

Evaluating Numerical Expressions

Use the following order to calculate and solve expressions:

1. Solve inside parentheses. $(36 \div 12) \times 2 + 3 \rightarrow (3) \times 2 + 3$
2. Multiply and divide from left to right. $3 \times 2 + 3 \rightarrow 6 + 3$
3. Add and subtract from left to right. $6 + 3 \rightarrow 9$

Solve each expression. Remember to follow the order of operations.

1. $(6 \times 2) + 8 = \underline{\hspace{2cm}}$

2. $3 + (8 \times 2) = \underline{\hspace{2cm}}$

3. $14 \div 2 + 3 = \underline{\hspace{2cm}}$

4. $21 \div 7 \times 2 = \underline{\hspace{2cm}}$

5. $(5 \times 2) + 3 = \underline{\hspace{2cm}}$

6. $(10 + 10) \div 2 = \underline{\hspace{2cm}}$

7. $6 \times (3 + 3) = \underline{\hspace{2cm}}$

8. $10 \times 10 \div 25 = \underline{\hspace{2cm}}$

9. $(17 - 7) \div 5 = \underline{\hspace{2cm}}$

10. $50 \div 5 + 3 = \underline{\hspace{2cm}}$

Interpreting Numerical Expressions

Expressions can be written with numbers and symbols or in words.

4 more than the product of 6 and 7

$$4 + (6 \times 7)$$

add 10 and 12, then divide in half

$$(10 + 12) \div 2$$

Look for key words to help you decide which operations to use. Use parentheses to group the part of the expression that should happen first.

Write each expression with numbers.

1. 3 times the sum of 2 and 46 _____
2. 16 more than the product of 2 and 9 _____
3. subtract 4 from 29, then double _____
4. 6 less than the quotient of 90 divided by 9 _____

Write each expression in words.

5. $9 + (24 \div 6)$ _____
6. $(86 - 72) + 6$ _____
7. $(22 \times 3) \div 2$ _____
8. $4 \times (5 + 83)$ _____

Powers of Ten

Numbers can be abbreviated using exponential notation.

An exponent tells how many times a factor is multiplied by itself.

$$10^3 = 10 \times 10 \times 10 = 1,000 \quad 10 \text{ is multiplied by itself 3 times.}$$

Look for patterns when a power of 10 is multiplied by another number between 1 and 9.

$$7,000,000 = 7 \times 10^6$$

Hint: To know what power of 10 to use, simply match the power of 10 to the number of zeros in the number.

$$4,000 = 4 \times 10^3$$

$$900,000 = 9 \times 10^5$$

Write each number with an exponent.

1. 10 to the fourth power _____ 2. 10 to the third power _____ 3. 10 to the eighth power _____

Solve.

4. $10^3 =$ _____ $10^6 =$ _____ $10^4 =$ _____

5. $10^2 =$ _____ $10^{10} =$ _____ $10^8 =$ _____

6. $10^7 =$ _____ $10^5 =$ _____ $10^9 =$ _____

Rewrite each problem without the exponent. Then, solve.

7. $3 \times 10^2 =$ _____ $=$ _____ $8 \times 10^3 =$ _____ $=$ _____

8. $6 \times 10^4 =$ _____ $=$ _____ $4 \times 10^5 =$ _____ $=$ _____

Write each number as a number multiplied by a power of 10.

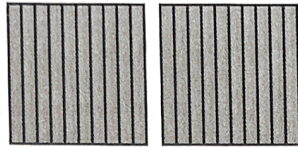
9. 7,000 = _____ 5,000 = _____ 600,000 = _____

10. 8,000,000 = _____ 40,000 = _____ 3,000,000,000 = _____

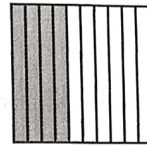
Understanding Decimals

ones		tenths
2	.	4

$$2\frac{4}{10}$$



What portion of these boxes are shaded?
two entire boxes



What portion of this box is shaded?
four-tenths of the box

2.4 (two and four-tenths)

This can be spoken, "two point four," or "two and four-tenths."

Note: When writing a decimal, if there are no whole numbers, place a zero left of the decimal point. Examples: seven-tenths = 0.7, nine-tenths = 0.9

Write each decimal.

1. three and five-tenths _____

2. six and one-tenth _____

3. eight-tenths _____

4. eight and three-tenths _____

5. three-tenths _____

6. two and one-tenth _____

7. seven-tenths _____

8. twenty and two-tenths _____

9. four-tenths _____

10. thirty-seven and two-tenths _____

Write each decimal in words.

11. 3.9 _____

12. 2.7 _____

13. 12.8 _____

14. 7.3 _____

Use $<$, $>$, or $=$ to compare the decimals.

15. 3.4 4.5

16. 6.01 2.06

17. 5.01 51.09

18. 3.02 2.03

Rounding Decimals

To round a decimal, follow these steps:

1. Underline the place value you are rounding to.
2. If the number to the right of the underline is 0, 1, 2, 3, or 4, the underlined digit stays the same. All of the digits to the right change to zeros.
3. If the number to the right of the underline is 5, 6, 7, 8, or 9, the underlined digit goes up by one. All of the digits to the right change to zeros.

Examples:

Round to the nearest whole number: 4.8 rounds up to 5.0

Round to the nearest tenth: 14.24 rounds down to 14.20

Round to the nearest whole number.

1. 3.67 _____
2. 6.8 _____
3. 11.4 _____
4. 5.9 _____
5. 21.24 _____
6. 10.51 _____
7. 4.9 _____
8. 14.2 _____
9. 8.6 _____
10. 7.8 _____
11. 9.21 _____
12. 10.9 _____
13. 9.7 _____
14. 10.3 _____
15. 8.3 _____
16. 74 _____

Round to the nearest tenth.

17. 6.29 _____
18. 10.68 _____
19. 14.83 _____
20. 6.84 _____
21. 3.48 _____
22. 24.37 _____
23. 17.47 _____
24. 28.15 _____
25. 5.49 _____
26. 10.43 _____
27. 3.56 _____
28. 6.26 _____
29. 17.64 _____
30. 112.26 _____
31. 942 _____
32. 400.67 _____

Multiplying Multi-Digit Numbers

Solve each problem. Regroup when necessary.

1.
$$\begin{array}{r} 323 \\ \times 5 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 515 \\ \times 4 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 255 \\ \times 4 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 915 \\ \times 2 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 860 \\ \times 2 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 561 \\ \times 9 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 109 \\ \times 4 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 812 \\ \times 8 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 503 \\ \times 3 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 827 \\ \times 3 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 122 \\ \times 8 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 523 \\ \times 6 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 5,306 \\ \times 3 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 6,241 \\ \times 7 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 6,384 \\ \times 9 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 4,634 \\ \times 2 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 8,436 \\ \times 5 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 5,691 \\ \times 5 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 35 \\ \times 28 \\ \hline \end{array}$$

20.
$$\begin{array}{r} 73 \\ \times 56 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 72 \\ \times 43 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 63 \\ \times 58 \\ \hline \end{array}$$

23.
$$\begin{array}{r} 83 \\ \times 27 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 70 \\ \times 60 \\ \hline \end{array}$$

Name _____

5.NBT.B.5

Multiplying Multi-Digit Numbers

Solve each problem. Regroup when necessary.

$$\begin{array}{r} 87 \\ \times 5 \\ \hline \end{array}$$

$$2. \begin{array}{r} 72 \\ \times 18 \\ \hline \end{array}$$

$$3. \begin{array}{r} 425 \\ \times 15 \\ \hline \end{array}$$

$$4. \begin{array}{r} 303 \\ \times 83 \\ \hline \end{array}$$

$$5. \begin{array}{r} 187 \\ \times 26 \\ \hline \end{array}$$

$$6. \begin{array}{r} 93 \\ \times 6 \\ \hline \end{array}$$

$$7. \begin{array}{r} 63 \\ \times 25 \\ \hline \end{array}$$

$$8. \begin{array}{r} 313 \\ \times 72 \\ \hline \end{array}$$

$$9. \begin{array}{r} 442 \\ \times 81 \\ \hline \end{array}$$

$$10. \begin{array}{r} 593 \\ \times 45 \\ \hline \end{array}$$

$$11. \begin{array}{r} 84 \\ \times 3 \\ \hline \end{array}$$

$$12. \begin{array}{r} 42 \\ \times 8 \\ \hline \end{array}$$

$$13. \begin{array}{r} 81 \\ \times 53 \\ \hline \end{array}$$

$$14. \begin{array}{r} 872 \\ \times 20 \\ \hline \end{array}$$

$$15. \begin{array}{r} 351 \\ \times 67 \\ \hline \end{array}$$

$$16. \begin{array}{r} 52 \\ \times 4 \\ \hline \end{array}$$

$$17. \begin{array}{r} 75 \\ \times 21 \\ \hline \end{array}$$

$$18. \begin{array}{r} 21 \\ \times 10 \\ \hline \end{array}$$

$$19. \begin{array}{r} 214 \\ \times 87 \\ \hline \end{array}$$

$$20. \begin{array}{r} 109 \\ \times 15 \\ \hline \end{array}$$

$$21. \begin{array}{r} 12 \\ \times 9 \\ \hline \end{array}$$

$$22. \begin{array}{r} 16 \\ \times 8 \\ \hline \end{array}$$

$$23. \begin{array}{r} 87 \\ \times 26 \\ \hline \end{array}$$

$$24. \begin{array}{r} 99 \\ \times 21 \\ \hline \end{array}$$

Division with One-Digit Divisors

olve each problem.

1. $4 \overline{)100}$

2. $2 \overline{)132}$

3. $3 \overline{)225}$

4. $9 \overline{)198}$

5. $2 \overline{)902}$

6. $7 \overline{)112}$

7. $6 \overline{)510}$

8. $4 \overline{)216}$

9. $6 \overline{)426}$

10. $2 \overline{)630}$

11. $3 \overline{)138}$

12. $9 \overline{)369}$

13. $8 \overline{)624}$

14. $6 \overline{)396}$

15. $8 \overline{)648}$

16. $5 \overline{)310}$

17. $5 \overline{)425}$

18. $7 \overline{)672}$

19. $3 \overline{)864}$

20. $7 \overline{)966}$

Name _____

5.NBT.B.6

Division with Two-Digit Divisors

Solve each problem.

1. $32 \overline{)512}$

2. $52 \overline{)624}$

3. $18 \overline{)450}$

4. $32 \overline{)768}$

5. $62 \overline{)992}$

6. $41 \overline{)820}$

7. $12 \overline{)144}$

8. $32 \overline{)960}$

9. $18 \overline{)702}$

10. $39 \overline{)858}$

11. $15 \overline{)540}$

12. $23 \overline{)345}$

13. $56 \overline{)952}$

14. $47 \overline{)517}$

15. $27 \overline{)810}$

16. $26 \overline{)338}$

17. $25 \overline{)350}$

18. $45 \overline{)990}$

19. $24 \overline{)600}$

20. $54 \overline{)864}$

Adding Decimals

Solve each problem. Regroup when necessary.

1.
$$\begin{array}{r} 14.2 \\ + 12.1 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 18.7 \\ + 10.5 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 6.54 \\ + 1.47 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 15.2 \\ + 12.3 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 16.6 \\ + 13.8 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 9.41 \\ + 7.85 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 18.2 \\ + 16.5 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 15.2 \\ + 13.0 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 3.94 \\ + 2.22 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 22.2 \\ + 13.1 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 14.9 \\ + 12.0 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 7.54 \\ + 2.24 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 47.5 \\ + 32.6 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 49.4 \\ + 11.1 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 8.85 \\ + 7.33 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 54.8 \\ + 13.2 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 4.58 \\ + 2.31 \\ \hline \end{array}$$

18. $12.95 + 5.06 =$

19. $13.8 + 6.9 =$

20. $46.02 + 75.67 =$

21. $16.3 + 35.7 =$

22. $3.25 + 3.25 =$

23. $87.01 + 16.53 =$

Name _____

5.NBT.B.7

Subtracting Decimals

Solve each problem. Regroup when necessary.

$$\begin{array}{r} 1. \quad 5.6 \\ - 3.2 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 10.4 \\ - 8.2 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 8.5 \\ - 3.5 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 7.8 \\ - 4.5 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 9.3 \\ - 7.5 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 86.5 \\ - 2.3 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 6.3 \\ - 4.1 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 8.7 \\ - 5.2 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 9.65 \\ - 4.22 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 8.6 \\ - 5.2 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 16.4 \\ - 8.2 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 75.4 \\ - 3.1 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 7.6 \\ - 3.2 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 26.7 \\ - 2.5 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 16.2 \\ - 4.1 \\ \hline \end{array}$$

$$16. \quad 72.5 - 63.7 =$$

$$17. \quad 8.1 - 6.5 =$$

Name _____

5.NBT.B.7

Multiplying Decimals

Solve each problem. Regroup when necessary.

$$\begin{array}{r} 5.2 \\ \times 1.8 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 10.5 \\ \times 6.6 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 2.8 \\ \times 9.9 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 2.2 \\ \times 4.4 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 0.12 \\ \times 3.7 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 5.2 \\ \times 0.2 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 1.3 \\ \times 1.0 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 7.1 \\ \times 0.25 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 7.5 \\ \times 2.7 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 6.4 \\ \times 2.5 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 16.2 \\ \times 1.1 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 2.0 \\ \times 2.1 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 5.4 \\ \times 1.3 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 6.6 \\ \times 1.5 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 0.44 \\ \times 0.1 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 0.34 \\ \times 0.12 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 5.5 \\ \times 4.6 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 6.1 \\ \times 2.5 \\ \hline \end{array}$$

$$\begin{array}{r} 19. \quad 5.6 \\ \times 7.3 \\ \hline \end{array}$$

$$\begin{array}{r} 20. \quad 3.3 \\ \times 0.8 \\ \hline \end{array}$$

Name _____

5.NBT.B.7

Multiplying Decimals

Solve each problem. Round to the nearest thousandth when necessary.

1.
$$\begin{array}{r} 0.18 \\ \times 1.5 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 0.16 \\ \times 100 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 0.08 \\ \times 0.42 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 87.85 \\ \times 63.4 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 536.7 \\ \times 1.79 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 6.42 \\ \times 3.7 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 0.48 \\ \times 13.5 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 0.65 \\ \times 53.7 \\ \hline \end{array}$$

9.
$$\begin{array}{r} 4.06 \\ \times 0.7 \\ \hline \end{array}$$

10.
$$\begin{array}{r} 43.6 \\ \times 64.7 \\ \hline \end{array}$$

11.
$$\begin{array}{r} 80.42 \\ \times 7.86 \\ \hline \end{array}$$

12.
$$\begin{array}{r} 0.62 \\ \times 5.97 \\ \hline \end{array}$$

13.
$$\begin{array}{r} 84.4 \\ \times 0.07 \\ \hline \end{array}$$

14.
$$\begin{array}{r} 5.11 \\ \times 0.78 \\ \hline \end{array}$$

15.
$$\begin{array}{r} 4.35 \\ \times 0.68 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 3.17 \\ \times 0.78 \\ \hline \end{array}$$

Dividing Decimals

Solve each problem.

1. $9 \overline{)2.7}$

2. $7 \overline{)2.1}$

3. $4 \overline{)0.16}$

4. $0.8 \overline{)56}$

5. $6 \overline{)3.6}$

6. $8 \overline{)0.64}$

7. $9 \overline{)0.27}$

8. $0.07 \overline{)2.1}$

9. $3 \overline{)2.7}$

10. $6 \overline{)0.30}$

11. $0.04 \overline{)28}$

12. $0.9 \overline{)5.4}$

13. $3 \overline{)0.18}$

14. $2 \overline{)0.12}$

15. $0.9 \overline{)72}$

16. $0.7 \overline{)0.35}$

17. $4 \overline{)2.4}$

18. $5 \overline{)2.5}$

19. $0.04 \overline{)36}$

20. $0.9 \overline{)6.3}$

Adding Fractions with Unlike Denominators

1. Find the least common denominator (LCD).

$$\frac{1}{3} + \frac{1}{4}$$

$$\text{LCD} = 12$$

2. Find the equivalent fractions.

$$\frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$$

$$\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

3. Add the numerators.

$$\begin{array}{r} \frac{4}{12} \\ + \frac{3}{12} \\ \hline \frac{7}{12} \end{array}$$

Solve each problem. Write each answer in simplest form.

1.
$$\begin{array}{r} \frac{1}{4} \\ + \frac{3}{5} \\ \hline \end{array}$$

2.
$$\begin{array}{r} \frac{1}{2} \\ + \frac{1}{5} \\ \hline \end{array}$$

3.
$$\begin{array}{r} \frac{4}{5} \\ + \frac{2}{3} \\ \hline \end{array}$$

4.
$$\begin{array}{r} \frac{2}{3} \\ + \frac{2}{5} \\ \hline \end{array}$$

5.
$$\begin{array}{r} \frac{4}{5} \\ + \frac{7}{8} \\ \hline \end{array}$$

6.
$$\begin{array}{r} \frac{3}{4} \\ + \frac{1}{3} \\ \hline \end{array}$$

7.
$$\begin{array}{r} \frac{1}{6} \\ + \frac{2}{5} \\ \hline \end{array}$$

8.
$$\begin{array}{r} \frac{3}{6} \\ + \frac{3}{4} \\ \hline \end{array}$$

9.
$$\begin{array}{r} \frac{1}{4} \\ + \frac{2}{3} \\ \hline \end{array}$$

10.
$$\begin{array}{r} \frac{5}{8} \\ + \frac{2}{3} \\ \hline \end{array}$$

11.
$$\begin{array}{r} \frac{2}{5} \\ + \frac{1}{3} \\ \hline \end{array}$$

12.
$$\begin{array}{r} \frac{1}{3} \\ + \frac{5}{7} \\ \hline \end{array}$$

13.
$$\begin{array}{r} \frac{1}{4} \\ + \frac{7}{8} \\ \hline \end{array}$$

14.
$$\begin{array}{r} \frac{2}{3} \\ + \frac{3}{15} \\ \hline \end{array}$$

15.
$$\begin{array}{r} \frac{2}{6} \\ + \frac{1}{3} \\ \hline \end{array}$$

Adding Mixed Numbers with Unlike Denominators

1. Find the least common denominator and equivalent fractions.

$$\begin{array}{r} 3\frac{2}{3} \\ + 2\frac{7}{9} \\ \hline \end{array} \quad \frac{2 \times 3}{3 \times 3} = \frac{6}{9}$$

$$\frac{7 \times 1}{9 \times 1} = \frac{7}{9}$$

2. Add.

$$\begin{array}{r} 3\frac{6}{9} \\ + 2\frac{7}{9} \\ \hline 5\frac{13}{9} \end{array}$$

3. Reduce and regroup if necessary.

$$\begin{array}{r} 3\frac{6}{9} \\ + 2\frac{7}{9} \\ \hline 5\frac{13}{9} = 6\frac{4}{9} \end{array}$$

Solve each problem. Write each answer in simplest form.

1.
$$\begin{array}{r} 4\frac{5}{8} \\ + 3\frac{1}{6} \\ \hline \end{array}$$

2.
$$\begin{array}{r} 2\frac{5}{6} \\ + 6\frac{3}{4} \\ \hline \end{array}$$

3.
$$\begin{array}{r} 4\frac{5}{8} \\ + 5\frac{4}{12} \\ \hline \end{array}$$

4.
$$\begin{array}{r} 10\frac{3}{8} \\ + 3\frac{1}{2} \\ \hline \end{array}$$

5.
$$\begin{array}{r} 3\frac{2}{5} \\ + 2\frac{1}{2} \\ \hline \end{array}$$

6.
$$\begin{array}{r} 8\frac{5}{7} \\ + 9\frac{2}{3} \\ \hline \end{array}$$

7.
$$\begin{array}{r} 8\frac{2}{3} \\ + 1\frac{5}{9} \\ \hline \end{array}$$

8.
$$\begin{array}{r} 2\frac{3}{4} \\ + 7\frac{1}{2} \\ \hline \end{array}$$

9.
$$\begin{array}{r} 1\frac{7}{9} \\ + 4\frac{1}{5} \\ \hline \end{array}$$

10.
$$\begin{array}{r} 6\frac{5}{6} \\ + 2\frac{2}{3} \\ \hline \end{array}$$

11.
$$\begin{array}{r} 4\frac{2}{14} \\ + 6\frac{3}{7} \\ \hline \end{array}$$

12.
$$\begin{array}{r} 1\frac{1}{4} \\ + 5\frac{10}{12} \\ \hline \end{array}$$

Subtracting Fractions with Unlike Denominators

1. Find the least common denominator (LCD).

$$\frac{3}{4} - \frac{2}{5}$$

LCD = 20

2. Find the equivalent fractions.

$$\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$$

$$\frac{2}{5} \times \frac{4}{4} = \frac{8}{20}$$

3. Subtract. Reduce to simplest form if necessary.

$$\begin{array}{r} \frac{15}{20} \\ - \frac{8}{20} \\ \hline \frac{7}{20} \end{array}$$

Solve each problem. Write each answer in simplest form.

1.
$$\begin{array}{r} \frac{1}{3} \\ - \frac{1}{4} \\ \hline \end{array}$$

2.
$$\begin{array}{r} \frac{3}{4} \\ - \frac{1}{5} \\ \hline \end{array}$$

3.
$$\begin{array}{r} \frac{9}{10} \\ - \frac{5}{7} \\ \hline \end{array}$$

4.
$$\begin{array}{r} \frac{5}{7} \\ - \frac{2}{9} \\ \hline \end{array}$$

5.
$$\begin{array}{r} \frac{3}{5} \\ - \frac{1}{3} \\ \hline \end{array}$$

6.
$$\begin{array}{r} \frac{3}{8} \\ - \frac{2}{6} \\ \hline \end{array}$$

7.
$$\begin{array}{r} \frac{2}{4} \\ - \frac{1}{3} \\ \hline \end{array}$$

8.
$$\begin{array}{r} \frac{1}{5} \\ - \frac{1}{8} \\ \hline \end{array}$$

9.
$$\begin{array}{r} \frac{7}{12} \\ - \frac{1}{4} \\ \hline \end{array}$$

10.
$$\begin{array}{r} \frac{3}{9} \\ - \frac{1}{4} \\ \hline \end{array}$$

11.
$$\begin{array}{r} \frac{7}{8} \\ - \frac{1}{9} \\ \hline \end{array}$$

12.
$$\begin{array}{r} \frac{8}{8} \\ - \frac{4}{6} \\ \hline \end{array}$$

13.
$$\begin{array}{r} \frac{2}{3} \\ - \frac{1}{2} \\ \hline \end{array}$$

14.
$$\begin{array}{r} \frac{2}{3} \\ - \frac{4}{9} \\ \hline \end{array}$$

15.
$$\begin{array}{r} \frac{1}{3} \\ - \frac{1}{6} \\ \hline \end{array}$$

Subtracting Mixed Numbers with Unlike Denominators

1. Find the least common denominator and equivalent fractions.

$$\begin{array}{r} 5\frac{1}{8} \\ - 2\frac{1}{3} \\ \hline \end{array} \quad \frac{1 \times 3}{8 \times 3} = \frac{3}{24}$$

$$\frac{1 \times 8}{3 \times 8} = \frac{8}{24}$$

2. Borrow and regroup. Subtract the fractions.

$$\begin{array}{r} 5\frac{3}{24} \\ - 2\frac{8}{24} \\ \hline \end{array}$$

3. Subtract the whole numbers.

$$\begin{array}{r} 4\frac{27}{24} \\ \cancel{5}\frac{\cancel{3}}{24} \\ - 2\frac{8}{24} \\ \hline 19 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 4\frac{27}{24} \\ \cancel{5}\frac{\cancel{3}}{24} \\ - 2\frac{8}{24} \\ \hline 2\frac{19}{24} \end{array}$$

Reduce to lowest terms if necessary.

Solve each problem. Write each answer in simplest form.

1.
$$\begin{array}{r} 5\frac{1}{6} \\ - 2\frac{3}{4} \\ \hline \end{array}$$

2.
$$\begin{array}{r} 4\frac{7}{10} \\ - 1\frac{4}{5} \\ \hline \end{array}$$

3.
$$\begin{array}{r} 5\frac{7}{8} \\ - 1\frac{1}{16} \\ \hline \end{array}$$

4.
$$\begin{array}{r} 3\frac{1}{3} \\ - 5\frac{5}{6} \\ \hline \end{array}$$

5.
$$\begin{array}{r} 4\frac{1}{3} \\ - 1\frac{1}{4} \\ \hline \end{array}$$

6.
$$\begin{array}{r} 3\frac{7}{12} \\ - 1\frac{9}{10} \\ \hline \end{array}$$

7.
$$\begin{array}{r} 5\frac{4}{5} \\ - 1\frac{9}{10} \\ \hline \end{array}$$

8.
$$\begin{array}{r} 4\frac{3}{4} \\ - 1\frac{5}{6} \\ \hline \end{array}$$

9.
$$\begin{array}{r} 6\frac{1}{2} \\ - \frac{1}{3} \\ \hline \end{array}$$

10.
$$\begin{array}{r} 7\frac{1}{4} \\ - 3\frac{2}{3} \\ \hline \end{array}$$

11.
$$\begin{array}{r} 10\frac{4}{5} \\ - 6\frac{5}{6} \\ \hline \end{array}$$

12.
$$\begin{array}{r} 12\frac{2}{3} \\ - 9\frac{6}{7} \\ \hline \end{array}$$

Multiplying Fractions

1. Multiply the numerators. 2. Multiply the denominators. 3. Simplify when necessary.

$$\frac{2}{3} \times \frac{5}{6} = \frac{10}{18}$$

$$\frac{2}{3} \times \frac{5}{6} = \frac{10}{18}$$

$$\frac{10}{18} \div \frac{2}{2} = \frac{5}{9}$$

Solve each problem. Write the answer in simplest form.

1. $\frac{3}{4} \times \frac{2}{5} =$

2. $\frac{7}{8} \times \frac{1}{6} =$

3. $\frac{4}{5} \times \frac{2}{3} =$

4. $\frac{1}{3} \times \frac{1}{5} =$

5. $\frac{2}{7} \times \frac{2}{9} =$

6. $\frac{1}{4} \times \frac{3}{5} =$

7. $\frac{4}{7} \times \frac{3}{8} =$

8. $\frac{2}{3} \times \frac{2}{5} =$

9. $\frac{1}{3} \times \frac{3}{5} =$

10. $\frac{3}{5} \times \frac{1}{3} =$

11. $\frac{1}{8} \times \frac{2}{5} =$

12. $\frac{1}{6} \times \frac{2}{3} =$

Multiplying Whole Numbers and Fractions

1. Convert the whole number to a fraction.

$$7 \times \frac{2}{3} = \frac{7}{1} \times \frac{2}{3}$$

2. Multiply straight across.

$$\frac{7}{1} \times \frac{2}{3} = \frac{14}{3}$$

3. If the product is an improper fraction, convert to a mixed number in simplest form.

$$\frac{14}{3} = 4\frac{2}{3}$$

Solve each problem. Write each answer in simplest form.

1. $5 \times \frac{2}{5} =$

2. $8 \times \frac{1}{7} =$

3. $6 \times \frac{3}{8} =$

4. $4 \times \frac{8}{9} =$

5. $2 \times \frac{3}{7} =$

6. $\frac{2}{3} \times 4 =$

7. $\frac{1}{9} \times 6 =$

8. $\frac{5}{6} \times 4 =$

9. $\frac{4}{6} \times 3 =$

10. $\frac{4}{5} \times 6 =$

11. $\frac{3}{4} \times 5 =$

12. $2 \times \frac{4}{5} =$

Multiplying Mixed Numbers

1. Convert the mixed numbers to fractions.

$$1\frac{1}{3} \times 2\frac{1}{2} = \frac{4}{3} \times \frac{2}{2}$$

2. Multiply.

$$\frac{4}{3} \times \frac{2}{2} = \frac{20}{6}$$

3. Convert the product back to a mixed number in simplest form.

$$\frac{20}{6} = 3\frac{2}{6} = 3\frac{1}{3}$$

Solve each problem. Write each answer in simplest form.

1. $8\frac{1}{4} \times 6\frac{2}{3} =$

2. $7\frac{2}{5} \times 6\frac{2}{3} =$

3. $2\frac{5}{6} \times 12\frac{4}{5} =$

4. $4\frac{2}{7} \times 6\frac{1}{10} =$

5. $5\frac{1}{5} \times 4\frac{1}{3} =$

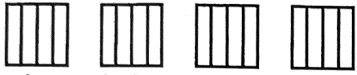
6. $9\frac{9}{10} \times 4\frac{7}{8} =$

7. $1\frac{10}{13} \times 2\frac{9}{13} =$

8. $8\frac{3}{5} \times 4\frac{5}{6} =$

Dividing Whole Numbers by Unit Fractions

$$4 \div \frac{1}{4}$$



Divide each figure into fourths.

$$4 \div \frac{1}{4} = 16$$

There are
now 16 parts.

1. To solve, turn the division problem into a multiplication problem by flipping the digits in the fraction.

$$4 \times \frac{4}{1} = 16$$

2. Check the quotient by multiplying it by the divisor.

$$16 \times \frac{1}{4} = 4$$

$$\frac{16}{4} = 4$$

Solve each problem. Write each answer in simplest form.

1. $1 \div \frac{1}{4} =$

2. $3 \div \frac{1}{8} =$

3. $5 \div \frac{1}{10} =$

4. $1 \div \frac{1}{7} =$

5. $2 \div \frac{1}{8} =$

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

7. $2 \div \frac{1}{8} =$

8. $4 \div \frac{1}{2} =$

9. $6 \div \frac{1}{7} =$

Dividing Unit Fractions by Whole Numbers

1. Change the whole number to a fraction.

$$\frac{1}{3} \div 6 = \frac{1}{3} \div \frac{6}{1}$$

2. Find the reciprocal of the second fraction by flipping it. Change the division sign to a multiplication sign.

$$\frac{6}{1} = \frac{1}{6}$$

$$\frac{1}{3} \div 6 = \frac{1}{3} \times \frac{1}{6}$$

3. Multiply. Simplify when necessary.

$$\frac{1}{3} \times \frac{1}{6} = \frac{1}{18}$$

Solve each problem. Write each answer in simplest form.

1. $\frac{1}{3} \div 4 =$

2. $\frac{1}{2} \div 1 =$

3. $\frac{1}{3} \div 1 =$

4. $\frac{1}{3} \div 2 =$

5. $\frac{1}{4} \div 2 =$

6. $\frac{1}{8} \div 1 =$

7. $\frac{1}{3} \div 8 =$

8. $\frac{1}{5} \div 3 =$

9. $\frac{1}{3} \div 3 =$

Converting Measurements

Standard units of length

$$12 \text{ inches (in.)} = 1 \text{ foot (ft.)}$$

$$3 \text{ feet (ft.)} = 1 \text{ yard (yd.)}$$

$$5,280 \text{ feet (ft.)} = 1 \text{ mile (mi.)}$$

$$1,760 \text{ yards (yd.)} = 1 \text{ mile (mi.)}$$

US standard units of capacity and weight

$$2 \text{ cups (c.)} = 1 \text{ pint (pt.)}$$

$$2 \text{ pints} = 1 \text{ quart (qt.)}$$

$$4 \text{ quarts} = 1 \text{ gallon (gal.)}$$

$$16 \text{ ounces (oz.)} = 1 \text{ pound (lb.)}$$

$$2,000 \text{ pounds} = 1 \text{ ton (t.)}$$

Metric units of length

$$10 \text{ millimeters (mm)} = 1 \text{ centimeter (cm)}$$

$$100 \text{ centimeters (cm)} = 1 \text{ meter (m)}$$

$$1,000 \text{ meters (m)} = 1 \text{ kilometer (km)}$$

Metric units of capacity and weight

$$1,000 \text{ milliliters (mL)} = 1 \text{ liter (L)}$$

$$1,000 \text{ liters (L)} = 1 \text{ kiloliter (kL)}$$

$$1,000 \text{ milligrams (mg)} = 1 \text{ gram (g)}$$

$$1,000 \text{ grams (g)} = 1 \text{ kilogram (kg)}$$

Convert each unit of weight.

1. 32 oz. = _____ lb.
2. 3 lb. = _____ oz.
3. 5 kg = _____ g
4. 8 oz. = _____ lb.
5. 4 g = _____ kg
6. 4 oz. = _____ lb.
7. 6,000 mg = _____ g
8. 1 t. = _____ lb.
9. 4,000 lb. = _____ t.
10. 80 oz. = _____ lb.
11. 800 g = _____ kg
12. 6 lb. = _____ oz.

Convert each unit of capacity.

13. 3,000 mL = _____ L
14. 3 c. = _____ pt.
15. 4 L = _____ mL
16. 3 pt. = _____ c.
17. 4 qt. = _____ gal.
18. 4 pt. = _____ qt.
19. 2 kL = _____ L
20. 1 qt. = _____ gal.
21. 1 pt. = _____ qt.

Convert each unit of length.

22. 20 mm = _____ cm
23. 5 yd. = _____ in.
24. 3 mi. = _____ ft.
25. 50 m = _____ cm
26. 2 m = _____ cm
27. 1 mi. = _____ in.
28. 90 cm = _____ mm
29. 10,000 km = _____ m
30. 8 ft. = _____ in.