

Math 115 for Spring 2018

Chapter 1: Linear Equations and Inequalities in One Variable

Sections to be covered: all (1.1 to 1.7), but 1.7 gets a light treatment
Important formulas: Absolute value equations and inequalities on page 104.

The key section is 1.3. It should be emphasized.

In Chapter 1.6.2, the interesting examples with two absolute values and an additional number are pointedly avoided.

In Chapter 1.7, there are no problems with two absolute values and no compound inequalities. Essentially the whole section is doing one type of problem, occasionally in disguise. It should have been made more interesting and challenging.

Boxes containing important rules and procedures:
pp. 78, 97, 101, 104 (especially the bottom two on page 104)

Good examples in Chapter Summary:
p. 116: example 1; p. 117: example 2; p. 120: 1.7 example 1

Key Review Exercises:
pp. 122–125: 9, 22, 28, 32, 51, 71, 75, 76, 77

Key Test Exercises:
pp. 125–126: 4, 6, 9, 12, 13, 15, 16, 17, 23, 29, 32

Key Cumulative Review Exercises:
P. 233: 4, 6, 7, 10, 11
p. 316: 5, 10, 11
p. 420: 16, 17, 25
p. 493: 4
pp. 578–579: 5
p. 660: 2, 3, 4

Suggested Homework Problems:
pp. 54–55: 38, 40, 50, 74, 86 and check the solution
p. 67: 36, 42
pp. 74–76: 16, 18, 36, 38, 46, 52, 56, 58, 64, 66, 70
pp. 83–84: 20, 24, 28, 30, 38, 56
pp. 94–96: 24, 48, 58, 60, 62, 70
pp. 102–103: 5, 24, 30, 36, 46
pp. 112–113: 28 also in set-builder notation, 42, 46, 62, 64

Errors in chapter:
pages 67–68: numbers 49, 50, 55, 56; and page 122: number 24. Unclear.
Average speed is still undefined. Avg. speed doesn't mean a constant rate.
Average speed isn't the average of the speeds. Needs the formula $\frac{\text{total distance}}{\text{total time}}$.
page 79, Example 3. It is better to add $6x$ to both sides.
page 80: Example 4. It is better to add $5x$ to both sides.
page 96: number 80. Not clear: there is no definition of the difference.
page 125: number 11. Same as above.

Key Skills and Key Problems are found on the next page.

Key Skills

A student (after Chapter 1) should be capable of the following:

- solving a linear equation in one variable.
- solving applications in consecutive integers, percents and rates, and distance-rate-time.
- solving a literal equation.
- solving a linear inequality.
- solving a compound inequality.
- solving absolute value equations and inequalities.

Key Problems

1. Solve for x and check your answer. $-3(x - 7) + 5 = 13 - (x + 4)$.
2. Solve for x and check your answer. $\frac{3}{8} - \frac{x - 7}{4} = 2x + 1$.
3. Two times the sum of three consecutive even integers is 100 more than 4 times the largest integer. Find the integers and check the answer.
4. Bartholomew (Bart) invested money in two accounts; one paying 3% simple interest and the other paying 5% simple interest. He invested \$1000 more in the 5% account than in the 3% account. If he received \$770 in interest at the end of 1 yr, how much did he invest in each account? Check your answer.
5. A vacationer travels 510 miles in one day. She drove at a constant speed of 50 mph for part of the trip and at constant speed of 65 mph for the remainder. The time at 65 was one hour less than the time at 50 mph. Find the time in hours for each part of the trip. Check your answer.
6. Solve for v . $w(v - x) = v$.
7. Solve for y . $3x + 2y = 8$.
8. Solve the inequality $-5(x + 1) \geq 6 - 2(x - 3)$ and graph the solution set. Write the solution set in (a) set-builder notation and (b) interval notation.
9. One tenth of a number is between -10 and 25 . Find all such numbers.
10. Solve the inequalities: (a) $|\frac{1}{2}x - 4| \leq 7$. (b) $|\frac{1}{2}x - 4| \geq 7$.