

7th Grade Pre-Algebra – Summer Assignments:

While everyone needs, and deserves a break from school to relax and recharge, there are several foundational concepts used in pre-algebra that should be practiced over the summer.

The following are the summer assignments for 7th Grade Pre-Algebra:

[1. IXL]

IXL: IXL is an interactive and comprehensive website which provides focused practice on various skills and concepts that align with Regis' mathematics curriculum. The website is adaptive and will adjust to your demonstrated ability level. During the summer, the student will be using IXL to help reinforce this past year's accomplishments and to help reinforce core foundational math principals used in pre-algebra.

ASSIGNMENT: Students are expected to complete a total of 8 hours doing math practice and review during the summer – more than 8 is GREAT!

Rising 7th graders should practice the skills from the 6th grade sections of IXL.

SUPER SUPER IMPORTANT!: You DO NOT need to complete an entire skill, as this is where IXL can become frustrating and tedious (if you can complete an entire skill, great). Focus on the number of questions per skill and not on completion. Please attempt AT LEAST 15 questions per skill. I do not encourage doing 3-4 questions on one skill and then moving on to another – shoot for 15!

To get the most out of IXL, if you miss a problem, spend some time looking at the feedback given-see what you did wrong. **ALSO, when working on IXL, please have pencil and paper at hand – this is NOT meant to be mental math – work the problems before answering!**

Be patient and take your time, it will pay off in the long run.

INCENTIVE:

Completion of 8 hours BEFORE the first day of school = a quiz grade of 100 and 1 homework pass.

Completion of each additional hour after 8 hours = 1 homework pass.

(A homework pass is just that, a pass from doing one homework assignment.)

HOW?

Log on to: www.ixl.com

If you have never used IXL or have forgotten your username & password, I have set them up for the class.

Your username is: first and last name, ALL LOWER CASE, followed by 330

Your password is: your last name in all lower case

FOR EXAMPLE, a student named John Smith:

User Name: johnsmith330

Password: smith

HONOR CODE: I can see each person's activity, section attempted, problems attempted, time spent and progress in real time – I will be checking periodically during the summer.

****I expect you to work on an honor code – your work is just that – YOUR work.***

IXL Sections to focus on: 6th Grade Section of Math

[Each Category is broken down into specific skills; it's the SKILLS that you will work through.]

****Please note**, should you find some of the skills challenging, I strongly encourage you to explore some of the lower grades of IXL focusing on the skills that you need reinforcement on.

You can never get enough practice working with fractions, decimals, integers and percent's.

There's NO SHAME going down to 4th and 5th grade for solid foundational practice. Do NOT go below 4th grade – anything attempted in 3rd grade or lower will not count towards your 8-hour requirement nor will working in another subject!! Working in 4th – 6th grade math WILL count towards your 8-hour goal.

Yes, you may work above 6th grade level math for more challenging problems if you choose and yes that will count towards your 8-hour goal (it must be in math though).

[2. {attached packet to start in August}]

7th Grade - PRE-ALGEBRA

You are to start working on the attached packet the first week of AUGUST.

- **DUE: This is due NO LATER THAN the 3rd day of school; for each day it's late after the 3rd day: -10 points.**
- **TYPE OF GRADE: Quiz grade.**
- **SHOW YOUR WORK ON THE WORK SHEETS. NO WORK, NO CREDIT!**

- There are examples provided for each section of the worksheet; please read them before attempting the problems.
- These sheets will get your brain thinking about math again!
- NO CALCULATORS please.

HAVE A GREAT SUMMER!!

Ms. Weikel

7th Grade – PRE-ALGEBRA

You are to start working on the attached packet the first week of AUGUST.

- **DUE:** This is due NO LATER THAN the 3rd day of school; for each day it's late after the 3rd day: -10 points.

 - **TYPE OF GRADE:** Quiz grade.

 - **SHOW YOUR WORK ON THE WORK SHEETS. NO WORK, NO CREDIT!**
-
- There are examples provided for each section of the worksheet; please read them before attempting the problems.
 - These sheets will get your brain thinking about math again!
 - NO CALCULATORS please.

HAVE A GREAT SUMMER!!

Ms. Weikel

Adding & Subtracting Decimals

1. Write the problem vertically, lining up the decimal points.
2. Add additional zeroes at the end, if necessary, to make the numbers have the same number of decimal places.
3. Add/subtract as if the numbers are whole numbers
4. Bring the decimal point straight down

ex: $14.2 - 7.934$

$$\begin{array}{r} 14.200 \\ - 7.934 \\ \hline 6.266 \end{array}$$

Multiplying Decimals

1. Write the problem vertically with the numbers lined up to the right. The decimal points do NOT need to be lined up.
2. Ignore the decimals and multiply as if the numbers are whole numbers.
3. Count the total number of decimal places in the factors and put a decimal point in the product so that it has that same number of decimal places.

ex: 6.94×7.8

$$\begin{array}{r} 6.94 \rightarrow 2 \text{ decimal places} \\ \times 7.8 \rightarrow 1 \text{ decimal place} \\ \hline + 5552 \\ + 48580 \\ \hline 54132 \end{array}$$

3 decimal places

54.132

Dividing Decimals

1. Write the dividend under the long division symbol and the divisor to the left of it.
2. Move the decimal point in the divisor after the number to turn it into a whole number and then move the decimal in the dividend the same number of places. Then bring it up.
3. Divide as if the numbers are both whole numbers.
4. Annex zeros in the dividend as needed until there is no remainder. If your answer is a repeating decimal, write the answer using bar notation.

ex: $25.3 \div 0.3$

$$\begin{array}{r} 84.\bar{3} \\ 0.3 \overline{) 25.30} \\ \underline{-24} \\ 13 \\ \underline{-12} \\ 10 \\ \underline{-9} \\ 1 \end{array}$$

Order of Operations

1. Grouping Symbols (parentheses, brackets, etc.)
2. Exponents
3. Multiplication & Division (left to right)
4. Addition & Subtraction (left to right)

ex: $5 + 4(3 - 1.2)$

$$5 + 4(1.8)$$

$$5 + 7.2$$

$$12.2$$

Evaluate each expression.

| | | |
|---------------------------|--------------------|--------------------------------|
| 1. $5.983 + 2.99$ | 2. $224 - 56.73$ | 3. $6.12 - 4.923$ |
| 4. $24.5 \cdot 3.2$ | 5. $0.23 \cdot 7$ | 6. $3.86 \cdot 9.15$ |
| 7. $14.8 \div 5$ | 8. $46.3 \div 1.5$ | 9. $147 \div 2.25$ |
| 10. $24.33 - 2.5 \cdot 7$ | 11. $3.9 + 4.5^2$ | 12. $9.25(18.4 - 2 \cdot 1.2)$ |

Solve each word problem, showing all work.

| | |
|---|---|
| 13. Jeff had \$46.18 in his wallet Monday morning. He gave half of his money to his brother. He then bought two donuts for \$0.75 each and a cup of coffee for \$2.99. How much money did Jeff have left? | 14. Five friends split a \$65.20 bill at a restaurant. They also each left \$2.75 for the tip. How much money did each person pay in all? |
|---|---|

Adding Fractions & Mixed Numbers

1. Find a common denominator for the two fractions.
2. Add the two numerators and keep the denominator the same.
3. Add the whole numbers.
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex: $3\frac{3}{4} + 2\frac{1}{2}$

$$\begin{array}{r} 3\frac{3}{4} = 3\frac{3}{4} \\ + \\ 2\frac{1}{2} = 2\frac{2}{4} \\ \hline 5\frac{5}{4} = 6\frac{1}{4} \end{array}$$

Subtracting Fractions & Mixed Numbers

1. Find a common denominator for the two fractions.
2. Subtract the two numerators and keep the denominators the same.
If the top numerator is smaller than the bottom numerator, borrow from the whole number and rename the top fraction.
3. Subtract the whole numbers.
4. Simplify the answer.

ex: $5\frac{1}{4} - 1\frac{2}{3}$

$$\begin{array}{r} 5\frac{1}{4} = 5\frac{3}{12} = 4\frac{15}{12} \\ - \\ 1\frac{2}{3} = 1\frac{8}{12} = 1\frac{8}{12} \\ \hline 3\frac{7}{12} \end{array}$$

Multiplying Fractions & Mixed Numbers

1. Turn any mixed numbers and whole numbers into improper fractions.
2. Cross-simplify if possible.
3. Multiply the numerators and then multiply the denominators
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex: $2\frac{1}{6} \cdot \frac{4}{7}$

$$\frac{13}{\cancel{3}^2} \cdot \frac{\cancel{4}^2}{7} = \frac{26}{21} = 1\frac{5}{21}$$

Dividing Fractions & Mixed Numbers

1. Turn any mixed numbers and whole numbers into improper fractions.
2. Keep the first fraction the same, change the division to multiplication, and flip the second fraction to its reciprocal.
3. Multiply the fractions.
4. Simplify the answer and/or change improper fraction answers to mixed numbers.

ex: $7 \div 1\frac{3}{4}$

$$\begin{array}{r} \frac{7}{1} \div \frac{7}{4} \\ \downarrow \\ \frac{7}{1} \cdot \frac{4}{\cancel{7}^1} = \frac{4}{1} = 4 \end{array}$$

Evaluate each expression.

| | | |
|--|------------------------------------|---------------------------------------|
| 15. $\frac{4}{5} + \frac{3}{4}$ | 16. $4\frac{2}{7} + 2\frac{9}{14}$ | 17. $8\frac{11}{12} + 9\frac{5}{18}$ |
| 18. $6 - \frac{3}{8}$ | 19. $8\frac{3}{5} - 2\frac{1}{3}$ | 20. $4\frac{1}{6} - \frac{8}{9}$ |
| 21. $\frac{4}{25} \cdot \frac{15}{16}$ | 22. $2\frac{3}{4} \cdot 8$ | 23. $6\frac{5}{8} \cdot 3\frac{1}{2}$ |
| 24. $\frac{7}{9} \div \frac{2}{3}$ | 25. $\frac{4}{5} \div 10$ | 26. $5\frac{2}{3} \div 2\frac{5}{6}$ |

Solve each word problem, showing all work.

| | |
|--|---|
| 27. Jaimie ran $3\frac{1}{2}$ miles on Monday. She ran half as far on Tuesday as she did on Monday. How far did Jaimie run in all on Monday and Tuesday? | 28. A $5\frac{1}{2}$ quart pot is filled $\frac{2}{3}$ of the way with water. How many more quarts of water can the pot hold? |
|--|---|

Ratios

Ratios are comparisons of two quantities.
There are 3 different ways to write ratios:

- Fraction $\left(\frac{A}{B}\right)$
- Colon (A:B)
- Word Form (A to B)

ex: write the ratio of triangles to circles
in 3 ways: $\blacktriangle \blacktriangle \blacktriangle \blacktriangle \bigcirc \bigcirc$

$$\frac{4}{2} = \boxed{\frac{2}{1}, 2:1, 2 \text{ to } 1}$$

Ratios can be simplified just like fractions.

Rates & Unit Rates

Rates are ratios that compare quantities measured in different units.
A unit rate is a rate with a denominator of 1.

ex: express as a unit rate:
125 miles in 4 hours

To convert a rate to a unit rate:

1. Divide the numerator by the denominator
2. Either write your answer as a fraction with a label for the both the numerator and denominator OR as one number labeled with the first unit "per" the second unit

$$\frac{125 \text{ mi}}{4 \text{ hr}} \quad 125 \div 4 = 31.25$$

$$\boxed{\frac{31.25 \text{ mi}}{1 \text{ hr}} \text{ or } 31.25 \text{ miles per hr}}$$

Fractions, Decimals, & Percent

To convert a:

- Decimal to Percent: move the decimal point 2 places to the right
- Percent to Decimal: move the decimal point 2 places to the left
- Decimal to Fraction: write the decimal over the place value of the last digit and then simplify
- Fraction to Decimal: divide the numerator by the denominator
- Percent to Fraction: write the percent over 100 and then simplify
- Fraction to Percent: convert the fraction to a decimal and then convert the decimal to a percent

ex: $0.345 = \boxed{34.5\%}$

ex: $7\% = \boxed{0.07}$

ex: $0.008 = \frac{8}{1000} = \boxed{\frac{1}{125}}$

ex: $\frac{1}{5} = 5 \overline{)1.0} = \boxed{0.2}$

ex: $45\% = \frac{45}{100} = \boxed{\frac{9}{20}}$

ex: $\frac{3}{10} = 0.3 = \boxed{30\%}$

Percent of a Number

1. Turn the percent to a fraction or decimal.
2. Multiply the fraction/decimal by the number.

ex: Find 18% of 40

$$0.18 \cdot 40 = \boxed{7.2}$$

Write each ratio in 3 ways.

29. A bank contains 15 pennies and 12 nickels. Write the ratio of nickels to pennies.

30. A bowl contains 6 apples and some bananas. If there are a total of 10 pieces of fruit, find the ratio of apples to bananas.

Convert each rate to a unit rate.

31. \$4.25 for 64 fluid ounces

32. 297 miles on 11 gallons of gas

33. 124 feet in 10 seconds

Complete the chart by converting each number to a percent, fraction, and/or decimal.

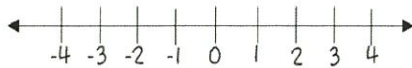
| | Fraction | Decimal | Percent |
|-----|-----------------|---------|---------|
| 34. | $\frac{3}{8}$ | | |
| 35. | | 0.45 | |
| 36. | | | 72% |
| 37. | | 0.1 | |
| 38. | $\frac{3}{200}$ | | |

Find each percent of a number.

| | | |
|----------------|---------------|---------------|
| 39. 30% of 90 | 40. 15% of 38 | 41. 50% of 86 |
| 42. 75% of 160 | 43. 24% of 35 | 44. 2% of 74 |

Comparing Integers

Integers are numbers without fractional parts. They can be positive, negative, or zero. The further right a number is on the number line, the greater it is.



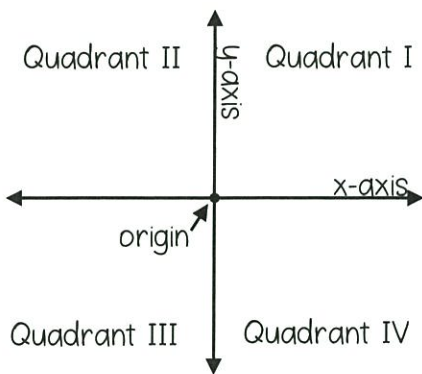
The absolute value of a number is the distance the number is from zero.

ex: compare with $<$, $>$, or $=$

-7 \bigcirc $|-9|$ \leftarrow The absolute value of $-9 = 9$

-7 $\boxed{<}$ 9

The Coordinate Plane

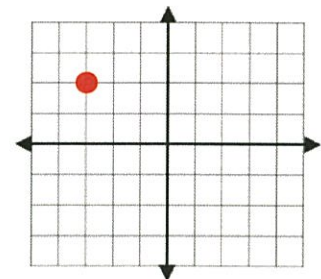


Ordered Pair: (x, y)

To graph a point on the coordinate plane, start at the origin. The first number in the ordered pair (the x-coordinate) tells you how far left (if negative) or right (if positive) to move. The second number (the y-coordinate) tells you how far up (if positive) or down (if negative) to move.

ex: Graph the point $(-3, 2)$ and state the quadrant in which it is located.

Start at the origin, and move LEFT 3 and UP 2



Quadrant II

Perimeter, Area and Volume

- Perimeter of Any Polygon: add all side lengths

- Area of a Rectangle: $A = lw$

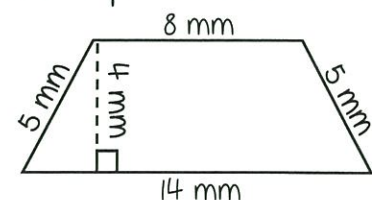
- Area of Parallelogram: $A = bh$

- Area of Triangle: $A = \frac{1}{2}bh$

- Area of Trapezoid: $A = \frac{1}{2}h(b_1 + b_2)$

- Volume of Rectangular Prism: $V = lwh$

ex: Find the perimeter & area:



Perimeter: $P = 5 + 8 + 5 + 14 = \boxed{32 \text{ mm}}$

Area: This is a trapezoid, so use the area of a trapezoid

formula: $A = \frac{1}{2}h(b_1 + b_2)$

The bases are the sides that are parallel, and the height is perpendicular to the bases.

$\rightarrow A = \frac{1}{2}(4)(8+14) = \boxed{44 \text{ mm}^2}$

Compare the integers with $<$, $>$, or $=$.

| | | | | |
|------------------------|------------------------|--------------------------|---------------------|-------------------------|
| 45. $-4 \bigcirc -5$ | 46. $2 \bigcirc -2$ | 47. $ -5 \bigcirc 5 $ | 48. $-7 \bigcirc 6$ | 49. $-13 \bigcirc -9$ |
| 50. $ -7 \bigcirc -6$ | 51. $-17 \bigcirc -14$ | 52. $ -3 \bigcirc -2 $ | 53. $0 \bigcirc -6$ | 54. $ -4 \bigcirc 6 $ |

Graph and label each of the ordered pairs in the coordinate plane. Then state the quadrant or axis in/on which the point is located.

| | | |
|---------------|---------------|--|
| 55. A(2, 4) | 56. B(0, -3) | |
| 57. C(1, -1) | 58. D(3, 3) | |
| 59. E(-4, 1) | 60. F(2, 0) | |
| 61. G(-3, -2) | 62. H(-2, 3) | |
| 63. I(0, 2) | 64. J(-1, -4) | |

Find the perimeter, area, and/or volume of the given figure.

| | | |
|---|--|---|
| <p>65. Find the perimeter & area:</p> | <p>66. Find the perimeter & area:</p> | <p>67. Find the perimeter & area:</p> |
| <p>68. Find the perimeter & area:</p> | <p>69. Find the area of a square with a perimeter of 45 cm</p> | <p>70. Find the volume:</p> |

Evaluating Algebraic Expressions

1. Substitute the given numbers for the variables
2. Evaluate the expression using the order of operations

ex: evaluate $x + 4y$ for
 $x = 4$ & $y = 6$

$$\begin{array}{r} 4 + 4(6) \\ 4 + 24 = \boxed{28} \end{array}$$

One-Step Addition & Subtraction Equations

- Addition Equations: Subtract the number being added to the variable from both sides of the equation

$$\begin{array}{r} \text{ex: } 4 + x = 18 \\ -4 \quad -4 \\ \hline x = 14 \end{array}$$

- Subtraction Equations: Add the number being subtracted from the variable to both sides of the equation

$$\begin{array}{r} \text{ex: } 20 = a - 5 \\ +5 \quad +5 \\ \hline 25 = a \rightarrow \boxed{a = 25} \end{array}$$

One-Step Multiplication & Division Equations

- Multiplication Equations: Divide both sides of the equation by the number next to the variable

$$\begin{array}{r} \text{ex: } 7b = 28 \\ \cancel{7} \quad \cancel{7} \\ \hline b = 4 \end{array}$$

- Division Equations: Multiply both sides of the equation by the number under the variable

$$\begin{array}{r} \text{ex: } 5 \cdot \frac{n}{5} = 10 \cdot 5 \\ \cancel{5} \quad \cancel{5} \\ \hline n = 50 \end{array}$$

Problem Solving

1. Read the problem. Identify the question that is being asked and the key information in the problem.
2. Plan how you are going to solve the problem and estimate the answer.
3. Solve the problem using the strategy of your choice.
4. Check your answer. Make sure your answer is reasonable and compare it to your estimate. Label your answer with appropriate units.

Evaluate each expression for $a = 5$, $b = 12$, $c = 10$, & $d = 2$.

| | | |
|-------------------------|-----------------|-----------------------|
| 71. $2b - a$ | 72. $d(ab - c)$ | 73. $3 + \frac{b}{d}$ |
| 74. $\frac{4a}{b + 4d}$ | 75. $2a^2 - c$ | 76. $b - c + d$ |

Solve each one-step equation.

| | | | |
|------------------------|-----------------------|------------------------|-------------------------|
| 77. $g + 3 = 17$ | 78. $r - 6 = 7$ | 79. $6b = 18$ | 80. $\frac{h}{q} = 3$ |
| 81. $5 = f - 8$ | 82. $48 = 12b$ | 83. $a + 24 = 83$ | 84. $17 + x = 23$ |
| 85. $10 = \frac{m}{5}$ | 86. $86.5 = f - 7.63$ | 87. $\frac{n}{6} = 11$ | 88. $\frac{3}{4}h = 12$ |

Solve each word problem using the method of your choice.

89. A fencing company charges \$22 per foot to install a wood fence. How much will it cost to install a wood fence around a rectangular pool area that is 20 feet wide and 38 feet long?

90. A 6 inch-tall plant grew $\frac{3}{4}$ of an inch one week and twice as much the following week. How tall is the plant now?

91. Jack can read 45 pages of his book in one and a half hours. At that rate, how long will it take him to read the entire 300-page book?

92. Brian ordered 3 large cheese pizzas and a salad. The salad cost \$4.95. If he spent a total of \$47.60 including the \$5 tip, how much did each pizza cost? (Assume there is no tax).

93. A cookie recipe calls for $3\frac{1}{4}$ cups of flour. The recipe makes 3 dozen cookies. How much flour is needed to make 144 cookies?

94. Ella has a box of chocolate candies. She gives $\frac{1}{3}$ of the candies to her sister, 4 to her brother, and she eats the remaining 12 candies. How many chocolate candies were in the box originally?

Solve each word problem using the method of your choice.

95. 20% of the 520 students in Wendover Middle School were involved in school sports. Of those students, 12.5% were on the wrestling team. How many students were on the wrestling team?

96. A piggy bank contains some dimes and nickels. There are 8 more dimes than nickels in the bank. There is a total of \$1.40. How many of each type of coin are in the bank?

97. An elevator in a tall building goes up 7 floors, then down 9 floors, down 4 floors, up 8 floors, and down 2 floors. Now it is on floor 14. On what floor did the elevator start?

98. Jenna danced for 3 hours on Sunday, 2 hours on Monday and Tuesday, 1 hour on Thursday, 1.5 hours on Friday, and 2 hours on Saturday. She did not dance at all on Wednesday. What is the average number of hours she danced each day? Round your answer to the nearest tenth of an hour.

99. Jackie makes \$15.25/hour babysitting. George makes \$18.50/hour mowing the lawn. If Jackie babysits for 4 hours and George mows lawns for 3 hours, who makes more money? How much more does he/she make?

100. A box of 8 crayons costs \$0.96. How much does each crayon cost? At that unit price, how much would a box of 30 crayons cost?