8th Grade Math Prerequisite
(Entering 8th Grade Math Summer Practice)

Purpose:

This summer practice assignment was created to

- communicate to each student what she is expected to know prior to entering 8th Grade Math.
    - The topics in this assignment were taught in previous math courses.
- provide an opportunity for students to practice those skills and concepts necessary for success in 8th Grade Math.
- provide your teacher with information about the skills in which you may need more practice.

Expectations:

- Students are expected to complete this assignment independently.
- For each question in this assignment, show all of your work and your answers on loose leaf paper.
    - Your work must be clearly labeled and easy to follow.
- Box your final answers.
- Check your final answers with the key.
- **This assignment will be graded for completion and entered as a quiz grade.**
    - **You are expected to**
        - **complete every problem.**
        - **check your answers with the key.**
        - **mark the questions you answered incorrectly.**
    - **This assignment is DUE on first day of class. NO EXCEPTION.**
    - **If you turn in this assignment after the first day of school, 10 percentage points will be deducted for each day it is late.**

Students entering 8th Grade Math are expected to know how to:

- evaluate and simplify expressions
- identify real number system
- apply the order of operations
- find GCF by factoring
- identify like terms
- write algebraic expressions, equations, and inequalities
- identify dependent and independent variable
- solve linear equations
- write and solve proportions
- rewrite equations and formulas
- plot points in a coordinate plane

These skills will be incorporated into the Math 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.

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Student Signature

For each question in this assignment, show all of your work on loose leaf paper. Remember to check your final answers with the key. Your work must be clearly labeled and easy to follow.

Topic 1: Evaluate expressions

Evaluate each expression. Write your final answers as improper fractions if necessary. You are expected to complete this section without a calculator. Remember to show each step for questions 6 – 10.

1. $\frac{9}{5}-\frac{1}{2}$ **2.** $-5-8$ **3.** $-7+(-4)$ **4.** $5+\frac{3}{4}-6$ **5.** $-\frac{3}{7}-\left(-\frac{1}{3}\right)+2$

6. $3[15-(2^3-6)^2]+2$ **7.** $8q^2+7(r-3)-r$ when $q=2$ and $r=10$ **8.** $\frac{2m-n}{m^2-2n+2}$ when $m=5$ and $n=3$

9. $21.7-14.314\div 3.4+5.1$ (round your answer to the nearest hundredth)

10. $-2(6+7)-8\div 4$ **11.** $\left(\frac{3}{4}\right)\left(-\frac{1}{5}\right)(-2)$ **12.** $\left(\frac{5}{8}\right)\div\left(\frac{4}{5}\right)$ **13.** $\left(\frac{7}{9}\right)\div\left(\frac{1}{3}\right)(-12)$

Topic 2: Simplify expressions

Simplify each expression.

14. $6x-2-2+6x$ **15.** $r+2+5r+7$ **16.** $-8x+4y-10+11y-x+5$ **17.** $-6(1+6a)$

18. $8(-3m-4)$ **19.** $-5(3r-7)$ **20.** $-\frac{3}{4}(12d-20)$

Topic 3: Find the Greatest Common Factor (GCF)

Find the GCF of each

21. $28, 40, 24$ **22.** $32, 24, 36$ **23.** $24y^3, 24xy^2, 36y^3$ **24.** $30y, 20y, 40xy$ **25.** $24, 48, 12y^2$

26. $24m^2, 48m^3, 48m^4$ **27.** $12n, 24n$ **28.** $48m^3n, 18mn$ **29.** $48y, 14$ **30.** $27xy, 45$

Topic 4: Write algebraic expressions, equations and inequalities

For questions 31 – 36, translate the statement into an expression, an equation or an inequality.

31. Seven less than twice a number n.

32. Three times a number, decreased by the sum of another number squared and eight.

33. The quotient of a number h and 9 is at most 28.

34. The difference of a number b and 7 is no less than 10 and no more than 21.

35. You are making beaded bracelets for your friends. You plan to use 30 beads for each bracelet and want to use no more than 145 beads. **Write an inequality that models this situation, where b represents the number of bracelets you can make.**

36. Write a variable expression for the volume of the cube whose side length is x.

37. A rectangle is twice as long as it is wide.

- **a)** Write a variable expression to represent the perimeter of the rectangle.
- **b)** Write a variable expression to represent the area of the rectangle.

Topic 5: Solve linear equations

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

38. $-4=x-18$ **39.** $-21m=420$ **40.** $\frac{d}{4}+10=\frac{3}{4}$ **41.** $\frac{7-2a}{-5}=6$

42. $5w+24=5(w-5)$ **43.** $12n+2-3n=5-(n-2)$ **44.** $\frac{1}{2}x+\frac{2}{3}=\frac{1}{3}x-\frac{3}{2}$

45. $\frac{1}{4}(60+16w)=15+4w$ **46.** $3(3h+1)-(h-1)=6(h+10)$

Topic 6: Write and solve proportions

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

47. $\frac{2w}{16} = \frac{30}{80}$ **48.** $\frac{7}{112} = \frac{c-3}{8}$ **49.** $\frac{p+15}{42} = \frac{p-5}{14}$ **50.** $\frac{4}{3} = \frac{9x}{5}$ **51.** $\frac{2}{x} = \frac{3}{7}$ **52.** $\frac{v}{4} = \frac{2}{6}$ **53.** $\frac{4}{n} = \frac{8}{3}$

54. $\frac{5}{8} = \frac{16}{k}$ **55.** $-\frac{m}{12} = -\frac{11}{9}$ **56.** $\frac{x}{15} = \frac{11}{6}$ **57.** $-\frac{16}{12} = \frac{13}{p}$

58. Assign a variable, write a proportion to represent the situation, solve the proportion, then answer the question.

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?

59. Assign a variable, write a proportion to represent the situation, solve the proportion, then answer the question.

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?

Topic 7: Write and solve linear equations

60. Assign a variable, write an equation to represent the situation, solve the equation, then answer the question.

The length is 5 inches more than the width. The perimeter is 9 times the width. Find the length and width of the rectangle described.

61. Assign a variable, write an equation to represent the situation, solve the equation, then answer the question.

The membership fee for joining a gardening association is $24 per year. A local botanical garden charges members of the gardening association $3 for admission to the garden. Nonmembers of the association are charged $6. After how many visits to the garden is the total cost for members, including the membership fee, the same as the cost for nonmembers?

62. Assign a variable, write an equation to represent the situation, solve the equation, then answer the question.

You helped Daisy move into a new apartment. Daisy rented a truck for $15 an hour and a dolly for $5. She paid a total of $80 for the rental. For how long did Daisy rent the truck?

63. Write an inequality to represent the situation, solve the inequality, then answer the question.

A pickup truck has a maximum carrying capacity of 1220 pounds. If a container weights 320 pounds, what is the maximum weight, w, allowable for driver and her friend?

64. Write an equation to represent the situation, solve the equation, then answer the question.

Nicole swims 40 meters per minute, and she wants to swim at least 2000 meters this morning. How many minutes, t, should she swim?

Topic 8: Rewrite equations and formulas

Solve for the indicated variable.

65. $C = 2\pi r$ for π **66.** $D = \frac{C-S}{n}$ for C **67.** $Ax + By = C$ for y **68.** $D = A + \frac{1}{3}Bc$ for c

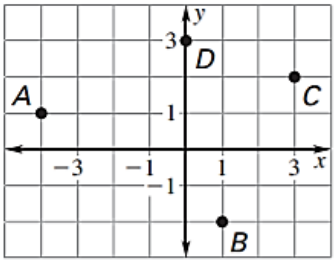
69. $A = \frac{1}{2}bh$ for b **70.** $3y - x = 12$ for x **71.** $\frac{1}{3}(y + 2) + 3x = 7x$ for y **72.** $V = \pi r^2 h$ for r

Topic 9: 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.

73. $R(-5,-1)$ **74.** $S(-3,4)$ **75.** $T(4,-1)$ **76.** $U(5,5)$ **77.** $V(0,-2)$ **78.** $W(-1,0)$

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



Answers:

1. $\frac{13}{10}$ **2.** -13 **3.** -11 **4.** $-\frac{1}{4}$ **5.** $\frac{40}{21}$ **6.** 35 **7.** 71 **8.** $\frac{1}{3}$ **9.** 22.59 **10.** -28 **11.** $\frac{3}{10}$ **12.** $\frac{25}{32}$

13. -28 **14.** $12x-4$ **15.** $6r+9$ **16.** $-9x+15y-5$ **17.** $-12a-6$ **18.** $-24m-32$ **19.** $-15r+35$

20. $-9d+15$ **21.** 4 **22.** 4 **23.** $12y^2$ **24.** $10y$ **25.** 12 **26.** $24m^2$ **27.** 12n **28.** $6mn$

29. 2 **30.** 9 **31.** $2n-7$ **32.** $3x-(y^2+8)$ **33.** $\frac{h}{9}\leq 28$ **34.** $10\leq b-7\leq 21$

35. $30b\leq 145$ **36.** x^3 **37. a)** $6w$ **b)** $2w^2$ **38.** $x=14$ **39.** $m=-20$ **40.** $d=-37$

41. $a=\frac{37}{2}$ **42.** No solution **43.** $n=\frac{1}{2}$ **44.** $x=-13$ **45.** All real numbers **46.** $h=28$ **47.** $w=3$

48. $c=\frac{7}{2}$ **49.** $p=15$ **50.** $x=\frac{20}{27}$ **51.** $x=\frac{14}{3}$ **52.** $v=\frac{4}{3}$ **53.** $n=\frac{3}{2}$ **54.** $k=\frac{128}{5}$

55. $m=\frac{132}{9}$ **56.** $x=\frac{55}{2}$ **57.** $p=-\frac{39}{4}$

58. Variable: 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.

59. *Sample Answer:* Variable: Let $x=$ # of freshwater fish; Proportion: $\frac{x}{640}=\frac{3}{8}$; $x=240$.
There are 240 freshwater and 400 saltwater fish in the aquarium. There are 160 more saltwater fish than freshwater fish.

60. Variable: Let $w=$ width of the rectangle; Equation: $9w=2(5+w)+2w$; $w=2$. The width of the rectangle is 2 inches, and the length of the rectangle is 7 inches.

61. Variable: Let $n=$ # of visits to the garden; Equation: $3n+24=6n$; $n=8$. After 8 visits to the garden, the total cost for members will be the same as the cost for nonmembers.

62. Variable: Let $h=$ # of hours Daisy rented the truck; Equation: $15h+5=80$; $h=5$. Daisy rented the truck for 5 hours.

63. $w\leq 900$ **64.** $t\geq 50$ **65.** $\pi=\frac{C}{2r}$ **66.** $C=Dn+S$ **67.** $y=\frac{-Ax+C}{B}$ **68.** $c=\frac{3(D-A)}{B}$

69. $b=\frac{2A}{h}$ **70.** $x=3y-12$ **71.** $y=30x-2$ **72.** $r=\sqrt{\frac{V}{\pi h}}$ **73.** Quadrant III **74.** Quadrant II **75.** Quadrant IV

76. Quadrant I **77.** y-intercept **78.** x-intercept **79.** $A(-4,1), B(1,-2), C(3,2), D(0,3)$

73 – 78, refer to the graph:

