

Name: _____

Summer 2021
Incoming 8th grade Algebra I Summer Practice

For each question in this assignment, show all of your work on loose leaf paper. Remember to check your final answer with the key. You are expected to work on these questions independently and on your own. Your work must be clearly labeled and easy to follow.

This assignment is due on the first day of school and will be entered as a quiz grade. It is not acceptable to turn this assignment in late. There will be an assessment based on this package.

Students entering Algebra I are expected to know how to:

- evaluate expressions
 - find the greatest common factor (GCF)
 - simplify expressions / apply the order of operations
- write algebraic expressions, equations and inequalities
- represent functions as rules, tables and graphs
- combine like terms
- write and solve proportions
- rewrite equations and formulas
- Reproduce a scale drawing at a different scale.
- plot points in a coordinate plane
 - identify x-intercepts
 - identify y-intercepts
 - identify slope of an equation
- find the slope and distance between two points

These skills will be incorporated into the Algebra I course throughout the school year.

**As a member of the Sacred Heart Community,
I pledge to act in a moral, ethical, honest, and honorable way in all
that I do.**

Student Signature

Use loose leaf paper to show all your work. **Box your answer.** Remember to check your final answer with the key. Your work must be clearly labeled and easy to follow.

• **Evaluate each expression.** You are expected to complete this section without a calculator.

1. x^2 when $x = 3$ 2. y^3 when $x = -2$ 3. $\frac{x+y}{y-2}$ when $x = 1$ and $y = -1$ 4. $z^3 + 4$ when $z = 1$
5. $p^2 + m$ when $m = 1$ and $p = 5$ 6. $8q^2 + 7(r - 3) - r$ when $q = 2$ and $r = 10$
7. $\frac{2m-n}{m^2-2n+2}$ when $m = 5$ and $n = 3$ 8. $\frac{x+y}{z}$ when $x = 2$, $y = 4$, and $z = -3$

Find the greatest common factor

9. 22, 55, 44 10. 42, 28, 56 11. $3 + 6x$ 12. 60, 72 13. $30xy - 15y^2$

Simplify expressions. If necessary keep your final answers as simplest fraction or improper fractions. You are expected to complete this section without a calculator.

14. $\frac{9}{5} - \frac{1}{2}$ 15. $-7 + (-4 + 2)$ 16. $5 + \frac{3}{4} - 6$ 17. $-\frac{3}{7} - (-\frac{1}{3}) + 2$ 18. $-5 - 8 + 3$
19. $3[15 - (2^3 - 6)^2] + 2$ 20. $21.7 - 14.314 \div 3.4 + 5.1$ 21. $-2(6 + 7) - 8 \div 4$
22. $(\frac{3}{4})(-\frac{1}{5})(-2)$ 23. $(\frac{5}{8}) \div (\frac{4}{5})$ 24. $(\frac{7}{9}) \div (\frac{1}{3})(-12)$

• **Combine like terms**

25. $3n + 6n$ 26. $x - 3 + 5 - 2x$ 27. $-8(-5y + 4)$ 28. $1 + 7(1 - 3z)$ 29. $3x + 15x - 2$

• **Write algebraic expressions, equations and inequalities**

For questions 30 – 35, translate the statement into an expression, an equation or an inequality.

30. Seven less than twice a number n .
31. Three times a number, decreased by the sum of another number squared and eight.
32. The quotient of the square of a number a and 14 is more than 80.
33. Five more than the square of a number v is 14.
34. The quotient of a number h and 9 is at most 28.
35. The difference of a number b and 7 is no less than 10 and no more than 21.

• Represent functions as rules, tables and graphs.

Write the rule for the table below.

36.

| | | | | | |
|-------------|-----|----|---|---|----|
| Input, x | -2 | -1 | 0 | 1 | 2 |
| Output, y | -10 | -5 | 0 | 5 | 10 |

37.

| | | | | | |
|-------------|---|---|----|----|----|
| Input, x | 1 | 2 | 3 | 4 | 5 |
| Output, y | 4 | 8 | 12 | 16 | 18 |

38.

| | | | | | | |
|-------------|----|----|---|---|---|---|
| Input, x | -2 | -1 | 0 | 1 | 2 | 3 |
| Output, y | -1 | 1 | 3 | 5 | 7 | 9 |

39.

| | | | | | |
|-------------|----|----|---|----|----|
| Input, x | -8 | 0 | 8 | 10 | 12 |
| Output, y | -5 | -1 | 3 | 4 | 5 |

40. Make a table of $y = 4x - 2$ with the input (or domain), $x = 0, 1, 2, 3, 4$. Write the value for the output (or range), y .

• Rewrite equations and formulas.

Solve for the indicated variable.

41. $C = 2\pi r$ for π

42. $D = \frac{C-S}{n}$ for C

43. $Ax + By = C$ for y

44. $D = A + \frac{1}{3}Bc$ for c

Solve linear equations. Show each step. Write your final answers as improper fractions if necessary.

45. $-4 = x - 18$

46. $-21m = 420$

47. $\frac{d}{4} + 10 = \frac{3}{4}$

48. $\frac{7-2a}{-5} = 6$

49. $5w + 24 = 4(w + 5)$

50. $12n + 2 - 3n = 5 - (n - 2)$

51. $\frac{1}{2}x + \frac{2}{3} = \frac{1}{3}x - \frac{3}{2}$

52. $\frac{1}{4}(60 + 16w) = 15 + 4w$

53. $3(3h + 1) - (h - 1) = 6(h + 10)$

• Rewrite equations and formula.

Solve each proportion. Show each step. Write your final answers as improper fractions if necessary.

54. $\frac{2w}{16} = \frac{30}{80}$

55. $\frac{7}{112} = \frac{c-3}{8}$

56. $\frac{p+15}{42} = \frac{p-5}{14}$

57. $\frac{4}{r} = \frac{5}{20}$

58. $\frac{2.7}{30} = \frac{3.6}{x}$

59. $\frac{2}{9} = \frac{6}{k}$

60. A 64-ounce container of juice costs \$6.50. A 48-ounce container of the same juice costs \$4.25. Which size container is the better buy?

For questions 61 & 62, assign a variable, write a proportion to represent the situation, solve the proportion, then answer the question.

61. Kelli works in the local mailroom at a college. One of her duties is to sort local mail from all of the other mail. She can sort 8 pieces of mail in 10 seconds. How many pieces should Kelli be able to sort in 45 minutes?

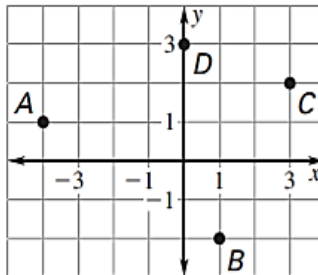
62. At an aquarium the ratio of freshwater fish to saltwater fish is 3 to 5. Determine the number of each kind of fish if the aquarium has 640 fish. How many more saltwater fish are there than freshwater fish?

• **Plot points in the coordinate plane.**

Plot the following coordinates points on a coordinate plane then identify the quadrant in which the point is located. If the coordinate is an x-intercept or y-intercept, state it. Use graph paper, label your axes and scale. Remember to label each coordinate point with the assigned letter.

63. $R(-5, -1)$ 64. $U(5,5)$ 65. $S(-3,4)$ 66. $T(4, -1)$ 67. $V(0, -2)$ 68. $W(-1,0)$

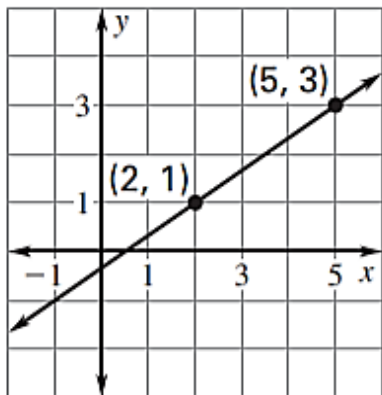
69. Give the coordinates of the points labeled A,B,C," and " D.



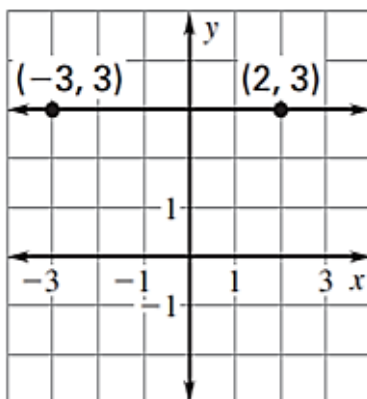
• **Find the slope and distance between two points.**

Find the slope of the line that passes through the points.

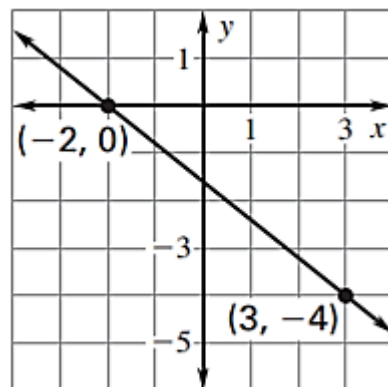
70.



71.



72.



73. $(-4, -5)$ & $(-3, -2)$

74. $(-7, -1)$ & $(-7, 5)$

Find the distance between two points.

75. $(0, 0), (-8, -4)$

76. $(-6, -3), (-7, 2)$

Answers:

- 1/ 9 2/ -8 3/ $-\frac{2}{3}$ 4/ 5 5/ 26 6/ 71 7/ $\frac{1}{3}$ 8/ -2
- 9/ 11 10/ 14 11/ $3(1 + 2x)$ 12/ 12 13/ $15y(2x - y)$ 14/ $\frac{13}{10}$ 15/ -9 16/ $-\frac{1}{4}$
- 17/ $\frac{40}{21}$ 18/ -10 19/ 35 20/ 22.59 21/ -28 22/ $\frac{3}{10}$ 23/ $\frac{25}{32}$ 24/ -28
- 25/ $9n$ 26/ $2 - x$ 27/ $40y - 32$ 28/ $8 - 21z$ 29/ $18x - 2$ 30/ $2n - 7$ 31/ $3n - (m^2 + 8)$
- 32/ $\frac{a^2}{14} > 80$ 33/ $v^2 + 5 = 14$ 34/ $\frac{h}{9} \leq 28$ 35/ $21 \geq b - 7 \geq 10$ 36/ $y = 5x$ 37/ $y = 4x$
- 38/ $y = 2x + 3$ 39/ $y = \frac{1}{2}x - 1$ 40/

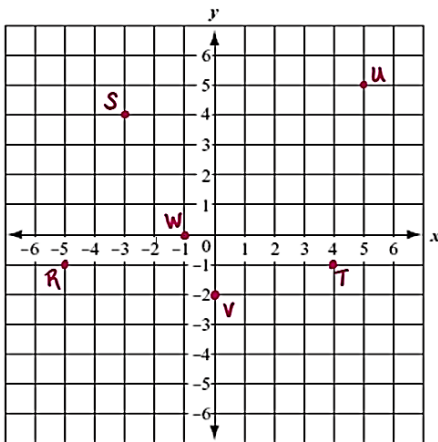
| | | | | | |
|---|----|---|---|----|----|
| x | 0 | 1 | 2 | 3 | 4 |
| y | -2 | 2 | 6 | 10 | 14 |

 41/ $\pi = \frac{C}{2r}$ 42/ $C = Dn + s$
- 43/ $y = \frac{C - Ax}{B}$ 44/ $C = \frac{3(D - A)}{B}$ 45/ $x = 14$ 46/ $m = -20$ 47/ $d = -37$ 48/ $a = \frac{37}{2}$
- 49/ $w = -4$ 50/ $n = \frac{1}{2}$ 51/ $x = -13$ 52/ $w =$ All real numbers 53/ $h = 28$ 54/ $w = 3$
- 55/ $c = 3\frac{1}{2}$ 56/ $p = 15$ 57/ $r = 16$ 58/ $x = 40$ 59/ $k = 27$ 60/ 48- oz

61/ Let $m =$ # of pieces of mail; Proportion: $\frac{m}{2700} = \frac{8}{10}$; $m = 2160$. Kelli can sort 2,160 pieces of mail in 45 minutes.

62/ freshwater fish: 240; saltwater fish: 400; 160 more saltwater fish than freshwater fish.

63 – 68 refer to the graph below:



69/ $A(-4, 1), B(1, -2), C(3, 2), D(0, 3)$

70/ $\frac{2}{3}$ 71/ 0 72/ $-\frac{4}{5}$ 73/ 3

74/ undefined 75/ $4\sqrt{5}$ 76/ $2\sqrt{6}$