This notebook is dedicated to our past, present, and future students. It is our students that inspire us to continue in the pursuit of excellence as we strive to assist in the journey from our classrooms forward into the future.
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# Math 108 Grade Summary

Keep track of your grades by filling in this grid. See a sample Grade Summary on the next page.

## In Class Notebook Assessments

<table>
<thead>
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## Polya Lab Attendance (PA)

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## Quizzes

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## Grading Scale

(after dropping lowest NB, PA, HW and Quiz)

- **A**: 743-825 pts
- **B**: 660-742 pts
- **C**: 578-659 pts
- **D**: 495-577 pts
- **F**: Below 495 pts

## Totals

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## Math 108 Grade Summary Example

This person earned an “A” for the course without ever getting an “A” on any tests.

### In Class Notebook Assessments

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### Polya Lab Attendance (PA)

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### Grading Scale

- **A**: 743-825 pts
- **B**: 660-742 pts
- **C**: 578-659 pts
- **D**: 495-577 pts
- **F**: Below 495 pts

### Totals

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**Week 1A Task List**

Your Week 1A HW Assignment will cover Section 1.1 of your eText. Work through each of the following tasks, carefully filling in the following pages in your notebook.

**Polya Time**

My time requirement for this week is: _______ minutes due on _________________.

**Week 1A Homework Due Date**

My Week 1A HW assignment is due on _____________________.

Any Week 1A HW exercises completed after the due date will be given a ________ penalty.

**Section 1.1 Linear Equations in One Variable**

Work through Objective 1 then do problems #1-4
Work through Objective 2 then do problems #5-15
Work through Objective 4 then do problems #16-24
Section 1.1 Linear Equations in One Variable

Section 1.1 Objective 1: Determine if a Given Value Is a Solution to an Equation

What is an algebraic equation?

What is an algebraic expression?

What do algebraic equations have that algebraic expressions do not have?

What is an equation in one variable? Write 3 examples.
Write the definition of **Linear Equation in One Variable**.

Linear equations are also called ______________________________ because the exponent of the variable is ________________________________.

Work through Example 1 and write your notes here.

Determine if the given value is a solution to the equation.

a. \(2x + 3 = 11; \ x = 4\)

b. \(3y + 8 = 5y - 4; \ y = 2\)

c. \(\frac{2}{3}w - \frac{1}{2} = \frac{1}{4}; \ w = \frac{3}{8}\) For part c) watch the accompanying video on page 1.1-6.

**NOW WORK WEEK 1A HW EXERCISES #1-4**
Section 1.1 Objective 2: Solve Linear Equations in One Variable

Write down the Properties of Equality that are used to find simpler equations.

Work through Example 2 and write your notes here.

Use the properties of equality to solve each equation (be sure to show all work for checking your solution).

a. \(3x - 1 = 5\)

b. \(8 = \frac{1}{2}n + 3\)
Work through the video that accompanies Example 3 and write your notes here.
Solve: \( 6x - 5 = 2x - 3 \)

Work through the video that accompanies Example 4 and write your notes here:
Solve: \( 5(x - 6) - 2x = 3 - (x + 1) \)

What is the distributive property? (Look at the solution to Example 4 in your e-text.)

**NOW WORK WEEK 1A HW EXERCISES #5-9**
(Fill in the Blanks)
When an equation contains fractions, it is usually best to _______________ the fractions first. To do this, we multiply both sides of the equation by an appropriate common multiple of all the ___________________________, usually the ___________________________________ of all the fractions.

Work through the video that accompanies Example 5 and write your notes here:
Solve: \( \frac{x}{3} - \frac{5}{12} = \frac{5}{6}x - \frac{11}{12} \)

Work through the video that accompanies Example 6 and write your notes here:
Solve: \( \frac{1}{3} (1 - x) - \frac{x+1}{2} = -2 \)

NOW WORK WEEK 1A HW EXERCISES #10-13
(Fill in the Blanks)

When an equation contains decimals, we _________________ the decimals by multiplying both sides of the equation by an appropriate _________________ of 10, such as ____________, ____________, and _______________.

Work through the video that accompanies Example 7 and write your notes here:
  Solve: \( 0.5n - 0.25 + 0.075n = 0.5 - 0.025n \)

Work through the video that accompanies Example 8 and write your notes here:
  Solve: \( 0.1(y - 2) + 0.03(y - 4) = 0.02(10) \)

NOW WORK WEEK 1A HW EXERCISES #14-15
Skip Objective 3 and go to Objective 4 starting on page 1.1-19

Section 1.1 Objective 4: Use Linear Equations to Solve Application Problems

Write down the key words that all translate to an Equal Sign by filling in the table below. See Table 1 in your eText.

**Table 1**

<table>
<thead>
<tr>
<th>Key Words That Translate to an Equal Sign</th>
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</table>

What is the mathematical equation for “The product of 5 and a number is 45”?

The equation is: _______________________________

Work through Example 10:

Translate each sentence into an equation. Use $x$ to represent each unknown number.

a. Fifty-two less than a number results in $-21$.

b. Three-fourths of a number, increased by 8, gives the number.

c. The difference of 15 and a number is the same as the sum of the number and 1.

d. If the sum of a number and 4 is multiplied by 2, the result will be 2 less than the product of 4 and the number.

NOW WORK WEEK 1A HW EXERCISES #16-20
Go to page 1.1-24 of your eText.

Write down the 6-Step Problem-Solving Strategy for Applications of Linear Equations (See page 1.1-24)

Problem-Solving Strategy for Applications of Linear Equations

Step 1:

Step 2:

Step 3:

Step 4:

Step 5:

Step 6:
Work through the video that accompanies Example 13 and write your notes here:

Camille uses the cloud storage services *Dropbox* and *Google Drive* to store her photos in the cloud. The amount of storage she uses in *Google Drive* is 6 times the storage she uses in *Dropbox*. If she uses a total of 14 gigabytes of storage, how much storage does she use with each cloud service?

NOW WORK WEEK 1A HW EXERCISES #21-22
Go to page 1.1-29 of your eText.
Work through the Concept Animation and fill in the number lines below:

According to the concept animation, if $x$ represents an integer, then label the next three consecutive integers.

![Number line with an arrow indicating the next three consecutive integers.]

According to the concept animation, if $x$ represents an even integer, then label the next two consecutive even integers.

![Number line with an arrow indicating the next two consecutive even integers.]

Work through the video that accompanies Example 16 and write your notes here:

Three consecutive even integers add to 432. Find the three integers.

![Number line with an arrow indicating the next two consecutive even integers.]

NOW WORK WEEK 1A HW EXERCISES #23-24
Week 1B Task List

Your Week 1B Homework Assignment will cover Sections 1.2 and 1.4 of your eText. Work through each of the following tasks, carefully filling in the following pages in your notebook.

Polya Time
My time requirement for this week is: _______ minutes due on _________________.

Week 1A Homework Requirement
I must receive at least a ________ % on Week 1A HW before I can work on Week 1B HW.

Week 1B Homework Due Date
My Week 1B HW assignment is due on _____________________.
I must receive at least a ________ % on Week 1B HW or I cannot take Week 1 Quiz.

Section 1.2 Linear Inequalities in One Variable
Work through Objective 1 then do problems #1-2
Work through Objective 2 then do problems #3-7
Work through Objective 3 then do problems #8-10
Work through Objective 4 then do problems #11-19

Section 1.4 Absolute Value Equations and Inequalities
Work through Objective 1 then do problems #20-24

Complete Notebook Policy Question #25

Now Complete Quiz 1
Section 1.2 Linear Inequalities in One Variable

Section 1.2 Objective 1: Determine if a Given Value Is a Solution to an Inequality

Write down the 5 different types of inequality symbols.

Work through the interactive video that accompanies Example 1 and write your notes here:

Determine if the given value is a solution to the inequality.

a. \( 3x + 4 < 8; x = 2 \)

b. \( n^2 + 5n \geq 4; n = -6 \)

What is the difference between a strict inequality and a non-strict inequality?

NOW WORK WEEK 1B HW EXERCISES #1-2
Section 1.2 Objective 2: Graph the Solution Set of an Inequality on a Number Line

Read page 1.2-5.

What is set-builder notation and why is it used? Give an example of a set written in set-builder notation.

Sketch the set $\{x \mid x < 4\}$ on a number line:
Work through Example 2 and write your notes here:

Graph each solution set on a number line.

a) \{x|x \geq 0\}

b) \{x|1 < x \leq 7\}

c) \{x|x < 3\}

d) \{x|0 < x < 4\}

e) \{x|x \neq -2\}

f) \{x|-1 \leq x \leq 5\}

g) \{x|-3 \leq x < 2\}

h) \{x|x \text{ is any real number}\}

NOW WORK WEEK 1B HW EXERCISES #3-7
Section 1.2 Objective 3: Use Interval Notation to Express the Solution Set of an Inequality

Work through the Concept Animation on page 1.2-8 and answer the questions below:

1. Graph the inequality \( a < x \leq b \) on a number line.

2. What is the correct interval notation for your graph from above?

3. Graph the inequality \( x \leq a \)

4. What is the correct interval notation for your graph from above?

5. What is the correct interval notation for the set of all real numbers?

This table summarizes three ways of expressing intervals:

<table>
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<th>Interval Notation</th>
<th>Set-Builder Notation</th>
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<td>((a, b])</td>
<td>({x</td>
</tr>
<tr>
<td>![Graph 4]</td>
<td>((-\infty, a])</td>
<td>({x</td>
</tr>
<tr>
<td>![Graph 5]</td>
<td>([-\infty, b])</td>
<td>({x</td>
</tr>
</tbody>
</table>
Work through Example 3 and take notes here.
Write each solution set using interval notation.

a) \( \{x \mid x < 5\} \)

b) \( \{x \mid 2 \leq x < 10\} \)

c) \( \{x \mid x \geq -3\} \)

d) \( \{x \mid -6 < x < 0\} \)

e) \( \{x \mid -1 \leq x \leq 5\} \)

f) \( \{x \mid x \text{ is any real number}\} \)

NOW WORK WEEK 1 HW EXERCISES #8-10
Section 1.2 Objective 4: Solve Linear Inequalities in One Variable

What is the definition of a linear inequality in one variable?

Work through the interactive video on page 1.2-11 to learn how to identify linear and nonlinear inequalities and take notes here.

Write down the 2 properties of inequalities seen below: (refer to page 1.2-12)

**Properties of Inequalities:**
Let $a$, $b$, and $c$ be real numbers.

1. Addition Property of Inequality:

2. Multiplication Property of Inequality:
Work through Example 4 and take notes here.
   Solve the inequality $4x - 8 \geq 6x + 6$. Graph the solution set on a number line and write the solution in interval notation.

Work through the video that accompanies Example 5 and take notes here.
   Solve the inequality $2 - 5(x - 2) < 4(3 - 2x) + 7$. Write the solution set in set-builder notation.

Work through the video that accompanies Example 6 and take notes here.
   Solve the inequality $\frac{m}{2} - 5 + 2m > -\frac{m}{4} + \frac{1}{2}$. Write the solution set in interval notation.

NOW WORK WEEK 1B HW EXERCISES #11-14
Work through the video that accompanies Example 8 and take notes here.

Solve the inequality \(-2 < \frac{3x - 5}{4} \leq 3\). Graph the solution set on a number line; write this solution in interval notation.

Work through the video that accompanies Example 9 and take notes here.

Solve the inequality \(-1.4 < 5 - 3.2x < 3.4\) and write its solution set in interval notation.

NOW WORK WEEK 1B HW EXERCISES #15-19
Section 1.4 Absolute Value Equations and Inequalities

Section 1.4 Objective 1: Solve Absolute Value Equations

Fill in the blanks:

The absolute value of a number \( a \), written as _______, represents the ________________ from \( a \) to _______________ on a ________________ line.

Work through the concept animation on page 1.4-3 and answer the questions below.

Solve the equation \(|x + 2| = 5\).

Write down the Absolute Value Equation Property:

In the concept animation, work through the example \(3|x − 5| − 7 = 11\).

Work through Example 1 and take notes here: Solve \(|m + 4| = 8\).
Work through the video that accompanies Example 2 and take notes here: Solve $|1 - 3x| = 4$.

Work through the video that accompanies Example 3 and take notes here: Solve $|2x - 5| = 0$.

Work through Example 4 and take notes here: Solve $|3x + 7| = -4$.

Write down the **Strategy for Solving Absolute Value Equations** (See page 1.4-8)

**Step 1:**

**Step 2:**

**Step 3:**

**Step 4:**
Work through the video that accompanies Example 5 and take notes here:
Solve $2|w - 1| + 3 = 11$.

Work through the video that accompanies Example 6 and take notes here:
Solve $-3|2 - m| + 8 = 2$.

NOW WORK WEEK 1 HW EXERCISES #20-24

COMPLETE THE NOTEBOOK POLICY QUESTION #25

YOU ARE NOW READY TO TRY WEEK 1 QUIZ. REMEMBER THAT YOU CAN TAKE THIS QUIZ UP TO 10 TIMES.
Week 2A Task List

Your Week 2A Homework Assignment will cover Section 1.5 of your eText. Work through each of the following tasks, carefully filling in the following pages in your notebook.

Polya Time
My time requirement for this week is: __________ minutes due on _________________.

Week 2A Homework Due Date
My Week 2A HW assignment is due on _____________________.
Any Week 2A HW exercises completed after the due date will be given a ________ penalty.

Grade Check
Fill out your Grade Calculation page

Polya Time
My time requirement for this week is: __________ minutes

Prerequisite
Earn at least a 25% on Practice Test 1

Read the brief overview of the upcoming Week 3 testing procedures. Then do problem #1.

Section 1.5 Formulas and Problem Solving
Work through TTK 3 then do problems #2-4
Work through Objective 1 then do problems #5-11
Work through Objective 2 then do problems #12-15
Work through Objective 5 then do problems #16-19
Log into PolyaWeb to find your individual scores. Use these scores to fill out the tables below. Bring this completed grade sheet to class. It must be filled out completely and correctly at the beginning of class to receive credit. Ask a tutor if you need help finding your individual scores.

<table>
<thead>
<tr>
<th>In Class Notebook Assessments</th>
<th>Polya Lab Attendance (PA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week</strong></td>
<td><strong>Possible</strong></td>
</tr>
<tr>
<td>NB 0</td>
<td>5</td>
</tr>
<tr>
<td>NB 1</td>
<td>5</td>
</tr>
<tr>
<td><strong>SUBTOTAL</strong></td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Homework (HW)</th>
<th>Quizzes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homework</strong></td>
<td><strong>Possible</strong></td>
</tr>
<tr>
<td>HW 1A</td>
<td>HW 1B</td>
</tr>
<tr>
<td>SUBTOTAL</td>
<td>10</td>
</tr>
</tbody>
</table>

**Copy your subtotals here and find the grand total:**

<table>
<thead>
<tr>
<th>SUBTOTAL NB</th>
<th>SUBTOTAL PA</th>
<th>SUBTOTAL HW</th>
<th>SUBTOTAL QUizzes</th>
<th>GRAND TOTAL</th>
</tr>
</thead>
</table>

Do not include extra credit. Do not drop any scores.

**Your current grade through week 1:**

Enter your Grand Total in the box

Round to the nearest tenth as needed

\[ \div .35 \] %
It is Time to Start Thinking About Your First Test!

Your first test week starts NEXT week during Week 3. Test 1 will cover material from Week 1 and Week 2. Below are some important procedures to be aware of as we get closer to the beginning of your Test 1 week:

- You must earn at least a 60% on Practice Test 1 before taking Test1A.
- You may take the computer tests three times in the Polya lab (no more than one test per day).
- You will not be allowed to use any calculator other than the TI 30xIIS on any tests.

See the Week 3 Notebook pages for more test details.

NOW WORK WEEK 2A HW EXERCISE #1
Section 1.5 Formulas and Problem Solving

1.5 Things To Know

3. Use Linear Equations to Solve Application Problems (Section 1.1)
   Do you remember the 6-Step Problem-Solving Strategy for Applications of Linear Equations?
   (See your Week 1 notebook pages) Use this strategy to answer homework problems #2-4.

NOW WORK WEEK 2A HW EXERCISES #2-4
Section 1.5 Objective 1: Solve a Formula for a Given Variable

What is the definition of a formula?

What is the definition of perimeter?

Work through the interactive video on page 1.5-3 and use the formulas provided to find the value of the unknown variable.

a) \( P = 2l + 2w; P = 46\text{cm}, l = 13\text{cm}. \) Find \( w \).

b) \( A = lw; l = 12\text{in}, w = 8\text{in}. \) Find \( A \).

c) \( V = \frac{1}{2}Bh; V = 200\text{m}^3, h = 25\text{m}. \) Find \( B \).

We are often interested in solving for specific variables of a formula. In Example 1, we are given the formula for the area of a triangle and the formula for the perimeter of a rectangle. Work through Example 1 now and see if you can solve each formula for the given variable. (Part b has video solution)

\( A = \frac{1}{2}bh; \) Solve for \( b \).  
\( P = 2l + 2w; \) Solve for \( l \).

NOW WORK WEEK 2A HW EXERCISES #5-11
Section 1.5 Objective 2: Use Formulas to Solve Application Problems

Click on the “Review” link on page 1.5-6 that shows common formulas for area and perimeter and complete each formula below:

**Square**

- Area: \( A = \) \\
- Perimeter: \( P = \)

**Rectangle**

- Area: \( A = \) \\
- Perimeter: \( P = \)

**Circle**

- Area: \( A = \) \\
- Circumference: \( C = \)

**Triangle**

- Area: \( A = \) \\
- Perimeter: \( P = \)

**Trapezoid**

- Area: \( A = \) \\
- Perimeter: \( P = \)

**Parallelogram**

- Area: \( A = \) \\
- Perimeter: \( P = \)
Work through the video that accompanies Example 2 and write your notes here:

The length of a college basketball court (rectangle) is 6 feet less than twice its width. If the perimeter is 288 feet, then what are the dimensions of the court?

![Basketball Court Diagram](image)

**NOW WORK WEEK 2A HW EXERCISES #12-13**

Work through the video that accompanies Example 3 and write your notes here:

A 13-ounce Maxwell House coffee can has a surface area of $186\pi \text{ cm}^2$. Find the height of the can if its radius is 5.0 cm.

**NOW WORK WEEK 2A HW EXERCISES #14-15**
Section 1.5 Objective 5: Solve Applications Involving Mixtures

Go to Objective 5 which starts on page 1.5-14 of your eText

What is the definition of concentration?

Work through the animation that accompanies Example 8 and take notes here.
Suppose 2 gallons of a 10% bleach solution is mixed with 3 gallons of a 25% bleach solution.
What is the concentration of bleach in the new 5-gallon mixture?
Work through the video that accompanies Example 9 and write your notes here:

How many milliliters of a 70% alcohol solution must be mixed with 30 mL of a 40% alcohol solution to result in a mixture that is 50% alcohol?

(Fill in the blanks)

NOW WORK WEEK 2A HW EXERCISES #16-19
Week 2B Task List

Your Week 2B Homework Assignment will cover Section 2.1 of your eText. Work through each of the following tasks, carefully filling in the following pages in your notebook.

Polya Time
My time requirement for this week is: _______ minutes due on ___________________.

Week 2B Homework Due Date
My Week 2 HW B homework assignment is due on ___________________.

Prerequisite
Earn at least a 25% on Practice Test 1
I must receive at least a ________ % on Week 2A HW before I can work on Week 2B HW.

Section 2.1 The Rectangular Coordinate System and Graphing
Work through Objective 1 then do problems #1-6
Work through Objective 2 then do problems #7-8
Work through Objective 3 then do problems #9-10
Work through Objective 4 then do problems #11-13
Work through Objective 5 then do problems #14-15

Complete Notebook Policy Question #16

Now Complete Quiz 2
Section 2.1 The Rectangular Coordinate System and Graphing

Section 2.1 Objective 1: Plot Ordered Pairs in the Rectangular Coordinate System

Read page 2.1-3 through page 2.1.5:

- What is an equation in two variables?

- Give three examples of an equation in two variables.

- Work through the interactive video on page 2.1-4 to practice identifying equations in two variables.

- What is another name for the rectangular coordinate system and who was the inventor of this system?
- Work through the concept animation on the bottom of page 2.1-4 and label the $x$-axis, $y$-axis, Origin, and label the four quadrants on the diagram below.

Read page 2.1-6 and 2.1-7 and take notes here:

What is the definition of an ordered pair?

Work through the concept animation found on page 2.1-6 and fill in the blanks below:

When a point lies to the right of the origin, its $x$-coordinate is ________________.

When a point lies to the left of the origin, its $x$-coordinate is ________________.

When a point lies above the origin, its $y$-coordinate is ________________.

When a point lies below the origin, its $y$-coordinate is ________________.
Work through the video that accompanies Example 1 and write your notes here:

Plot each ordered pair in the coordinate plane. In which quadrant or on which axis does each point lie?

\[ A(-4,4) \quad B(-5,-2) \quad C(0,-2) \quad D\left(\frac{3}{2},\frac{5}{2}\right) \quad E(3.5,-4.5) \quad F(2,0) \]

NOW WORK WEEK 2B HW EXERCISES #1-6
Section 2.1 Objective 2: Determine if an Ordered Pair is a Solution to an Equation

Describe what it means to be a solution to an equation in two variables.

Work through Example 2 and write your notes here:

Determine if each ordered pair is a solution to the equation \( x + 2y = 8 \).

- a. \((-2,5)\)
- b. \((2,6)\)
- c. \((-11, \frac{3}{2})\)
- d. \((0,4)\)

NOW WORK WEEK 2B HW EXERCISES #7-8

Section 2.1 Objective 3: Find Unknown Coordinates

Sometimes we are given one coordinate of an ordered pair that is a solution to an equation in two variables and wish to find the other coordinate. Carefully read page 2.1-11 and then work through the interactive video that accompanies Example 3.

Find the unknown coordinate so that each ordered pair satisfies the equation \( 3x + 4y = 20 \).

- a. \((8,?)\)
- b. \((?,2)\)
- c. \(\left(-\frac{2}{3},?\right)\)

NOW WORK WEEK 2B HW EXERCISES #9-10
Section 2.1 Objective 4: Graph Equations by Plotting Points

Every equation in two variables has a graph in the coordinate plane. The graph is the set of all ordered pairs that are solutions to the given equation. One way to graph an equation in two variables is to find several ordered pairs that are solutions, plot the points in the coordinate plane, and connect the points with a curve.

Write down the 3-step **Strategy for Graphing Equations by Plotting Points**

**Step 1**

**Step 2**

**Step 3**

Work through the interactive video that accompanies Example 4. (Part b and c are on the following page)

Graph each equation by plotting points.

a. $2x + y = 1$
b. \( y = x^2 - 4 \)

c. \( y = |x| \)

NOW WORK WEEK 2B HW EXERCISES #11-13
Section 2.1 Objective 5: Find $x$- and $y$-Intercepts

What is the definition of a $y$-intercept?

What is the definition of an $x$-intercept?

Take a look at your graph of $2x + y = 1$ from Example 4a on the previous pages. The $y$-intercept of $2x + y = 1$ is ______. The $x$-intercept of $2x + y = 1$ is ______

Work through Example 5: What are the $x$- and $y$-intercepts of the graph below?

NOW WORK WEEK 2B HW EXERCISES #14-15

COMPLETE THE NOTEBOOK POLICY QUESTION #16

YOU ARE NOW READY TO TRY WEEK 2 QUIZ. REMEMBER THAT YOU CAN TAKE THIS QUIZ UP TO 10 TIMES.