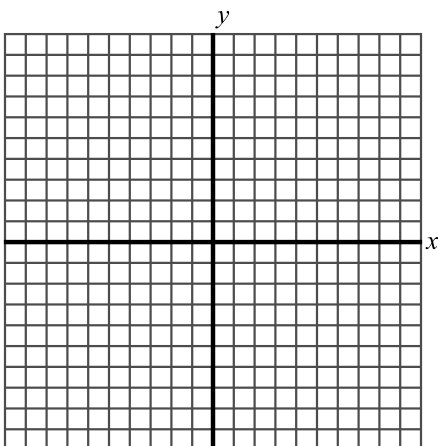
3.  $4x + 3y = 12$



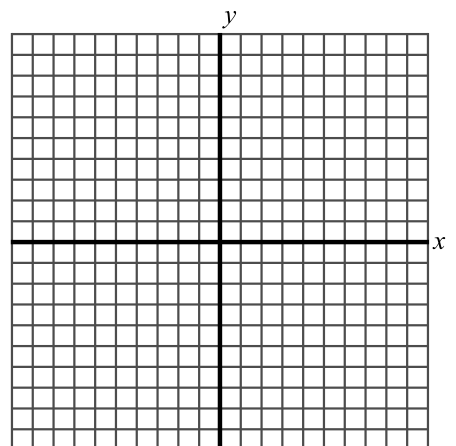
4.  $y = 5$



5.  $x = 5$

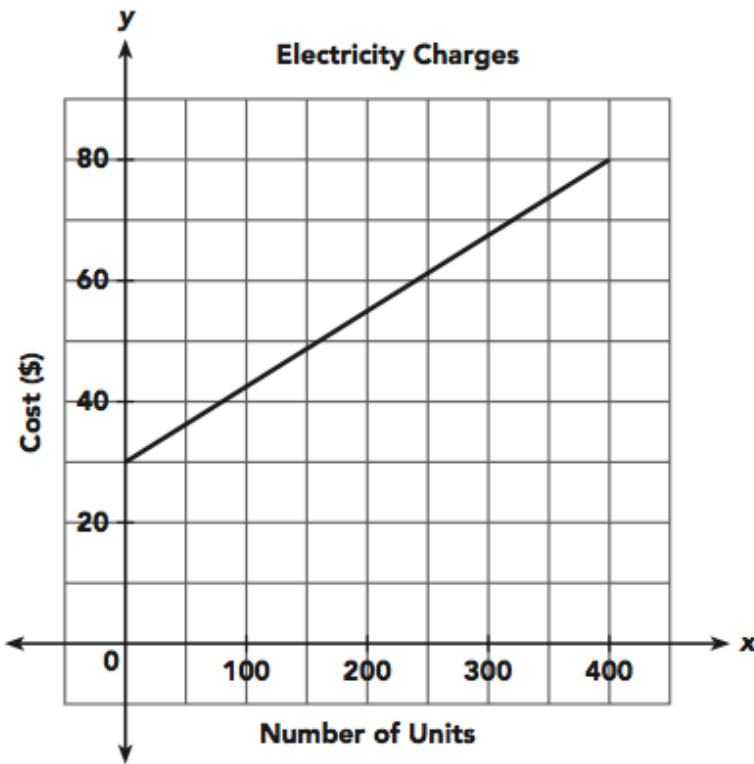


6.  $y > -2x + 1$



**IV. Constructed Response Questions. Show all work and clearly indicate your final answer for each question.**

1. The graph shows the total cost,  $C$  dollars, of the electricity supplied to a house based on the number of units,  $x$ , of electricity used.



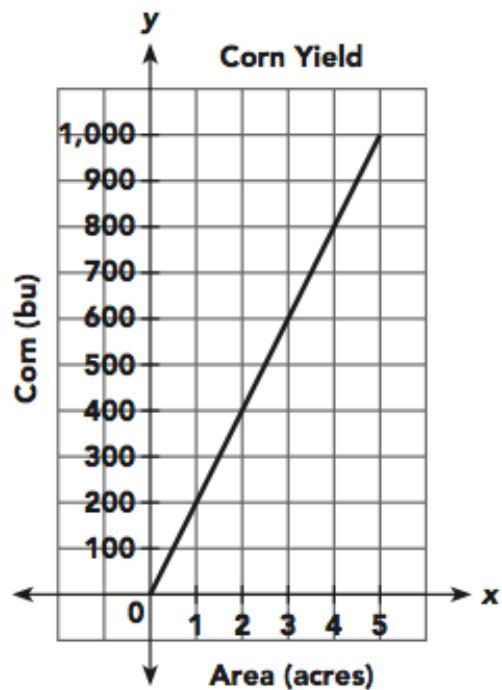
- What is the cost for 400 units?
- If you use 200 units, about how much will you pay?
- What is the  $y$ -intercept?
- What does it mean in terms of this problem?
- What is the slope?
- What does it mean in terms of this problem?

2. The graph below shows bushels (bu) of corn that is grown over acres.

a. How many bushels are grown in two acres?

b. If you have 600 bushels, how many acres are needed?

c. What is the y-intercept?



d. What does it mean in terms of this problem?

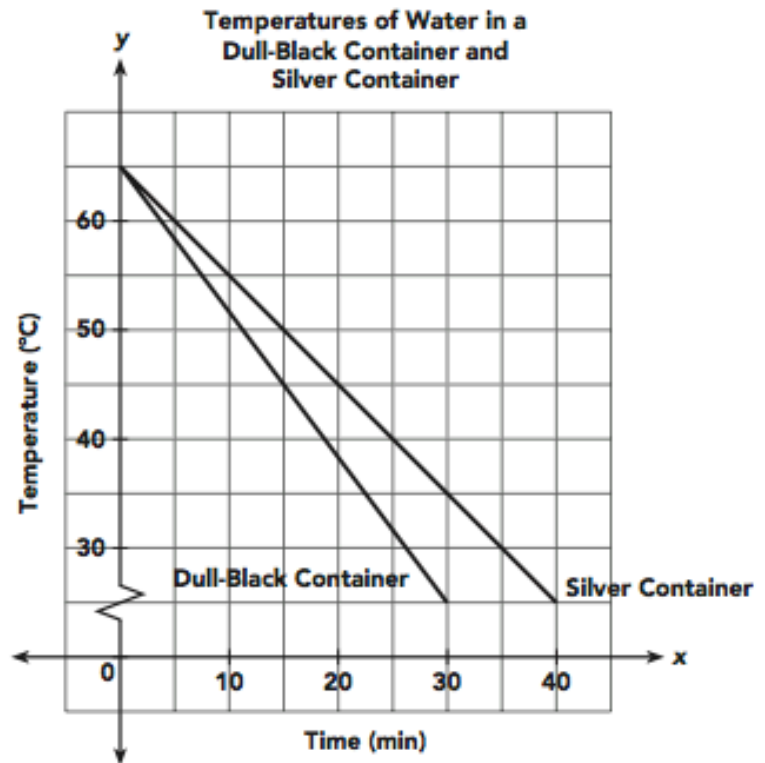
e. What is the slope?

f. What does it mean in terms of this problem?

3.

Kelly conducted an experiment to find the effect of a container's surface color on the cooling temperature of water. Kelly filled two containers of the same shape and size, with the same volume of water. One container had a silver surface and the other had a dull-black surface. The graphs show the temperature of the water in each container,  $y$  °C, after  $x$  minutes.

- a) Find the initial water temperature of both containers. Explain what information you used to determine your answer.



- b) Which container has a greater rate in temperature change?

4. A text-messaging plan is \$5 a month plus \$0.05 per text message sent or received.

a. Write a formula for the cost,  $C$ , of sending  $m$  messages a month.

b. If you send/receive a total of 1000 messages, what is your total cost for the month?



## High School Assessment Reference Sheet

|                           |                           |                                  |
|---------------------------|---------------------------|----------------------------------|
| 1 inch = 2.54 centimeters | 1 kilometer = 0.62 mile   | 1 cup = 8 fluid ounces           |
| 1 meter = 39.37 inches    | 1 pound = 16 ounces       | 1 pint = 2 cups                  |
| 1 mile = 5280 feet        | 1 pound = 0.454 kilograms | 1 quart = 2 pints                |
| 1 mile = 1760 yards       | 1 kilogram = 2.2 pounds   | 1 gallon = 4 quarts              |
| 1 mile = 1.609 kilometers | 1 ton = 2000 pounds       | 1 gallon = 3.785 liters          |
|                           |                           | 1 liter = 0.264 gallons          |
|                           |                           | 1 liter = 1000 cubic centimeters |

|                |                             |
|----------------|-----------------------------|
| Triangle       | $A = \frac{1}{2}bh$         |
| Parallelogram  | $A = bh$                    |
| Circle         | $A = \pi r^2$               |
| Circle         | $C = \pi d$ or $C = 2\pi r$ |
| General Prisms | $V = Bh$                    |
| Cylinder       | $V = \pi r^2 h$             |
| Sphere         | $V = \frac{4}{3}\pi r^3$    |
| Cone           | $V = \frac{1}{3}\pi r^2 h$  |
| Pyramid        | $V = \frac{1}{3}Bh$         |

|                          |  |
|--------------------------|--|
| Pythagorean Theorem      | $a^2 + b^2 = c^2$                                    |
| Quadratic Formula        | $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$             |
| Arithmetic Sequence      | $a_n = a_1 + (n - 1)d$                               |
| Geometric Sequence       | $a_n = a_1 r^{n-1}$                                  |
| Geometric Series         | $S_n = \frac{a_1 - a_1 r^n}{1 - r}$ where $r \neq 1$ |
| Radians                  | 1 radian = $\frac{180}{\pi}$ degrees                 |
| Degrees                  | 1 degree = $\frac{\pi}{180}$ radians                 |
| Exponential Growth/Decay | $A = A_0 e^{k(t-t_0)} + B_0$                         |