B.M.C. Durfee High School Mathematics Department

Accelerated Geometry and Algebra II Summer Assignment
2018-2019

Welcome to Accelerated Geometry/ and Algebra II! This summer review assignment is designed to refresh your Algebra and Geometry skills. It includes information from Chapters 1 and 2 and parts of Chapter 3 in the Algebra 2 textbook. Also, some questions about basic geometric concepts are included in the packet.

Assignment Requirements: You **MUST** show all work in order to receive credit! This includes the multiple choice problems. All work must be done in a neat and organized manner. No work, no credit! Please fill in the correct multiple choice answers on the provided bubble sheet. The majority of the questions should be completed without the use of a calculator.

Due Date: This packet must be completed by the first day of school. Ten points will be deducted for each day that the packet is late.

Grading: This assignment will be collected and graded based upon completion and correctness. It will count as your first assessment grade for Term I. You will review this material during the first few days of school and will then be **tested on the material** covered in this packet.

Pacing: Due to the fact that there is an assessment the first week of school, you should pace yourself to work on this at least a few hours a week leading up to the start of school in August. If you complete the whole packet at the beginning of July, it will not be very helpful with the test at the start of school. That being said, do not try to complete the entire packet on the night before school starts!

Extra help: Extra help will be made available in the library at B.M.C. Durfee High School on Tuesdays from 12:00 pm- 2:00pm (starting July 13th) with Ms. Neubauer and Mr. Meneses. If you are unavailable to meet during this time, please contact mneubauer@fallriverschools.org or tmeneses@fallriverschools.org to arrange an alternate meeting time.

About Accelerated Geometry/Algebra II: This is a rigorous and fast-paced course. A graphing calculator is suggested. The course topics to be covered in this course include the following:

Geometry
Lines and Angles
Reasoning and Proof
Parallel and Perpendicular Lines
Relationships in Triangles
Proportions and Similarity
Right Triangles and Trigonometry
Quadrilaterals and Circles
Area and Volume

Algebra II
Quadratic Functions
Polynomial Functions
Radicals
Rational Expressions and Functions
Exponential and Logarithmic Functions
Trigonometric Functions

<u>Multiple Choice Section</u>: Please fill in the correct answer on the bubble sheet. Work must be shown on a separate piece of paper in order to receive credit. Questions must be numbered and work done in a neat and organized manner. Your work must support the chosen answer. These questions should be completed without the use of a calculator.

1. Evaluate $\frac{a^3+2bc}{c^2+7}$ if $a=-2,\ b=4,$ and $c=-5.$

A. -2.71 B. -1.50 C. 1.48 D. 2.67

2. Evaluate $a\left|b^2-2c\right|$ if $a=-\frac{1}{2},\ b=-6,$ and $c=12.$

A. -30 B. -18 C. -6 D. 6

3. Which set of numbers is ordered from least to greatest?

A. $\frac{3}{8},\ \frac{1}{2}, 1,\ \sqrt{2},\ 4$

B. $\frac{3}{8},\ \frac{1}{2},\ \sqrt{2}, 1, 4$

C. $4,\ \sqrt{2},\ 1,\ \frac{1}{2},\ \frac{3}{8}$

D. $\frac{1}{2},\ \frac{3}{8},\ 1, 4,\ \sqrt{2}$

4. Aleta went to dinner. The bill was $36. She gave the waiter a 15% tip. What was the total amount Aleta spent on the food and the tip?

A. $36.15 B. $37.50 C. $38.40 D. $41.40

5. Solve for *x:* $2x+3(x-7)=-2(x-21)$

A. 4 B. 9 C. 14 D. 28

6. Solve for *x:* $\frac{2}{5}x+\frac{3}{7}=1-\frac{4}{7}x$

A. $-\frac{2}{9}$ B. $\frac{10}{17}$ C. $\frac{3}{5}$ D. $\frac{9}{2}$

7. Solve for x: $\frac{2x+3}{5} = x+6$

A. -9 B. -2 C. 9 D. 12

8. Solve for x: $\frac{6x+5}{3} = \frac{5-2x}{4}$

A. -6 B. $-\frac{1}{6}$ C. $\frac{5}{13}$ D. $\frac{13}{5}$

9. Solve for x: $-6+9|x+3| = 12$

A. {-7, 1} B. {-12, 6} C. {4, 7} D. {-5, -1}

10. State all solutions for x: $|2x-3| = 3x+8$

A. -1 B. $\{-5,-11\}$ C. $-\frac{11}{5}$ D. $\{-11,-1\}$

11. Solve the equation for b_1: $A = \frac{1}{2}h(b_1+b_2)$

A. $b_1 = 2Ah - b_2$ B. $b_1 = 2Ahb_2$ C. $b_1 = \frac{2A}{h} - b_2$ D. $b_1 = \frac{2A-b_2}{h}$

12. Find the slope of the line that passes through the pair of points (-1, -3) and (-8, 10).

A. -8 B. $-\frac{13}{7}$ C. $-\frac{8}{13}$ D. $\frac{5}{11}$

13. Find the slope of the line that passes through the pair of points $\left(\frac{2}{3},\frac{5}{6}\right)$ and $\left(\frac{1}{2},\frac{3}{4}\right)$.

A. -1 B. $-\frac{1}{2}$ C. $\frac{1}{2}$ D. 2

14. Write an equation in point-slope form for the line that passes through the points (5, -14) and (14, 2).

A. $y-14=\frac{16}{9}(x-5)$

C. $y+14=\frac{16}{9}(x-5)$

B. $y+14=-\frac{16}{9}(x-5)$

D. $y+14=\frac{9}{16}(x+5)$

15. Write an equation in slope-intercept form for the line that has a slope of 5 and passes through the point (2, 28).

A. $y=5x-28$ B. $y=2x-2$ C. $y=28x+18$ D. $y=5x+18$

16. Write an equation in slope-intercept form for the line that has an *x*-intercept of 6 and a *y*-intercept of 20.

A. $y=-\frac{10}{3}x+26$ B. $y=-\frac{10}{3}x+20$ C. $y=20x-\frac{10}{3}$ D. $y=6x-\frac{10}{3}$

17. Write the equation in slope-intercept form: $y+3=3(x-1)$

A. $y=-3x-6$ B. $y=3x+6$ C. $y=3x+4$ D. $y=3x-6$

18. Write the equation in standard form: $y+3=\frac{2}{5}(x+9)$

A. $2x-5y=33$ B. $2x-5y=-3$ C. $y=\frac{2}{5}x+\frac{3}{5}$ D. $2x+5y=3$

19. The table below shows the yearly sales of a CD player in a particular store. Find an equation in function notation for the relation.

Year	1	2	3	4	5	6
Sales	55	100	145	190	235	280

A. $f(x)=10x+45$

C. $f(x)=45x-10$

B. $f(x)=45x+10$

D. $f(x)=55x-10$

20. Which relation is a function?

A. {(5, 3), (2, 8), (-5, -1), (4, 7), (2, 1)}

B. {(5, 3), (2, 8), (-5, -1), (4, 7), (5, 7)}

C. {(-5, 3), (2, 8), (-5, -1), (4, 7), (2, 2)}

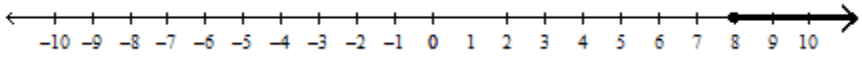
D. {(5, 3), (2, 8), (-5, -1), (4, 7), (-2, 1)}

21. If $g(x) = x^2 + 4x - 5$, find $g(-4)$.

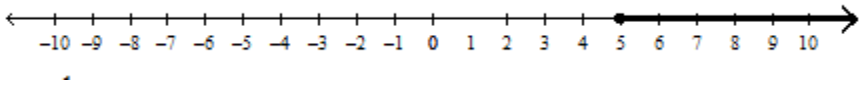
A. -85 B. -5 C. 5 D. 27

22. Solve and graph the solution set on a number line for the inequality: $\frac{10 - p}{2} \leq 1$

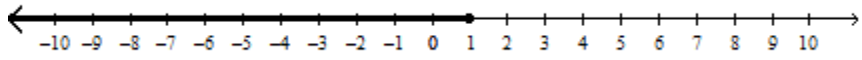
A. $p \geq 8$



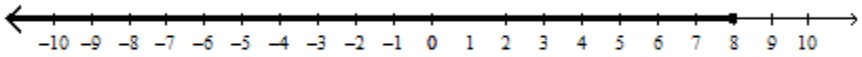
B. $p \geq 5$



C. $p \leq \frac{1}{5}$

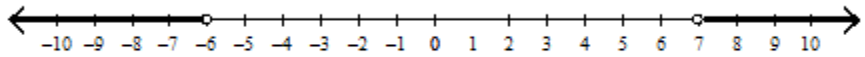


D. $p \leq 8$

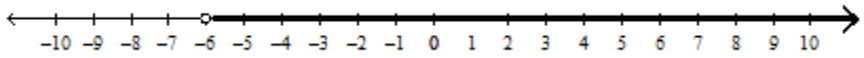


23. Solve and graph the solution set on a number line for the given inequality: $p+9<3$ or $p+1>8$

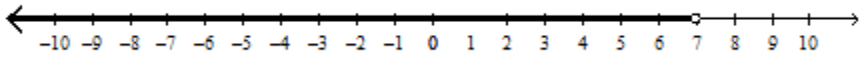
A. $p<-6$ or $p>7$



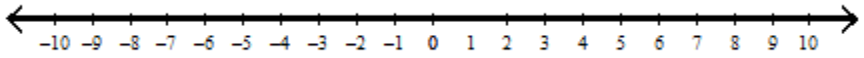
B. $p>-6$



C. $p<7$



D. All Real Numbers



24. Solve the system of equations: $\begin{aligned} y &= 11x-6 \\ y &= -6x+11 \end{aligned}$

A. (-1, 5) B. (1, 7) C. (5, 1) D. (1, 5)

25. Solve the system of equations: $\begin{aligned} 8x+2y &= 58 \\ -5x+y &= 11 \end{aligned}$

A. (2, 21) B. (21, 2) C. (4, 20) D. (1, 21)

26. Solve the system of equations: $\begin{aligned} -3x-2y &= -5 \\ 7x+6y &= 1 \end{aligned}$

A. (-8, 7) B. (1, -1) C. (7, -8) D. (-1, 1)

27. What is true concerning the lines graphed by the system of equations: $\begin{aligned} 8x+6&=2y \\ 12x-3&=3y \end{aligned}$

A. The lines intersect.

C. The lines are parallel.

B. The lines are perpendicular.

D. The lines are the same.

28. Simplify: $\left(19x^{-6}y^{11}\right)\left(-6xy^{5}\right)$

A. $-114x^{-5}y^{16}$ B. $-114x^{-6}y^{55}$ C. $\dfrac{-114y^{16}}{x^{5}}$ D. $13x^{-5}y^{16}$

29. Simplify: $\left(\dfrac{32x^{18}y^{10}}{16x^{9}y^{20}}\right)^{2}$

A. $2x^{9}y^{20}$ B. $\dfrac{4x^{18}}{y^{20}}$ C. $\dfrac{4x^{9}}{y^{10}}$ D. $4x^{18}y^{-20}$

30. Simplify: $\dfrac{36m^{-4}n^{6}}{4mn^{-2}p^{-4}}$

A. $\dfrac{9n^{4}p^{4}}{m^{3}}$ B. $\dfrac{9n^{8}}{m^{5}p^{4}}$ C. $\dfrac{9n^{8}p^{4}}{m^{5}}$ D. $\dfrac{9m^{5}}{n^{8}p^{4}}$

31. Simplify: $\left(-2x^{2}-9x+17\right)-\left(16x^{2}+17x-1\right)$

A. $-18x^{2}-26x+18$

C. $-18x^{2}-8x+18$

B. $-18x^{2}-26x+16$

D. $-18x^{2}-25x+16$

32. Simplify: $-2xy\left(3xy^{3}-5xy+7y^{2}\right)$

A. $-6x^{2}y^{4}+10x^{2}y^{2}-14xy^{3}$

C. $-6x^{2}y^{4}-5x^{2}y^{2}+7x^{2}y^{3}$

B. $-6x^{2}y^{4}-5xy+7y^{2}$

D. $-6x^{2}y^{4}+10xy+14y^{2}$

33. Simplify: $(-6k+4)(-7k^2+2k-7)$

A. $-7k^2-4k-3$

C. $-42k^3-40k^2-34k-28$

B. $42k^3-40k^2+50k-28$

D. $-7k^2-12k-28$

34. Simplify: $(4x-9)^2$

A. $16x^2-72x+81$

C. $16x^2-72x-81$

B. $16x^2+81$

D. $16x^2-81x+81$

35. Factor completely: $12g+20h$

A. $2(6g+10h)$

C. $4(3g+5h)$

B. $4gh(3+5)$

D. $2gh(6+10)$

36. Factor completely: $16j^2k-8j^6k^5+60j^3$

A. $2j^2(8k-4j^4k^5+30j)$

C. $4j^2(4k-2j^3k^5+15j^{15})$

B. $4jk(4j-2j^5k^4+15j^2)$

D. $4j^2(4k-2j^4k^5+15j)$

37. Factor completely: $x^2+15x+14$

A. $(x+14)(x+1)$

C. $(x+7)(x+2)$

B. $x(x+15)+14$

D. $(x-14)(x-1)$

38. Factor completely: $g^2-9g-22$

A. $(g-2)(g+11)$

C. $(g-22)(g+1)$

B. $(g-11)(g+2)$

D. $(g-11)(g-2)$

39. Factor completely: $3x^2 + 10x + 8$

A. $(3x + 4)(x + 2)$

C. $(4x + 3)(x + 2)$

B. $(3x + 2)(x + 4)$

D. prime

40. Factor completely: $12v^2 - 27$

A. $3(3v + 2)(3v - 2)$

C. $(2v + 3)(2v - 3)$

B. $3(2v + 3)(2v - 3)$

D. prime

41. Solve for x: $(x - 3)(x + 6) = 0$

A. {-6, -3}

B. {3, 6}

C. {-6, 3}

D. {-3, 6}

42. Solve the equation be factoring: $x^2 - x - 79 = -7$

A. {-8, 9}

B. {-9, 8}

C. {-9, -8}

D. No real solution

43. Solve the quadratic equation using the method of your choice: $2x^2 + 3x - 14 = 0$

A. $\left\{-4, -\frac{7}{2}\right\}$

B. $\left\{-\frac{7}{2}, 2\right\}$

C. $\{-4, 7\}$

D. $\{2, 7\}$

44. Solve the quadratic equation using the method of your choice: $x^2 - 8x = 20$

A. {-10, 2}

B. {20, 28}

C. {-4, 20}

D. {-2, 10}

45. Find the *y*-intercept and the equation of the axis symmetry for the quadratic function:
$f(x) = -2x^2 + 2x + 2$

A. The *y*-intercept is $(0, -2)$ and the equation of axis of symmetry is $x = -\frac{1}{2}$.

B. The *y*-intercept is $\left(0, \frac{1}{2}\right)$ and the equation of axis of symmetry is $x = 2$.

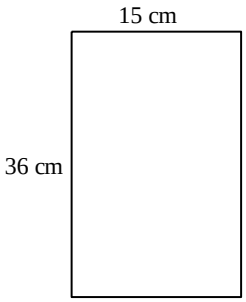
C. The *y*-intercept is $(0, 2)$ and the equation of axis of symmetry is $x = \frac{1}{2}$.

D. The *y*-intercept is $\left(0, -\frac{1}{2}\right)$ and the equation of axis of symmetry is $x = -2$.

46. Simplify the radical expression: $\sqrt{150}$

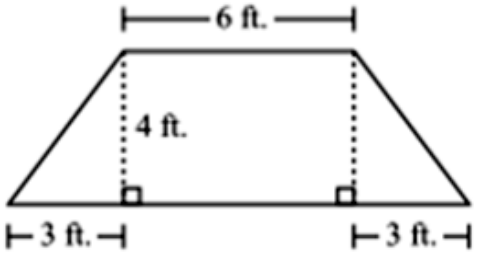
A. $6\sqrt{5}$ B. $5\sqrt{5}$ C. $5\sqrt{6}$ D. $10\sqrt{5}$

47. Find the perimeter of the parallelogram.



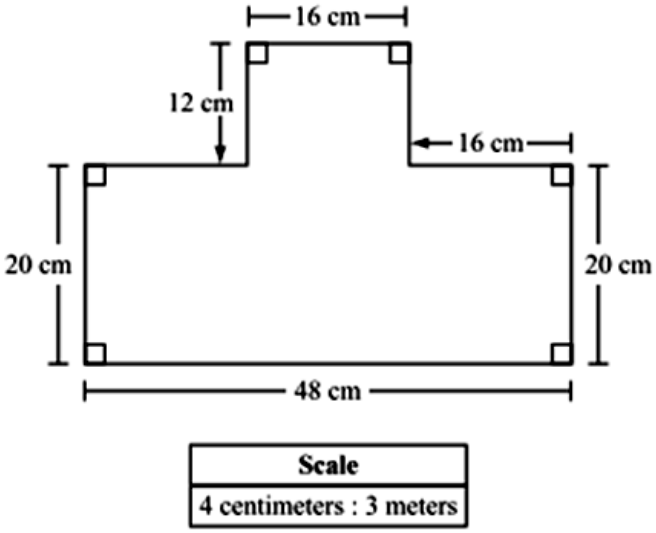
A. 51 cm B. 102 cm C. 270 cm D. 540 cm

48. Find the area of the trapezoid.



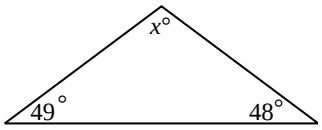
A. 24 feet^2 B. 36 feet^2 C. 42 feet^2 D. 48 feet^2

49. Jaden is installing fencing around his garden. A scale drawing of his garden is shown below. What is the minimum number of meters of fencing Jaden needs to go around his garden with no overlap?



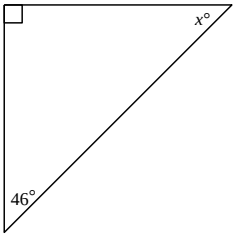
A. 120 meters B. 160 meters C. 213 meters D. 480 meters

50. Find the value of *x* and classify the triangle as acute, right, or obtuse.



A. 83°, obtuse B. 83°, acute C. 97°, obtuse D. 263°, obtuse

51. Find the value of *x* and classify the triangle as acute, right, or obtuse.



A. 44°, right B. 134°, obtuse C. 44°, acute D. can't be determined

52. Find the distance between the pair of points: (2, 10) and (8, 2)

A. $\sqrt{28}$ B. 10 C. 14 D. 100

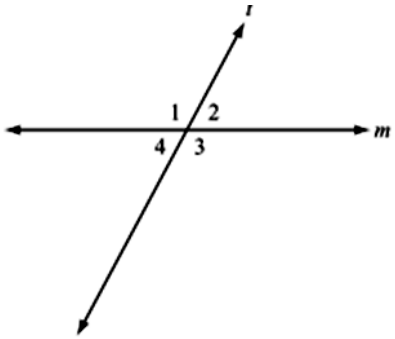
53. Find the distance between the pair of points (-9, 3) and (-1, 7).

A. $2\sqrt{5}$ B. $4\sqrt{5}$ C. 24 D. 80

54. Find the midpoint between the pair of points: (-5, 8) and (-7, -14)

A. (6, 3) B. -9 C. (-6, -3) D. (-1, -11)

55. Line *m* is intersected by line *t*, as shown in the diagram. Based on the diagram, which of equations must be true?



A. $m\angle 1 + m\angle 2 = 180^\circ$ C. $m\angle 2 + m\angle 3 = 90^\circ$

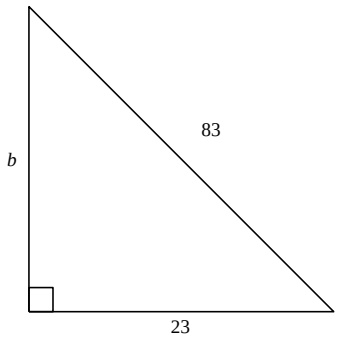
B. $m\angle 1 + m\angle 3 = 180^\circ$ D. $m\angle 2 + m\angle 4 = 90^\circ$

56. If *c* is the measure of the hypotenuse of a right triangle, find the missing measure. If necessary, round to the nearest hundredth.

$a = 60,\ b = ?,\ c = 100$

A. 8 B. 40 C. 80 D. 116.6

57. Find the length of the missing side. If necessary, round to the nearest hundredth.

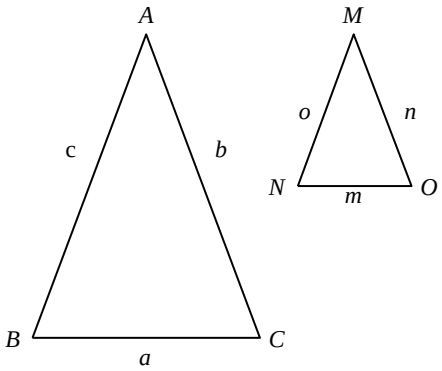


A. 7.75 B. 60 C. 79.75 D. 86.13

58. Solve the proportion: $\frac{8}{3} = \frac{d}{21}$

A. $\frac{29}{3}$ B. 56 C. 165 D. 168

Use the figure below for questions 59-60.



59. For each set of measures given, find the measures of the missing side if $\Delta ABC \sim \Delta MNO$.

$$a = 8,\ b = 10,\ m = 4,\ n = ?$$

A. $\frac{7}{4}$ B. $\frac{9}{2}$ C. 5 D. 20

60. For each set of measures given, find the measures of the missing side if $\Delta ABC \sim \Delta MNO$.

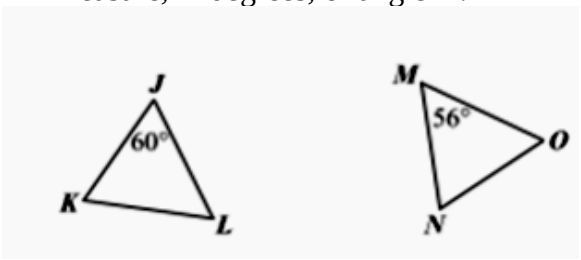
$$c = 12,\ b = 15,\ o = 4,\ n = ?$$

A. $\frac{5}{3}$ B. $\frac{19}{12}$ C. 5 D. 45

<u>Short Answer Section</u>: All work for these problems must be shown in the space provided.
No work = No Credit.

61. Determine whether the following side measures form a right triangle: 20, 21, 29. Justify your answer.

62. In the diagram below, $\Delta JKL \cong \Delta ONM$. Based on the angle measures in the diagram, what is the measure, in degrees, of angle *N?*



63. Solve for *b*: $V = \dfrac{ax + b}{r^2}$

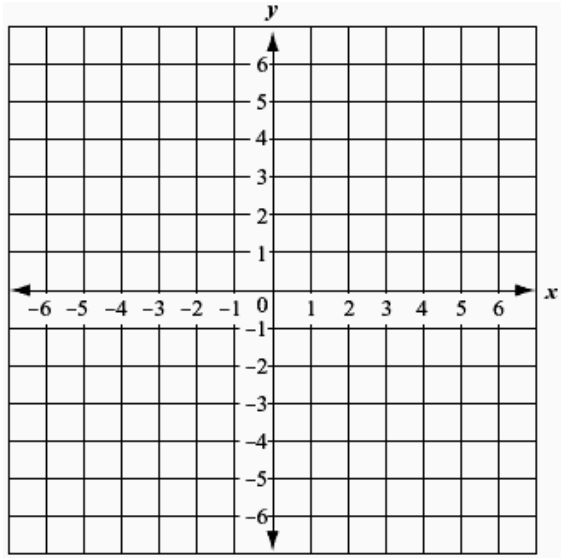
64. Solve and graph the solution set on a number line: $3x - 15 < 9 + 7x$

65. Solve and graph the solution set on a number line: $3x + 4 \le 13$ AND $6 + 2x \ge -2$

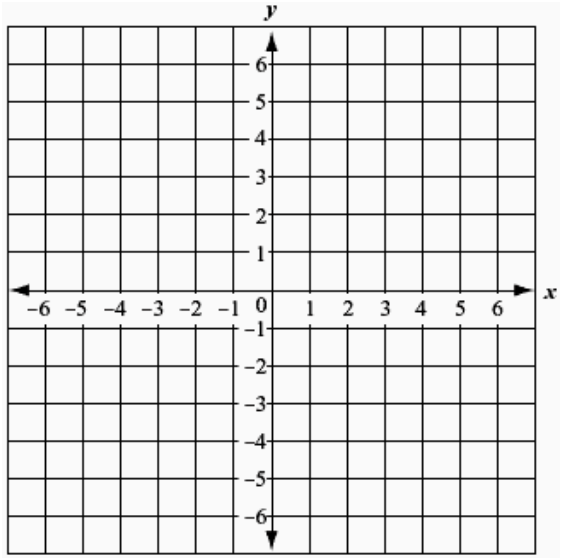
66. Solve and graph the solution set on a number line: $2x-1<-5$ OR $3x+2\geq 5$

67. Graph each line on the given coordinate planes.

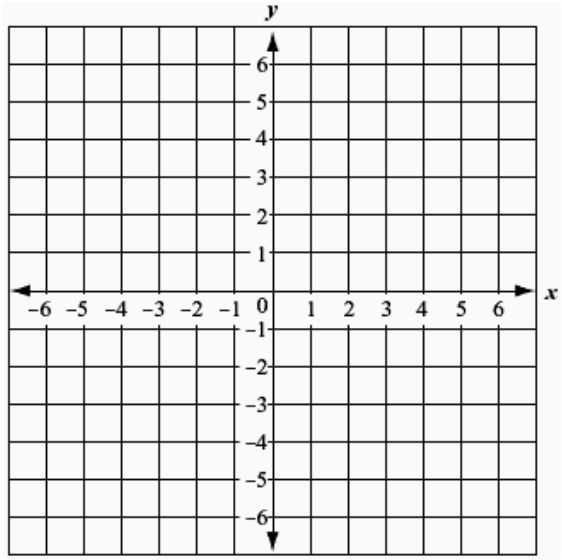
a. $y=2x+5$



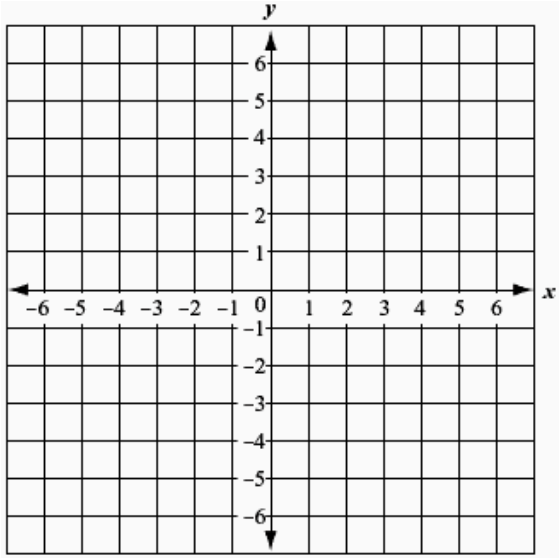
b. $y=-4x+6$



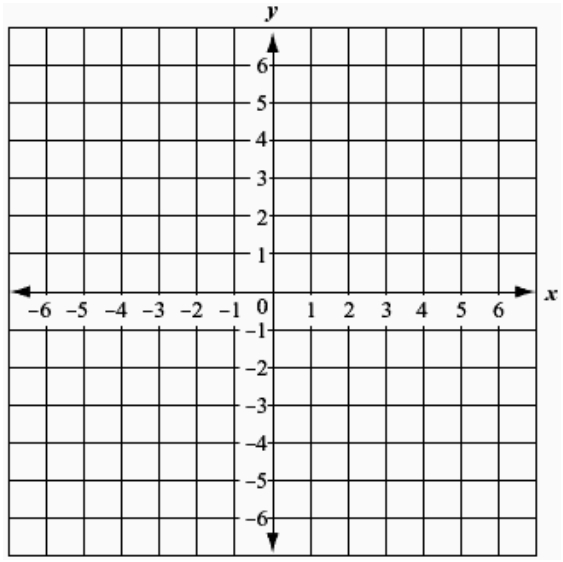
c. $y=\frac{1}{2}x-6$



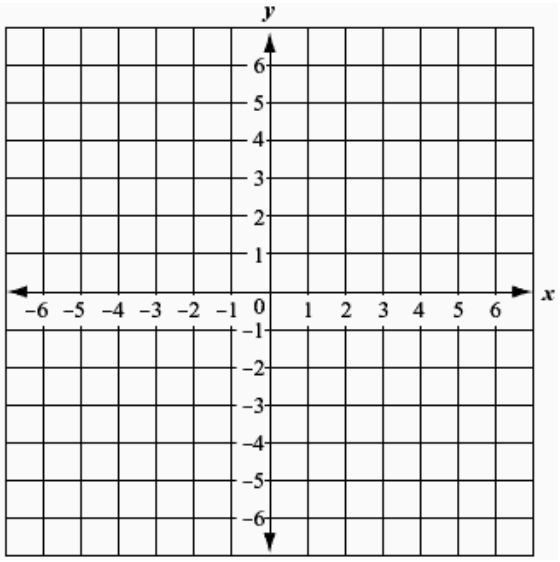
d. $y=x$



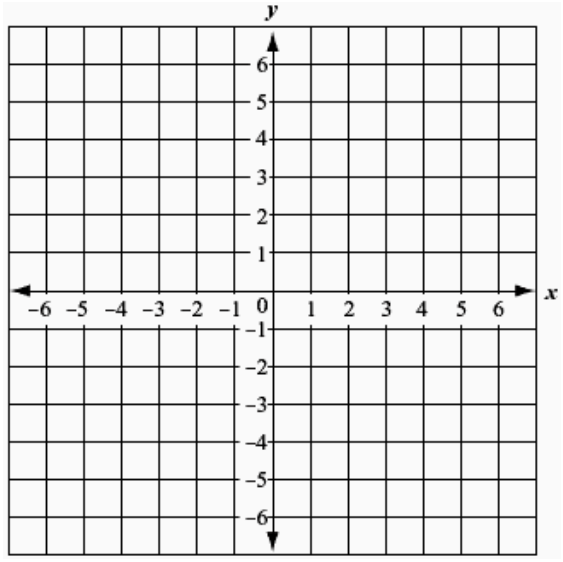
e. $y = 4$



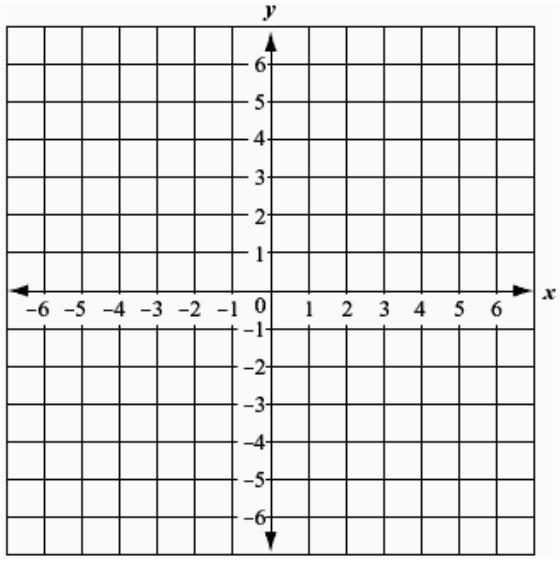
f. $x = -6$



g. $2x + 4y = 8$



h. $3x - 4y = -12$



68. Given the quadratic equation: $y = x^2 + 4x + 3$

a. State the direction of opening for the parabola.

b. Write the equation for the axis of symmetry.

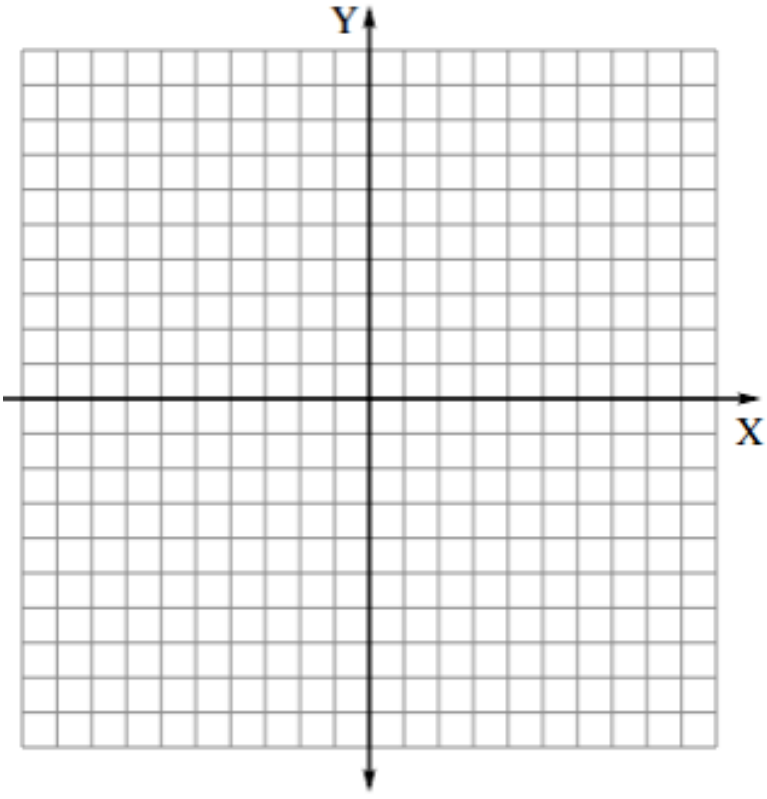
c. Find the vertex.

e. State the maximum/minimum value.

f. Find the y-intercept.

g. Find the x-intercepts.

h. Graph the parabola (plot at least five points)



69. Given the quadratic equation: $y = -2(x+1)^2 + 8$

a. State the direction of opening for the parabola.

b. Write the equation for the axis of symmetry.

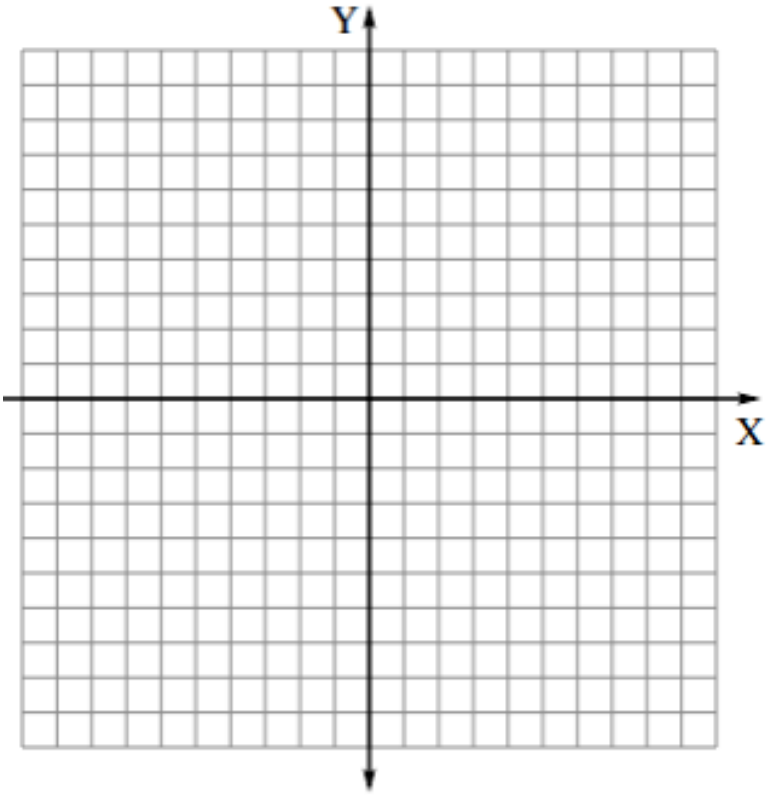
c. Find the vertex.

e. State the maximum/minimum value.

f. Find the y-intercept.

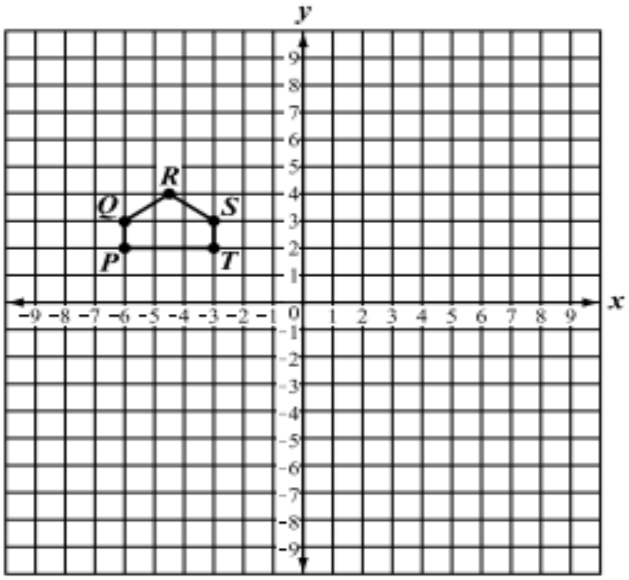
g. Find the x-intercepts.

h. Graph the parabola (plot at least five points)

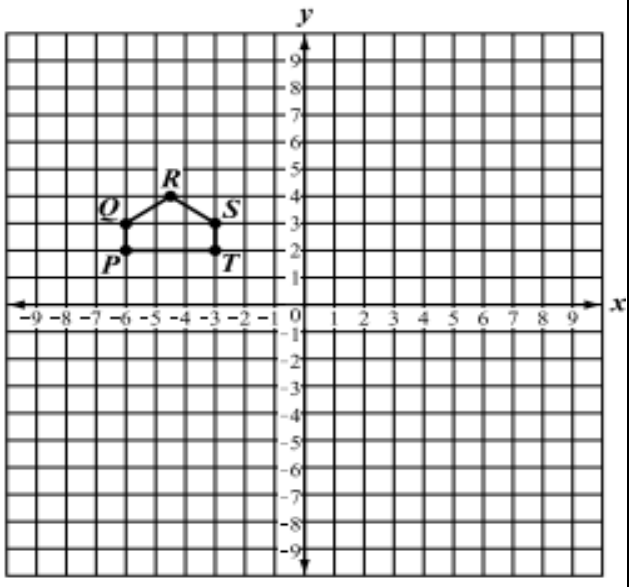


70. Graph each transformation based on the given pre-image.

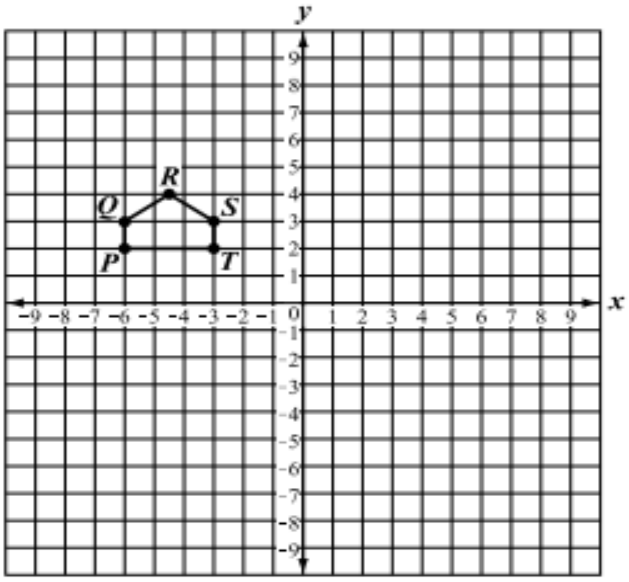
a. Reflect over the *x*-axis.



b. Reflect over the *y*-axis



c. Translate 2 units right and 3 units down.



d. Dilate by a scale factor of 2.