

Name: _____

Due: _____

ADVANCED GEOMETRY SUMMER PACKET

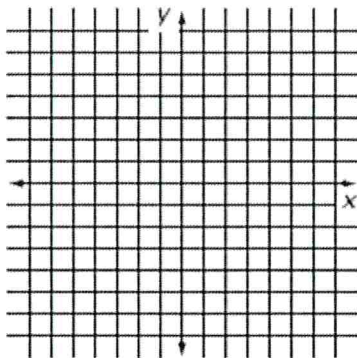
To be successful in Advanced Geometry, you will need a good foundation of Algebra 1. The following Algebra 1 topics are likely to be used again in Geometry. Some material from this packet will be included in this course. **This packet will be due the first day of school.** You should have sufficient time to work through these problems at your own pace.

PLEASE **SHOW ALL WORK** FOR EACH PROBLEM.

I. Linear Equations, Slopes, and Graphing

The formula for the slope of a line through points (x_1, y_1) and (x_2, y_2) is $\frac{y_2 - y_1}{x_2 - x_1}$ or $\frac{\Delta y}{\Delta x}$.

- Find the slope of the line through the points $(1,5)$ and $(3,11)$.
- Find the slope of a line through the points $(3,-1)$ and $(-5,7)$.
- Given the information below, write the equation for each line in $y = mx + b$ form. Then graph each line and label it.



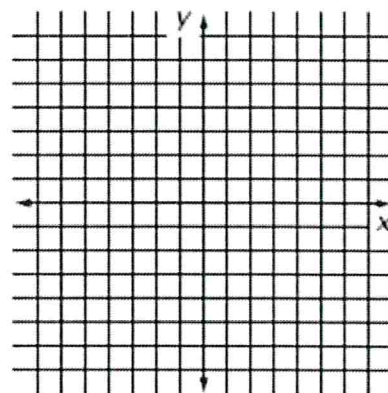
a. slope = 3, y-intercept of -4

b. slope = $-\frac{2}{3}$, y-intercept of 6

- State the slope and y-intercept of each of the following lines. Then graph each line and label it on the coordinate plane.

(a) $y = 2x - 5$
slope _____ y-intercept _____

(b) $y = \frac{-1}{4}x + 7$
slope _____ y-intercept _____



5. Find the slope and y-intercept of each of the following lines, then graph it.

(a) $4x + 5y = 20$

(b) $x = 4$

(c) $y = -3$

slope _____

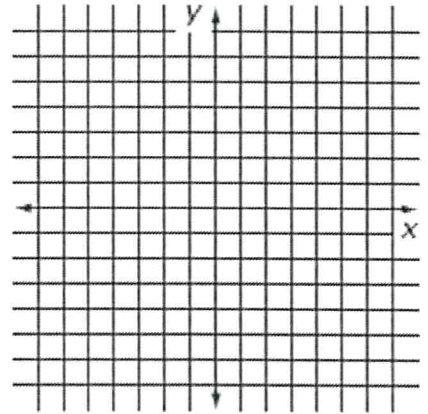
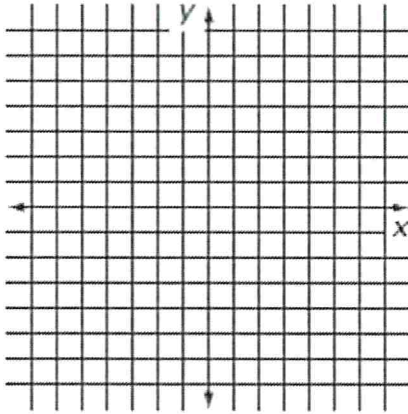
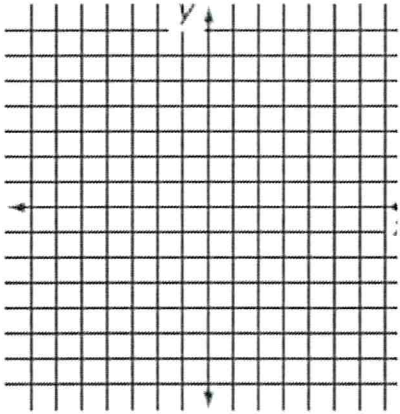
slope _____

slope _____

y-intercept _____

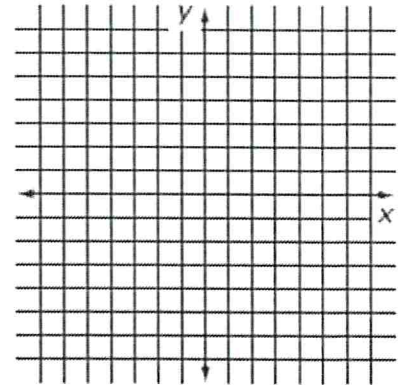
y-intercept _____

y-intercept _____



6. (a) Find the slope of the line with y-intercept of 6 which passes through the point (3,4).
 [HINT: Find out what ordered pair corresponds to a "y-intercept of 6"]

(b) Write the equation of this line slope-intercept ($y = mx + b$) form.



7. Graph the points (7,4) and (-2,4).

What is the slope of this line? _____

8. Given a point in col. A, translate (slide) as indicated, and write the new point in col. B.

| A | Translation | B |
|----------|-----------------|-------|
| (2,3) | 4 right, 3 down | _____ |
| (-7, -4) | 6 up, 4 left | _____ |
| (0, 6) | 4 right, 5 down | _____ |

II. Solving Algebraic Equations

Solve for the variable. Be sure to show all work for each problem.

9. $4x - 9 = 7x + 12$

10. $5x + 16 = 2x$

11. $2x - (2 - x) = 13$

x = _____

x = _____

x = _____

12. $5x - 2(4 - 2p) = 19$

13. $\frac{4}{7}x = 7$

14. $\frac{-2}{3}x = 6$

x = _____

x = _____

x = _____

15. $7x - 2(1 + 3x) = 2$

16. $-3(x - 8) - 5 = 9(x + 2) + 13$

x = _____

x = _____

17. $-3x + 5(6 - x) = 4(1 + 2x)$

18. $2(m - 8) + 7 = 5(m + 2) + 3m - 19$

x = _____

x = _____

In #19-21, solve the following systems of equations using “elimination” (not “substitution”)

19.
$$\begin{cases} 2x + 3y = -4 \\ -2x + 4y = -3 \end{cases}$$

20.
$$\begin{cases} 5x + 2y = 11 \\ x + 6y = 19 \end{cases}$$

21.
$$\begin{cases} 6x + 3y = -12 \\ 2x - y = -4 \end{cases}$$

x = _____

x = _____

x = _____

y = _____

y = _____

y = _____

22. Simplify the following radicals, giving EXACT value solutions.

(a) $\sqrt{8}$

(b) $\sqrt{12}$

(c) $\sqrt{50}$

(d) $3\sqrt{32}$

23. Expand the following.

(a) $(x + 5)(x - 3)$

(b) $(m + 2)^2$

(c) $(2x + 3)(4x - 1)$

(d) $(2x + 3y)(x + y)$

(e) $(2x + 1)^2$

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