

CHAPTER 1 STUDY GUIDE (WHOLE NUMBERS)

1.1 Ordering and Rounding: examples on pages 2-4

Round each number to the specified place.

1. 360,093 (hundreds) \approx 360,100

2. 1,500 (thousands) \approx 2,000

Compare using $>$, $<$, or $=$.

5. 51,328 $<$ 53,128

6. 6,197 $>$ 6,098

List in **INCREASING** order.

9. 123, 135, 153, 152, 132
123; 132; 135; 152; 153

10. 241, 142, 214, 124, 421
124; 142; 214; 241; 421

3. 73.38498 (hundredths) \approx 73.38

4. 239.9542 (tenths) \approx 240.0

7. 19,584 $<$ 19,854

8. 364,579 $=$ 364,579

List in **DECREASING** order.

11. 674, 476, 746, 467, 647
746; 674; 647; 476; 467

12. 891, 918, 981, 198, 189
981; 918; 891; 198; 189

1.2 Addition & Subtraction: examples on pages 8-10

Tips: When both numbers are the same sign add them together (pos + pos = more positive) or (neg + neg = more negative).

Tips: When you subtract a negative number (minus a minus), the number becomes a positive number (two negatives will cancel each other).

13. $4 + (-23) = 4 - 23$
more neg
-19

14. $-15 + (-6) = -15 - 6$
more neg
-21

15. $144 + 563 + 6945$
add
7652

16. $336 + 5853 + 741$
add
6930

17. $-13 - (-8) = -13 + 8$
more neg
-5

18. $-17 - 5 = -17 - 5$
more neg
-22

19. $5,624,873 - 3,548,691$
add
2,076,182

20. $51,131 - 39,298$
add
11,833

1.3 Estimating Sums & Differences: examples on pages 12-15

Tips: **Highest Place Value** = round the number to the far left.

Tips: **Front-End Estimation** = use the far left digit only and make all other numbers zero.

Estimate using highest place value.

21. $89,811 + 5,498 \approx 90,000 + 5,000$
 \approx 95,000

22. $68,500 - 14,509 \approx 70,000 - 10,000$
 \approx 60,000

Estimate using front-end estimation.

23. $56,945 + 27,895 \approx 50,000 + 20,000$
 \approx 70,000

24. $94,399 - 76,760 \approx 90,000 - 70,000$
 \approx 20,000

1.4 Multiplication & Division: examples on pages 18-22

Tips: If two numbers being multiplied have different signs ($- \cdot +$) the answer will be **negative** (-).

Tips: If two numbers being multiplied have the same sign ($+ \cdot +$) or ($- \cdot -$), the answer will be **positive** (+).

Tips: When multiplying more than two numbers, if there are an **odd** number of negative signs the answer will be **negative** (-).

Tips: When multiplying more than two numbers, if there are an **even** number of negative signs the answer will be **positive** (+).

Tips: When dividing numbers with different signs ($- \div +$) the answer will be **negative** (-).

Tips: When dividing numbers with the same sign ($+ \div +$) or ($- \div -$) the answer will be **positive** (+).

25. $6(-8)(2) = -48(2) = -96$

28. $-32 \div 4 = -8$

26. $-3(-12) = 36$

29. $-56 \div -7 = 8$

27. 5,724

$\times 97$
40068
+ 51516
555228

30. $26,810 \div 12 =$

2234 R2
12 | 26810
-24
28
-24
41
-36
50
-48
2

1.5 Estimating Products & Quotients: examples on pages 25-29

- Tips: **Highest Place Value** = round the number to the far left.
- Tips: **Front-End Estimation** = use the far left digit only and make all other numbers zero.

Estimate using highest place value.

$$31. 65,019 \times 894 \approx \begin{array}{r} 70,000 \\ \times 900 \\ \hline 63,000,000 \end{array}$$

$$32. 24,558 \div 2,487 \approx \frac{20,000}{2,000} \approx 10$$

Estimate using front-end estimation.

$$33. 14,599 \times 4,521 \approx \begin{array}{r} 10,000 \\ \times 4,000 \\ \hline 40,000,000 \end{array}$$

$$34. 36,412 \div 5,846 \approx \frac{30,000}{5,000} \approx 6$$

1.7 Exponents: examples on pages 39-41

- Tips: An exponent is a superscript located to the upper-right of a number (or letter) that tells how many times that base number is repeated.

$$35. (-5)^3 = (-5)(-5)(-5) \\ = 25(-5) = -125$$

$$38. (-3)^3 - (4)^2 = (-3)(-3)(-3) - (4)(4) \\ = 9(-3) - 16 \\ = -27 - 16 = -43$$

$$36. (-3)^4 = (-3)(-3)(-3)(-3) \\ = 9(9) = 81$$

$$39. (-2)^3 \times (-3)^3 = (-2)(-2)(-2) \times (-3)(-3)(-3) \\ = 4(-2) \times 9(-3) \\ = -8 \times -27 = 216$$

$$37. (2)^3 + (-5)^2 = (2)(2)(2) + (-5)(-5) \\ = 4(2) + 25 \\ = 8 + 25 = 33$$

$$40. (8)^3 \div (-4)^2 = (8)(8)(8) \div (-4)(-4) \\ = 64(8) \div 16 \\ = 512 \div 16 = 32$$

1.8 Square Roots: examples on pages 43-45

$$41. \sqrt{169} = 13$$

$$43. \sqrt{83 + 38} = \sqrt{121} = 11$$

$$42. 3\sqrt{225} = 3(15) = 45$$

$$44. 5\sqrt{72 - 47} = 5\sqrt{25} = 5(5) = 25$$

1.9 Order of Operations: examples on pages 46-47

- Tips: **PEMDAS** = (P)arenthesis (E)xponents (M)ultiplication (D)ivision (A)ddition (S)ubtraction
- Tips: (1) Symbols of grouping (2) Exponents (3) Multiplication & Division (from left to right) (4) Addition & Subtraction (from left to right)

$$45. \sqrt{144} \div 3 + (3 - 8) \times (-2)^3 \\ = 12 \div 3 + (-5) \times (-2)^3 \\ = 12 \div 3 + (-5) \times (-8) \\ = 4 + 40 \\ = 44$$

$$46. (-3)^3 - (-3 \times -7 + 42) \div \sqrt{49} \\ = (-3)^3 - (21 + 42) \div 7 \\ = (-3)^3 - 63 \div 7 \\ = -27 - 63 \div 7 \\ = -27 - 9 \\ = -36$$

$$47. (-18 \div -3) + 3 \times (-4)^2 + 2\sqrt{64} \\ = 6 + 3 \times (-4)^2 + 2(8) \\ = 6 + 3 \times 16 + 2(8) \\ = 6 + 48 + 16 \\ = 54 + 16 \\ = 70$$

Name:

Key

Hour:

CHAPTER 2 STUDY GUIDE (DECIMALS)

2.1 Writing Decimals: examples on pages 54-56

Write the phrase in standard form.

1. five and eight thousandths 5.008

2. seventy-six hundredths 0.76

Write the following in standard form.

5. $5 + 0.9 + .001$ 5.901

6. $26 + 0.7 + .0004$ 26.7004

Write each decimal in expanded form.

9. 12.7 $1(10) + 2(1) + 7(.1)$

10. 8.05 $8(1) + 5(.01)$

3. one hundred thirty-two and three tenths 132.3

4. six hundred eighty-four millionths 0.000684

7. $9(0.1) + 5(0.01) + 8(.001) + 2(.0001)$ $.9582$

8. $3(100) + 6(10) + 7(1) + 4(0.1) + 1(0.01)$ 367.41

11. 0.516 $5(.1) + 1(.01) + 6(.001)$

12. 0.2938 $2(.1) + 9(.01) + 3(.001) + 8(.0001)$

2.2 Comparing & Rounding: examples on pages 58-61

Round each decimal to the specified place value.

13. 1.091 (tenths) 1.1

14. 251.3649 (hundredths) 251.36

Compare by using $>$, $<$, or $=$.

17. $0.5734 < 0.5743$

18. $18.610 = 18.61$

15. 2,407.2355 (thousandths) $2,407.236$

16. 18,931.42637 (ten-thousandths) $18,931.4264$

19. $4.188 < 4.28$

20. $0.71 > 0.701$

Round 283,645.158974 to the specified place value.

21. tenths $283,645.2$

22. hundredths $283,645.16$

23. ten-thousandths $283,645.1590$

24. hundred-thousandths $283,645.15897$

2.3 Addition & Subtraction: examples on pages 63-64

► Tips: Align all decimal places before adding or subtracting.

25. $521.2018 + 92.75193$
 521.2018
 $+ 92.75193$
 613.95373

26. $8,421.513 - 573.1689$
 $8,421.5130$
 $- 573.1689$
 $7,848.3441$

27. $215.125 + (931.72 - 463.145)$
 215.125
 $+ 468.575$
 683.700

28. $872.3492 - (21.513 + 325.1589)$
 872.3492
 $- 346.6719$
 525.6773

931.720
 $- 463.145$
 468.575

2.4 Multiplication: examples on pages 66-67

► Tips: (1) Multiply (2) Count the total number of decimal places from both numbers. (3) Starting from far right and moving left, place the decimal point so the new total has the same number of decimal places as the previous two numbers.

29. 0.51×5.392
 5.392
 $\times 0.51$
 5392
 $+ 26960$
 2.74992

30. 7.6×9.384
 9.384
 $\times 7.6$
 56304
 65688
 71.3184

31. 0.63479×0.852
 0.63479
 $\times 0.852$
 126958
 317395
 $+ 507832$
 $.54084108$

32. 2.758×0.9364
 2.758
 $\times 0.9364$
 11032
 16548
 8274
 24822
 2.5825912

2.5 Division: examples on pages 70-73

- **Tips:** Place the decimal point directly above where the answer will be located.
- **Tips:** (1) Divide the decimal and continue dividing until one digit beyond the rounding place. (2) Round the quotient to the specified place.
- **Tips:** (1) Move the decimal on the outside until there is no decimal. (2) Move the decimal on the inside the same number as the outside.

33. $65.92 \div 8$

$$\begin{array}{r} 8.24 \\ 8 \overline{) 65.92} \\ \underline{-64} \\ 19 \\ \underline{-16} \\ 32 \\ \underline{-32} \\ 0 \end{array}$$

8.24

34. $305.13 \div 21$

$$\begin{array}{r} 14.53 \\ 21 \overline{) 305.13} \\ \underline{-21} \\ 95 \\ \underline{-84} \\ 111 \\ \underline{-105} \\ 63 \\ \underline{-63} \\ 0 \end{array}$$

14.53

35. $15.45 \div 3.75$

$$\begin{array}{r} 4.12 \\ 3.75 \overline{) 15.45.00} \\ \underline{-15.00} \\ 456 \\ \underline{-375} \\ 750 \\ \underline{-750} \\ 0 \end{array}$$

4.12

Round to the nearest tenths.

36. $54.3 \div 2.4$

$$\begin{array}{r} 22.62 \\ 2.4 \overline{) 54.3.00} \\ \underline{-48} \\ 63 \\ \underline{-48} \\ 150 \\ \underline{-144} \\ 60 \\ \underline{-48} \\ 12 \end{array}$$

22.6

Round to the nearest cent.

37. $0.819 \div 4.5$

$$\begin{array}{r} 0.182 \\ 4.5 \overline{) 8.190} \\ \underline{-45} \\ 369 \\ \underline{-360} \\ 90 \\ \underline{-90} \\ 0 \end{array}$$

\$.18

Round to the nearest thousandths.

38. $78.1 \div 3.2$

$$\begin{array}{r} 24.4062 \\ 3.2 \overline{) 78.10000} \\ \underline{-64} \\ 141 \\ \underline{-128} \\ 136 \\ \underline{-128} \\ 80 \\ \underline{-64} \\ 16 \end{array}$$

24.406

2.8 Scientific Notation: examples on pages 86-89

- **Tips:** An exponent is a superscript located to the upper-right of a number that tells how many times the base 10 number is repeated.

Write each in scientific notation.

39. 30,500

3.05×10^4

40. 160,400

1.604×10^5

41. 8,200,100

8.2001×10^6

Write each standard form.

42. 7.18×10^3

7,180

43. 2.0079×10^5

200,790

44. 4.2063×10^8

420,630,000

2.9 Operations in Scientific Notation: examples on pages 93-95

- **Tips:** (1) Verify the powers of 10 are the same before adding or subtracting. (2) Line up the decimals and add or subtract the two numbers.

Add or subtract.

45. $(5.31 \times 10^3) + (4.77 \times 10^3)$

$$\begin{array}{r} 5.31 \\ + 4.77 \\ \hline 10.08 \end{array}$$

1.008×10^4

46. $(9.82 \times 10^7) - (3.576 \times 10^7)$

$$\begin{array}{r} 9.820 \\ - 3.576 \\ \hline 6.244 \end{array}$$

6.244×10^7

47. $(6.313 \times 10^5) + (8.8 \times 10^5)$

$$\begin{array}{r} 6.313 \\ + 8.800 \\ \hline 15.113 \end{array}$$

1.5113×10^6

- **Tips:** (1) Multiply the numbers. (2) Add the exponents.

Multiply.

48. $(4.86 \times 10^3)(1.9 \times 10^6)$

$$\begin{array}{r} 4.86 \\ \times 1.9 \\ \hline 4374 \\ + 4860 \\ \hline 9234 \end{array}$$

9.234×10^9

49. $(2.255 \times 10^4)(3.7 \times 10^4)$

$$\begin{array}{r} 2.255 \\ \times 3.7 \\ \hline 15785 \\ + 67650 \\ \hline 83435 \end{array}$$

8.3435×10^8

50. $(5.572 \times 10^3)(7.4 \times 10^8)$

$$\begin{array}{r} 5.572 \\ \times 7.4 \\ \hline 22288 \\ + 390040 \\ \hline 412328 \end{array}$$

4.12328×10^{12}