

**FOR ALL STUDENTS
TAKING PRE-ALGEBRA**

2013-2014

SUMMER REVIEW PACKET

Dear Student and Parent/Guardian,

The math department at Central Dauphin School District wants you to be successful in Pre-Algebra. We also want you to be prepared for PSSAs. This summer packet is designed to help you reach these goals by reviewing necessary skills.

Be sure to follow the key information below when completing this packet:

- The packet is due when you return to school in August.
- **Every problem must be completed. None left blank.**
- The packet is worth 10 times a regular homework grade.
- Work must be shown to receive credit – no work, no points.
Show the work on the packet pages. Do NOT add additional pages.
- A Quiz covering the material from the packet may be given at the end of the first week of school. These topics also tie in with the first few units of Pre-Algebra.
- All topics covered in the packet should be completed without the aid of a calculator. No calculator will be allowed on the Quiz.
- When you return in August, you will have the opportunity to ask questions. Math Help will also be available during the first week.

In addition, it is our expectation for every student to know their multiplication facts by memory up to and including 12.

We hope that you have an enjoyable summer and return to school ready to be successful in Pre-Algebra!

Helpful Websites www.glencoe.com www.regentsprep.org www.khanacademy.org
www.purplemath.com/modules
www.Aleks.com (a website where you can subscribe for individual math lessons)

A. Fractions & Decimals

Place Value with decimals

0.29456

Tenths
Hundredths
Thousandths
Ten Thousandths
Hundred Thousandths

Changing Decimals to Fractions / Mixed Numbers

0.28

$$\frac{28}{100}$$

$$\frac{28 \div 4}{100 \div 4}$$

$$\frac{7}{25}$$

0.102

$$\frac{102}{1000}$$

$$\frac{102 \div 2}{1000 \div 2}$$

$$\frac{51}{500}$$

31.0045

$$31 \frac{45}{10000}$$

$$31 \frac{45 \div 5}{10000 \div 5}$$

$$31 \frac{9}{2000}$$

Changing Fractions / Mixed Numbers to Decimals:

$$\frac{3}{8}$$

$$\begin{array}{r} 0.375 \\ 8 \overline{)3.000} \\ \underline{-24} \\ 60 \\ \underline{-56} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

0.375

$$18 \frac{2}{3}$$

$$\begin{array}{r} 0.666 \\ 3 \overline{)2.000} \\ \underline{-18} \\ 20 \\ \underline{-18} \\ 20 \\ \underline{-18} \\ 2 \end{array}$$

18.6

Fill in the table with a fraction / mixed number (simplest form) or decimal.

Fraction	Decimal	Fraction	Decimal
$\frac{1}{2}$	0.50	$\frac{7}{5}$	1.4
$\frac{12}{9}$		$\frac{999}{1000}$	
0.006		2.5	
$\frac{13}{16}$			14.022
	0.01	$\frac{6}{7}$	

Show your work in the space provided below.

B. Factors

Two or more numbers that are multiplied to form a product are called factors.

$$\boxed{\text{Factors}} \rightarrow 4 \times 9 = 36 \leftarrow \boxed{\text{Product}}$$

So, 4 and 9 are factors of 36 because they each divide 36 with a remainder of 0. We can say that 36 is divisible by 4 and 9. However, 5 is not a factor of 36 because $36 \div 5 = 7$ with a remainder of 1.

Example: List all the factors of 72

Number	72 Divisible by Number?	Factor Pairs
1	yes	1×72
2	yes	2×36
3	yes	3×24
4	yes	4×18
5	no	-----
6	yes	6×12
7	no	-----
8	yes	8×9
9	yes	9×8

Use division to find the other factor in each factor pair.

$$72 \div 2 = 36$$

You can stop finding factors when the numbers start repeating.

The factors of 72 are 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, and 72.

List all the factors of each number.

1.) 75

2.) 57

3.) 90

4.) 102

C. Comparing and Ordering Decimals

Examples: Write $<$ or $>$ in the answer blank to make a true statement.

$2.36 \underline{\quad} 2.4$

$0.043 \underline{\quad} 0.0092$

2.36 Write the numbers one above the other.

2.36 Line up the decimal points.

$0.043\underline{0}$

2.40 Write an additional zero(s) to easily compare
OR compare the first place value where the
digits are not the same.

0.0092

$2.36 \underline{<} 2.4 \quad (3 \text{ tenths is less than } 4 \text{ tenths})$

$0.043 \underline{>} 0.0092$

Write $<$ or $>$ in the answer blank to make a true statement.

1.) $4.05 \underline{\quad} 4.45$

2.) $3.005 \underline{\quad} 3.05$

3.) $1.9 \underline{\quad} 1.96$

4.) $32.1 \underline{\quad} 3.215$

5.) $0.943 \underline{\quad} 0.4991$

6.) $0.048 \underline{\quad} 0.11$

7.) $9.1 \underline{\quad} 9.005$

8.) $0.66 \underline{\quad} 0.582$

Order each set of decimals from least to greatest.

Example: 9.07, 8.925, 9.5, 9.48

$9.07\underline{0} \rightarrow 2^{\text{nd}}$

$8.925 \rightarrow 1^{\text{st}} \text{ (smallest)}$

$9.5\underline{00} \rightarrow 4^{\text{th}} \text{ (largest)}$

$9.48\underline{0} \rightarrow 3^{\text{rd}}$

Final Answer: 8.925, 9.07, 9.48, 9.5

9.) {0.2, 1.0, 0.06}

10.) {3.5, 0.6, 2.06, 0.28}

11.) {7.026, 7.061, 7.009, 7.1}

D. Adding and Subtracting Decimals

To add or subtract decimals, write the numbers vertically and be sure to line up the decimal points. Then add or subtract and bring down the decimal point into the answer.

Ex. $8.2 + 3.4$

$$\begin{array}{r} 8.2 \\ + 3.4 \\ \hline 11.6 \end{array}$$

Line up the decimal points. Then add.

Ex. $7 - 1.75$

$$\begin{array}{r} 7.00 \\ - 1.75 \\ \hline 5.25 \end{array}$$

Add zeros. Line up the decimal points. Then subtract.

1.) $5.2 - 3.01$

2.) $9.43 + 1.8$

3.) $0.8 + 9.612$

4.) $18 - 12.31$

5.) How much more than \$102.90 is \$115?

E. Rounding

Round each number to the nearest whole number or dollar.

1.) 3.2

2.) \$50.57

3.) 38.726

Examples: $\underline{5.8}$ rounds to 6
 $\underline{5.3}$ rounds to 5

Round each number to the nearest tenth.

4.) 16.57

5.) 53.865

6.) 49.975

Examples: $5.\underline{2}46$ rounds to 5.2
 $5.\underline{2}7$ rounds to 5.3

Round each number to the nearest hundredth.

7.) 62.624

8.) 85.5639

9.) 458.7625

Examples: $5.\underline{27}9$ rounds to 5.28
 $5.\underline{27}16$ rounds to 5.27

F. Multiplying and Dividing Decimals

Ex. 6.3(2.1)

$$\begin{array}{r}
 6.3 \leftarrow 1 \text{ decimal place} \\
 \times 2.1 \leftarrow 1 \text{ decimal place} \\
 \hline
 63 \\
 1260 \leftarrow \text{Add a zero for place value} \\
 \hline
 13.23 \leftarrow 2 \text{ decimal places} \\
 \hline
 \text{The product is } \underline{\underline{13.23}}.
 \end{array}$$

Ex. 9.47(0.5)

$$\begin{array}{r}
 9.47 \leftarrow 2 \text{ decimal place} \\
 \times 0.5 \leftarrow 1 \text{ decimal place} \\
 \hline
 4.735 \leftarrow 3 \text{ decimal places} \\
 \hline
 \text{The product is } \underline{\underline{4.735}}.
 \end{array}$$

When you divide decimals, the goal is for the divisor (the number you are dividing by on the “outside” of the long division) to be a **whole number**.

Move the decimal point to the right however many spaces you need until the divisor (on the “outside”) is a whole number. Move the decimal point on the “inside” the same number of spaces.

$$\begin{array}{r}
 128 \\
 0.25 \overline{) 32.00} \\
 \underline{25} \\
 70 \\
 \underline{50} \\
 200 \\
 \underline{200} \\
 0
 \end{array}$$

Move each decimal point right two places

$$\begin{array}{r}
 1.5 \\
 0.8 \overline{) 1.20} \\
 \underline{8} \\
 40 \\
 \underline{40} \\
 0
 \end{array}$$

Move each decimal point right one place

Find each product or quotient.

1.) $1.4(6.1)$

2.) 0.47×3.01

3.) $0.001(7.09)$

Showing Multiplication:

$1.4(6.1)$
means 1.4×6.1

4.) $0.51 \div 0.03$

5.) $0.384 \div 1.2$

6.) $25.9 \div 2.8$

G. Order of Operations

How to:

1. Perform operations inside parentheses
2. Do any exponents
3. Multiply or divide from left to right
4. Add or subtract from left to right

Showing Multiplication:

$$6 \cdot 7 \text{ means } 6 \times 7$$

Example 1:

$$9 + 12 \div 3 \cdot 2 \cdot 5 \div 10$$

Work

$$9 + 12 \div 3 \cdot 2 \cdot 5 \div 10$$

$$9 + 4 \cdot 2 \cdot 5 \div 10$$

$$9 + 8 \cdot 5 \div 10$$

$$9 + 40 \div 10$$

$$9 + 4$$

$$\textcircled{13}$$

Example 2:

$$27 - 2 \cdot (4 - 1) + 7$$

Work

$$27 - 2 \cdot (4 - 1) + 7$$

$$27 - 2 \cdot 3 + 7$$

$$27 - 6 + 7$$

$$21 + 7$$

$$\textcircled{28}$$

← Perform operations inside parentheses.

← Multiply.

← Add/Subtract going left to right.

Use the order of operations to find the value of each expression.

1.) $(3 \cdot 4) - 9$

2.) $23 + 7 \cdot (18 \div 6)$

3.) $100 + 10 \cdot 2 \div 4 \cdot 3 - 1$

4.) $(16 \div 4) \cdot (5 + 5)$

5.) $15 \cdot (13 - 7) \div (8 - 5)$

6.) $16 \div 4 \cdot 1 + 3 - 5 + 2$