

Chapter 4 Closure What have I learned?

Reflection and Synthesis

The activities below offer you a chance to reflect about what you have learned during this chapter. As you work, look for concepts that you feel very comfortable with, ideas that you would like to learn more about, and topics you need more help with. Look for connections between ideas as well as connections with material you learned previously.



1. TEAM BRAINSTORM

What have you studied in this chapter? What ideas were important in what you learned? With your team, brainstorm a list. Be as detailed as you can. To help get you started, a list of Learning Log entries and Math Notes boxes are below.

What topics, ideas, and words that you learned *before* this course are connected to the new ideas in this chapter? Again, be as detailed as you can.

How long can you make your list? Challenge yourselves. Be prepared to share your team's ideas with the class.

Learning Log Entries

- [Lesson 4.1.1](#) – Strategies for Solving Equations
- [Lesson 4.1.2](#) – The Meaning of a Solution, Part 1
- [Lesson 4.1.3](#) – Finding Solutions to Systems
- [Lesson 4.1.4](#) – The Meaning of a Solution, Part 2
- [Lesson 4.2.1](#) – The Meaning of a Solution, Part 3



Math Notes

- [Lesson 4.2.2](#) – Inequalities with Absolute Value
- [Lesson 4.2.3](#) – Graphing Inequalities with Two Variables
- [Lesson 4.2.4](#) – Solutions to One- and Two-Variable Equations

2. MAKING CONNECTIONS

Below is a list of the vocabulary used in this chapter. Make sure that you are familiar with all of these words and know what they mean. Refer to the glossary or index for any words that you do not yet understand.

solution	boundary curve	boundary line
boundary point	extraneous solution	intercepts
intersection	linear programming	Looking Inside
maximize	one-variable equation	one-variable inequality
rewrite	solution region	system of equations
system of inequalities	two-variable equation	two-variable inequality
Undoing		

Make a concept map showing all of the connections you can find among the key words and ideas listed above. To show a connection between two words, draw a line between them and explain the connection. A word can be connected to any other word as long as you can justify the connection. For each key word or idea, provide an example or sketch that shows the idea.

While you are making your map, your team may think of related words or ideas that are not listed here. Be sure to include these ideas on your concept map.

3. PORTFOLIO: EVIDENCE OF MATHEMATICAL PROFICIENCY

This section gives you an opportunity to show growth in your understanding of key mathematical ideas over time as you complete this course.



Explain everything that you know about $f(x) = 2^x - 3$.

Now consider the system below. Describe all of the strategies you can think of to solve this system of equations. Of all of these strategies, which would you choose to use to solve this system? Solve the system using the strategy you have chosen and explain why that choice is best for you.

$$y = 2x - 1 \quad y = -\frac{1}{3}x + 6$$

Find a problem from this chapter that can be solved using more than one strategy. Why did you choose to solve it the way you did? Now solve the problem again, this time using a different strategy.

Alternatively, your teacher may ask you to showcase your use of inequalities with your work from “Sandy Dandy Dune Buggies,” problem 4-90.

Your teacher may give you the [Chapter 4 Closure Resource Page](#): Solutions Graphic Organizer page to work on. A “Graphic Organizer” is a tool you can use to organize your thoughts and communicate your ideas clearly.

4. WHAT HAVE I LEARNED

Most of the problems in this section represent typical problems found in this chapter. They serve as a gauge for you. You can use them to determine which types of problems you can do well and which types of problems require further study and practice. Even if your teacher does not assign this section, it is a good idea to try these problems and find out for yourself what you know and what you still need to work on.



Solve each problem as completely as you can. The table at the end of the closure section has answers to these problems. It also tells you where you can find additional help and practice with problems like these.

CL 4-106. Use one of the strategies of Looking Inside, Rewriting, or Undoing to solve each equation.

a. $2(y - 1)^2 + 8 = 80$

b. $\sqrt{1 - 2x} = 10$

c. $\frac{6y-1}{y} - 2 = 3$

d. $|2x + 1| = 5$

CL 4-107. Solve each system of equations without graphing. For each case, explain what the solution tells you about the graph of the system.

a. $y = \frac{1}{3}x^2 + 1$
 $y = 2x - 2$

b. $y = \sqrt{x - 3}$
 $y = x - 5$

c. $6x - 2y = -4$
 $y = 3x + 2$

CL 4-108. Estelle and Carlos will be hosting a party and will buy 6 pies for their guests. Two lemon meringue pies cost \$3 less than 4 blueberry

pies. Three lemon meringue pies cost \$9 more than 3 blueberry pies. How much does each type of pie cost?

CL 4-109. Graph the following inequality or systems of inequalities.

a. $y \leq 4x + 16$

$$y > -\frac{4}{3}x - 4$$

b. $y < x^2 - 2x - 3$

$$y \leq \frac{3}{4}x + 2$$

c. $y \geq |x + 2| - 3$

d. $y \leq \frac{1}{2}x + 3$

$$y \geq (x + 1)^2 - 2$$

CL 4-110. Solve each inequality and graph the solution on a number line.

a. $x^2 - 2x - 15 < 0$

b. $|3x - 2| \geq 10$

CL 4-111. Find the equation of each of the lines described below.

a. The line that passes through (6, 1) and (-10, -7)

b. The line that is perpendicular to $y = \frac{2}{3}x + 1$ and passes through (0, 5).

CL 4-112. Solve each equation for y .

a. $2y^2 + 3y = 7$

b. $3(2x - y) + 12 = 4x - 3$

c. $y(2y + 1) + 3(2y + 1) = 0$

d. $-4y - 1 = 4y(y - 2)$

CL 4-113. Add, subtract, multiply, or divide the expressions below. Be sure to simplify your answer.

a. $\frac{4x^2 - 13x + 3}{5x^2 + 23x - 10} \cdot \frac{5x - 2}{x^2 + 6x - 27} \cdot \frac{x^2 + 5x - 36}{4x - 1}$

b. $\frac{x^2 - 9}{x^2 + 6x + 9} \div \frac{x^2 - x - 6}{x^2 + 4}$

c. $6 + \frac{3}{x+1}$

d. $\frac{5}{x} - \frac{10}{x^2 + 2x}$

CL 4-114. Consider the system of equations below.

$$x^2 + y^2 = 25$$

$$y = x^2 + 3$$

a. Solve the system graphically.

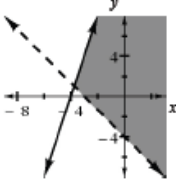
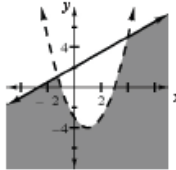
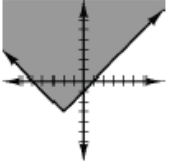
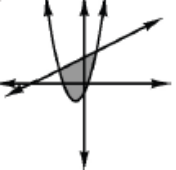
b. Now solve the system algebraically.

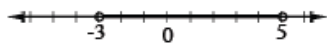
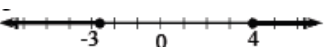
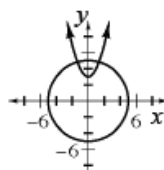
CL 4-115. Check your answers using the table at the end of this section. Which problems do you feel confident about? Which problems were hard? Have you worked on problems like these in math classes you have taken before? Use the table to make a list of topics you need help on and a list of topics you need to practice more.

Answers and Support for Closure Activity #4

What Have I Learned?

Note: MN = Math Note, LL = Learning Log

Problem	Solutions	Need Help?	More Practice
CL 4-106.	a. $y = 7$ or $y = -5$ b. $x = -\frac{99}{2}$ c. $y = 1$ d. $x = 2$ or $x = -3$	Lesson 4.1.1	Problems 4-3 , 4-4 , 4-8 , 4-24 , 4-31 , 4-41 , and 4-53
CL 4-107.	a. (3, 4); a line tangent to parabola b. (7, 2); a line intersecting the positive portion of a parabola, the second algebraic solution, $x = 4$, is extraneous c. infinite solution; lines are coinciding	Lessons 4.1.2 and 4.1.3 Checkpoint 2B MN: 2.1.1 , 2.1.3 , and 4.2.4	Problems 4-10 , 4-36 , 4-40 , 4-92 , and 4-96
CL 4-108	$2L = 4B - 3$ $3L = 3B + 9$ Lemon meringue pies cost \$7.50 each and blueberry pies cost \$4.50 each.	Lessons 4.1.3 and 4.1.4 Checkpoint 2B MN: 2.1.1 and 2.1.3	Problems 4-49 , 4-51 , and 4-85
CL 4-109.	 a.  b.  c.  d.	Lesson 4.2.1 MN: 4.2.3	Problems 4-62 , 4-63 , 4-72 , 4-93 , 4-100 , and 4-104
CL 4-110.	a. $-3 < x < 5$	Lesson 4.2.1	Problems 4-59 , 4-65 , 4-66 , 4-73 , 4-94 ,

	 b. $x \leq -\frac{8}{3}$ or $x \geq 4$ 	MN: 4.2.2	and 4-101
CL 4-111.	a. $y = \frac{1}{2}x - 2$ b. $y = -\frac{3}{2}x + 5$	Checkpoint 2A	Problems 2-9 , 2-10 , 2-89 , 2-105 , and 4-9
CL 4-112.	a. $y = \frac{-3 \pm \sqrt{65}}{4}$ b. $y = \frac{2}{3}x + 5$ c. $y = -\frac{1}{2}, -3$ d. $y = \frac{1}{2}$	Checkpoint 4B MN: 1.1.2 and 1.1.4	Problems 4-32 , 4-67 , and 4-87
CL 4-113.	a. $\frac{x-4}{x+5}$ b. $\frac{x^2+4}{(x+3)(x+2)}$ c. $\frac{6x+9}{x+1}$ d. $\frac{5}{x+2}$	Lessons 3.2.2 , 3.2.3 , and 3.2.4	Problems 4-13 , 4-69 , and 4-76
CL 4-114.	a. See graph at right. Approximately (1.35, 4.82) and (-1.35, 4.82) b. $x = \pm \sqrt{\frac{-1 \pm \sqrt{113}}{2}} - 3 \approx \pm 1.35$ $y = \frac{-1 \pm \sqrt{113}}{2} \approx 4.82$	 Lessons 4.1.2 and 4.2.4 MN: 4.2.4 LL: 4.1.2 and 4.1.4	Problems 4-7 , 4-22 , 4-23 , 4-30 , and 4-57