

OEHS Honors Geometry Algebra Review Packet

There are 8 sections that you need to finish by the first day you come to Honors Geometry. All problems must be done on separate paper, not on these worksheets. It must be done legibly. All problems must include work and checks as demonstrated in the “Summer Packet Help!” document found on my webpage located at <http://mysite.oswego308.org/schools/OE/staff.asp?EID=1136> . Answers are provided for each problem on the last sheet of the packet.

Expectations: These skills that are represented in this packet are crucial to your success in the class. You will be called upon to know and apply these skills throughout the semester. As you complete this packet you must **show all work, if there is not enough room provided, show work on another sheet of paper that will be accompanied with the packet.** You will have to do these problems **without a calculator** unless otherwise noted. Also, expect to be quizzed over the material within the first week of class. This packet will be graded and if the packet is not turned you will receive a zero.

Contents:

1. Solving Linear Equations
2. Solving Systems of Equations by Linear Combination (Elimination)
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6. Solving Quadratic Equations by Factoring ($a = 1$)
7. Solving Quadratic Equations by Factoring ($a \neq 1$)
8. Solving Special Cases of Quadratic Equations

1. Solving Linear Equations

Solve these linear equations and check your answers. Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at

<http://www.oswego308.org/schools/oehs/staff.asp?Empl=71186&ID=938>.

1. $2x + 5 = 11$

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

9. $2(4x - 3) + 4 = 5x - 6$

2. $3x + 5 = -16$

6. $2(4 - 2x) - 3(2x - 9) = 125$

10. $x - 3(x - 7) = 4(x - 7) - 2x$

3. $2(x - 3) = 84$

7. $3x - 4(x - 4) + 4 = 13$

11. $3(4 - 2(5x - 3) - 2x) = 8(x + 1)$

4. $5x - 32 = 80$

8. $3(2x - 9) + 6x = -19$

12. $5(4(3 - 2(x - 1)) + 2) = 2(55 - x)$

2. Solving Systems of Equations by Linear Combination Method

(also called Elimination Method)

Solve each system for x and y by linear combination (elimination). Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at

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1.
$$\begin{cases} 2x - 3y = 2 \\ 5x - 3y = 14 \end{cases}$$

5.
$$\begin{cases} x - y = 39 \\ x + y = 1785 \end{cases}$$

9.
$$\begin{cases} -3x - 10y = 9 \\ 14x + 18y = -22 \end{cases}$$

2.
$$\begin{cases} 2x + 7y = 3 \\ -4x - 2y = -18 \end{cases}$$

6.
$$\begin{cases} 32x + 24y = 42 \\ 36x + 27y = -26 \end{cases}$$

10.
$$\begin{cases} 2y - 3x = 51 \\ 11x - 7y = -187 \end{cases}$$

3.
$$\begin{cases} 8x - 6y = 16 \\ 12x - 9y = 24 \end{cases}$$

7.
$$\begin{cases} 6x + 4y = 7 \\ 15x - 12y = 1 \end{cases}$$

11.
$$\begin{cases} 2x - 3y = 4y - 3x - 68 \\ x - 4y = 3x + 3y - 61 \end{cases}$$

4.
$$\begin{cases} 51x + 17y = 102 \\ 3x - 5y = -66 \end{cases}$$

8.
$$\begin{cases} 11x - 3y = -39 \\ 6x + 12y = -19 \end{cases}$$

12.
$$\begin{cases} 4(x + 3y) + 25 = -3(2x - y) + 3 \\ 5x - 3(x - 2y) = 2(y - 6) + 1 \end{cases}$$

3. Solving Systems of Equations by Substitution

Solve each system for x and y using substitution. Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at <http://www.oswego308.org/schools/oehs/staff.asp?Empl=71186&ID=938>.

1.
$$\begin{cases} 2x + y = 21 \\ 7x - 2y = 90 \end{cases}$$

4.
$$\begin{cases} 2x - 4y = 40 \\ 8x - 3y = 82 \end{cases}$$

7.
$$\begin{cases} 2(x - 3y) = x - 76 \\ 5(x + 2y) = 1 - 3(x - 6y + 43) \end{cases}$$

2.
$$\begin{cases} 2x + 7y = -20 \\ x - 5y = -10 \end{cases}$$

5.
$$\begin{cases} 9x - 2y = -6 \\ 5x + 4y = 12 \end{cases}$$

8.
$$\begin{cases} 10x - 5y = 3 \\ 6x + 30y = 81 \end{cases}$$

3.
$$\begin{cases} x - 6y = -2 \\ -5x + 30y = 10 \end{cases}$$

6.
$$\begin{cases} 2x + 3y = 8 \\ 9x - 3y = 14 \end{cases}$$

9.
$$\begin{cases} 2x - 6y = -3 \\ 10x - 6y = -5 \end{cases}$$

4. Simplifying Radicals

Simplify each radical. Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at <http://www.oswego308.org/schools/oehs/staff.asp?Empl=71186&ID=938>.

1. $\sqrt{40}$

7. $\sqrt{675}$

13. $\frac{3}{\sqrt{3}}$

2. $\sqrt{52}$

8. $\sqrt{\frac{4}{9}}$

14. $\frac{2\sqrt{3}}{\sqrt{5}}$

3. $\sqrt{80}$

9. $\sqrt{\frac{3}{7}}$

15. $\frac{3\sqrt{5}}{\sqrt{20}}$

4. $\sqrt{320}$

10. $\sqrt{\frac{6}{10}}$

16. $\sqrt{\frac{50}{75}}$

5. $\sqrt{243}$

11. $\sqrt{\frac{12}{8}}$

17. $\frac{16}{\sqrt{24}}$

6. $\sqrt{288}$

12. $\frac{5}{\sqrt{15}}$

18. $\frac{10\sqrt{10}}{\sqrt{80}}$

5. Solving Quadratic Equations by the Quadratic Formula

Solve each quadratic equation by the quadratic formula. **Please round answers to the nearest hundredth, if necessary.** Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at <http://www.oswego308.org/schools/oehs/staff.asp?Empl=71186&ID=938>.

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

5. $x^2 + 3x = 12x - 1$

9. $-8x + 3x^2 = -1$

2. $x^2 - x = 6$

6. $-20 = x^2 + 5(2x + 1)$

10. $3a^2 + 6a + 2 = 0$

3. $x^2 = -6x$

7. $4x^2 + 8x + 2 = 0$

11. $x^2 + x + 1 = 0$

4. $x^2 + 8 = 6x$

8. $4x^2 = 4x - 1$

12. $4x^2 - 3x = 7$

6. Solving Quadratic Equations by Factoring (when $a=1$)

Solve each quadratic equation by factoring. Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at <http://www.oswego308.org/schools/oehs/staff.asp?Empl=71186&ID=938>.

1. $x^2 + 4x + 3 = 0$

4. $x^2 - 10x - 24 = 0$

7. $x(x + 8) = 4(11 - 3x)$

2. $x^2 - 2x - 35 = 0$

5. $x^2 = 2x + 48$

8. $x^2 + 5x = 5(x + 5)$

3. $x^2 - 8x + 12 = 0$

6. $x^2 - 9x = 2x + 12$

9. $32x + 240 = -x^2$

7. Solving Quadratic Equations by Factoring (when $a \neq 1$)

Solve each quadratic equation by factoring. Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at <http://www.oswego308.org/schools/oehs/staff.asp?Empl=71186&ID=938>.

1. $3x^2 - 10x + 8$

4. $24x - 35 = 4x^2$

7. $12x^2 + 39x + 27 = 0$

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

5. $-9x^2 + 15x = 4$

8. $7x + 21 = 14x^2$

3. $5x^2 = 2x + 3$

6. $6x^2 = 2(13x + 10)$

9. $-72x^2 + 36x + 36 = 0$

8. Solving Special Cases of Quadratic Equations

Solve each special quadratic equation. Rewrite the problem and show your work for the solution, then check. Answers can be found at the end of this packet. For additional help, check out my web page at <http://www.oswego308.org/schools/oehs/staff.asp?Empl=71186&ID=938>.

1. $x^2 + 5 = 30$

5. $12x^2 + 420 = 40x^2 - 1372$

9. $x^2 + 5x = 0$

2. $x^2 - 3 = 125$

6. $4x^2 + 5 = 54$

10. $2x^2 = 32x$

3. $2x^2 + 5 = 103$

7. $3x^2 + 12 = 22$

11. $3x^2 - 6x = 11x$

4. $45x^2 - 586 = 19,259$

8. $5x^2 + 5 = x^2 + 25$

12. $4x(x - 5) = -2(x^2 + 3x)$

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1. Solving Linear Equations

p2

1. $x = 3$
2. $x = -7$
3. $x = 45$
4. $x = 112/5 = 22.4$
5. $x = -3$
6. $x = -9$
7. $x = 7$
8. $x = 2/3$
9. $x = -4/3$
10. $x = 49/4 = 12.25$
11. $x = 1/2$
12. $x = 0$

2. Linear Combination

(Elimination) p4

1. (4, 2)
2. (5, -1)
3. infinite solution - same line
4. (-2, 12)
5. (912, 873)
6. no solutions - parallel lines
7. (2/3, 3/4)
8. (-7/2, 1/6)
9. (-29/43, -30/43)
10. (-17, 0) – put equations into standard form
11. (-1, 9)
12. (1/2, -3)

3. Substitution p6

1. (12, -3)
2. (-10, 0)
3. infinite solutions - same line
4. (8, -6)
5. (0, 3)
6. (2, 4/3)
7. (-4, 12)
8. (3/2, 12/5)
9. (-1/4, 5/12)

Answer Key

4. Simplify Radicals p8

1. $2\sqrt{10}$
2. $2\sqrt{13}$
3. $4\sqrt{5}$
4. $8\sqrt{5}$
5. $9\sqrt{3}$
6. $12\sqrt{2}$
7. $15\sqrt{3}$
8. $2/3$
9. $\sqrt{21}/7$
10. $\sqrt{15}/5$
11. $\sqrt{6}/2$
12. $\sqrt{15}/3$
13. $\sqrt{3}$
14. $2\sqrt{15}/5$
15. $3/2$
16. $\sqrt{6}/3$
17. $4\sqrt{6}/3$
18. $5\sqrt{2}/2$

5. Quadratic Formula p10

1. $x = -4, -1$
2. $x = -2, 3$
3. $x = -6, 0$
4. $x = 2, 4$
5. $x =$
 $\frac{9 \pm \sqrt{77}}{2} \approx .11, 8.89$
6. $x = -5$ (double solution)
7. $x =$
 $\frac{-2 \pm \sqrt{2}}{2} \approx -1.71, -0.29$
8. $x = 0.5$ (double solution)
9. $x =$
 $\frac{4 \pm \sqrt{13}}{3} \approx 0.13, 2.54$

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10. $a =$

$$\frac{-3 \pm \sqrt{3}}{3} \approx -1.58, -0.42$$

11. $\frac{-1 \pm \sqrt{-3}}{2}$ - no real solutions

12. $x = -1, 7/4$

6. Factor (a = 1) p12

1. $x = -3, -1$
2. $x = -5, 7$
3. $x = 2, 6$
4. $x = -2, 12$
5. $x = -6, 8$
6. $x = -1, 12$
7. $x = -22, 2$
8. $x = -5, 5$
9. $x = -20, -12$

7. Factor (a ≠ 1) p15

1. $x = 4/3, 2$
2. $x = -3/2, 1$
3. $x = 1, -3/5$
4. $x = 5/2, 7/2$
5. $x = 1/3, 4/3$
6. $x = -2/3, 5$
7. $x = -9/4, -1$
8. $x = -1, 3/2$
9. $x = -1/2, 1$

8. Special Quadratics p17

1. $x = \pm 5$
2. $x = \pm 8\sqrt{2}$
3. $x = \pm 7$
4. $x = \pm 21$
5. $x = \pm 8$
6. $x = \pm 7/2$
7. $x = \pm \sqrt{30}/3$
8. $x = \pm \sqrt{5}$
9. $x = -5, 0$
10. $x = 0, 16$
11. $x = 0, 17/3$
12. $x = 0, 7/3$

