

# Lake Zurich High School

## Mathematics Department

### GETTING STARTED PACKET

for

### Honors Geometry

Welcome to Honors Geometry.

This Summer Review Packet was prepared for students to review material from Algebra I before beginning Geometry. There are many algebra skills needed to succeed in Geometry. This packet is to be completed by the first Friday of the school year, August 28, 2009. **All work must be shown on the packet.** It is to be handed in for a grade on that Friday and students will be quizzed on the material the same day. It is recommended that students complete this packet before school starts because the geometry curriculum will begin that first week.

This packet is also available from the LZHS Mathematics Department Homepage. **If you need help** with some concepts, you can find explanations in the **Resource Companion**. Both can be found using the link:

<http://www.lz95.org/lzhs/Math/mathhome.htm>

## Honors Geometry Summer Packet

**Simplify. Leave answer in reduced form. Show all work**

1.  $\frac{13}{5} + \frac{5}{2}$

2.  $\frac{2}{3} - \frac{1}{4} - \frac{3}{5}$

3.  $\frac{6}{7} \cdot \frac{14}{15} \div \frac{2}{3}$

4.  $\frac{3}{4} - \frac{7}{8} \div \frac{5}{4}$

**5. What's the slope of the line in each of the following?**

a. a line that runs through the points (-4, 2) and (-7, 9). \_\_\_\_\_

b. a horizontal line that runs through the point (4, -8). \_\_\_\_\_

c. a line parallel to the line whose equation is  $5y - 7x = 10$  \_\_\_\_\_

d. a line that's perpendicular to the line whose equation is  $y = -\frac{2}{3}x + 1$  \_\_\_\_\_

**6. Are the lines that would be created by the solutions to the following two equations parallel, perpendicular, or neither? Explain your answer.**

$$2x + 5y = 10$$

$$-5x + 2y = -6$$

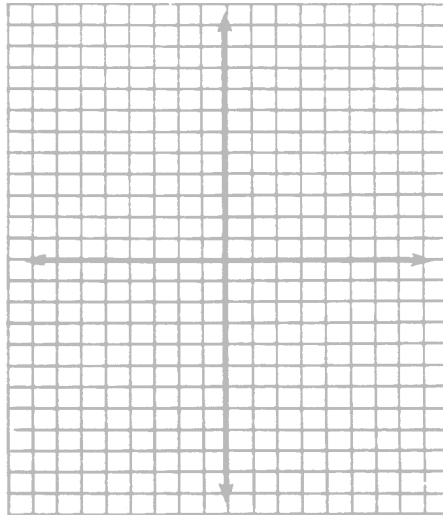
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**7. What's the equation of a line (in slope intercept form) that runs through the points (4, 5) and (-2, 7) ?**

\_\_\_\_\_

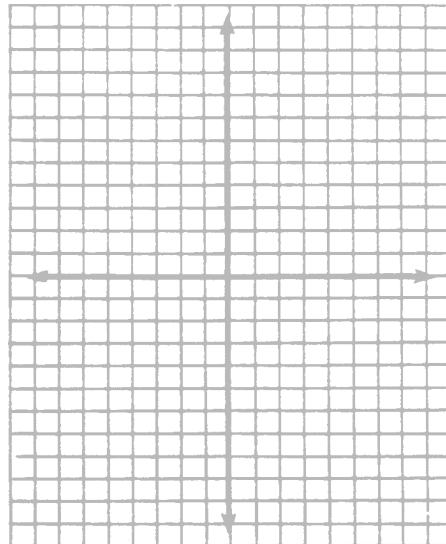
8. Graph the following.

$$y = -\frac{1}{2}x + 4$$



9. Graph the following and label it "A"

$$5x - 3y = -6$$



10. On the same coordinate plane, graph  $x = -4$  and label it "B"

11. Find the x and y intercept for the following.

$$3x - 10y = 12$$

x-int. \_\_\_\_\_

y-int. \_\_\_\_\_

Solve each quadratic equation or write *no real solution*. Write the solutions as exact answers (no decimals).

12.  $x^2 = 36$

13.  $x^2 = 15$

14.  $x^2 + 25 = 0$

15.  $6x^2 - 54 = 0$

16.  $5x^2 - 22 = -7$

17.  $2x^2 - 68 = 30$

Solve each quadratic equation by the factoring method.

18.  $x^2 + 3x = 54$

19.  $x^2 + 2x - 24 = 0$

20.  $x^2 = 6x - 9$

21.  $25x^2 + 20x + 4 = 0$

22.  $3x^2 - x - 2 = 0$

Use the quadratic formula to solve the equation. Write the solutions as exact answers (no decimals).

23.  $2x^2 - x - 1 = 0$

24.  $2x^2 + 10x - 5 = 0$

25.  $8x^2 - 5x - 2 = 0$

26.  $7x^2 + 9x - 1 = 0$

27.  $4x^2 + 5x + 1 = 0$

Solve each of the systems using linear combinations (elimination) method.

28.  $8x + 6y = -6$   
 $-8x - 10y = 90$

29.  $\frac{2}{3}x + \frac{5}{4}y = 34$   
 $-\frac{2}{3}x + \frac{7}{8}y = 0$

30.  $12x^2 + y^2 = 804$   
 $10x^2 + y^2 = 676$

Simplify to lowest radical form.

31.  $\sqrt{24}$

32.  $\sqrt{250}$

33.  $\sqrt{75} + \sqrt{12} - \sqrt{125}$

34.  $7\sqrt{20} + 3\sqrt{500}$

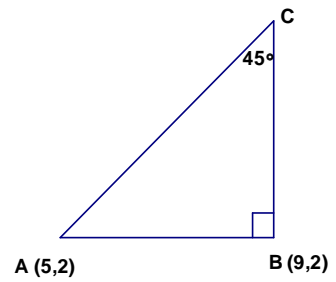
35.  $3\sqrt{8} \cdot 5\sqrt{6}$

36.  $\frac{1}{\sqrt{3}}$

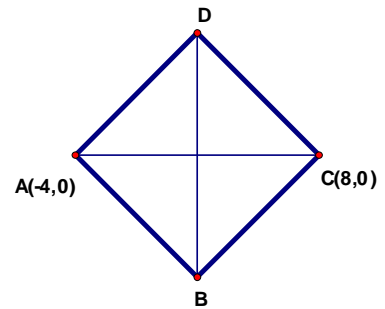
37.  $(3\sqrt{5})^2$

## Challenge Problems

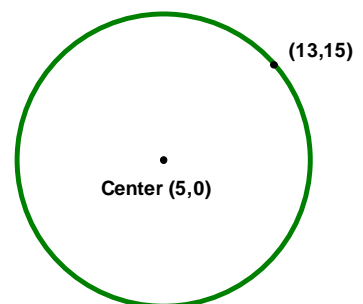
38. Find the coordinates of point C.



39. ABCD is a square. Find the coordinates of point B.



40. Find the area of the circle in terms of  $\pi$ .



ANSWERS

1. $\frac{51}{10}$	2. $\frac{-11}{60}$	3. $\frac{6}{5}$	4. $\frac{1}{20}$
5. $\frac{-7}{3}; 0; \frac{7}{5}; \frac{3}{2}$	6. $\perp$ , opposite reciprocal slopes	7. $y = \frac{-1}{3}x + \frac{19}{3}$	8. falling line (0,4) (8,0)
9. rising line (0,2) (-3,-3)	10. vertical line through (-4,0)	11. (4,0)  (0, $\frac{-6}{5}$ )	12. $\pm 6$
13. $\pm\sqrt{15}$	14. No Real Solution	15. $\pm 3$	16. $\pm\sqrt{3}$
17. $\pm 7$	18. -9, 6	19. -6, 4	20. $x = 3$
21. $\frac{-2}{5}$	22. $\frac{-2}{3}, 1$	23. 1 or $-\frac{1}{2}$	24. $\frac{-5 \pm \sqrt{35}}{2}$
25. $\frac{5 \pm \sqrt{89}}{16}$	26. $\frac{-9 \pm \sqrt{109}}{14}$	27. -1 or $-\frac{1}{4}$	28. (15, -21)
29. (21, 16)	30. $x = \pm 8, y = \pm 6$	31. $2\sqrt{6}$	32. $5\sqrt{10}$
33. $7\sqrt{3} - 5\sqrt{5}$	34. $44\sqrt{5}$	35. $60\sqrt{3}$	36. $\frac{\sqrt{3}}{3}$
37. 45	38. C (9, 6)	39. B (2, -6)	40. $289\pi$