Summer Packet for 8th Grade Geometry Students

This assignment is intended to review Algebra 1 skills that will be needed in Geometry. It is not a comprehensive review; rather, it covers the sections that we feel students forget over the summer. <u>You are expected to know the content in this assignment</u>. During the first week of school, your teacher will inform you how this packet will be used as a first quarter assignment.

Proportions

Solve each proportion.

1. $\dfrac{x+6}{3} = \dfrac{x-5}{2}$

2. $\dfrac{x-2}{4} = \dfrac{x+10}{10}$

3. $\dfrac{5}{2y} = \dfrac{7}{y-3}$

4. $\dfrac{2}{3t} = \dfrac{t-1}{t}$

5. $\dfrac{x}{2} = \dfrac{5}{x+3}$

6. $\dfrac{x-3}{18} = \dfrac{3}{x}$

7. $\dfrac{x-3}{x} = \dfrac{x}{x+6}$

8. $\dfrac{9-x}{x+4} = \dfrac{5}{2x}$

Distance Formula

Find the distance between the two points. Keep your answers in simplified radical form.

1.   (2, 0), (8, -3)   **2.**   (5, 8), (-2, 3)

3.   (4, 5), (-1, 3)   **4.**   (7, 12), (-7, -4)

5.   You are planning a family vacation. A map of a city is superimposed on a coordinate plane and each attraction is located at the following coordinates: Amusement Park (100, 250), Beach (450, 450), Campground (350, 200), Zoo (450, 50). Your home is located at (0, 0). Each unit of measure is 1 mile. Round answers to the nearest hundredth.
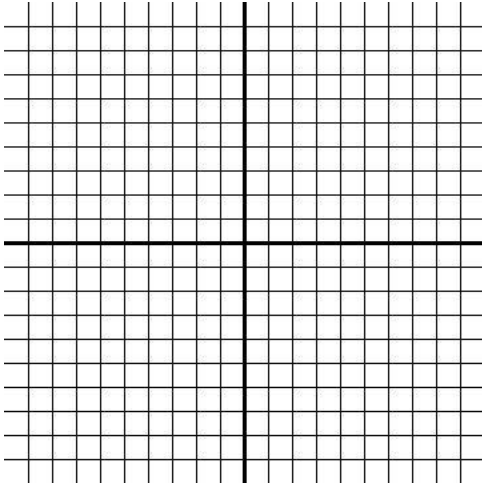
   a.   How far is it from your home to the amusement park?

   b.   You leave your home and go to the amusement park. After visiting the amusement park, you go to the beach. You return home. How far did you travel?
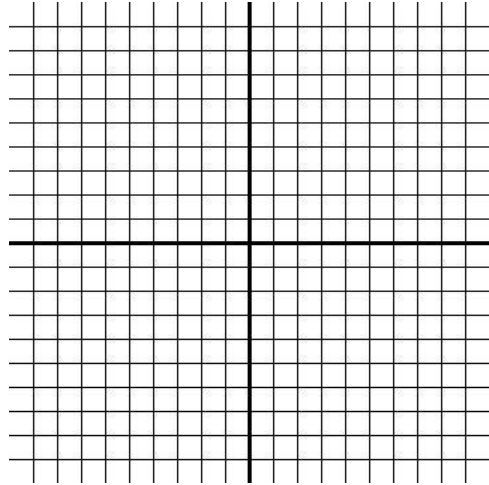
Slope Intercept Form
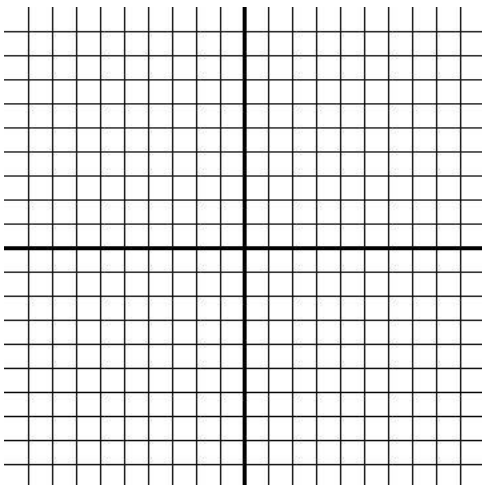
Use the slope and the y-intercept to graph the equation.

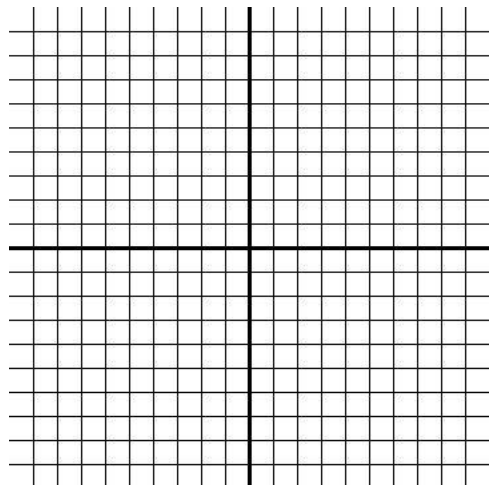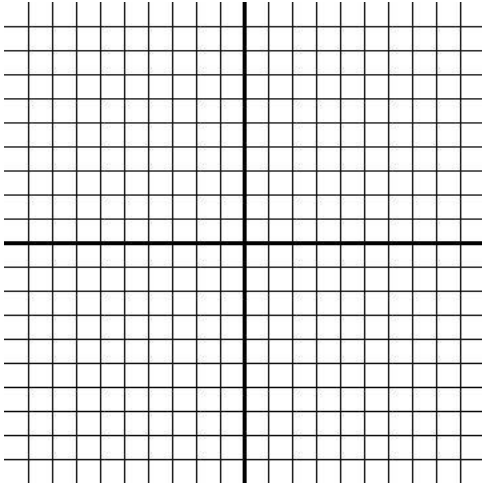**1.** $y = \dfrac{1}{2}x + 4$

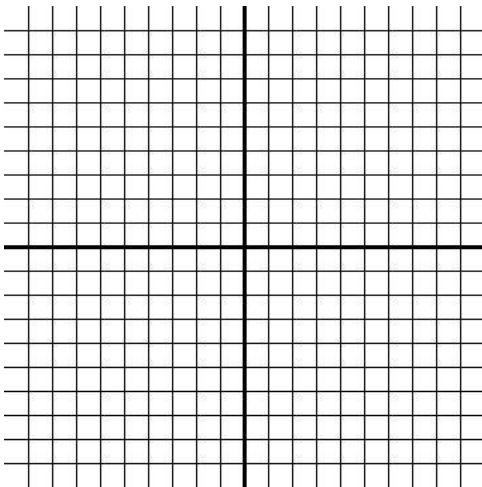**2.** $x - y - 3 = 0$

3. $-4x = 8$

4. $2x = 6 - 3y$

5. Graph the equation $x = -2$. Explain why the graph has no slope and no y-intercept.

6. **Graph the equation $y = 3$. Find the slope of the graph. Name three different ordered pairs that are solutions of the graph.**

Writing Linear Equations

Write an equation in slope-intercept form of the line that passes through the given point and has the given slope.

1. $(0,-4),\ m=1$

2. $(1,-5),\ m=2$

3. $(-9,7),\ m=-1$

4. $(3,-11),\ m=0$

Write an equation in slope-intercept form of the line that passes through the given points. Leave your answers in simplified, fraction form. Do not have decimals in your answers.

5. $(1,3),(7,4)$

6. $(4,2),(7,-4)$

7. $(1.4,2.7),(3.9,1.1)$

8. $(58,20),(80,108)$

Solving Systems of Equations

Use substitution to solve the systems of linear equations. Leave your answers in simplified, fraction form. Do not have decimals in your answers.

1.
$$2x - 3y = -16$$
$$y = 5x + 1$$

2.
$$x + y = 8$$
$$2x + 5y = 3$$

3.
$$9x + 4y = 3$$
$$x + 8y = 6$$

4.
$$x - 0.5y = 6$$
$$0.5x + 0.2y = 8$$

Use linear combinations (also known as elimination) to solve the system of linear equations.

5.
$$4x - 5y = 18$$
$$3x + 10y = -3$$

6.
$$5x + 9y = -6$$
$$2x - 6y = 6$$

Multiplying Binomials

Find the product by squaring the binomial.

1. $(x+2)^2$

2. $(x-1)^2$

3. $(10+x)^2$

4. $(15-x)^2$

Radical Expressions

Find all real square roots of the number or write *no square roots*. Check the result by squaring each root.

1. 64

2. -36

3. $\dfrac{49}{81}$

4. 0.09

Simplify the expression. Give the exact value in simplified form.

5. $\sqrt{36+64}$

6. $\sqrt{4+9}$

7. $\sqrt{16+16}$

8. $\sqrt{(-1)^2+7^2}$

Simplify the expression. Give the exact value in simplified form.

9. $-\sqrt{0}$

10. $-\sqrt{196}$

11. $\sqrt{54}$

12. $\sqrt{60}$

13. $\sqrt{7}\cdot\sqrt{3}$

14. $\sqrt{12}\cdot\sqrt{6}$

15. $\sqrt{10}\cdot\sqrt{15}$

16. $\sqrt{120}\cdot\sqrt{105}$

17. $\dfrac{\sqrt{147}}{\sqrt{3}}$

18. $\dfrac{\sqrt{20}}{\sqrt{500}}$

19. $\dfrac{\sqrt{48}}{\sqrt{6}}$

20. $\dfrac{\sqrt{6}}{\sqrt{96}}$

21. $\dfrac{4}{\sqrt{3}}$

22. $\dfrac{6}{\sqrt{2}}$

23. $\dfrac{5}{\sqrt{20}}$

24. $\dfrac{4}{\sqrt{27}}$

Solving $ax^2 + c = 0$

Solve the equation or write *no solution*. Round solutions to the nearest hundredth.

1. $x^2 = 625$

2. $x^2 = -9$

3. $x^2 + 6 = 11$

4. $4x^2 = 0$

5. $-8 + 3r^2 = 4$

6. $\dfrac{1}{2}k^2 + 3 = 245$

7. $7a^2 + 25 = -6$

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

9. $(x+5)^2 = x^2 + 49$

10. $(x+4)^2 = (x-4)^2 + 96$

Solving $ax^2 + bx + c = 0$

Solve each quadratic equation. If the equation cannot be factored, use the quadratic equation. Write your answer two ways: 1) in exact simplified form, and 2) rounded to the nearest hundredth, where applicable.

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

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

3. $x^2 + 6x = 0$

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

5. $z^2 = 9z - 1$

6. $-25 = x^2 + 10x$

7. $2x^2 + 4x + 1 = 0$
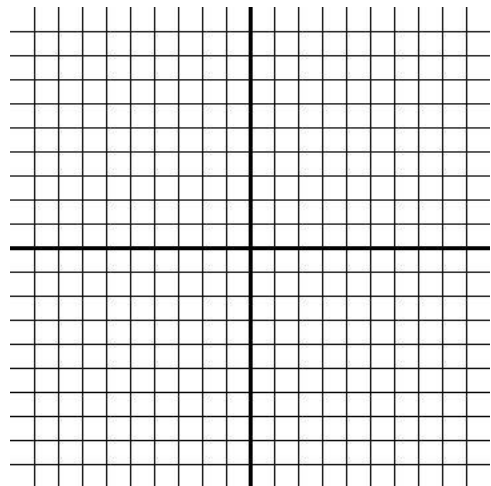
8. $4c^2 = 4c - 1$

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

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

11. $5y^2 = 1 + 5y$

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

13. Solve the quadratic equation $x^2 - 3x + 2 = 0$. Then graph the function $y = x^2 - 3x + 2$ using a table of values in a coordinate plane. Describe the relationship between the solutions of the quadratic equation and the x-intercepts of the graph.

Factoring

Solve each equation by factoring.

1. $x^2 - 4x = 0$

2. $24x^2 - 12x = 0$

3. $6x^2 - 10x = 0$

4. $12x^2 - 48x = 0$

5. $4x^2 - 24x = 0$

6. $x^2 - x - 20 = 0$

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

8. $x^2 + 4x - 77 = 0$

9. $x^2 - x - 110 = 0$

10. $x^2 + x - 132 = 0$

11. $x^2 - 9x + 18 = 0$

12. $x^2 - 12x + 32 = 0$

13. $x^2 - 17x + 16 = 0$

14. $x^2 - 6x - 40 = 0$

15. $x^2 - 14x + 24 = 0$

16. $9x^2 - 35x - 4 = 0$

17. $2x^2 - 15x + 25 = 0$

18. $2x^2 + 5x - 25 = 0$

19. $4x^2 + 14x - 368 = 0$