Chapter 1

Signing on with Signed Numbers

Signed numbers include all real numbers, positive or negative, except 0. In other words, signed numbers are all numbers that have a positive or negative sign. You usually don't put a plus sign in front of a positive number, though, unless you're doing math problems. When you see the number 7, you just assume that it's +7. The number 0 is the only number that isn't either positive or negative and doesn't have a plus or minus sign in front of it; it's the dividing place between positive and negative numbers.

The Problems You'll Work On

As you work with signed numbers (and positive and negative values), here are the types of problems you'll do in this chapter:

- Placing numbers in their correct position on the number line — starting from smallest to largest as you move from left to right
- Performing the absolute value operation — determining the distance from the number to 0
- Adding signed numbers — finding the sum when the signs are the same, and finding the difference when the signs are different
- Subtracting signed numbers — changing the second number to its opposite and then using the rules for addition
- Multiplying and dividing signed numbers — counting the number of negative signs and assigning a positive sign to the answer when an even number of negatives exist and a negative sign to the answer when an odd number of negatives exist

What to Watch Out For

Pay careful attention to the following items when working on the signed number problems in this chapter:

- Keeping track of the order of numbers when dealing with negative numbers and fractions
- Working from left to right when adding and subtracting more than two terms
- Determining the sign when multiplying and dividing signed numbers, being careful not to include numbers without signs when counting how many negatives are present
- Reducing fractions correctly and dividing only by common factors

Placing Real Numbers on the Number Line

1–6 *Determine the correct order of the numbers on the real number line.*

1. Determine the order of the numbers:

$-3, 4, -1, 0, -4$

2. Determine the order of the numbers:

$-3, 3, -2, 0, 1$

3. Determine the order of the numbers:

$-1, 2, -5, \frac{3}{7}, -\frac{7}{3}$

4. Determine the order of the numbers:

$\frac{5}{6}, -\frac{6}{5}, -2, -4, 0$

5. Determine the order of the numbers:

$\sqrt{3}, -\sqrt{2}, 0, 3, -4$

6. Determine the order of the numbers:

$-3, \sqrt{3}, 0, 2, 4, -\frac{7}{2}$

Using the Absolute Value Operation

7–10 *Evaluate each expression involving absolute value.*

7. $|-4|$

8. $|-7.6|$

9. $-|-2|$

10. $-\left|-\frac{2}{3}\right|$

Adding Signed Numbers

11–20 *Find the sum of the signed numbers.*

11. –4 + (–2) =

12. 2 + (–4) =

13. –2 + 4 =

14. –5 + 3 =

15. –6 + 6 =

16. 7 + (–2) =

17. 5 + (–4) + (–2) =

18. –1 + 2 + (–3) + 4 =

19. –67 + 68 + (–69) + 70 =

20. –4 + (–5) + (–6) + (–7) + 7 + 4 =

Subtracting Signed Numbers

21–30 *Find the difference between the signed numbers.*

21. –4 – 6 =

22. 7 – (–8) =

23. 6 – 3 =

24. –9 – (–4) =

25. –7 – 7 =

26. –7 – (–7) =

27. $3 - (-2) =$

28. $-[-2] - 3 =$

29. $-[-4] - (-4) =$

30. $0 - (-5) =$

Multiplying and Dividing Signed Numbers

31 – 50 *Find the products and quotients involving signed numbers.*

31. $2(-3) =$

32. $-4(-5) =$

33. $-5(6) =$

34. $3(-1) =$

35. $(-7)(-7) =$

36. $(-8)(8) =$

37. $-6\left(-\frac{5}{3}\right) =$

38. $20\left(-\frac{3}{4}\right) =$

39. $-2(0) =$

40. $(-1)\ (-1)\ (-1)\ (-1) =$

41. $\frac{-6}{2} =$

42. $\frac{-8}{-4} =$

43. $\frac{12}{-3} =$

44. $\frac{-60}{-15} =$

45. $\frac{0}{-2} =$

46. $\frac{-5}{1} =$

47. $\frac{-16}{2(-4)} =$

48. $\frac{2(-6)(-1)}{4(-3)} =$

49. $\frac{-4(-3)(-2)(-1)}{6(-1)(-1)(-1)} =$

50. $\frac{2(2)(-3)(-3)}{(-2)(-2)(3)(3)} =$