Algebra 1 Summer Homework
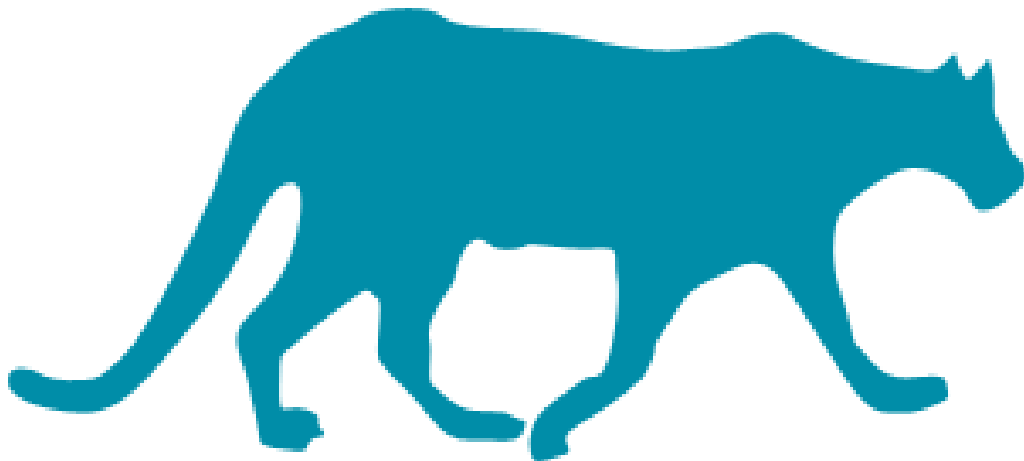
Dear Future Mathematician,

Teachers and administrators at Muchin College Prep feel it is important for scholars to continue to learn over the summer. Summer homework allows you to retain what you have learned during the school year. It will help you be successful in your math course next year. You should complete this summer homework in order to reach your full potential in mathematics.

Resources included in this packet include:

- Examples and problem sets emphasizing the most important algebra objectives to help prepare you for Algebra 1.

Directions:

- Work in **pencil** and **<u>show all of your work</u>** in the packet to receive full credit.
- A calculator may be used on any of the problems in this packet.
- Important: You will **receive a grade** for the completion of this packet. This packet is due the **first day of school.** You will receive LaSalle (homework detention) until this packet is completed.

Scholars and families are encouraged to use the following website(s) for support:

- Khan Academy: http://www.khanacademy.org/ includes video tutorials and worked examples organized by objective.

With any additional questions, please contact Ms. Deal at dedeal@muchincollegeprep.org.

See you in the fall!

Directions: Complete the following problems, showing all work necessary to find your answer. Failure to show your work (in its entirety) will result in LaSalle.

If you need help with #1 – 4 watch this: **https://tinyurl.com/zlmfr5v**

If you need help with #10 – 13 watch this: **http://tinyurl.com/mbkt5ad**

Factors + Multiples

Vocabulary:
- *Multiple: Any number that can be divided by another number without a remainder.*
  - *Example: Multiples of 2: 2, 4, 6, 8, 10 . . .*
- *Factor: Numbers you can multiply together to get another number.*
  - *Example: Factors of 10 – 1, 2, 5, 10*

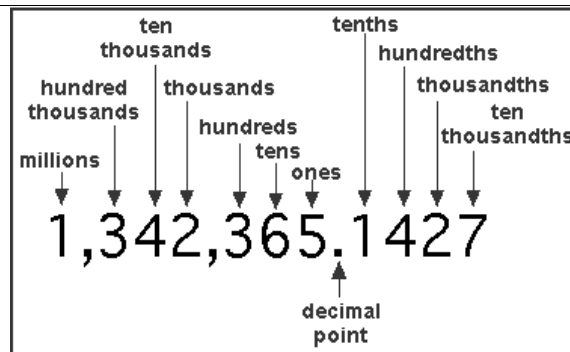| 1. What are all of the factor pairs of 48?	2. List the first 4 common multiples between 12 and 8.

3. Alyosha made two types of cakes: chocolate and vanilla. He cut all of the chocolate cakes into 6 slices each and all of the vanilla cakes into 10 slices each. If Alyosha ended up with the same total number of slices of each type of cake, what is the minimum number of slices of each type?

4. Describe your 8th grade math class. How did you feel in class?

Place Value + Rounding:

Rounding Rules:
- *"4 and below, let it go . . . 5 and above, give it a shove!"*
  - *Example: 2**6**, 498 → 26,000 (let 6 go)*
  - *Example: **2**6, 498 → 30,000 (shove 2 to 3)*

ten thousands   tenths
hundred thousands   thousands   hundredths
thousandths
hundreds   ten thousandths
tens
millions   ones

1,342,365.1427

decimal point

MathATube.com to gether we'll learn

5. Round 86.72531 to the designated place value.
- Hundredths place:

- Thousandths place:

6. What place value is the digit "5" located at in the following number?

4056.23

7. What place value is the digit "8" located at in the following number?

258,675

8. Ivan has $45.89 and needs to round to the nearest dollar – how much money does Ivan have?

9. Where does your name come from?

Order of Operations:

GEMA

- *Grouping*
- *Exponents*
- *Multiplication & Division*
- *Addition & Subtraction*

$$25 \div (8-3)^2 - 1$$
$$25 \div (5)^2 - 1$$
$$25 \div 25 - 1$$
$$1 - 1$$
$$0$$

10. Simplify the expression using order of operations: $5 \cdot 2^3 + 7(3 + 1)$

11. Simplify the expression using order of operations: $4^3 \div 8 + 8$

12. Simplify the expression using order of operations: $2^4 \cdot 4 - 2 \div 8$

13. Simplify the expression using order of operations $3[20 - (7 - 5)^2]$

Questions to ponder. . . On every assignment there will be one question for you to ponder. There is no right or wrong answer to these questions. You need to decide on your answer and DEFEND it

14. What is one thing your 8th grade math teacher did that you want all your teachers to do?

15. Describe your learning style. How do you learn best?

16. On the same day in history, a researcher captures a live loch ness monster, the President announces that the potentially has thyroid cancer and is getting a biopsy, and NASA announces that they have discovered life on Mars. You are the editor of the New York Times – which story do you choose to run on the front page?

Name:_____

Date: _____

Directions: Complete the following problems, showing all work necessary to find your answer. Failure to show your work (in its entirety) will result in LaSalle.

*If you need help solving percentage questions, watch this: http://tinyurl.com/kdpdwhm

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To find a percentage $\rightarrow \frac{part}{whole} \, x \, 100$

Example: If I take the bus to school 18 times out of the 35 times I travel to school (I take the El the remaining times), I take the bus 51% of the time, because $\frac{18}{35} = 0.51 \, x \, 100 = 51\%$.

1.) Fyodor shot a total of 217 times last hockey season. If he made 73 of those shots, what percentage did he make? (round to the nearest tenth)	**2.)** Grushenka answered 60 out of 72 questions correct on her last Algebra test. What percentage did she earn on the quiz (rounded to the nearest whole percentage)?

3.) Alyosha is playing trashketball. He throws 51 balls of crumpled paper, making 36 of his shots. What percentage accuracy did Alyosha have, rounding your answer to the nearest whole percent?

Questions to ponder. . . On every assignment there will be one question for you to ponder. There is no right or wrong answer to these questions. You need to decide on your answer and DEFEND it

4.) What are three things you would say about yourself? Three things your family would say about you? And three things your rivals would say about you? (You need to use positive words only AND you may not repeat a word!)

You:

Family/Friends:

Rivals:

5.) If you could travel anywhere in the world, where would you go and why?	**6.)** Is a hot dog a sandwich? Why?

To find the percentages:

- To convert the percentage into a decimal: $\frac{\text{percentage}}{100}$.
  - *Example*: What is 40% written as a decimal?
    - $40\% = \frac{40}{100} = 0.4$.
- To find the **percent of** an original, multiply:
  - *Example*: A sweater is on sale and costs only 40% of its original price of $18.00. What is its sale price?
    - $\$18 \times 0.4 = \$7.20$
- To **increase** or **decrease by a percent**, add or subtract from 100%:
  - *Example*: A sweater is on sale and its original price of $18.00 has decreased by 60%. What is its sale price?
    - $100\% - 60\% = 40\%$
    - $\$18 \times 40\% = \$7.20$
- To find percent change, subtract from new value from original and then divide by original.
  - *Example*: A sweater is on sale for $7.20. If its original price was $18.00, by what percent has the price been cut?
    - $\frac{\$7.20 - \$18.00}{\$18.00} = -60\%$
    - (negative answer because of **decrease**)

7.) The grocery store has a fruit basket for $25. The fruit basket includes mangoes, papayas, and guava. Usually papayas costs $15, mangoes cost $8, and papayas cost $9. What The fruit basket is what percent cheaper than buying the individual fruit separately?

8.) A sweater is 20% off. If the sweater is usually $45, how much is the savings?

9.) One round of laser tag costs $23.45. If sales tax is 8%, how much will tax be?

10.) Before taxes, Fyodor makes $380,000 per week. If 38% of his money is paid for different taxes, how much money does Fyodor make after taxes are deducted?

11.) In Chicago, a coat that cost $45.99 has a sales tax of 9.25%. What is the final price of the sweater after tax?

12.) A bill for lunch costs $48 dollars. Alyosha wants to leave a 20% tip. How much would he need to tip?

13.) If you can have any superpower, which would you choose? How much money would you be willing to pay for it?

Name:_____

Date: _____

Use the following example to help you complete #7-10.

A. $\dfrac{16}{p} = \dfrac{24}{12.9}$ B. $\dfrac{14}{88} = \dfrac{c}{132}$

$\dfrac{16}{p} \times \dfrac{24}{12.9}$ $\dfrac{14}{88} \times \dfrac{c}{132}$

$206.4 = 24p$ *Set cross products equal.* $88c = 1848$

$\dfrac{206.4}{24} = \dfrac{24p}{24}$ *Divide both sides.* $\dfrac{88c}{88} = \dfrac{1848}{88}$

$8.6 = p$ $c = 21$

Use cross multiplication to solve for the variables in each of the following questions.

1) $\dfrac{7}{6} = \dfrac{r}{9}$, solve for r.	2) $\dfrac{10}{11} = \dfrac{n}{5}$, solve for n.
3) $\dfrac{t}{9} = \dfrac{4}{7}$, solve for t.	4) $\dfrac{x+2}{3} = \dfrac{x}{4}$, solve for x.

Rates

5) If 4 tickets to a show cost $9.00, how much will 14 tickets cost?	6) Maria is making pancakes for the annual pancake breakfast. She needs 2 cups of batter to make eight 7-inch pancakes. If Maria needs to make 1,200 7-inch pancakes, how many cups of batter does she need?