

Name: _____

Date: _____

Lakelands Park Middle School



Investigations into Mathematics Summer Packet

Dear student,

Hooray! Summer vacation is almost here and the start of the new school year is just around the corner. We want you to be as prepared as possible for the school year. It is important that you have a smooth transition to your new math class right at the beginning of the school year. With this in mind, we are providing a practice workbook of previously taught skills for you to complete over the summer.

It is your responsibility to complete the packet before the start of the school year. Please look for the calculator and no calculator symbols throughout the packet. Your new math teacher is expecting to see all work necessary to solve the problems in this packet. Work space is provided. However, if you use lined paper, please attach it to your packet. Your signature at the bottom of the page signifies that you have completed all work to the best of your ability and tried your best to complete the packet. If you have trouble on some of the information, seek assistance from a parent/guardian or other adult who may be able to assist you! Best wishes and we will see you soon!

Sincerely,
LPMS Mathematics Department

Dear Parent/Guardian,

It is important to us that your child has a smooth transition into a new math course. With this in mind, we are providing a practice workbook of previously taught skills for your child to complete over the summer. By doing so, it is our goal to increase your child's retention of mathematics' skills and to assure a clear understanding of expectations we have for students in the upcoming year in math.

Please encourage and monitor your child's completion of this workbook. Please make sure that ALL WORK IS SHOWN on each page or on attached paper. Remember, the goal is to work on it consistently throughout the summer and not to rush to finish it quickly. Students are to submit their workbooks to their math teachers within the first week of school. The packet will be assessed for a completion grade. Please sign and date the bottom of this document stating that your child has completed the summer math packet to the best of his/her ability.

A list of suggested supplies and resources is also attached to this summer packet. The math department will be using graphing calculators for classroom instruction, homework completion, and MCPS assessments. Students may choose to purchase their own to bring back and forth to school. It is recommended that you purchase the graphing calculator during the summer so that your child can become acquainted with it before school starts in the fall. Thank you for your support!

Suggested Math Supplies for Investigations Into Mathematics (IM) Student:

- #2 pencils
- Paper (refill as needed)
- Graph Paper
- Protractor- basic and clear
- Compass
- Graphing Calculator- TI 83+/TI-84

Sincerely,
LPMS Mathematics Department

Please fill in the following information when the summer math packet is complete:

Student Signature	Grade:	Date:


Parent/Guardian Signature	Date




Note: Answers for the packet can be found on the Lakelands Park MS Web Page.

IM 7: Suggested Supplies

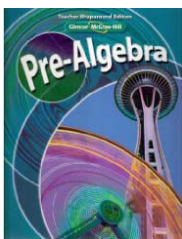
Protractor	Compass- Choice 1	Compass- Choice 2
		
<ul style="list-style-type: none"> Clear Plastic Protractors with a small hole are the easiest for the children to use. The protractor above is available at most office supply stores. 	<ul style="list-style-type: none"> Metal compasses are the easiest for student to use. They won't move around as much as the plastic ones. Compasses with wheels in the middle are the most stable to use. The compasses above are available at most office supply stores. 	<ul style="list-style-type: none"> Safety compasses have unique slides that are easy to adjust and easy to tighten, yet hold firm when students go to sketch a figure. These compasses are available online or at most teacher supply stores.
Cost- \$0.50	Cost- \$2 - \$10	Cost- \$2 - \$4

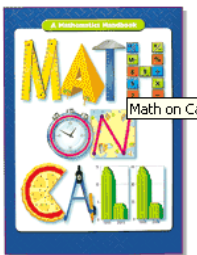
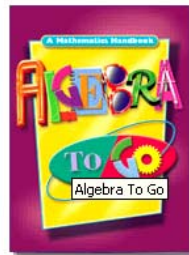
Calculators

SUGGESTED!
Texas Instrument Graphing Calculator (TI-83+ or 84)

Graphing calculators will be utilized in the IM 7 curriculum. It will also be utilized daily for the Algebra course in the following school year. Graphing calculators can be rented from LPMS. Ask your child's Math teacher for a calculator rental form.
Cost: \$100 - \$120

Scientific calculators are helpful for fractional operations!		
Casio FX-300MS Plus 229	Texas Instrument TI-30X IIS	Texas Instrument TI-34II
		
The number sentence stays on the top of the screen. The student can scroll through previous operations. It turns off automatically. This is one of the calculators used by the LPMS math department.	The calculator automatically simplifies fractions. It will also turn off automatically as long as it has a solar panel at the top of the calculator.	This is one of the calculators used by the LPMS math department.
Cost- \$15	Cost- \$17	Cost- \$25

IM 7: Textbook & Resources

Provided

Glencoe: Pre-Algebra (2008 Edition)
The textbook provided to your child is the standard MCPS textbook. It is the Glencoe Pre-Algebra textbook (2008 edition). One textbook will be issued at no cost to each student by LPMS math department.

Additional Resources (Optional)	
	
Math On Call	Algebra To Go
"Math on Call" is a great resource to guide students through complicated tasks. The text is kid friendly and easy to read. This text can be used when reviewing past topics. It also matches some concepts in the IM course.	"Algebra To Go" is a great resource to guide students through complicated tasks. The text is kid friendly and easy to read. It closely matches our IM and Algebra curriculums.
ISBN #: 0-669-45770-1	Cost: \$25
ISBN #: 0-669-47151-8	Cost: \$25

Note: All costs are approximate.

Whole Number Operations- Help Page

Whole Numbers- Addition and Subtraction Help

Adding numbers with different places requires lining up the units column. Your problem should always be justified on the right side. The key to adding is regrouping. If a column adds up to more than ten, then the tens digit of the sum needs to be included in the next column.

Examples:

$\begin{array}{r} 567 \\ + 295 \\ \hline \end{array}$	→	$\begin{array}{r} 1 \\ 567 \\ + 295 \\ \hline 62 \end{array}$	→	$\begin{array}{r} 1 \\ 567 \\ + 295 \\ \hline 862 \end{array}$
$7 + 5 = \underline{12}$ (I have to carry the <u>1</u>)		$1 + 6 + 9 = \underline{16}$ (I have to carry the <u>1</u>)		$1 + 5 + 2 = 8$ (I don't have to carry because my number is less than 10)

Subtracting numbers with different places requires lining up the units column. Your problem should always be justified on the right side. The key to adding is regrouping. If a column adds up to more than ten, then the tens digit of the sum needs to be included in the next column.

Examples:

I cannot subtract $6 - 7$, so I must borrow from the 4 and make the 6 a 16.	→	I cannot subtract $3 - 5$, so I must borrow from the 3 and make the 3 a 13.	→	I can subtract $2 - 1$ so I do not have to borrow.
$\begin{array}{r} 316 \\ - 157 \\ \hline \end{array}$		$\begin{array}{r} 213 \\ - 157 \\ \hline \end{array}$		$\begin{array}{r} 2 \\ - 157 \\ \hline 189 \end{array}$

Whole Numbers- Multiplication Help

Step #1

Line up the numbers vertically (right justified). Multiply each digit in the top line by the ones digit in the bottom line (far right). Carry when necessary.

$3 \times 5 = 15$ $15 + 1$ (carried) = 16. I write the 16 next to the 8.	$\begin{array}{r} 1 \\ 56 \\ \times 23 \\ \hline 168 \end{array}$	$3 \times 6 = 18$ I place the 8 below and carry the 1.
---	---	---

Step #2

Write a 0 under the last term you multiplied by (3 in the example) as a place holder. Then multiply each digit of the top line by the tens digit in the bottom line.

Multiply 2×6 . Place 2 below and carry the 1. Multiply 2×5 and add the carried 1.	$\begin{array}{r} 1 \\ 56 \\ \times 23 \\ \hline 68 \\ 1120 \end{array}$
---	--

Step #3

Add the numbers together. Carry when necessary.

	5	6
	x	23
	168	
+	1120	
	1288	

The answer is 1,120

Whole Numbers- Division Help

You can always use the mnemonic device to help you remember the steps.

<u>D</u> addy	<u>M</u> ommy	<u>S</u> ister	<u>B</u> rother	Then repeat the process over again!
Step 1: <u>D</u> ivide	Step 2: <u>M</u> ultiply	Step 3: <u>S</u> ubtract	Step 4: <u>B</u> ring down	

Round 1	Round 2	Round 3																														
<table border="1" style="width: 100%; text-align: center;"> <tr><td colspan="2">Divide: $76 \div 12$ is about 4</td></tr> <tr><td colspan="2">Multiply: $12 \times 6 = 72$</td></tr> <tr><td colspan="2">Subtract: $76 - 72 = 4$</td></tr> <tr><td colspan="2">Bring Down: Bring the 0 down.</td></tr> <tr><td colspan="2">Repeat the steps!</td></tr> </table>	Divide: $76 \div 12$ is about 4		Multiply: $12 \times 6 = 72$		Subtract: $76 - 72 = 4$		Bring Down: Bring the 0 down.		Repeat the steps!		<table border="1" style="width: 100%; text-align: center;"> <tr><td colspan="2">Divide: $76 \div 12$ is about 4</td></tr> <tr><td colspan="2">Multiply: $12 \times 6 = 72$</td></tr> <tr><td colspan="2">Subtract: $76 - 72 = 4$</td></tr> <tr><td colspan="2">Bring Down: Bring the 0 down.</td></tr> <tr><td colspan="2">Repeat the steps!</td></tr> </table>	Divide: $76 \div 12$ is about 4		Multiply: $12 \times 6 = 72$		Subtract: $76 - 72 = 4$		Bring Down: Bring the 0 down.		Repeat the steps!		<table border="1" style="width: 100%; text-align: center;"> <tr><td colspan="2">Divide: $76 \div 12$ is about 4</td></tr> <tr><td colspan="2">Multiply: $12 \times 6 = 72$</td></tr> <tr><td colspan="2">Subtract: $76 - 72 = 4$</td></tr> <tr><td colspan="2">Bring Down: Bring the 0 down.</td></tr> <tr><td colspan="2">Repeat the steps!</td></tr> </table>	Divide: $76 \div 12$ is about 4		Multiply: $12 \times 6 = 72$		Subtract: $76 - 72 = 4$		Bring Down: Bring the 0 down.		Repeat the steps!	
Divide: $76 \div 12$ is about 4																																
Multiply: $12 \times 6 = 72$																																
Subtract: $76 - 72 = 4$																																
Bring Down: Bring the 0 down.																																
Repeat the steps!																																
Divide: $76 \div 12$ is about 4																																
Multiply: $12 \times 6 = 72$																																
Subtract: $76 - 72 = 4$																																
Bring Down: Bring the 0 down.																																
Repeat the steps!																																
Divide: $76 \div 12$ is about 4																																
Multiply: $12 \times 6 = 72$																																
Subtract: $76 - 72 = 4$																																
Bring Down: Bring the 0 down.																																
Repeat the steps!																																
<table border="1" style="width: 100%; text-align: center;"> <tr><td>$12 \overline{) 7608}$</td><td>63</td></tr> <tr><td>$- 72$</td><td></td></tr> <tr><td>40</td><td></td></tr> </table>	$12 \overline{) 7608}$	63	$- 72$		40		<table border="1" style="width: 100%; text-align: center;"> <tr><td>$12 \overline{) 7608}$</td><td>63</td></tr> <tr><td>$- 72$</td><td></td></tr> <tr><td>40</td><td></td></tr> <tr><td>$- 36$</td><td></td></tr> <tr><td>48</td><td></td></tr> </table>	$12 \overline{) 7608}$	63	$- 72$		40		$- 36$		48		<table border="1" style="width: 100%; text-align: center;"> <tr><td>$12 \overline{) 7608}$</td><td>634</td></tr> <tr><td>$- 72$</td><td></td></tr> <tr><td>40</td><td></td></tr> <tr><td>$- 36$</td><td></td></tr> <tr><td>48</td><td></td></tr> <tr><td>$- 48$</td><td></td></tr> <tr><td>0</td><td></td></tr> </table>	$12 \overline{) 7608}$	634	$- 72$		40		$- 36$		48		$- 48$		0	
$12 \overline{) 7608}$	63																															
$- 72$																																
40																																
$12 \overline{) 7608}$	63																															
$- 72$																																
40																																
$- 36$																																
48																																
$12 \overline{) 7608}$	634																															
$- 72$																																
40																																
$- 36$																																
48																																
$- 48$																																
0																																
		<table border="1" style="width: 100%; text-align: center;"> <tr><td colspan="2">Subtract: $76 - 72 = 4$</td></tr> <tr><td colspan="2">Bring Down: Bring the 0 down.</td></tr> <tr><td colspan="2">The final answer is 634!</td></tr> </table>	Subtract: $76 - 72 = 4$		Bring Down: Bring the 0 down.		The final answer is 634!																									
Subtract: $76 - 72 = 4$																																
Bring Down: Bring the 0 down.																																
The final answer is 634!																																

Whole Number Operations



See previous page for assistance.

a) $\begin{array}{r} 8,875 \\ 7,260 \\ + 5,107 \\ \hline \end{array}$	b) $\begin{array}{r} 94,289 \\ + 43,407 \\ \hline \end{array}$	c) $\begin{array}{r} 3,962 \\ 5,849 \\ + \quad 888 \\ \hline \end{array}$	d) $\begin{array}{r} 45,876 \\ + 9,123 \\ \hline \end{array}$
e) $89,476 - 9,880$	f) $35,065 - 807$	g) $49,517 - 17,824$	h) $1,005 - 876$
i) $825 \cdot 31$	j) 647×9	k) $209(29)$	l) $(47)(29)$
m) $12 \overline{)3,048}$	n) $5 \overline{)6,170}$	o) $21 \overline{)18375}$	p) $8 \overline{)59400}$

Understanding Fractions



Hints:

Simplifying Fractions	Mixed Numbers Into Improper Fractions	Improper Fractions Into Mixed Numbers
<p>Example:</p> $\frac{16}{20} = \frac{16 \div 4}{20 \div 4} = \frac{4}{5}$ <p style="text-align: center;"><i>or</i></p> $\frac{16}{20} = \frac{16 \div 2}{20 \div 2} = \frac{8 \div 2}{10 \div 2} = \frac{4}{5}$	<p>Example:</p> $+ \begin{array}{c} \text{5} \\ \text{2} \\ \text{3} \end{array} = \frac{15+2}{3} = \frac{17}{3}$	<p>Example:</p> $\frac{26}{3} = 8 \frac{2}{3}$ <div style="display: flex; align-items: center; justify-content: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; color: blue; margin-right: 10px;">DIVISOR</div> <div style="text-align: center;"> $\begin{array}{r} 8 \\ 3 \overline{) 26} \\ \underline{- 24} \\ 2 \end{array}$ </div> <div style="writing-mode: vertical-rl; font-weight: bold; color: green; margin-left: 10px;">REMAINDER</div> </div> <p style="text-align: center; color: red; font-weight: bold; margin-top: 5px;">NUMERATOR</p>
<p>Look for a number that can be divided evenly into the top & bottom number (common factor). Divide top & bottom number by the common factor. Repeat until 1 is the only common factor.</p>	<p>1) Multiply the denominator (bottom number) times the whole number. 2) Add that number to the numerator (top number).</p>	<p>Divide the numerator (top) by the denominator (bottom). Note: The remainder is the numerator and denominator doesn't change.</p>

Simplify each fraction or mixed number. Show all work.

a) $\frac{12}{24} =$	b) $\frac{30}{38} =$	c) $\frac{8}{20} =$
d) $\frac{24}{30} =$	e) $\frac{12}{60} =$	f) $\frac{9}{42} =$

Write each mixed number as an improper fraction.

a) $7 \frac{3}{9}$	b) $8 \frac{2}{15}$	c) $3 \frac{5}{8}$	d) $5 \frac{2}{13}$
e) $11 \frac{4}{5}$	f) $9 \frac{7}{8}$	g) $13 \frac{1}{2}$	h) $5 \frac{3}{4}$

Write each improper fraction as a mixed number.

a) $\frac{21}{4}$	b) $\frac{35}{2}$	c) $\frac{19}{11}$	d) $\frac{45}{3}$
e) $\frac{32}{7}$	f) $\frac{77}{8}$	g) $\frac{121}{18}$	h) $\frac{26}{5}$

Fraction & Mixed Number Operations- Help Page

Steps and Examples for Finding the Least Common Multiples LCM and Greatest Common Factors GCF

- 1) Write the two numbers next to each other.
- 2) Draw a line before the first number listed.
- 3) Find a common factor of the 2 numbers. Place that number in front of the line next to the original two numbers. (HINT: Try 2, 3, 4, 5, and 7 first)
- 4) Divide each of the two original numbers by the common factor, placing the resulting numbers directly below.
- 5) Repeat this process until the only common factor is 1.
- 6) Multiply all the factors to find the GCF
- 7) Multiply the common factors and what is left over to find the LCM

2	10	20
5	5	10
1	2	

LCM

Multiply the numbers in the shaded "L" (factors and remaining two numbers on bottom)

$$2 \cdot 5 \cdot 1 \cdot 2 = 20$$

GCF

Find the GCF by multiplying the numbers in the first vertical column ($2 \cdot 5 = 10$)

Simplifying Fractions

A fraction is in simplest form when its numerator and denominator have no common factor other than one. There are two ways you can simplify fractions.

Choice One: Common Factors

You can divide the numerator and denominator by common factors until the only common factor is 1. The best order of common factors is 2, 3, 5, 4, 9, and then divide.

Example:

$$\frac{24}{32} \div \frac{2}{2} = \frac{12}{16} \div \frac{2}{2} = \frac{6}{8} \div \frac{2}{2} = \frac{3}{4}$$

Choice Two: Greatest Common Factor

You can also divide the numerator and denominator by the greatest common factor. You can find the greatest common factor by drawing the LCD table and multiplying together the common factors.

Example:

$$\frac{24}{32} \div \frac{8}{8} = \frac{3}{4}$$

	24	32
4	6	8
2	3	4

$$\text{GCF} = 2 \cdot 4 = 8$$

Adding Fractions and Mixed Numbers

- Write the problem up and down!
- Find the LCD! (Draw your L)
- Rewrite the fractions
- Leave the whole numbers alone
- Add the numerators
- Add the whole numbers
- Simplify and change your answer into a mixed number!

$$3 \frac{6}{10} = 3 \frac{6 \cdot 4}{10 \cdot 4} = 3 \frac{24}{40}$$

$$+1 \frac{7}{8} = +1 \frac{7 \cdot 5}{8 \cdot 5} = +1 \frac{35}{40}$$

2	10	8
5	4	

LCD = 40

$$4 \frac{59}{40} = 5 \frac{19}{40}$$

Subtracting Fractions and Mixed Numbers

- Write the problem up and down!
- Find the LCD! (Draw your L)
- Rewrite the fractions
- Leave the whole numbers alone
- Subtract the numerators
- Subtract the whole numbers
- Simplify and change your answer into a mixed number!

$$8 \frac{29}{30} = 8 \frac{29 \cdot 1}{30 \cdot 1} = 8 \frac{29}{30}$$

$$- 5 \frac{7}{10} = -5 \frac{7 \cdot 3}{10 \cdot 3} = -5 \frac{21}{30}$$

10	30	10
3	1	

LCD = 30

$$3 \frac{8 \div 2}{30 \div 2} = 3 \frac{4}{15}$$

Multiplying Fractions and Mixed Numbers

- Change mixed numbers into improper fractions
- Simplify before you multiply.
- Remember the two D's: Down and Diagonally
- Rewrite the problem.
- Multiply the numerators (top). Multiply the denominators.
- Rewrite your answer as a mixed number

$$4 \frac{2}{5} \cdot \frac{1}{4}$$

$$11 \frac{22}{5} \cdot \frac{1}{4} 2 = \frac{11 \cdot 1}{5 \cdot 2} = \frac{11}{10} = 1 \frac{1}{10}$$

Dividing Fractions and Mixed Numbers

- Change mixed numbers into improper fractions.
- **Keep** the first number.
- **Switch** the \div sign to a \times sign.
- **Change** the second number to its reciprocal.
- Follow the rules of multiplying.
- Rewrite your answer as a mixed number.

$$2 \frac{1}{7} \div 3 \frac{1}{3}$$

First: Change the mixed numbers to improper fractions

$$\frac{15}{7} \div \frac{10}{3}$$

Second: Keep 1st #, Switch \div to \times , Change 2nd # to reciprocal

$$3 \frac{15}{7} \cdot \frac{3}{10} 2 = \frac{3 \cdot 3}{7 \cdot 2} = \frac{9}{14}$$

Adding Fractions and Mixed Numbers



See *Fractions & Mixed Numbers Help Page* for assistance (page 8).

Add the fractions or mixed numbers. Show all work.

a) $8\frac{1}{3} + 4\frac{2}{4}$

b) $3\frac{3}{5} + \frac{9}{10}$

c) $2\frac{2}{3} + 4\frac{3}{4}$

d) $5\frac{11}{12} + 1\frac{2}{5}$

e) $7\frac{2}{9} + 3\frac{1}{3}$

f) $\frac{1}{4} + \frac{7}{8}$

g) $2\frac{3}{7} + 4\frac{3}{4}$

h) $8\frac{3}{4} + 6\frac{2}{5}$

i) $\frac{1}{9} + \frac{1}{6}$

Subtracting Fractions and Mixed Numbers



See *Fractions & Mixed Numbers Help Page* for assistance (page 8).

Subtract the fractions or mixed numbers. Show all work.

a) $7\frac{11}{12} - 6\frac{5}{8}$

b) $4\frac{9}{10} - 3\frac{2}{5}$

c) $5\frac{7}{8} - 3\frac{3}{10}$

d) $\frac{9}{10} - \frac{3}{5}$

e) $7\frac{2}{3} - 5\frac{5}{8}$

f) $11\frac{3}{8} - 5\frac{3}{4}$

g) $\frac{4}{5} - \frac{1}{6}$

h) $2\frac{21}{22} - 5\frac{1}{2}$

i) $\frac{5}{8} - \frac{2}{5}$

Multiplying Fractions and Mixed Numbers



See *Fractions & Mixed Numbers Help Page* for assistance (page 8).

Multiply the fractions or mixed numbers. Show all work.

a) $8\frac{2}{3} \cdot 3\frac{1}{2}$

b) $2\frac{1}{2} (3\frac{1}{3})$

c) $5\frac{1}{3} (\frac{2}{3})$

d) $6 (5\frac{2}{3})$

e) $16 \cdot \frac{9}{10}$

f) $1\frac{3}{4} (1\frac{3}{8})$

g) $2\frac{1}{2} (\frac{4}{10})$

h) $\frac{4}{5} \times \frac{12}{28}$

i) $\frac{9}{11} \times \frac{1}{4}$

Dividing Fractions and Mixed Numbers



See *Fractions & Mixed Numbers Help Page* for assistance (page 8).

Divide the fractions or mixed numbers. Show all work.

a) $7\frac{1}{2} \div 2\frac{1}{2}$

b) $15 \div \frac{5}{8}$

c) $7\frac{1}{2} \div 2\frac{1}{2}$

d) $4\frac{1}{6} \div \frac{5}{6}$

e) $7 \div 2\frac{3}{9}$

f) $4\frac{1}{2} \div 6\frac{3}{4}$

g) $\frac{5}{6} \div \frac{2}{3}$

h) $5 \div 1\frac{1}{3}$

i) $10\frac{5}{6} \div 4\frac{1}{3}$

Decimals (All Operations)- Help Page

Adding Decimals

- Write the problem up and down!
- Line up the decimal points
- Add. Remember to carry when needed.
- Erase any extra zeros at the end of your final answer.

$$602.84 + 37.3 + 157.662 + 54.89$$

	1	2	2		1		
	6	0	2	.	8	4	0
		3	7	.	3	0	0
	1	5	7	.	6	6	2
+		5	4	.	8	9	0
	8	5	2	.	6	9	2

852.962

Subtracting Decimals

- Write the problem up and down!
- Line up the decimal points.
- Subtract. Remember to borrow when needed.
- Erase any extra zeros at the end of your final answer.

$$803.25 - 32.73$$

	7	10	2		12	
	8	0	3	.	2	5
-		3	2	.	7	3
	7	7	0	.	5	2

770.52

Multiplying Decimals

- Write the problem up and down.
- DO NOT LINE UP YOUR DECIMALS!!!!!!
- Multiply carefully!
- **Place the decimal in the final answer.** Count the places to the right of the decimal point in each number. Count the same number of places from right to left in the answer, then place the decimal pt.
- Sometimes you'll need to fill places with zeroes.

$$167.5 \times 0.14$$

		2	3	2	
		1	6	7	5
x			0	1	4
		6	7	0	0
+	1	6	7	5	0
	2	3	4	5	0

1 # after decimal pt.

2 #'s after decimal pt.

Move decimal 3 spaces right.

23.450 = 23.45 *(Cut off any zeros at the end after the decimal point)*

Dividing Decimals

- Write the problem across.
- The first number goes into the "division symbol." The second number goes outside of the house.

Dividing by Whole Numbers

- 1) Bring up the decimal point.
- 2) Divide until there is no remainder

Dividing by Decimals

- 1) Move both decimal points to the right until the outside number is whole.
- 2) Bring the moved decimal pt up.
- 3) Divide until there is no remainder

Problem
1.692 ÷ 23.5

$$\begin{array}{r}
 23 \overline{) 1.692} \\
 \underline{16} \\
 92 \\
 \underline{92} \\
 0
 \end{array}$$

Answer
0.072

Decimals- All Operations



See Decimals All Operations Page for assistance (page 13).

1) $17.62 + 49.475 + 95.906$

2) $41.08 + 76.214 + 3.67 + 2.5$

3) $874.84 - 274.601$

4) $4009.52 - 2347.18$

5) 18.9×14.3

6) 427.3×0.85

7) 16.7×0.25

8) 268×5.2

9) $7.31 \div 0.017$

10) $14.04 \div 0.52$

11) $35.42 \div 1.4$

12) $4.992 \div 2.4$

Integer Operations



Addition	Subtraction	Multiplication	Division
<p>Same Sign: You add Pos + Pos = Pos Neg + Neg = Neg</p> <p>Different Signs: You subtract The number that "looks bigger" determines whether the answer is negative or positive.</p>	<p>a) Keep the first number. b) Switch the minus sign to a plus sign c) Change the sign of the second number. d) Then follow the rules of adding.</p>	<p>e) Positive x Positive = Positive f) Negative x Negative = Positive g) Positive x Negative = Negative h) Negative x Positive = Negative i) Anything x zero = zero</p>	<p>j) Positive ÷ Positive = Positive k) Negative ÷ Negative = Positive l) Positive ÷ Negative = Negative m) Negative ÷ Positive = Negative n) Anything ÷ zero = NOT POSSIBLE o) Zero ÷ Anything = ZERO</p>

1) Find each sum (add). Show all work!

a) $-12 + -7$	b) $-20 + 25$	c) $-16 + 9$	d) $10 + 27$
---------------	---------------	--------------	--------------

2) Find each difference (subtract). Show all work!

a) $-15 - -20$	b) $14 - 20$	c) $-10 - 24$	d) $-21 - 4$
----------------	--------------	---------------	--------------

3) Find each product (multiply). Show all work!

a) 0×-54	b) $23 \cdot -2$	c) $(-10)(-10)$	d) $-8 \cdot -4 \cdot 3$
-------------------	------------------	-----------------	--------------------------

Note: All of the questions listed above involve multiplication. You can see multiplication written in many different ways!

4) Find each quotient (divide). Show all work!

a) $80 \div -4$	b) $\frac{-90}{6}$	c) $\frac{-100}{-5}$	d) $\frac{215}{5}$
-----------------	--------------------	----------------------	--------------------

Note: All of the questions listed above involve division. You can see division written in many different ways!

5) Simplify the following expressions using the integer laws.

a) $\frac{-56}{2^3}$	b) $-6(9 - 11)$	c) $-3 + \frac{-12 \cdot -5}{4}$	d) $(-4 + 7)(-16 + 3)$
e) $13(-9 + 17) + 24$	f) $(-2^3)(-5 - -6)$	g) $\frac{-6 - -8}{-2}$	h) $-7 + \frac{4 + -6}{-2}$

Order of Operations



Helpful Hints- Order of Operations

- 1) Underline the step you are completing.
- 2) Bring down all other numbers and operations.

Go in order! Remember:

Please Excuse My Dear Aunt Sally!

<u>P</u>	Parenthesis
<u>E</u>	Exponents
<u>M</u> <u>D</u>	Multiply or Divide (Left to Right)
<u>A</u> <u>S</u>	Add or Subtract (Left to Right)

Example #1

$$3(2)^3 \div (10 - \underline{3 \cdot 2}) + 8 - 2 \cdot 5 - 4$$

$$3(2)^3 \div (\underline{10 - 6}) + 8 - 2 \cdot 5 - 4$$

$$3(\underline{2})^3 \div 4 + 8 - 2 \cdot 5 - 4$$

$$\underline{3(8)} \div 4 + 8 - 2 \cdot 5 - 4$$

$$\underline{24} \div 4 + 8 - 2 \cdot 5 - 4$$

$$6 + 8 - \underline{2 \cdot 5} - 4$$

$$\underline{6 + 8} - 10 - 4$$

$$\underline{14 - 10} - 4$$

$$\underline{4 - 4}$$

$$\boxed{0}$$

Example #2

$$12 \div 6 + 8 - 4 \cdot 2 \div (\underline{5 - 1})$$

$$\underline{12 \div 6} + 8 - 4 \cdot 2 \div 4$$

$$2 + 8 - \underline{4 \cdot 2} \div 4$$

$$2 + 8 - \underline{8} \div 4$$

$$\underline{2 + 8} - 2$$

$$\underline{10 - 2}$$

$$\boxed{8}$$

Simplify the following expressions using order of operations.

a) $600 \div 2 \div 3 \div 5$

b) $(21 - 15)^2 - 20$

c) $128 \div 16 - 8 \div 2$

d) $5 \cdot 6 - 25 \div 5 - 2$

e) $(6 - 4)^2$

f) $(3 \cdot 2) \div (4 - 2) + 6 \cdot 2$

g) $25 - (12 - 10)$

h) $15 + 2(5^2) \div (14 - 4)$

i) $2(4^2 - 2) \div 2^2 + 7$

Solving One & Two Step Equations



Solving One Step Equations

Get the variable (letter) by itself by doing the opposite operation on both sides of equal sign.

Opposite operations	
x	÷
÷	x
+	-
-	+

Solving Two Step Equations

Steps:

- 1) Get rid of the number that is added or subtracted by doing the opposite operation.
- 2) Get the variable by itself by doing the opposite of the multiplication or division.

$$3x + 7 = 13$$

Second →
↖ First

Examples

Addition: $x + 7 = 9$

$$\begin{array}{r} x + 7 = 9 \\ \underline{-7 \quad -7} \\ x = 2 \end{array}$$

Subtraction: $x - 12 = 8$

$$\begin{array}{r} x - 12 = 8 \\ \underline{+12 \quad +12} \\ x = 20 \end{array}$$

Examples

$$\begin{array}{r} 3x + 7 = 13 \\ \underline{-7 \quad -7} \\ 3x = 6 \\ \underline{\div 3 \quad \div 3} \\ x = 2 \end{array}$$

$$\begin{array}{r} \frac{x}{3} - 7 = 4 \\ \underline{+7 \quad +7} \\ \frac{x}{3} = 11 \\ \underline{\times 3 \quad \times 3} \\ x = 33 \end{array}$$

Solve each equation using the steps above.

1) $y + 13 = 5$

2) $x - 12 = 15$

3) $\frac{a}{8} = 4$

4) $5h = 65$

5) $4x - 6 = 14$

6) $\frac{y}{3} + 4 = 9$

7) $12 + 5x = 32$

8) $\frac{y}{5} + 12 = 15$

9) $3w - 5 = 19$

10) $\frac{y}{4} - 8 = 2$

Solving One & Two Step Inequalities



Solving Inequalities

Follow the same steps that you would use when solving equations. However, there is one extra step.

NOTE:

- If you multiply or divide both sides of inequality by same **POSITIVE NUMBER**, direction of *inequality sign does not change*.
- If you multiply or divide both sides of inequality by same **NEGATIVE NUMBER**, direction of *inequality sign REVERSES*.

Change the Sign

$$\begin{array}{r} 4x - 5 > 3 \\ +5 \quad +5 \\ \hline 4x > 8 \\ \hline 4 \quad 4 \\ \hline x > 2 \end{array}$$

Don't Change the Sign

$$\begin{array}{r} -4x - 5 > 3 \\ +5 \quad +5 \\ \hline -4x > 8 \\ \hline -4 \quad -4 \\ \hline x < -2 \end{array}$$

↗ by -4 switch the > to a <

Graphing Inequalities

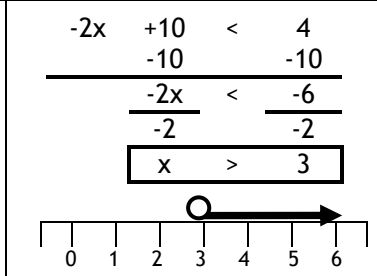
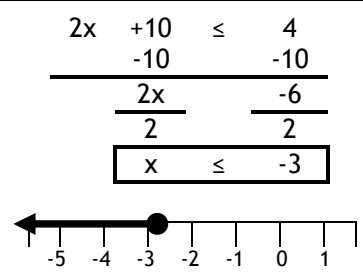
Look at the final solved answer.

1) If the final solved answer has:

< or >	≤ or ≥
Use an open dot (○)	Use an open dot (●)

2) If the final answer has:

< or ≤	≤ or ≥
↙ Arrow goes to <i>left</i> .	↘ Arrow goes <i>right</i> .



1) Solve and graph.

a) $-4d + 8 \geq 40$

b) $5c - 18 < -33$

c) $2x - 3 > 7$

2) Which of these graphs represents the solution set for the inequality below?

$$2x + 10 \leq 4$$

- A)
- B)
- C)
- D)

3) Which of these graphs represents the solution set for the inequality below?

$$2x - 5 \leq 9$$

- A)
- B)
- C)
- D)

3) What does each sign mean?

a) <	b) ≥	c) ≤
d) ≠	e) >	f) =

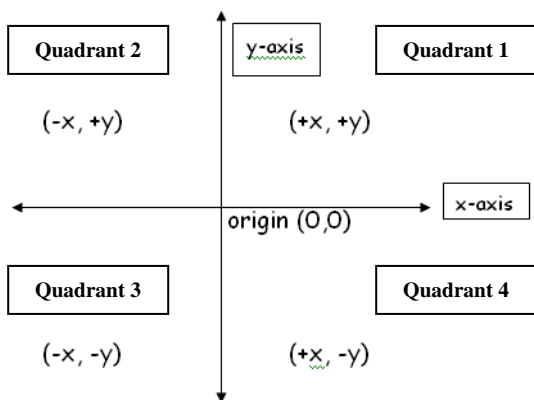
Word Bank

greater than or equal to	not equal to	less than or equal to	less than	equal	greater than
--------------------------	--------------	-----------------------	-----------	-------	--------------

Graphing on the Coordinate Plane



Coordinate Plane Vocabulary



Helpful Hints for Graphing

Steps to plot a point. Start at the origin (0, 0)

1. Move left or right to whatever number x is.

sign	direction
positive (+)	right
negative (-)	left

2. Move up or down to whatever number y is.

sign	direction
positive (+)	up
negative (-)	down

Definitions:

Ordered Pairs: set of 2 numbers.

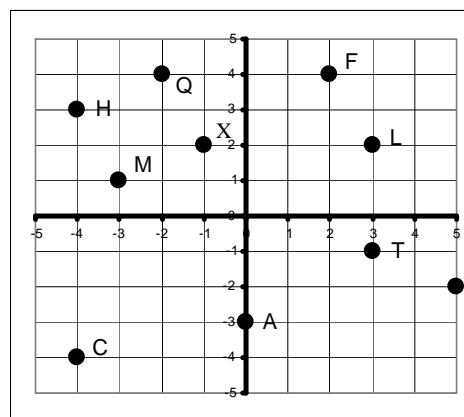
The first number tells you to move left or right. The second number tells you to move up or down. Remember: CRAWL before you CLIMB!!!

Origin: the center point

You always start from (0, 0) and then move across and then up or down.

1) Give the coordinates of each point.

a) H	f) Q
b) A	g) L
c) T	h) C
d) M	i) X
e) F	j) J



2) State which quadrant each point is in.

a) (3,-21)	b) (-15,-42)	c) (18,10)
d) (-24,29)	e) (35,11)	f) (-6,17)

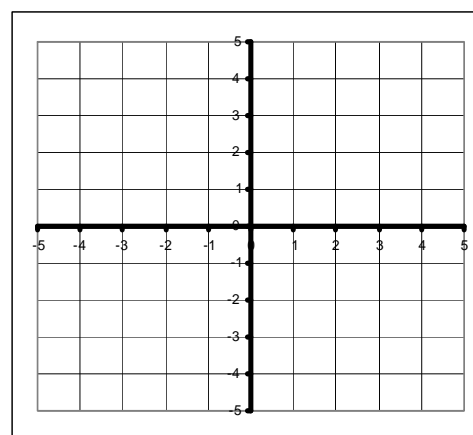
3) Describe how to locate each point.

a) (5,-11)

b) (-8,-6)

4) Plot and label each point.

a) J (3,-2)	b) E (3, 2)
c) W (-1,-4)	d) R (1,0)
e) B (-2, 2)	f) Z (2,3)
g) P (-4,1)	h) G (-3,-1)
i) Y (0,-3)	j) S (2,-4)



Problem Solving- Part 1



Addition	Subtraction	Multiplication	Division
<ul style="list-style-type: none"> • Sum • Positive • Total • Plus • All together • Increased by • Add • Addends • In all • Deposit 	<ul style="list-style-type: none"> • Difference • More than • Greater than • Take away • Subtract • Less than • Minus • Withdraw • Decreased by • _____ less than 	<ul style="list-style-type: none"> • Product • Times • In all • Multiply • Multiples • Double (x2) • Triple (x3) • Twice (x2) 	<ul style="list-style-type: none"> • Quotient • Divide • Goes into • Factors • Pieces or Parts • Per • Share Equally • Divisible • Part of

Show all steps to solve each problem.

1) If Julia can assemble 3 clipboards in 2 minutes, how many clipboards can she assemble in 15 minutes?



Final Answer:

2) An airplane is approaching its final descent into the airport. If the plane descends at a rate of 30 feet per second, what is the change in altitude of the plane after twelve seconds?

Final Answer:

3) Elizabeth is planning a trip to Houston and has calculated \$450.95 for lodging, \$98 for food, and \$114.50 for gasoline. How much will her trip cost?



Final Answer:

4) Keegan is a babysitter and earns \$8.50 per hour. Last week, she worked 36 hours. What is her total pay?

Final Answer:

5) Aleia rides her bike for 2 hours and 45 minutes. If she started riding her bike at 11:30 a.m., at what time will she finish?



Final Answer:



YAY! You are finished!

Make sure your work is shown!

Give your completed packet

to your math teacher

during the 1st week of school!