

Lesson A.1.1: Know the following:

- the hierarchy of real numbers and how to write the subsets for integers, whole numbers, and natural numbers.
- how to recognize rational and irrational numbers when represented as decimals.
- how to express intervals on the number line graphically using interval notation with [] instead of • and () instead of ○.
- how to write intervals using [] and () and inequality notation and how to convert words into intervals.
- how to determine the distance between two points using absolute value.

PRACTICE PROBLEMS: pp. A11-A12: 16, 32, 36, 40, 42, 46, 48, 60, 68, 70, 72, 74, 76

Lesson A.1.2: Know the following:

- the definition of **expression** and what it means to **simplify an expression**.
- how to use the order of operations to simplify an expression

PRACTICE PROBLEMS: HW A.1.2 Handout: 10, 20, 36, 44, 46

Lesson A.1.3: Know the following:

- how to state the "rules of algebra" given "For all real numbers $a, b, c...$ " and one of the properties. For example, "State the transitive property for all real numbers $a, b, c.$ "
- how to identify the properties that were used to simplify an algebraic statement.

PRACTICE PROBLEMS: 20, 22 below

$$\begin{aligned}
 20. \quad 3 + 4(x + 1) &= 3 + (4x + 4 \cdot 1) \\
 &= 3 + (4x + 4) \\
 &= (4x + 4) + 3 \\
 &= 4x + (4 + 3) \\
 &= 4x + 7
 \end{aligned}$$

$$\begin{aligned}
 22. \quad x(y + 1) + (-1)x &= x(y + 1) + x(-1) \\
 &= x[(y + 1) + (-1)] \\
 &= x[y + (1 + (-1))] \\
 &= x[y + 0] \\
 &= xy
 \end{aligned}$$

Lesson A.1.4: Know how to add, subtract, and multiply signed numbers.

PRACTICE PROBLEMS: 18, 20, 22, 30, 32, 34, 46, 50 below **and** HW A.1.4 handout: 4, 14, 16, 22, 30

$$18. \quad -16 - [2 - (-61)] - [2 + (-6)]$$

$$30. \quad 4(3 - y) + 2(1 - y)$$

$$20. \quad (3 - 6 - 9) - [8 + (-4) - (-7)]$$

$$32. \quad 6m - 4n + (-7)m - (-5)n$$

$$22. \quad |-22 - 33| - |16 - 7|$$

$$34. \quad (6x - 5y + 4) + 2(-2x + 3y - 2)$$

46. A subway train was carrying 103 passengers. At the next three stops, 15 people got on and 9 got off, 27 got on and 13 got off, and 8 got on and 53 got off. How many passengers were then on the train?

50. Give a numerical example to show that subtraction is not associative.

Lesson A.1.5: Know how to divide integers and fractions using the definition of division: multiplication by the reciprocal.

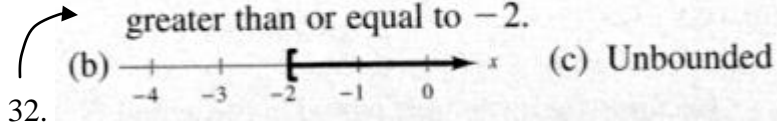
PRACTICE PROBLEMS: HW A.1.5 Handout: 6, 10, 12, 16, 18

ANSWERS

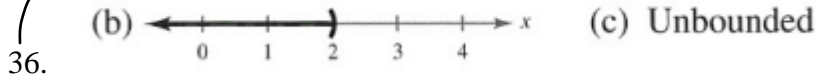
Lesson A.1.1

16. (a) 25, $\sqrt{9}$, 7, 13; (b) 25, $\sqrt{9}$, 7, 13; (c) 25, -17, $\sqrt{9}$, 7, 13; (d) all but $\pi/2$; (e) $\pi/2$

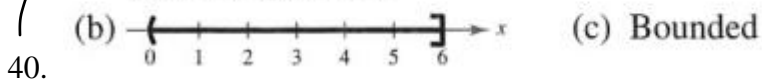
(a) $x \geq -2$ denotes the set of all real numbers greater than or equal to -2 .



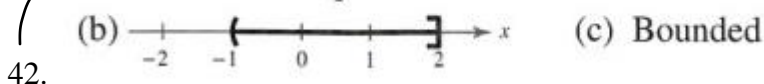
(a) $(-\infty, 2)$ denotes the set of all real numbers less than 2.



(a) $0 < x \leq 6$ denotes the set of positive real numbers less than or equal to 6.



(a) $(-1, 2]$ denotes all real numbers greater than -1 and less than or equal to 2.



46. $-6 \leq y < 0$; $[-6, 0)$

48. $-3 \leq k < 5$; $[-3, 5)$

60. 1

68. 51

70. $5/2$

72. 14.99

74. $|x + 10| \geq 6$

76. $|y - a| \leq 2$

Lesson A.1.2

10. $<$

20. 1

36. 3

44. $\frac{20}{3}$

46. $(7 - 2) \cdot (5 - 3) + 2 = 12$

Lesson A.1.3

20. Distributive, Identity (mult), Commutative, Associative, **Substitution**

22. Commutative, Distributive, Associative, Opposites, Identity (add)

Lesson A.1.4

18. -75

20. -23

22. 46

30. $14 - 6y$

32. $n - m$

34. $2x + y$

46. 78

50. for example, $(6 - 1) - 4 \neq 6 - (1 - 4)$

4. 12

14. -5

16. 0

22. $-5ab$

30. $-7cd - 5c + 12$

Lesson A.1.5

6. $\frac{1}{2}$

10. $-\frac{2}{3}$

12. $\frac{4}{5}$

16. -270

18. $-\frac{64}{9}$