Name: _____ Date: _____

Lakelands Park Middle School

Investigations into Mathematics Summer Packet

Dear Students,

Summer vacation is almost here and the start of the new school year is just around the corner. We want you to be prepared for the upcoming school year. It is important that you have a smooth transition to your new math class 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 workbook before the start of the school year. Please follow the directions for calculator use on each page. You should show all necessary work so that you and your teacher can both understand how you resolved the problems. 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. We have also included some websites which may assist you in completing the workbook. Remember the goal is to work consistently throughout the summer and not to rush to finish the workbook quickly.

You will receive an answer key for the workbook upon your return from summer vacation. You will be expected to seek help from your teacher on any topics that you found challenging. You will be able to demonstrate your knowledge of these concepts on a pre-assessment which will be graded for accuracy.

We look forward to seeing you in the fall.

Sincerely,

LPMS Mathematics Department

Websites for additional support and practice:

Kahn Academy	https://www.khanacademy.org/
Xtra math	http://xtramath.org/
Learn Zillion	http://learnzillion.com/
Purple math	http://www.purplemath.com/
IXL	http://www.ixl.com/
Math is fun	http://www.mathisfun.com/

Rename Fractions, Percents, and Decimals

Hints/Guide:

To convert fractions into decimals, we start with a fraction, such as $\frac{3}{5}$, and divide the numerator (the top number of a fraction) by the denominator (the bottom number of a fraction). So:

$$\begin{array}{r} 0.6 \\ 5 \overline{)\,3.0} \\ -\,30 \\ \hline 0 \end{array}$$ and the fraction $\frac{3}{5}$ is equivalent to the decimal 0.6

To convert a decimal to a percent, we multiply the decimal by 100 (percent means a ratio of a number compared to 100). A short-cut is sometimes used of moving the decimal point two places to the right (which is equivalent to multiplying a decimal by 100, so 0.6 x 100 = 60 and $\frac{3}{5} = 0.6 = 60\%$

To convert a percent to a decimal, we divide the percent by 100, $60\% \div 100 = 0.6$ so $60\% = 0.6$

To convert a fraction into a percent, we can use a proportion to solve,

$\frac{3}{5} = \frac{x}{100}$, so $5x = 300$ which means that $x = 60 = 60\%$

No Calculators!

Exercises:

Rename each fraction as a decimal:

1. $\frac{1}{5} =$
2. $\frac{3}{4} =$
3. $\frac{1}{2} =$
4. $\frac{1}{3} =$
5. $\frac{8}{10} =$
6. $\frac{2}{3} =$

Rename each fraction as a percent:

7. $\frac{1}{5} =$
8. $\frac{3}{4} =$
9. $\frac{1}{2} =$
10. $\frac{1}{3} =$
11. $\frac{8}{10} =$
12. $\frac{2}{3} =$

Rename each percent as a decimal:

13. $8\% =$
14. $60\% =$
15. $11\% =$
16. $12\% =$
17. $40\% =$
18. $95\% =$

Fraction Operations

Hints/Guide:

When adding and subtracting fractions, we need to be sure that each fraction has the same denominator, then add or subtract the numerators together. For example:

$$\frac{1}{8}+\frac{3}{4}=\frac{1}{8}+\frac{6}{8}=\frac{1+6}{8}=\frac{7}{8}$$

That was easy because it was easy to see what the new denominator should be, but what about if it is not so apparent? For example: $\frac{7}{12}+\frac{8}{15}$

For this example we must find the Lowest Common Denominator (LCM) for the two denominators. 12 and 15

$12 = 12, 24, 36, 48, 60, 72, 84, \ldots.$

$15 = 15, 30, 45, 60, 75, 90, 105, \ldots..$

$\text{LCM}(12, 15) = 60$

So, $\frac{7}{12}+\frac{8}{15}=\frac{35}{60}+\frac{32}{60}=\frac{35+32}{60}=\frac{67}{60}=1\frac{7}{60}$ Note: Be sure answers are in lowest terms

To multiply fractions, we multiply the numerators together and the denominators together, and then simplify the product. To divide fractions, we find the reciprocal of the second fraction (flip the numerator and the denominator) and then multiply the two together. For example:

$$\frac{2}{3}\bullet\frac{1}{4}=\frac{2}{12}=\frac{1}{6} \quad \text{and} \quad \frac{2}{3}\div\frac{3}{4}=\frac{2}{3}\bullet\frac{4}{3}=\frac{8}{9}$$

Exercises: Perform the indicated operation: No calculators!

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $\frac{1}{4}+\frac{3}{5}=$
2. $\frac{6}{7}+\frac{2}{3}=$
3. $\frac{2}{5}+\frac{8}{9}=$
4. $\frac{3}{4}-\frac{2}{3}=$
5. $\frac{2}{5}-\frac{2}{9}=$
6. $\frac{9}{11}-\frac{2}{5}=$
7. $\frac{1}{3}\bullet\frac{2}{3}=$
8. $\frac{3}{4}\bullet\frac{3}{5}=$
9. $\frac{7}{8}\bullet\frac{2}{5}=$
10. $\frac{3}{8}\div\frac{3}{4}=$
11. $\frac{1}{4}\div\frac{1}{4}=$
12. $\frac{7}{11}\div\frac{3}{5}=$

Multiply Fractions and Solve Proportions

Hints/Guide:

To solve problems involving multiplying fractions and whole numbers, we must first place a one under the whole number, then multiply the numerators together and the denominators together. Then we simplify the answer:

$$\frac{6}{7} \bullet 4 = \frac{6}{7} \bullet \frac{4}{1} = \frac{24}{7} = 3\frac{3}{7}$$

To solve proportions, one method is to determine the multiplying factor of the two equal ratios. For example:

$\frac{4}{9} = \frac{24}{x}$ since 4 is multiplied by 6 to get 24, we multiply 9 by 6, so $\frac{4}{9} = \frac{24}{54}$.

Since the numerator of the fraction on the right must be multiplied by 6 to get the numerator on the left, then we must multiply the denominator of 9 by 6 to get the missing denominator, which must be 54.

Exercises: Solve (For problems 8 - 15, solve for N): No Calculators!

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $4 \bullet \frac{3}{4} =$
2. $\frac{1}{5} \bullet 7 =$
3. $8 \bullet \frac{1}{5} =$
4. $6 \bullet \frac{3}{7} =$
5. $\frac{4}{5} \bullet 4 =$
6. $\frac{2}{3} \bullet 6 =$
7. $7 \bullet \frac{1}{4} =$
8. $\frac{1}{5} = \frac{n}{20}$
9. $\frac{3}{n} = \frac{12}{28}$
10. $\frac{1}{n} = \frac{5}{25}$
11. $\frac{n}{4} = \frac{3}{12}$
12. $\frac{3}{7} = \frac{12}{n}$
13. $\frac{n}{9} = \frac{12}{27}$
14. $\frac{2}{3} = \frac{18}{n}$
15. $\frac{2}{7} = \frac{n}{21}$

Add Mixed Numbers

Hints/Guide:

When adding mixed numbers, we add the whole numbers and the fractions separately, then simplify the answer. For example:

$$\begin{array}{r} 4\frac{1}{3} = 4\frac{8}{24} \\ +\,2\frac{6}{8} = 2\frac{18}{24} \\ \hline 6\frac{26}{24} = 6+1\frac{2}{24} = 7\frac{2}{24} = 7\frac{1}{12} \end{array}$$

First, we convert the fractions to have the same denominator, then add the fractions and add the whole numbers. If needed, we then simplify the answer.

No Calculators!

Exercises: Solve in lowest terms:
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $\begin{array}{r} 2\frac{1}{4} \\ +\,8\frac{1}{2} \\ \hline \end{array}$

2. $\begin{array}{r} 3\frac{8}{15} \\ +\,7\frac{1}{3} \\ \hline \end{array}$

3. $\begin{array}{r} 3\frac{3}{5} \\ +\,5\frac{1}{2} \\ \hline \end{array}$

4. $\begin{array}{r} 5\frac{3}{8} \\ +\,4\frac{1}{4} \\ \hline \end{array}$

5. $\begin{array}{r} 7\frac{3}{7} \\ +\,6\frac{1}{2} \\ \hline \end{array}$

6. $\begin{array}{r} 5\frac{5}{9} \\ +\,1\frac{1}{3} \\ \hline \end{array}$

7. $\begin{array}{r} 4\frac{1}{3} \\ +\,6\frac{1}{4} \\ \hline \end{array}$

8. $\begin{array}{r} 1\frac{2}{3} \\ +\,6\frac{1}{4} \\ \hline \end{array}$

9. $\begin{array}{r} 1\frac{2}{9} \\ +\,5\frac{2}{3} \\ \hline \end{array}$

Subtract Mixed Numbers

Hints/Guide:

When subtracting mixed numbers, we subtract the whole numbers and the fractions separately, then simplify the answer. For example:

$$\begin{array}{r} 7\frac{3}{4} = 7\frac{18}{24} \\ -2\frac{15}{24} = 2\frac{15}{24} \\ \hline 5\frac{3}{24} = 5\frac{1}{8} \end{array}$$

First, we convert the fractions to have the same denominator, then subtract the fractions and subtract the whole numbers. If needed, we then simplify the answer.

No Calculators!

Exercises: Solve in lowest terms:
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $4\frac{1}{3} - 2\frac{1}{4}$

2. $6\frac{3}{4} - \frac{2}{3}$

3. $9\frac{2}{3} - 6\frac{1}{4}$

4. $6\frac{3}{4} - 5\frac{1}{5}$

5. $7\frac{1}{2} - 3\frac{1}{4}$

6. $3\frac{1}{2} - 2\frac{3}{10}$

7. $8\frac{1}{2} - 4\frac{7}{10}$

8. $8\frac{1}{3} - 5\frac{5}{6}$

9. $8\frac{5}{8} - 6\frac{3}{4}$

Multiply Mixed Numbers

Hints/Guide:

To multiply mixed numbers, we first convert the mixed numbers into improper fractions. This is done by multiplying the denominator by the whole number part of the mixed number and then adding the numerator to this product, and this is the numerator of the improper fraction. The denominator of the improper fraction is the same as the denominator of the mixed number. For example:

$$3\frac{2}{5} \text{ leads to } 3 \bullet 5 + 2 = 17 \text{ so } 3\frac{2}{5} = \frac{17}{5}$$

Once the mixed numbers are converted into improper fractions, we multiply and simplify just as with regular fractions. For example:

$$5\frac{1}{5} \bullet 3\frac{1}{2} = \frac{26}{5} \bullet \frac{7}{2} = \frac{182}{10} = 18\frac{2}{10} = 18\frac{1}{5}$$

Exercises: Solve and place your answer in lowest terms: No Calculators!

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $3\frac{1}{3} \bullet 4\frac{1}{2} =$

2. $2\frac{2}{3} \bullet 1\frac{1}{4} =$

3. $1\frac{1}{9} \bullet 4\frac{3}{5} =$

4. $4\frac{3}{4} \bullet 1\frac{1}{5} =$

5. $3\frac{1}{3} \bullet 6\frac{4}{5} =$

6. $6\frac{2}{3} \bullet 7\frac{3}{7} =$

7. $1\frac{4}{5} \bullet 1\frac{2}{3} =$

8. $2\frac{2}{5} \bullet 4\frac{2}{7} =$

9. $4\frac{1}{3} \bullet 1\frac{1}{8} =$

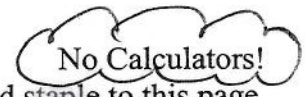
Divide Mixed Numbers

Hints/Guide:

To divide mixed numbers, we must first convert to improper fractions using the technique shown in multiplying mixed numbers. Once we have converted to improper fractions, the process is the same as dividing regular fractions. For example:

$$2\frac{1}{2} \div 3\frac{1}{3} = \frac{5}{2} \div \frac{10}{3} = \frac{5}{2} \bullet \frac{3}{10} = \frac{15}{20} = \frac{3}{4} \qquad 3\frac{1}{2} \div 8\frac{2}{3} = \frac{7}{2} \div \frac{26}{3} = \frac{7}{2} \bullet \frac{3}{26} = \frac{21}{52}$$

Exercises: Solve and place your answer in lowest terms:



SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $1\frac{1}{5} \div 4\frac{2}{5} =$
2. $6\frac{1}{2} \div 4\frac{2}{3} =$
3. $5\frac{1}{2} \div 6\frac{2}{3} =$

4. $\frac{8}{9} \div 2\frac{3}{5} =$
5. $3\frac{2}{3} \div 4\frac{3}{7} =$
6. $4\frac{4}{7} \div \frac{4}{9} =$

7. $6\frac{1}{5} \div 8\frac{2}{5} =$
8. $4\frac{1}{4} \div \frac{5}{7} =$
9. $6\frac{4}{7} \div 3\frac{3}{5} =$

Decimal Operations

Hints/Guide:

When adding and subtracting decimals, the key is to line up the decimals above each other, add zeros so all of the numbers have the same place value length, then use the same rules as adding and subtracting whole numbers, with the answer having a decimal point in line with the problem. For example:

$$\begin{array}{rrr} & 34.5 & 34.500 \\ 34.5 + 6.72 + 9.045 = & 6.72 & = \ 6.720 \\ & \underline{+\ 9.045} & \underline{+ 9.045} \\ & & 50.265 \end{array}$$

AND

$$\begin{array}{rr} 5 - 3.25 = & 5.00 \\ & \underline{-\ 3.25} \\ & 1.75 \end{array}$$

To multiply decimals, the rules are the same as with multiplying whole numbers, until the product is determined and the decimal point must be located. The decimal point is placed the same number of digits in from the right of the product as the number of decimal place values in the numbers being multiplied. For example:

8.54 x 17.2, since 854 x 172 = 146888, then we count the number of decimal places in the numbers being multiplied, which is three, so the final product is 146.888 (the decimal point comes three places in from the right).

To divide decimals by a whole number, the process of division is the same, but the decimal point is brought straight up from the dividend into the quotient. For example:

$3\overline{)\,51.06}$ (quotient: 17.02) The decimal point moves straight up from the dividend to the quotient.

Exercises: Solve: No Calculators!

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. 15.7 + 2.34 + 5.06 =
2. 64.038 + 164.8 + 15.7 =
3. 87.4 - 56.09 =
4. 5.908 - 4.72 =
5. 68.9 - 24.74 =
6. 955.3 - 242.7 =

7. $\begin{array}{r} 63 \\ \times\ .14 \end{array}$
8. $\begin{array}{r} .87 \\ \times\ 2.3 \end{array}$
9. $\begin{array}{r} 8.94 \\ \times\ 2.1 \end{array}$
10. $\begin{array}{r} 4.2 \\ \times\ .62 \end{array}$

11. $35\overline{)70.35}$
12. $7\overline{)25.83}$
13. $14\overline{)45.584}$

Summer Mathematics Packet

Mean, Median, and Mode

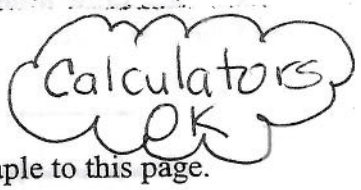
Hints/Guide:

We need to define some terms to solve problems involving mean, median, and mode. Mean is the sum of the numbers being considered divided by the total number of numbers being considered (also called "average"). Median is the number in the middle of the data set after the numbers have been placed in order from least to greatest. If there is an even number of elements, the median is the mean of the two numbers in the middle of the data set. The mode is the number or numbers that occur most frequently in a data set. For example, with the data set of 56, 62, 67, 45, 81, 76:

Mean is $56 + 62 + 67 + 45 + 81 + 76 = 387$ and $387 \div 6 = 64.5$, so the mean is 64.5

Median is (in order the data is 45, 56, 62, 67, 76, 81) the mean of 62 and 67, which is $(62 + 67 = 129$ and $129 \div 2 = 64.5)$ also 64.5.

There is no mode, because no number occurs more than once.



Exercises:

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

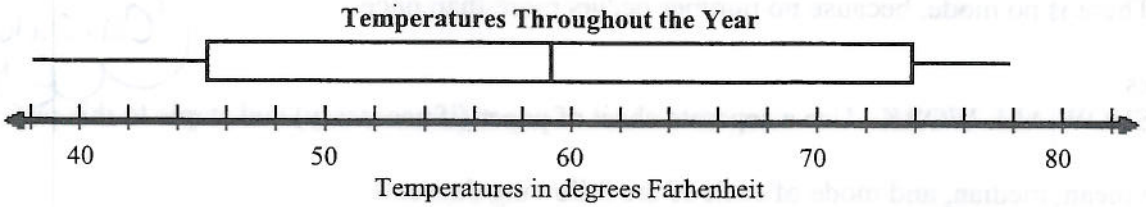
Find the mean, median, and mode of each of the following data sets:

1. 54, 65, 74, 35, 87
2. 54.6, 45.98, 67.4, 55.6, 45.7, 58.9
3. 122, 145, 156, 176, 198, 202
4. 11, 14, 16, 15, 32, 23, 27, 27, 23, 43
5. 6, 7, 8, 4, 6, 5, 8, 3, 6, 8, 5, 4
6. -4, 7, -3, 4, 8, 12, -5, -3, 8, 16, 9
7. 43, 56, 98, 67, 87
8. 12, 15, 14, 18, 33, 32, 24, 26, 27

Box-and-Whisker Plots

Hints/Guide:

To make a box and whisker plot using the data 38, 78, 74, 48, 77, 59, 66, 70, 45, 56, and 38 (temperature data), we first arrange the data in numerical order. Next, we find the median of the data set (59). Then, we find the median of all of the numbers less than the median of the total data set (45). This is called the lower quartile. Now, we find the median of the numbers greater than the overall median (74). This is called the upper quartile. The smallest and largest data elements are called the lower extreme and the upper extreme, respectively. Draw a scale line which covers the least and greatest elements in your data and mark it in even increments. Plot the three medians and the two extremes above the scale line. Draw the "box and whiskers" by drawing a box between the upper and lower quartiles and mark the median with a line inside the box. Then draw a line from each side of the box to each of the two extremes. Title your graph and the scale line.



Exercises: Make a box-and-whisker plot from each of the following data sets.

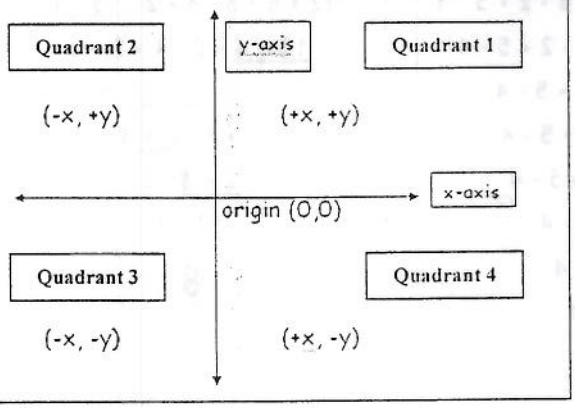
1. 84, 95, 70, 63, 46, 75, 98, 92, 87, 89, 94, 90, 79, 88, 83 (Test scores)

2. 29, 34, 45, 48, 38, 42, 29, 26, 34, 45, 38 (February temperatures)

3. 34, 42, 32, 26, 56, 53, 47, 35, 24, 26, 25, 34, 26, 24, 36 (Weights of dogs)

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

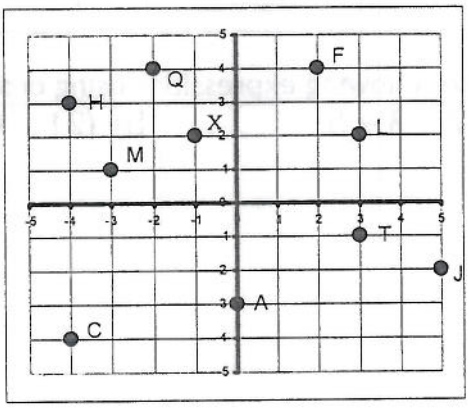
Definitions:

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.

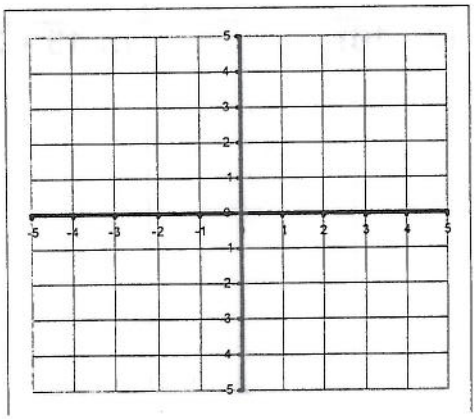
a) (3,-21)	b) (-15,-42)	c) (18,10)
d) (-24,29)	e) (35,11)	f) (-6,17)

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)



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:

*P*lease *E*xcuse *M*y *D*ear *A*unt *S*ally!

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

Example #1

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

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

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

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

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

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

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

$\underline{14 - 10} - 4$

$\underline{4 - 4}$

$\boxed{0}$

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

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Integers I

Hints/Guide:

To add integers with the same sign (both positive or both negative), add their absolute values and use the same sign. To add integers of opposite signs, find the difference of their absolute values and then take the sign of the larger absolute value.

To subtract integers, add its additive inverse.
For example 6 - 11 = a becomes 6 + -11 = a and solves as -5 = a.

Exercises: Solve the following problems:

No Calculators!

1. 6 + (-7) =
2. (-4) + (-5) =
3. 6 + (-9) =
4. (-6) - 7 =
5. 6 - (-6) =
6. 7 - (-9) =
7. 5 + (-8) =
8. -15 + 8 =
9. 14 + (-4) =
10. -9 - (-2) =
11. -7 - 6 =
12. -8 - (-19) =
13. 29 - 16 + (-5) =
14. -15 + 8 - (-19) =
15. 45 - (-13) + (-14) =
16. -15 - 6 - 9 =
17. -7 + (-6) - 7 =
18. 29 - 56 - 78 =
19. 17 + (-7) - (-5) =
20. 45 - (-9) + 5 =

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Integers II

Hints/Guide:

The rules for multiplying integers are:

Positive x Positive = Positive
Positive x Negative = Negative
Negative x Negative = Positive
Negative x Positive = Negative

The rules for dividing integers are the same as multiplying integers.

Exercises: Solve the following problems:

No Calculators!

1. $4 \cdot (-3) =$
2. $(-12) \cdot (-4) =$
3. $(-8)(-3) =$
4. $\frac{-14}{2} =$
5. $\frac{28}{-4} =$
6. $\frac{-36}{-6} =$
7. $6\,(-5) =$
8. $8\,(-4 - 6) =$
9. $-6\,(9 - 11) =$
10. $\frac{(-5)(-6)}{-2} =$
11. $\frac{6(-4)}{8} =$
12. $\frac{-56}{2^3} =$
13. $\frac{-6-(-8)}{-2} =$
14. $-7+\frac{4+(-6)}{-2} =$
15. $45 - 4\,(5 - (-3)) =$
16. $(-4 + 7)\,(-5 + 3) =$
17. $16 - (-3)\,(-7 + 5) =$
18. $\frac{4+(-6)-5-3}{-6+4} =$
19. $(-2)^3(-5-(-6)) =$
20. $13\,(-9 + 7) + 4 =$

Solving Equations I

Hints/Guide:

The key in equation solving is to isolate the variable, to get the letter by itself. In one-step equations, we merely undo the operation - addition is the opposite of subtraction and multiplication is the opposite of division. Remember the golden rule of equation solving: If we do something to one side of the equation, we must do the exact same thing to the other side.
Examples:

1. $x + 5 = 6$
   $-5 \quad -5$
   $x = 1$
   Check: $1 + 5 = 6$
   $6 = 6$

2. $t - 6 = 7$
   $+6 \quad +6$
   $t = 13$
   Check: $13 - 6 = 7$
   $7 = 7$

3. $\frac{4x}{4} = \frac{16}{4}$
   $x = 4$
   Check: $4\,(4) = 16$
   $16 = 16$

4. $6 \cdot \frac{r}{6} = 12 \cdot 6$
   $r = 72$
   Check: $72 \div 6 = 12$
   $12 = 12$

Exercises: Solve the following problems:

No Calculators!

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $x + 8 = 13$
2. $t - 9 = 4$
3. $4t = -12$
4. $\frac{r}{4} = 24$
5. $y - 4 = 3$
6. $h + 8 = 5$
7. $\frac{p}{8} = -16$
8. $-5k = 20$
9. $9 - p = 17$

Solving Equations II

Hints/Guide:

The key in equation solving is to isolate the variable, to get the letter by itself. In two-step equations, we must undo addition and subtraction first, then multiplication and division. Remember the golden rule of equation solving: If we do something to one side of the equation, we must do the exact same thing to the other side. Examples:

1. $4x - 6 = -14$

$+6 \quad +6$

$\frac{4x}{4} = \frac{-8}{4}$

$x = -2$

Solve: $4(-2) - 6 = -14$

$-8 - 6 = -14$

$-14 = -14$

2. $\frac{x}{-6} - 4 = -8$

$+4 \quad +4$

$-6 \cdot \frac{x}{-6} = -4 \cdot -6$

$x = 24$

Solve: $(24/-6) - 4 = -8$

$-4 - 4 = -8$

$-8 = -8$

Exercises: Solve the following problems: No Calculators!

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $4t - 6 = 22$
2. $\frac{m}{-5} + 6 = -4$
3. $-4r + 5 = 25$
4. $\frac{x}{3} - 7 = 6$
5. $5g + 3 = -12$
6. $\frac{y}{-2} + (-4) = 8$