Summer Math Packet for Incoming 7th Graders

Dear Parents of Incoming 7th Graders,

Attached is a packet of math problems that your child is expected to complete this summer. As you look through it, notice that each section starts with examples that demonstrate how to do problems on that page. It is important that students really study these examples to be sure they understand what to do before completing the practice problems that follow. I've removed problems I didn't feel were needed so it is correct that the problem numbers do not go in order.

Please allow your child to have a couple of weeks off to rest, relax, and just enjoy being a kid! Then, starting with the first week of July, please have him/her complete two pages per week. Please do not allow your child to complete the whole packet in a week at the beginning or end of the summer since that would defeat the purpose of maintaining a constant level of math awareness and skill.

Students should show their work. If there is room, this can be done in the packet as long as it is neat and the answers are circled. Otherwise, the problems should be copied to notepaper, with the page and problem numbers labeled, work shown, and the answers copied back onto the packet next to the original problems.

The use of calculators is not allowed. All work should be done independently. If your child needs help, please review the Examples together, but do not help with the practice problems. Students should not work together since this is my first pass at understanding what help each individual child will need.

We will begin grading the packet immediately in September, so it must be complete and ready to turn in on the first day. All work should be stapled to the back of the packet. The packet will count as a quiz so please ensure that your child takes it seriously and brings it to class on the very first day. As long as a child makes a serious attempt at each problem and the packet is turned in on time, full credit will be given even if some answers are incorrect.

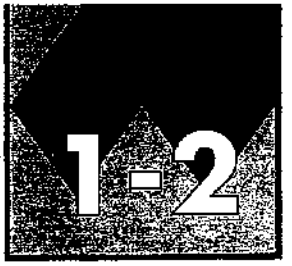
I hope you and your family have a safe, happy, fun summer. I look forward to working with your child in September.

Best regards,

Mrs. Flint

Mrs. Flint

For students who have completed 6th Grade Horizon or Accelerated Math.



Name _____

Order of Operations

Algebraic expressions are evaluated using these rules.

Order of Operations
1. Do all operations within grouping symbols first.
2. Multiply and divide in order from left to right.
3. Add and subtract in order from left to right.

PEMDAS

Example **Evaluate $56 \div (17 - 9) + 7 \times 3$.**

$56 \div (17 - 9) + 7 \times 3 = 56 \div 8 + 7 \times 3$ *Subtract 9 from 17.*

$= 7 + 7 \times 3$ *Divide 56 by 8.*

$= 7 + 21$ *Multiply 7 and 3.*

$= 28$ *Add 7 and 21.*

Name the operation that should be done first in each expression.

1. $(9 + 3) \times 7$

2. $98 - 5 \times 7$

4. $(15 \div 3) + (4 + 5)$

5. $5 \times 4 \div 2$

Evaluate each expression. (Solve)

7. $2 \times 9 + 5 \times 3$

8. $(9 - 4) \div 5$

10. $15 - 18 \div 9 + 3$

11. $30 \div (12 - 6) + 4$

13. $2(16 - 9) - (5 + 1)$

14. $(43 - 23) - 2 \times 5$

16. $81 \div (13 - 4)$

17. $7 \times 8 - 2 \times 8$

Name _____

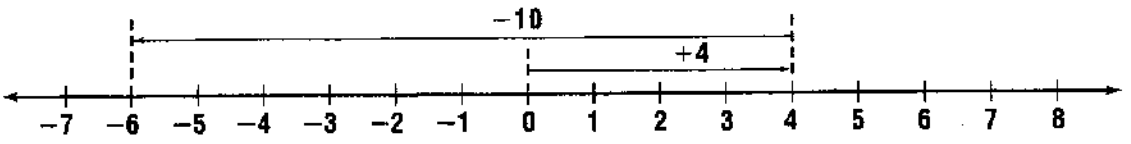
5-4

Adding Integers

To add integers, think of a number line. Locate the first addend on the number line. Move right if the second addend is positive. Move left if the second addend is negative.

Example 1 **Solve $t = 4 + (-10)$.**

Start at 0. Since 4 is positive, go 4 units to the right.
Since -10 is negative, go 10 units to the left.



So, $t = -6$.

When you add integers, remember the following.
The sum of two positive integers is positive.
The sum of two negative integers is negative.
The sum of a positive integer and a negative integer is:

- positive if the positive integer has the greater absolute value.
- negative if the negative integer has the greater absolute value.

Examples **2** **Solve $n = 14 + (-11)$.**

$|14| > |-11|$,
so the sum is positive.
$14 - 11 = 3$
So, $n = 3$.

3 **Solve $-24 + 16 = k$.**

$|-24| > |16|$,
so the sum is negative.
$24 - 16 = 8$
So, $k = -8$.

Solve each equation.

1. $p = 16 + (-11)$

2. $-22 + (-7) = g$

4. $-50 + 50 = v$

5. $c = -10 + (-10)$

7. $100 + (-25) = w$

8. $n = 38 + (-6)$

10. $r = -89 + 29$

11. $85 + (-10) = t$

Evaluate each expression if $a = 8$, $b = -8$, and $c = 4$.

13. $a + 16$

14. $b + (-9)$

16. $-10 + c$

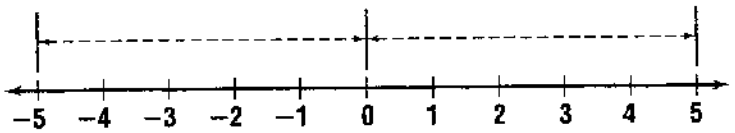
17. $a + (-21)$

5-5

Name _____

Subtracting Integers

An integer and its **opposite** are the same distance from 0 on a number line. The integers 5 and −5 are opposites.



The sum of an integer and its opposite is 0.

$$-5 + 5 = 0$$

To subtract an integer, add its opposite.

Examples **1** **Solve $t = 6 - 9$.**

$t = 6 + (-9)$ *To subtract 9, add −9.*

$t = -3$

2 **Solve $m = -10 - (-12)$.**

$m = -10 + 12$ *To subtract −12, add 12.*

$m = 2$

Solve each equation.

1. $b = 8 - 11$

2. $18 - (-5) = p$

4. $n = -8 - (-6)$

5. $v = -15 - 40$

7. $51 - (-26) = k$

8. $-30 - (-52) = a$

10. $j = -75 - 50$

11. $r = 5 - 55$

Evaluate each expression if m = −1, n = 10, and p = 6.

13. $m - 8$

14. $10 - m$

16. $n - m$

17. $p - (-m)$

5-6

Name _____

Multiplying Integers

The product of two positive integers is positive.

Examples **Solve $m = 5(8)$.**
$m = 40$

Solve $n = 4(5)(6)$.
$n = 20(6)$
$n = 120$

Solve $p = (2)(8)(1)$.
$p = 16(1)$
$p = 16$

The product of two negative integers is positive.

Examples **Solve $y = (-6)(-9)$.**
$y = 54$

Solve $x = (-7)^2$.
$x = (-7)(-7)$
$x = 49$

Solve $z = (-3)(-5)(2)$.
$z = 15(2)$
$z = 30$

The product of a positive integer and a negative integer is negative.

Examples **Solve $d = (-4)(7)$.**
$d = -28$

Solve $e = (10)(-5)(3)$.
$e = -50(3)$
$e = -150$

Solve $f = (-9)(2)^2$.
$f = (-9)(4)$
$f = -36$

Solve each equation.

1. $-7(-8) = p$
2. $10(-6) = j$
4. $(-8)^2 = k$
5. $m = (-12)(-12)$
7. $t = (-25)(4)$
8. $15(30) = c$

Evaluate each expression if $x = -3$, $y = -10$, $a = 2$, and $b = 6$.

10. $-8a$
11. $9x$
13. ab
14. $3xa$
16. $-abx$
17. x^2

Name _____

5-7

Dividing Integers

If two integers have the same sign, their quotient is positive.

Examples **1** **Solve $k = 560 \div 8$.** *The signs are the same.*
$k = 70$ *The quotient is positive.*

2 **Solve $h = -120 \div (-6)$.** *The signs are the same.*
$h = 20$ *The quotient is positive.*

If two integers have different signs, their quotient is negative.

Examples **3** **Solve $a = -75 \div 5$.** *The dividend is negative.*
$a = -15$ *The divisor is positive.*
The quotient is negative.

4 **Solve $b = 99 \div (-33)$.** *The dividend is positive.*
$b = -3$ *The divisor is negative.*
The quotient is negative.

Solve each equation.

1. $y = 64 \div (-8)$

2. $-100 \div 4 = c$

4. $60 \div (-12) = x$

5. $-90 \div (-10) = u$

7. $375 \div (-25) = g$

8. $t = -960 \div (-3)$

Evaluate each expression if $r = -96$, $t = -8$, and $v = 2$.

10. $\frac{r}{t}$

11. $\frac{t}{v}$

13. $\frac{t^2}{v}$

14. $\frac{728}{t}$

16. $\frac{r}{-48}$

17. $\frac{4t}{v}$

Name _____

1-5

Integration: Algebra
Solving Equations

An equation is a mathematical sentence that contains an equals sign.

Example **Phil can address 50 envelopes in an hour. How long will it take him to address 300 envelopes?**

Let h represent the number of hours. The problem can be represented by $50 \times h = 300$.

$50 \times h = 300$
$50 \times 6 \stackrel{?}{=} 300$
You know that $50 \times 6 = 300$.
The solution is 6.

It will take Phil 6 hours to address 300 envelopes.

Name the number that is a solution of the given equation.

1. $r - 12 = 20$; 8, 24, 32

2. $10m = 80$; 8, 10, 70

3. $k + 25 = 50$; 15, 25, 75

4. $y \div 9 = 8$; 64, 72, 80

5. $6p = 72$; 8, 10, 12

6. $48 - n = 12$; 32, 36, 60

Solve each equation.

7. $x + 22 = 66$

8. $t - 17 = 23$

9. $12f = 144$

10. $\frac{\ell}{7} = 10$

11. $25w = 225$

12. $176 - 45 = b$

13. $19 \times s = 171$

14. $210 \div v = 14$

6-1

Name _____

Solving Addition and Subtraction Equations

Remember, equations must always remain balanced. If you add the same number to each side of an equation, the two sides remain equal.

Example 1 **Solve $t - 12.2 = 15.3$. Check your solution.**

$$t - 12.2 + 12.2 = 15.3 + 12.2$$ *Add 12.2 to each side of the equation.*

$$t = 27.5$$

Check:

$$t - 12.2 = 15.3$$

$$27.5 - 12.2 \stackrel{?}{=} 15.3$$ *Replace t with 27.5.*

$$15.3 = 15.3 \quad ✔$$

If you subtract the same number from each side of an equation, the two sides remain equal.

Example 2 **Solve $5\frac{2}{5} + v = 7\frac{1}{2}$. Check your solution.**

$$5\tfrac{2}{5} - 5\tfrac{2}{5} + v = 7\tfrac{1}{2} - 5\tfrac{2}{5}$$ *Subtract $5\frac{2}{5}$ from each side of the equation.*

$$v = 7\tfrac{5}{10} - 5\tfrac{4}{10}$$

$$v = 2\tfrac{1}{10}$$

Check:

$$5\tfrac{2}{5} + v = 7\tfrac{1}{2}$$

$$5\tfrac{2}{5} + 2\tfrac{1}{10} \stackrel{?}{=} 7\tfrac{1}{2}$$ *Replace v with $2\frac{1}{10}$.*

$$5\tfrac{4}{10} + 2\tfrac{1}{10} \stackrel{?}{=} 7\tfrac{1}{2}$$

$$7\tfrac{5}{10} \stackrel{?}{=} 7\tfrac{1}{2}$$

$$7\tfrac{1}{2} = 7\tfrac{1}{2} \quad ✔$$

Solve each equation. Check your solution.

1. $17 + k = 62$

2. $j - 4.5 = 1.7$

4. $n + 2\frac{1}{3} = 4\frac{2}{3}$

5. $17.2 = h + 4.9$

7. $133 = v + 70$

8. $x - 7\frac{1}{2} = 15$

10. $m - 9.4 = 15.7$

11. $89.6 = c + 62.2$

6-2

Name _____

Solving Multiplication Equations

If you divide each side of an equation by the same nonzero number, the two sides remain equal.

Example 1 **Solve $48.6 = 6c$. Check your solution.**

$\frac{48.6}{6} = \frac{6c}{6}$ *Divide each side of the equation by 6.*

$8.1 = c$

Check: $48.6 = 6c$

$48.6 \stackrel{?}{=} 6 \times 8.1$ *Replace c with 8.1.*

$48.6 = 48.6$ ✔

If you multiply each side of an equation by the same number, the two sides remain equal.

Example 2 **Solve $\frac{w}{5} = 2.3$. Check your solution.**

$\frac{w}{5} \cdot 5 = 2.3 \times 5$ *Multiply each side of the equation by 5.*

$w = 11.5$

Check: $\frac{w}{5} = 2.3$

$\frac{11.5}{5} \stackrel{?}{=} 2.3$ *Replace w with 11.5.*

$2.3 = 2.3$ ✔

Solve each equation. Check your solution.

1. $5r = 45$

2. $\frac{y}{7} = 3.5$

4. $21 = \frac{n}{3}$

5. $\frac{1}{5}x = 4$

7. $\frac{1}{2} = \frac{1}{8} \cdot c$

8. $17v = 289$

10. $\frac{p}{5} = 2.4$

11. $5.1p = 61.2$

13. $\frac{x}{10} = 4.9$

14. $6.4t = 64$

Name _____

6-4 Study Guide

Writing Expressions and Equations

The table below shows phrases written as mathematical expressions.

Phrases	Expression	Phrases	Expression
9 more than a number the sum of 9 and a number a number plus 9 a number increased by 9 the total of x and 9	$x + 9$	4 subtracted from a number a number minus 4 4 less than a number a number decreased by 4 the difference of h and 4	$h - 4$
Phrases	**Expression**	**Phrases**	**Expression**
6 multiplied by g 6 times a number the product of g and 6	$6g$	a number divided by 5 the quotient of t and 5 divide a number by 5	$\frac{t}{5}$

The table below shows sentences written as an equation.

Sentences	Equation
Sixty less than three times the amount is \$59. Three times the amount less 60 is equal to 59. 59 is equal to 60 subtracted from three times a number. A number times three minus 60 equals 59.	$3n - 60 = 59$

Write each phrase as an algebraic expression.

1. 7 less than m
2. the quotient of 3 and y
3. the total of 5 and c
4. the difference of 6 and r
5. n divided by 2
6. the product of k and 9

Write each sentence as an algebraic equation.

7. A number increased by 7 is 11.
8. The price decreased by \$4 is \$29.
9. Twice as many points as Bob would be 18 points.
10. After dividing the money 5 ways, each person got \$67.
11. Three more than 8 times as many trees is 75 trees.
12. Seven less than a number is 15.

11-2

Name _____

$\frac{is}{of} = \frac{\%}{100}$

Integration: Algebra
The Percent Equation

In the percent proportion, $\frac{r}{100}$ is the rate. Let $R = \frac{r}{100}$.

Then $\frac{P}{B} = \frac{r}{100}$ becomes $\frac{P}{B} = R$.

Rewrite the equation at the right above to make it easier to solve equations when the rate and base are given.

$$P = R \cdot B$$

Examples **1** **What number is 35% of 480?**

$P = R \cdot B$ *Replace R with 0.35 and B with 480.*
$P = 0.35 \cdot 480$
$P = 168$
So, 35% of 480 is 168.

2 **56 is what percent of 224?**

$P = R \cdot B$ *Replace P with 56 and B with 224.*
$56 = 224R$
$\frac{56}{224} = \frac{224R}{224}$
$0.25 = R$

So, 56 is 25% of 224.

Write an equation for each problem. Then solve.

1. 63 is what percent of 42?

2. 35% of what number is 49?

3. Find 12% of 225.

4. 198 is 60% of what number?

5. What percent of 360 is 108?

6. 792 is 90% of what number?

7. 85% of 460 is what number?

8. 6% of what number is 9?

9. 95 is what percent of 50?

10. What is 29% of $17?