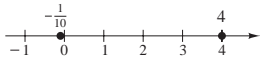
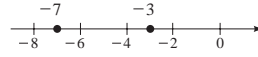


## Review Exercises for Chapter 1

- 1.
- $-\frac{1}{10} < 4$
- because
- $-\frac{1}{10}$
- lies to the left of 4.



- 3.
- $-3 > -7$
- because
- $-3$
- lies to the right of
- $-7$
- .



5. The opposite of 152 is
- $-152$
- . The distance from 152 to 0 is 152 units, and the distance from
- $-152$
- to 0 is also 152 units.

7. The opposite of
- $-\frac{7}{3}$
- is
- $\frac{7}{3}$
- . The distance from
- $-\frac{7}{3}$
- to 0 is
- $\frac{7}{3}$
- units, and the distance from
- $\frac{7}{3}$
- to 0 is also
- $\frac{7}{3}$
- units.

9.  $|-8.5| = 8.5$

11.  $-|-8.5| = -8.5$

13.  $|-84| = |84|$  because  
 $|-84| = 84$  and  $|84| = 84$ .

15.  $|\frac{3}{10}| > -|\frac{4}{5}|$  because  $|\frac{3}{10}| = \frac{3}{10}$ ,  
 $-|\frac{4}{5}| = -\frac{4}{5}$ , and  $\frac{3}{10} > -\frac{4}{5}$ .

17.  $32 + 68 = 100$

19.  $16 + (-5) = 11$

21.  $350 - 125 + 15 = 240$

23.  $-114 + 76 - 230 = -268$

25.  $|-86| - |124| = 86 - 124 = -38$

27.  $15 \times 3 = 45$

29.  $-300(-5) = 1500$

31.  $31(-6)(3) = -558$

33.  $\frac{-162}{9} = -18$

- 35.
- $815 \div 0$
- is undefined. Division by 0 is undefined.

37.  $613 - (-549) = 1162$

39.  $-27 - 75 = -102$

You must add  $-102$  to 75 to obtain  $-27$ .

41. 
$$\begin{array}{r} 469 \\ 72 \overline{) 33768} \\ \underline{288} \phantom{00} \\ 496 \phantom{00} \\ \underline{432} \phantom{00} \\ 648 \phantom{00} \\ \underline{648} \phantom{00} \\ 0 \end{array}$$

Thus,  $33,768 \div (-72) = -469$ .

43.  $7(5207) - 52,318 = -15,869$

45.  $\frac{345,582}{438} = 789$

47. 839 is prime; the divisibility tests yield no factors of 839. By testing the remaining primes less than or equal to
- $\sqrt{839} \approx 29$
- , you can conclude that 839 is a prime number.

49. 1764 is composite; its prime factorization is
- $1764 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 7 \cdot 7$
- .

51.  $378 = 2 \cdot 3 \cdot 3 \cdot 3 \cdot 7$

53.  $1612 = 2 \cdot 2 \cdot 13 \cdot 31$

55. By prime factorization,
- $54 = 2 \cdot 3 \cdot 3 \cdot 3$
- and
- $90 = 2 \cdot 3 \cdot 3 \cdot 5$
- . Thus, the greatest common factor is
- $2 \cdot 3 \cdot 3$
- , or 18.

57. By prime factorization,
- $63 = 3 \cdot 3 \cdot 7$
- ,
- $84 = 2 \cdot 2 \cdot 3 \cdot 7$
- , and
- $441 = 3 \cdot 3 \cdot 7 \cdot 7$
- . Thus, the greatest common factor is
- $3 \cdot 7$
- , or 21.

59.  $\frac{2}{3} = \frac{2(5)}{3(5)} = \frac{10}{15}$

61.  $\frac{6}{10} = \frac{3(\cancel{2})}{5(\cancel{2})} = \frac{3}{5} = \frac{3(5)}{5(5)} = \frac{15}{25}$

63.  $\frac{3}{25} + \frac{7}{25} = \frac{3+7}{25} = \frac{10}{25}$   
 $= \frac{(2)(\cancel{5})}{(5)(\cancel{5})} = \frac{2}{5}$

$$65. \frac{27}{16} - \frac{15}{16} = \frac{27-15}{16} = \frac{12}{16}$$

$$= \frac{(3)(4)}{(4)(4)} = \frac{3}{4}$$

$$67. -\frac{5}{9} + \frac{2}{3} = \frac{-5}{9} + \frac{2(3)}{3(3)} = \frac{-5}{9} + \frac{6}{9}$$

$$= \frac{-5+6}{9} = \frac{1}{9}$$

$$69. \frac{25}{32} + \frac{7}{24} = \frac{25(3)}{32(3)} + \frac{7(4)}{24(4)}$$

$$= \frac{75}{96} + \frac{28}{96}$$

$$= \frac{75+28}{96} = \frac{103}{96}$$

$$71. 5 - \frac{15}{4} = \frac{5(4)}{1(4)} - \frac{15}{4} = \frac{20}{4} - \frac{15}{4}$$

$$= \frac{20-15}{4} = \frac{5}{4}$$

$$73. 5\frac{3}{4} - 3\frac{5}{8} = \frac{23}{4} - \frac{29}{8}$$

$$= \frac{23(2)}{4(2)} - \frac{29}{8}$$

$$= \frac{46}{8} - \frac{29}{8}$$

$$= \frac{46-29}{8} = \frac{17}{8}$$

$$75. \frac{5}{8} \cdot \frac{-2}{15} = \frac{5(-2)}{8 \cdot 15}$$

$$= -\frac{(1)(5)(2)}{(4)(2)(3)(5)} = -\frac{1}{12}$$

$$77. 35\left(\frac{1}{35}\right) = \frac{35}{1} \cdot \frac{1}{35} = \frac{35 \cdot 1}{1 \cdot 35}$$

$$= \frac{(35)(1)}{(1)(35)} = 1$$

$$79. \frac{5}{14} \div \frac{15}{28} = \frac{5}{14} \cdot \frac{28}{15} = \frac{5 \cdot 28}{14 \cdot 15}$$

$$= \frac{(5)(14)(2)}{(14)(5)(3)} = \frac{2}{3}$$

$$81. \frac{-\frac{3}{4}}{-\frac{7}{8}} = \frac{\frac{3}{4}}{\frac{7}{8}} = \frac{3}{4} \div \frac{7}{8} = \frac{3}{4} \cdot \frac{8}{7}$$

$$= \frac{3 \cdot 8}{4 \cdot 7} = \frac{(3)(2)(4)}{(4)(7)} = \frac{6}{7}$$

83.  $\frac{5}{0}$  is undefined. Division by zero is undefined.

$$85. \frac{5.25}{0.25} = 21$$

$$0.25 \overline{)5.25} = 21 \overline{)525}$$

$$\begin{array}{r} 21 \\ 25 \overline{)525} \\ \underline{50} \phantom{0} \\ 25 \phantom{0} \\ \underline{25} \phantom{0} \\ 0 \phantom{0} \end{array}$$

$$87. (5.8)^4 - (3.2)^5 = 11331.6496 - 335.54432$$

$$= 796.10528$$

$$\approx 796.11$$

$$89. \frac{3000}{(1.05)^{10}} \approx 1841.739761$$

$$\approx 1841.74$$

$$91. 7^3 = 7 \cdot 7 \cdot 7 = 343$$

$$93. (-7)^3 = (-7)(-7)(-7)$$

$$= -343$$

$$95. 2^2 = 4$$

$$2^4 = 16$$

$$4 < 16$$

$$\text{Thus, } 2^2 < 2^4.$$

$$97. \frac{3}{4} = \frac{12}{16}$$

$$\left(\frac{3}{4}\right)^2 = \frac{9}{16}$$

$$\frac{12}{16} > \frac{9}{16}$$

$$\text{Thus, } \frac{3}{4} > \left(\frac{3}{4}\right)^2.$$

$$99. \left(\frac{3}{5}\right)^4 = \left(\frac{3}{5}\right)\left(\frac{3}{5}\right)\left(\frac{3}{5}\right)\left(\frac{3}{5}\right)$$

$$= \frac{3 \cdot 3 \cdot 3 \cdot 3}{5 \cdot 5 \cdot 5 \cdot 5} = \frac{81}{625}$$

$$101. 240 - (4^2 \cdot 5) = 240 - (16 \cdot 5)$$

$$= 240 - 80 = 160$$

$$103. 3^2(10 - 2^2) = 9(10 - 4)$$

$$= 9(6) = 54$$

$$105. \left(\frac{3}{4}\right)\left(\frac{5}{6}\right) + 4 = \frac{3 \cdot 5}{4 \cdot 6} + 4$$

$$= \frac{(3)(5)}{(4)(2)(3)} + 4 = \frac{5}{8} + \frac{4}{1} = \frac{5}{8} + \frac{4(8)}{1(8)}$$

$$= \frac{5}{8} + \frac{32}{8} = \frac{5+32}{8} = \frac{37}{8}$$

$$107. 122 - [45 - (32 + 8) - 23] = 122 - [45 - 40 - 23]$$

$$= 122 - [-18]$$

$$= 122 + 18$$

$$= 140$$

$$\begin{aligned}
 109. \quad \frac{6 \cdot 4 - 36}{4} &= \frac{24 - 36}{4} \\
 &= \frac{-12}{4} \\
 &= -3
 \end{aligned}$$

$$\begin{aligned}
 111. \quad \frac{54 - 4 \cdot 3}{6} &= \frac{54 - 12}{6} \\
 &= \frac{42}{6} \\
 &= 7
 \end{aligned}$$

$$\begin{aligned}
 113. \quad \frac{78 - |-78|}{5} &= \frac{78 - 78}{5} \\
 &= \frac{0}{5} = 0
 \end{aligned}$$

115. Additive Inverse Property

117. Commutative Property of Multiplication

119. Multiplicative Identity Property

121. Distributive Property

123. The smaller number is 0.6.

Note:  $\frac{2}{3} = 0.666 \dots$  and  $0.666 \dots > 0.6$

125. The statement is false because the sum of a positive and negative integer can be positive, negative or zero.

Note:

(a) If the absolute value of the negative integer is smaller than the positive integer, the sum is positive.

Example:  $12 + (-8) = 4$

(b) If the absolute value of the negative integer is larger than the positive integer, the sum is negative.

Example:  $12 + (-15) = -3$

(c) If the absolute value of the negative integer is equal to the positive integer, the sum is zero.

Example:  $12 + (-12) = 0$

$$127. \quad \frac{40,000(4)}{5} = \frac{160,000}{5} = 32,000$$

Thus, each tire has been driven 32,000 miles.

$$129. \quad \text{(a) Day 1: } 25(162) + 10(98) = \$5030$$

$$\text{Day 2: } 25(98) + 10(64) = \$3090$$

$$\text{Day 3: } 25(148) + 10(81) = \$4510$$

$$\text{Day 4: } 25(186) + 10(105) = \$5700$$

$$\text{(b) Adult Tickets: } 25(162 + 98 + 148 + 186) = 25(594) = \$14,850$$

$$\text{Student Tickets: } 10(98 + 64 + 81 + 105) = 10(348) = \$3480$$

$$\text{(c) Total from (a): } 5030 + 3090 + 4510 + 5700 = \$18,330$$

$$\text{Total from (b): } 14,850 + 3480 = \$18,330$$

The total revenue from tickets sales can be determined by adding the daily tickets sales (from part a) or by adding the sales of the two types of tickets (from part b). These two totals should be the same.

$$\begin{aligned}
 131. \quad 35\frac{1}{4} - \frac{3}{8} - \frac{1}{2} - \frac{1}{8} + 1\frac{1}{4} + \frac{1}{2} &= \frac{141}{4} - \frac{3}{8} - \frac{1}{2} - \frac{1}{8} - \frac{5}{4} + \frac{1}{2} \\
 &= \frac{282}{8} - \frac{3}{8} - \frac{4}{8} - \frac{1}{8} + \frac{10}{8} + \frac{4}{8} \\
 &= \frac{288}{8} \\
 &= 36
 \end{aligned}$$

Thus, the closing price on Friday was \$36.

Note: These numbers could be written in decimal form.

$$35.25 - 0.375 - 0.5 - 0.125 + 1.25 + 0.5 = 36.$$

$$135. \quad \text{(a) } 16,000\left(\frac{3}{4}\right)^3 = 6750$$

$$\text{(b) } 16,000 - 6750 = 9250$$

Thus, the car is worth \$6750 after three years. It has depreciated \$9250.

133. The cost of a five-minute call would be the sum of the \$0.64 cost for the first minute plus the \$0.72 cost of each of the *four* additional minutes.

$$0.64 + 4(0.72) = 0.64 + 2.88 = \$3.52$$

The cost of the call is \$3.52.