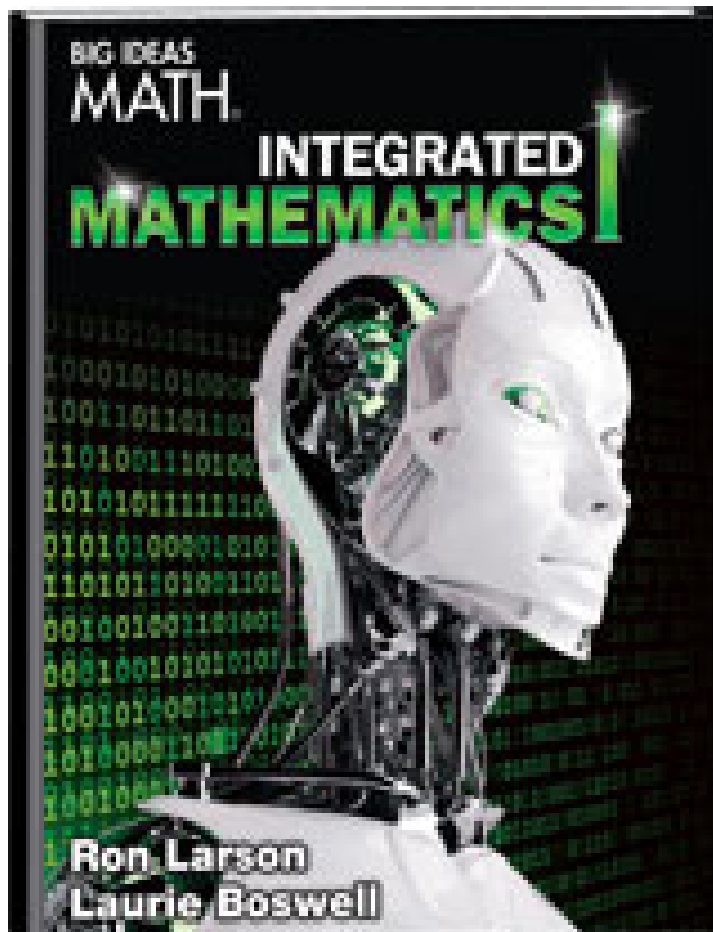


# **OPTIONAL Mathematics Summer Review Packet**

For  
ALL Students Entering  
Integrated Math I CP

DUE DATE: FIRST DAY OF SCHOOL  
DUE TO: INTEGRATED MATH I CP TEACHER



Medford Public Schools  
**Department of Mathematics**

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**Director of Mathematics K - 12**

**781-393-2214**

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Dear Student/Parent/Guardian:

Welcome to your Summer Mathematics Review Packet. To help students meet with success in Integrated Math I CP, students are provided with a packet of math problems that include topics that have been studied in middle school. In today's environment of rigorous academic standards with the newly implemented Common Core, students need to understand core topics to progress and progress in their mathematical learning. This **OPTIONAL** packet is intended to help students retain some basic skills they have learned as well as help them gain some new skills; it is designed to help students transition to High School Mathematics.

There are excellent, easy-to-understand tutorials online if students need to review how to complete the work. Most of the tutorials are under 10 minutes long. The references to different sites are given as one progresses through the packet. The site [www.khanacademy.org](http://www.khanacademy.org) is very popular with many topics. It can be scrolled down and clicked on **OR** can be searched using the box "*search for video or topic.*" Enter the topic students are working on for the day, and they will get a list of video tutorials. Watch as many as students need to help them complete the packet problems. There is also an opportunity to ask questions and get some online feedback. Students will find useful information there if time is taken to read the information.

The packet has nine sections. Students are suggested to work on at least one section weekly throughout the summer. At this rate, the packet will be completed in time for the start of school, and students will be ready for their Math class.

All work (all steps to each problem, including Calculator work) should be neatly shown on the packet or on a separate sheet of paper to be turned in with the packet. If work is done on separate paper, students should label their work and include the section and the problem number.

Good luck as you transition to high school.

Sincerely,

*Faiza Khan*

Director of Mathematics K-12

Medford Public Schools

Name: \_\_\_\_\_

## Order of Operations

Need a refresher? Order of Operations Video:

[https://www.khanacademy.org/math/arithmetic/order-of-operations/order\\_of\\_operations/v/order-of-operations](https://www.khanacademy.org/math/arithmetic/order-of-operations/order_of_operations/v/order-of-operations)

# PEMDAS

**Part 1:** Determine which step to perform first. The first example has been done for you.

a) $14 + 7 \cdot 40 \div 8 - 7$  $7 \cdot 40$ because it is the first multiplication when reading left to right.	b) $50 \div 5 + (7 \cdot 2) \cdot 9 + 4$	c) $(11 - 5) \cdot 2 + 7 + 36 - 9$
d) $6^2 - 20 \div (2^3 - 3) + 1$	e) $4^2 - 5 \div 12$	f) $ 4 - 6  + 2 \cdot 5$

**Part 2:** Simplify each expression. The first problem has been solved for you.

$(34 - 4) \div 3 - 6^2$ $30 \div 3 - 6^2$ $30 \div 3 - 36$ $10 - 36$ $26$	g) $(2 + 2)^2 + (12 \div 6)$	h) $(96 - 6^2) \div (9 + 6)$
i) $17 - (19 - 3^2)^2 \div 4$	j) $12 -  -3 - 5  \cdot -2$	k) $5 \cdot (3^2 - 7)$
l) $(2 \cdot 6 - 8^2) - 10$	m) $(65 - 5^2) \div (15 + 5)$	n) $4 \cdot (12 + 4) + 5^2$

Order of Operations Extra Practice:

[https://www.khanacademy.org/math/arithmetic/order-of-operations/order\\_of\\_operations/e/order\\_of\\_operations\\_2](https://www.khanacademy.org/math/arithmetic/order-of-operations/order_of_operations/e/order_of_operations_2)

[https://www.khanacademy.org/math/arithmetic/order-of-operations/order\\_of\\_operations/e/order\\_of\\_operations](https://www.khanacademy.org/math/arithmetic/order-of-operations/order_of_operations/e/order_of_operations)

[https://www.khanacademy.org/math/arithmetic/order-of-operations/order\\_of\\_operations/e/order\\_of\\_operations](https://www.khanacademy.org/math/arithmetic/order-of-operations/order_of_operations/e/order_of_operations)

**Part 3: Operations with Integers** – Simplify the following expressions. Use the number line if needed. The first problem has been done for you.

Operations with Integers Extra Practice:

- <http://cdn.kutasoftware.com/Worksheets/PreAlg/Dividing%20Integers.pdf>
- <http://cdn.kutasoftware.com/Worksheets/PreAlg/Multiplying%20Integers.pdf>
- <http://cdn.kutasoftware.com/Worksheets/PreAlg/Dividing%20Integers.pdf>

RULES FOR INTEGERS ( SIGNED NUMBERS)	
<p style="text-align: center; margin: 0;"><b>ADDITION</b></p> <p><math>+</math> and <math>+</math> = <math>+</math></p> <p><math>-</math> and <math>-</math> = <math>-</math></p> <p><math>+</math> and <math>-</math> = <math>+</math></p> <p><math>+</math> and <math>-</math> = <math>-</math></p>	<p style="text-align: center; margin: 0;"><b>SUBTRACTION</b></p> <p style="text-align: center; margin: 0;"><b>ADD THE OPPOSITE!</b></p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="font-size: small;">(Change the subtraction sign to an addition sign. Change the sign of the second number. Now follow the Addition rules!)</p> </div>
<p style="margin: 0;"><b>MULTIPLICATION AND DIVISION</b></p> <p><math>+</math> and <math>+</math> = <math>+</math>                      <math>+</math> and <math>-</math> = <math>-</math></p> <p><math>-</math> and <math>-</math> = <math>+</math>                      <math>-</math> and <math>+</math> = <math>-</math></p>	

<p>a) <math>8 + (-6) = 2</math></p>	<p>b) <math>-45 \div (-9) = 5</math></p>	<p>c) <math>(-11) - (-8) =</math></p>
<p>d) <math>12 + (-6) =</math></p>	<p>e) <math>14 - (-1) =</math></p>	<p>f) <math>(-5) + (-14) =</math></p>
<p>g) <math>1 - 8 =</math></p>	<p>h) <math>-8 - 6 =</math></p>	<p>i) <math>-9 + 7 =</math></p>
<p>j) <math>-4 - 14 =</math></p>	<p>k) <math>-26 - 39 =</math></p>	<p>l) <math>677 - 798 =</math></p>
<p>m) <math>-4 - (-8) =</math></p>	<p>n) <math>-6 \div 2 =</math></p>	<p>o) <math>-5 \times -8 =</math></p>
<p>p) <math>-9 \times 8 =</math></p>	<p>q) <math>-9 \times -1 =</math></p>	<p>r) <math>24 \div -8 =</math></p>

## Part 4: Operations with Rational Numbers

Resources & Extra Practice:

<https://youtu.be/zkJ1gOrYhEg>

<https://youtu.be/zkJ1gOrYhEg>

<https://youtu.be/zkJ1gOrYhEg>

<https://youtu.be/HSf9O1Domms>

<https://youtu.be/CTKMK1ZGLuk>

<https://youtu.be/m-pRnFleoNA>

### ADDITION:

1. FIND COMMON DENOMINATOR
  - a. Whatever you do to the bottom, you must do to the top!
2. ADD NUMERATORS
3. SIMPLIFY

### SUBTRACTION:

1. FIND COMMON DENOMINATOR
  - a. Whatever you do to the bottom, you must do to the top!
2. SUBTRACT NUMERATORS
3. SIMPLIFY

### MULTIPLICATION:

1. MULTIPLY NUMERATORS
2. MULTIPLY DENOMINATORS
3. SIMPLIFY

### DIVISION:

1. FLIP THE SECOND FRACTION
2. MULTIPLY (LOOK ABOVE FOR HELP)
3. SIMPLIFY

a) $\frac{6}{7} + \frac{7}{21}$ $\frac{18}{21} + \frac{7}{21} = \frac{25}{21}$	b) $\frac{2}{3} - \frac{3}{10}$	c) $\frac{2}{3} + \frac{8}{42}$	d) $\frac{12}{14} - \frac{4}{8}$
e) $\frac{13}{54} - \frac{1}{9}$	f) $\frac{1}{4} + \frac{4}{20}$	g) $\frac{5}{6} + \frac{2}{4}$	h) $\frac{10}{22} - \frac{5}{11}$

i) $\frac{5}{8} \div \frac{1}{6}$ $\frac{5}{8} \cdot \frac{6}{1} = \frac{30}{8} = \frac{15}{4}$	j) $\frac{1}{3} \div \frac{1}{4}$	k) $\frac{1}{2} \cdot \frac{2}{3}$	l) $\frac{3}{6} \cdot \frac{1}{2}$
m) $\frac{5}{7} \div \frac{1}{3}$	n) $\frac{3}{5} \cdot \frac{7}{10}$	o) $\frac{1}{2} \cdot \frac{5}{7}$	p) $\frac{1}{3} \div \frac{2}{6}$

**Part 5: Evaluating Expressions with Given Values** – Evaluate the expressions for the given replacement value. The first problem was done for you.

Need a refresher? Evaluating Expressions with Given Values Video:

<https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-expressions-and-variables/cc-6th-evaluating-expressions/v/variables-and-expressions-1>

$3a + 5b$ , for $a = -1$ , $b = 2$ $3(-1) + 5(2)$ $-3 + 10$ $7$	a) $4r + \frac{21}{s}$ , for $r = 7$ , $s = -7$	b) $-2 + \frac{6}{x} - y - 3$ , for $x = 2$ , $y = -6$
c) $-(g - 2h) + 3$ , for $g = 1$ , $h = -1$	d) $6(p - q)$ , for $p = 9$ , $q = -2$	e) $3m + n + m$ , for $m = 5$ , $n = 2$

Evaluating Expressions with Given Values Extra Practice:

<http://cdn.kutasoftware.com/Worksheets/PreAlg/Evaluating%20Variable%20Expressions.pdf>

<http://cdn.kutasoftware.com/Worksheets/PreAlg/Evaluating%20Variable%20Expressions.pdf>

### Part 6: Number Sense

Need a refresher? Number Sense Video:

<https://www.khanacademy.org/math/pre-algebra/decimals-pre-alg/comparing-decimals-pre-alg/v/comparing-decimals-1-example>

<https://www.khanacademy.org/math/pre-algebra/decimals-pre-alg/comparing-decimals-pre-alg/v/ordering-decimals-example>

a) $4.5 > -4.5$	b) $-0.707 \underline{\hspace{1cm}} 07.07$	c) $-18.2 \underline{\hspace{1cm}} 18.0$
d) $-3.21 \underline{\hspace{1cm}} -3.12$	e) $-0.3 \underline{\hspace{1cm}} -0.33$	f) $-0.06 \underline{\hspace{1cm}} 0.6$

Fill the placeholder in with the correct inequality  $<$ ,  $>$ , or  $=$ . The first problem has been done for you.

Rewrite the decimals in increasing order. The first problem has been solved for you.

f) 14.367, $-28.7784$ , 213.22, $-361.238$ , 5.2, $-5.33$ $-361.238$ , $-28.7784$ , $-5.33$ , 5.2, 14.367, 213.22
g) $-11.111$ , $-111.11$ , 1.11, 11.1, $-11.1$ , $-1.11$
h) 8.1, $-67.3$ , $-82.55$ , $-121.91$ , $-2.2$ , 46.76

Number Sense Extra Practice:

<https://www.khanacademy.org/math/pre-algebra/decimals-pre-alg/comparing-decimals-pre-alg/v/comparing-decimals-1-example>

<https://www.khanacademy.org/math/pre-algebra/decimals-pre-alg/comparing-decimals-pre-alg/v/ordering-decimals-example>

## Part 7: Properties of Exponents

Need a refresher on Properties of Exponents? Use the links below

<https://www.khanacademy.org/math/pre-algebra/exponents-radicals/exponent-properties/v/exponent-rules-part-1>  
<https://www.khanacademy.org/math/pre-algebra/exponents-radicals/exponent-properties/v/exponent-rules-part-2>  
<https://www.khanacademy.org/math/pre-algebra/exponents-radicals/exponent-properties/v/exponent-properties-involving-quotients>  
<https://www.khanacademy.org/math/pre-algebra/exponents-radicals/negative-exponents-tutorial/v/negative-exponents>

Simplify the following exponents. The first problem has been solved for you.

a) $(-2)^2 = (-2)(-2) = 4$	b) $5^0 =$	c) $(-10)^{-1} =$
d) $(-3)^3 =$	e) $(-5)^1 =$	f) $8^{-1} =$
g) $\frac{6z^5}{9z} = \frac{6z^{5-1}}{9} = \frac{2z^4}{3}$	h) $\frac{4b^{-6}}{2b^5k^{-4}}$	i) $2n^6y^{-3} \cdot 6n^{-2}y^2$
j) $\frac{8h^{-5}r^{-3}}{4hr^{-4}}$	k) $\frac{9^{-5}}{9}$	l) $\frac{8^6}{8^4}$
m) $2k^6 \cdot 7k^{-3}g^2$	n) $(\frac{6}{7})^4 \cdot (\frac{6}{7})^{-9} \cdot (\frac{6}{7})^5$	o) $d^6 \cdot d^{-2} \cdot d^{-3}$

Properties of Exponents Extra Practice:

[https://www.khanacademy.org/math/pre-algebra/exponents-radicals/exponent-properties/e/exponent\\_rules](https://www.khanacademy.org/math/pre-algebra/exponents-radicals/exponent-properties/e/exponent_rules)  
<https://www.khanacademy.org/math/pre-algebra/exponents-radicals/exponent-properties/e/properties-of-integer-exponents>  
<http://cdn.kutasoftware.com/Worksheets/Alg1/Properties%20of%20Exponents.pdf>  
<http://cdn.kutasoftware.com/Worksheets/Alg1/More%20Properties%20of%20Exponents.pdf>



## Part 8: Solving Equations with One Variable

Need a refresher? Solving Equations with One Variable Video:

<https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/one-step-equation-intuition>

<https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/why-of-algebra/v/why-we-do-the-same-thing-to-both-sides--two-step-equations>

a) $h - 15 = -22$ <b>**One Step**</b>	b) $21k = -105$	c) $\frac{g}{-12} = 11$
d) $s + 9 = 25$	e) $x - 7 = 1$	f) $\frac{-x}{4} = 5$
g) $-15 - 9c = 3$ <b>**Two-steps**</b>	h) $\frac{6-h}{22} = -16$	i) $7 + \frac{2}{7}k = 20$
j) $\frac{3}{7}a - 17 = -11$	k) $5f - 28 = -11$	l) $-18 + 25y = -6$
m) $\frac{21-r}{28} = -12$	n) $\frac{7+z}{-20} = -24$	o) $\frac{16-n}{-18} = -2$

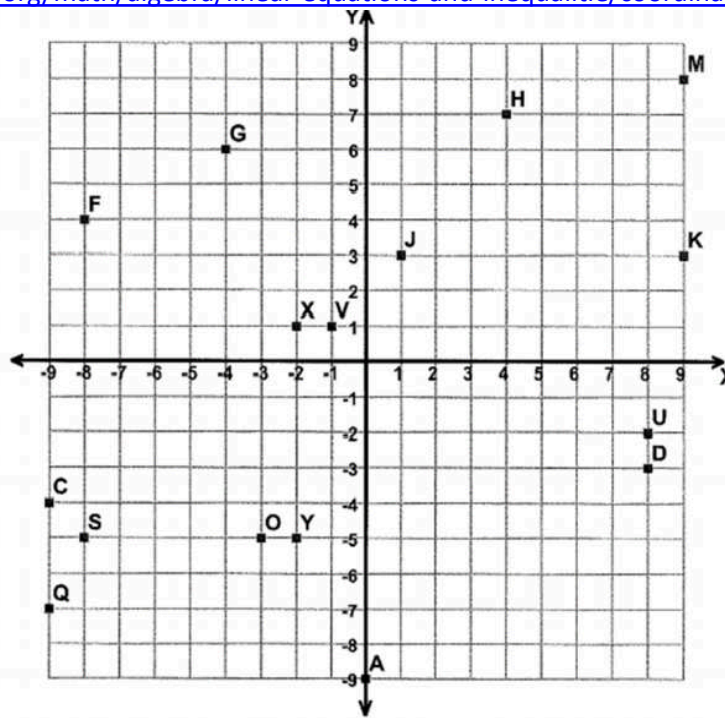
Solving Equations with One Variable Extra Practice:

<http://cdn.kutasoftware.com/Worksheets/PreAlg/One-Step%20Equations%20With%20Integers.pdf>

## Part 9: The Coordinate Plane

Need a refresher? Watch this video:

<https://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/coordinate-plane/v/the-coordinate-plane>



Tell what point is located at each ordered pair. The first problem has been solved for you.

a) $(-9, -4)$ C	b) $(4, 7)$	c) $(8, -2)$	d) $(8, -3)$
e) $(1, 3)$	f) $(-3, -5)$	g) $(9, 3)$	h) $(-1, 1)$

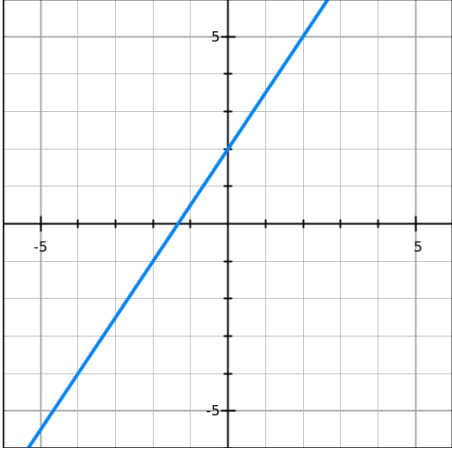
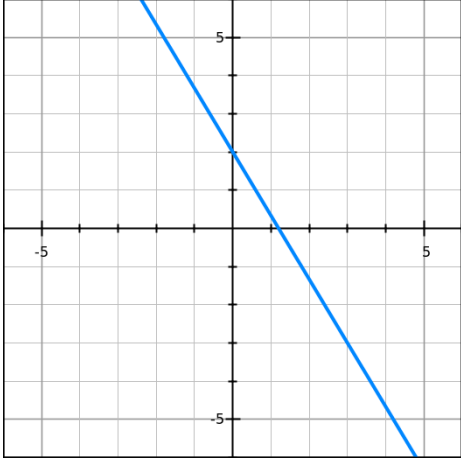
Write the ordered pair for each given point. The first problem has been solved for you.

a) S $(-8, -5)$	b) M	c) X	d) F
e) Y	f) Q	g) G	h) A

Plot the following points on the coordinate grid

a) $W(3, 5)$	b) $N(-7, -2)$	c) $P(-3, 5)$	d) $B(-3, -1)$
e) $T(6, 8)$	f) $I(0, 7)$	g) $E(6, -8)$	h) $Z(8, 3)$

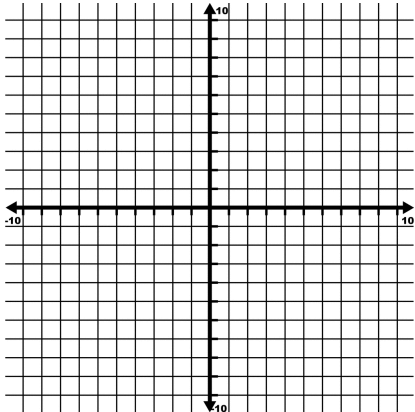
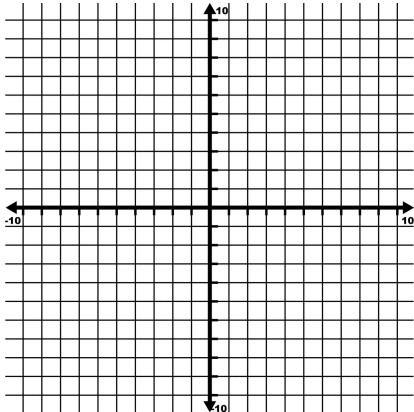
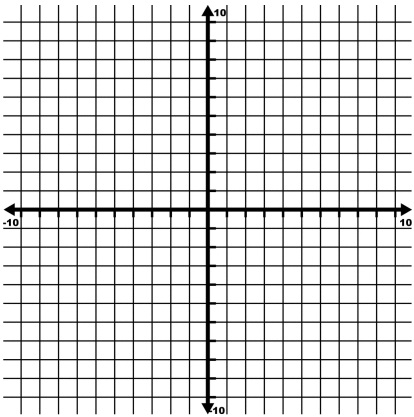
Need a refresher? Slope Intercept Form of Linear Equations Video:

<p>a) <math>y = \frac{-1}{4}x - 2</math></p> <p>m = _____ b = _____</p>	<p>b) <math>y = \frac{1}{3}x - 1</math></p> <p>m = _____ b = _____</p>	<p>c) <math>y = \frac{-2}{7}x + 1</math></p> <p>m = _____ b = _____</p>	<p>d) <math>y = \frac{3}{4}x + 3</math></p> <p>m = _____ b = _____</p>
<p>e)</p>  <p>Slope: _____</p> <p>Y-intercept: _____</p>	<p>f)</p>  <p>Slope: _____</p> <p>Y-intercept: _____</p>		

<https://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing-slope-intercept/v/graphing-a-line-in-slope-intercept-form>

Label the slope and y-intercept of each linear equation below:

Sketch the graph of each line.

<p>a) <math>y = \frac{1}{3}x - 4</math></p> 	<p>b) <math>y = \frac{-1}{3}x + 1</math></p> 	<p>c) <math>y = \frac{-4}{9}x - 3</math></p> 
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