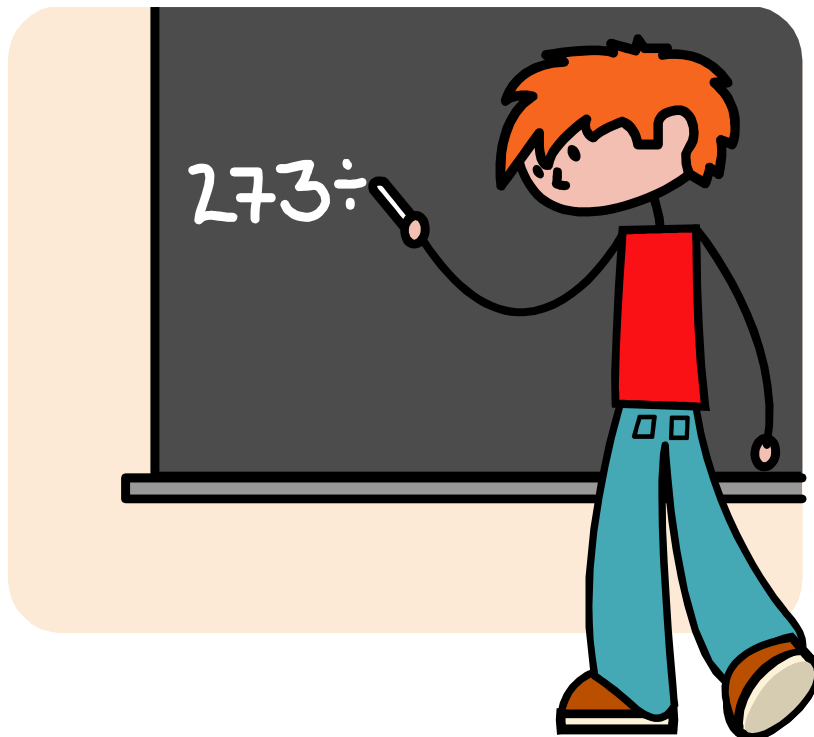


Math Summer Work 2023

Current Grade 6 ---- for Rising 7th grade students
Fall 2023 Math



No Calculators

This workbook will be collected in September.

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Unit 1 Place Value System

I. Write the numbers in expanded notation for questions 1 and 2.

Example $42,301 = 4 \times 10,000 + 2 \times 1,000 + 3 \times 100 + 1 \times 1$

1. 513,862

2. 8,308,136

3. Write the number 112,040,068 in **words**.

II. Write the following words in decimal and fraction form.

Example: three and two tenths 3.2 or $\frac{32}{10}$ or $3 \frac{2}{10}$

1. Two and three tenths _____

2. Sixty five and eleven hundredths _____

3. Twenty and five hundredths _____

4. Twenty two and twenty two hundredths _____

Write in standard form. Example $(8 \times 1,000) + (7 \times 100) + (6 \times 0.01) = 8,700.06$

5. $(9 \times 10) + (9 \times 1) + (9 \times 0.1) =$ _____

6. $(9 \times 1000) + (7 \times 100) + (1 \times 1) + (5 \times 0.1) =$ _____

Write the number in expanded notation. Example: 578.0053

$5 \times 100 + 7 \times 10 + 8 \times 1 + 5 \times 0.001 + 3 \times 0.0001$

7. 216.9 = _____

8. 97.065 = _____

9. 15.15 = _____

III. Round each number to the given place value.

1. 375 (tens) _____

2. 10,187 (thousands) _____

3. **400,891 (hundreds)** _____
4. **15.48 (tenths)** _____
5. **28.3 (ones)** _____
6. **8.5161 (thousandths)** _____
7. **5.436 rounded to the nearest tenth is** _____
8. **6.999 rounded to the nearest hundredth is** _____

Write the number in scientific notation. **Example** $85,698 = 8.5698 \times 10^4$

1. 540,000 _____
2. 12,050 _____
3. 0.0089 _____

Unit 2 Adding, Subtracting, Multiplying and Dividing Whole Numbers

I. Add or subtract

1. $526 + 1599 =$ _____
2. $15906 + 15906 =$ _____
3. $35187 - 5923 =$ _____
4. $5,693 + 1,278 =$ _____
5. $13,698 - 299 =$ _____
6. $28 + 72 =$ _____
7. $2550 - 325 =$ _____
8. $58,978 - 29,596 =$ _____

II. Multiply and Divide. Write the quotient in fraction form and decimal form

Example $48 \div 5 = 9 \frac{3}{5} = 9.6$

1. $37 \div 5 =$ _____
2. $47 \div 3 =$ _____
3. $3157 \div 6 =$ _____
4. $256 \div 5 =$ _____
5. $15 \times 81 =$ _____

6. $33 \times 33 =$ _____

7. $66 \div 11 =$ _____

8. $850 \div 10 =$ _____

9. $99 \div 8 =$ _____

10. $128 \div 6 =$ _____

III. In the exercises below, use the divisibility test to decide whether the number is divisible by 2, 3, 4, 5, 6, 9, and 10

Example: 927 is divisible by 3, 9. It is not an even number, so it cannot be divided by 2.

972 is divisible by 2, 3,4,6,9

1. 837 _____

2. 2940 _____

3. 252 _____

IV. Exponents

1. $5^2 =$ _____ 2. $9^3 =$ _____ 3. $4^2 =$ _____ 4. $10^3 =$ _____

V. Solve the expressions using order of operations. (PEMDAS)

1. $5 \cdot 3 + (6-2) =$ _____

2. $(13-2) + 4 \cdot 3 =$ _____

3. $28 \div 7 + 32 \cdot 5 =$ _____

4. $48 - 6 \cdot 7 =$ _____

5. $(5-3)^2 + 5 =$ _____

6. $5^2 + 5 \div 5 - 4 =$ _____

VI. Distributive Property = $6(2+2) = 12 + 12 = 24$ or $6 \cdot 4 = 24$

1. $8(2+4) =$ _____

2. $9(2+5) =$ _____

3. $5(2+ 6) =$ _____

4. $5(10 + 9) =$ _____

Solve using distributive property. Example: $22(22) = 22(20+2) = 440 + 44 = 484$

5. $16(75) =$ _____

6. $18(22)=$ _____

7. $5(88)=$ _____

8. $6(99)=$ _____

9. $15(15)=$ _____

10. $12(123)=$ _____

Unit 3 Decimals

I. Adding and subtracting with decimals

1. $19.09 + 1.504 =$

2. $65.98 + 5.002 =$

3. $196.2 + 9.82 =$

4. $12.95 - 8.87 =$

5. $139.7 - 82.8 =$

6. $582.27 - 390.25 =$

7. $\$25.01 - \$16.99 =$

8. $4.1 - 2.1 =$

9. $15.02 - 5.0299 =$

II. Multiplying and Dividing decimals

1. $0.07 \times 0.005 =$ _____

2. $8.14 \times 1.2 =$ _____

3. $1.62 \times 0.5 =$ _____

4. $0.0009 \times 0.8 =$ _____

5. $3.5 \times 2.5 =$ _____

6. $1.5 \times 51 =$ _____

7. $1.1 \times 1.1 =$ _____

8. $125.6 \times 10^3 =$ _____

9. $1.25 \times 100 =$ _____

10. $9.5 \times 10 =$ _____

Note the operation change!

11. $0.72 \div 10 =$ _____

12. $8.5 \div 5 =$ _____

13. $13.2 \div 6 =$ _____

14. $0.816 \div 8 =$ _____

15. $0.64 \div 8 =$ _____

16. $5.4 \div 6 =$ _____
17. $6.25 \div 5 =$ _____
18. $0.416 \div 0.004 =$ _____
19. $2.8 \div 10 =$ _____
20. $170.82 \div 10^3 =$ _____

Unit 4 Fractions

I. Equivalent fractions: Write 3 equivalent fractions for each fraction

1. $\frac{1}{2}$ _____, _____, _____
2. $\frac{5}{8}$ _____, _____, _____
3. $\frac{1}{3}$ _____, _____, _____
4. $\frac{1}{5}$ _____, _____, _____
5. $\frac{10}{16}$ _____, _____, _____
6. $\frac{2}{3}$ _____, _____, _____

Find the missing number

7. $\frac{2}{5} = \frac{x}{25}$ $x =$ _____
8. $\frac{1}{3} = \frac{9}{x}$ $x =$ _____
9. $\frac{2}{4} = \frac{x}{20}$ $x =$ _____

II. Order the fractions from least to greatest. Use common denominators, please.

1. $\frac{1}{16}, \frac{1}{9}, \frac{1}{100}, \frac{1}{2}, \frac{1}{15}, \frac{1}{3}, \frac{1}{26}$ _____
2. $\frac{2}{9}, \frac{1}{3}, \frac{5}{6}, \frac{7}{18}, \frac{1}{18}$ _____
3. Of the fractions $\frac{3}{4}, \frac{15}{16}$, and $\frac{32}{33}$, which is closest to 1? _____

Improper fractions and Mixed Numbers

Rewrite the improper fraction as a mixed number.

4. $\frac{15}{3} =$ _____
5. $\frac{13}{6} =$ _____

6. $7/5 =$ _____

7. $120/112 =$ _____

Rewrite the mixed number as an improper fraction

8. $2\frac{1}{2} =$ _____

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

10. $2\frac{3}{4} =$ _____

III. Adding and Subtracting Fractions

1. $2\frac{1}{8} + 3/8 =$ _____

2. $6\frac{5}{8} + 7\frac{11}{24} =$ _____

3. $4/7 + 9/28 =$ _____

4. $1/2 + 1/2 + 1/2 + 2/4 + 2/2 =$ _____

5. $5\frac{6}{35} + 8\frac{8}{7} =$ _____

6. $4/5 - 2/5 =$ _____

7. $6\frac{1}{2} - 3\frac{1}{4} =$ _____

8. $8\frac{5}{9} - 1\frac{1}{9} =$ _____

9. $6/9 - 1/6 =$ _____

10. $6\frac{4}{5} - 3\frac{1}{5} =$ _____

11. $8\frac{8}{9} - 2\frac{8}{9} =$ _____

12. $4\frac{1}{8} - 2\frac{3}{8} =$ _____

13. $3\frac{7}{12} - 2\frac{2}{3} =$ _____

14. $8 - 5\frac{2}{3} =$ _____

IV. Multiplying and Dividing Fractions

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

2. $\frac{1 \times 10}{5 \ 1} =$ _____

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

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

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

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

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

8. $10 \times \frac{1}{2} =$ _____

9. $9 \times \frac{6}{9} =$ _____

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

11. $2\frac{1}{4} \times 3 =$ _____

12. $1\frac{1}{2} \times 5 =$ _____

Solve the division problems

13. $\frac{1}{5} \div 5 =$ _____

14. $0.2 \div 5 =$ _____

15. $\frac{1}{10} \div \frac{1}{10} =$ _____

16. Rewrite question #15 using decimals and then solve. _____

17. Is the answer for question 15 and 16 the same or different? Explain

For questions 18-25, please check your answers by multiplication.

Division

Check by multiplication

18. $1/5 \div 1/3 =$ _____

19. $1/3 \div 6/15 =$ _____

20. $9 \div 1/3 =$ _____

21. $5/8 \div 1/8 =$ _____

22. $7/9 \div 1/3 =$ _____

23. $1/27 \div 1/9 =$ _____

24. $1/5 \div 5 =$ _____

25. $9 \div 18/27 =$ _____

V. Fractions, Decimals and Percents are related concepts.

Complete the table

| fractions | decimals | Percents |
|------------------|-----------------|-----------------|
| 1/5 | | |
| | 0.15 | |
| | | 19% |

Solve. Write an equation if necessary and then solve.

1. 90 % of 144 pencils = _____pencils

2. 5 % of 1058 people = _____people

3. 20% of what number is 8? _____

4. 27 is what percent of 45? _____

5. What percent of 20 is 3? _____

VI. In exercises 6 -8 use a tree diagram to write the prime factorization. Remember to make sure the factors are prime.

6.. 225

7. 65

8. 48

VII. In exercises 9-11 find the GCF for the pair of numbers. (HINT: prime factorization) You may use your Pink Resource!

9. 45 and 135 GCF = _____

10. 45 and 75 GCF = _____

11. 21 and 23 GCF = _____

VIII. Ratios, Proportions and Rates

Rewrite the quotient as a ratio. Then Simplify. Remember a ratio must have the same unit in the denominator and numerator.

1. $\frac{30 \text{ feet}}{24 \text{ inches}}$ _____

2. $\frac{66 \text{ days}}{3 \text{ weeks}}$ _____

3. $\frac{56 \text{ weeks}}{2 \text{ years}}$ _____

Solve the proportion using cross-multiplying or by examining the relationships.

4. $\frac{4}{9} = \frac{w}{72}$ _____

5. $\frac{10}{t} = \frac{2.5}{1}$ _____

6.. $\frac{63}{144} = \frac{t}{16}$ _____

7.. $\frac{30}{40} = \frac{w}{16}$ _____

Unit 5 Integers

Add or subtract.

1. $12 - (-2) =$ _____

2. $15 - (-25) =$ _____

3. $-12 - (-10) =$ _____

4. $64 - (-4) =$ _____

5. $5 + - 3 =$ _____

6. $-9 + 5 =$ _____

7. $75 + (-25) =$ _____

8. $-48 - 98 =$ _____

9. $-215 - 584 =$ _____

10. I am an integer. I am less than zero. When you subtract me from -5 the result is 0. What am I?

Solve

11. $8(-2) =$ _____

12. $-10 \cdot (-3) =$ _____

13. $-36 \div -9 =$ _____

14. $-56 \div 8 =$ _____

Find the product or quotient

15. $-8 \times 0 =$ _____

16. $(-2)(-9)(-1) =$ _____

17. $95 \div (-5) =$ _____

18. $-25 \div (-5) =$ _____

In exercises 14-17 **Complete the statement using $<$, $>$, or $=$ Absolute Value!**

19. -3 _____ $|-3|$

20. 10 _____ $|-11|$

21. $|-17|$ _____ $|17|$

22. 150 _____ $|-100|$

Solve

23. $(-9)^2 =$ _____

24. $(-3)^2 - (-1)^3 =$ _____

25. $-(-4)^3 =$ _____

Unit 6 Algebra

I. In exercises 1, 2, 3, and 4, evaluate the expression when $x = 6$, using order of operations.

1. $15 - x + 11 =$

2. $(4 + x) \cdot (x - 1) =$

3. $3^3 \cdot 10 + x =$

4. $x^2 + 10 - 6 =$

II. Solve for x SHOW ALL OF YOUR WORK ON LINED PAPER! You must show all steps on lined paper with a check.

Example
 $X - 5 = 25$
 $\begin{array}{r} +5 \quad +5 \\ X = 30 \end{array}$
Check
 $30 - 5 = 25$

1. $x + 19 = -45$ $x =$ _____ **check =** _____
2. $-2 = x + 5$ $x =$ _____ **check =** _____
3. $x - 9 = -10 + 5$ $x =$ _____ **check =** _____
4. $-18 + x = -26$ $x =$ _____ **check =** _____
5. $x - 13 = 10 - 6$ $x =$ _____ **check =** _____

Evaluate the expression for $x = -4$

6. $-2x =$ _____
7. $\frac{1}{4}(x) =$ _____
8. $x \div (-2) =$ _____
9. $-20 \div x =$ _____

Unit 7 Word Problems and Miscellaneous

I. Solve each problem

1. **Matthew, Chris and Trip play soccer. They each scored the same amount of goals this season. If the boys scored a total of 24 goals, how many goals did each boy score?**

2. **Owen's father worked thirty six hours one week and forty seven hours the next week. How many hours did he work during the two weeks?** _____
3. **The space flight is expected to last 11,720 minutes. They are now 7,342 minutes into the flight. How many minutes remain?** _____
4. **What is 20% of 50 cars?** _____

5. If I surveyed 50 fifth grades boys and 50% love math; how many students love math?

6. Jay bought shoes last night for \$60.00. They were on sale for 20% off. How much did the shoes cost on sale?

7. Jack Mac bought War hammer supplies for \$150.00. It was on sale for 25% off. How much is the discount? _____
8. You want to buy 4 sharpies. They sell for \$1.15 each. Tax in Maryland is 6%. How much do the 4 sharpies cost with tax? _____
9. How many days in 240 hours? _____
10. How many inches in 4 yards? _____

11. Find the perimeter. (Measure the length and width to the nearest 1/8 inch)

L= _____

W = _____

P = _____



12. You spend 1/9 of your allowance on a book and 1/3 of your allowance on a CD and 5/27 at the SP bookstore. Do you have more than half, half, or less than half of your allowance remaining? Explain by showing your number sentence.

13. JT has a friend who is deaf and uses sign language to communicate. He can sign about 36 concepts per minute. How many concepts can he sign in 15 minutes? _____

14. William makes 4% commission on his sales at Lax World. For a \$70.00 purchase, how much commission does earn? _____

15. Computer disks are on sale for 25% off the regular price. This is a savings of \$15 per box. What is the regular price for a box? _____

16. This year, a starting salary at a computer company is \$25,000. Next year, the salary will increase to \$28,000. What is the percent of the increase in the starting salary?

17. You deposit \$5000 in a savings account that pays 5% interest. Find the interest you earn for a period of 6 months. _____

18. You borrow \$2000 from a bank. How much interest will you pay after 1 year at a rate of 16% _____

II. Vocabulary: Match the vocabulary word with the definition or example

- | | |
|--------------------------------------|--|
| __1. factor | a. $(2 \times 3) \times 6 = 2 \times (3 \times 6)$ |
| __2. associative property | b. a fraction that is greater than or equal to one |
| __3. common denominator | c. The LCD of two or more fractions |
| __4. reciprocal | d. the number below the line in a fraction. |
| __5. Commutative property | e. a whole number and its fraction |
| __6. denominator | f. the smallest multiple of two or more denominators |
| __7. distributive property | g. the number of times a base is used as a factor |
| __8. exponent | h. the same denominator used in fractions |
| __9. multiple | i. $2 \times 3 = 3 \times 2$ |
| __10. improper fraction | j. per hundred |
| __11. least common denominator (LCD) | k. a number that divides another number evenly |
| __12. least common multiple (LCM) | l. 6, 12, 18, 20 are examples of _____ of 6 |
| __13. mixed number | m. $5(432) = 5 \times 400 + 5 \times 30 + 5 \times 2 = 2160$ |
| __14. numerator | n. the number above the line in a fraction |
| __15. percent | o. length x width is the formula for _____ |
| __16. perimeter | p. two numbers whose product is one |
| __17. area | q. the distance around a figure |

Answers and Resources

Resources

Barron's Mathematics Study Dictionary ISBN #0-7641-0303-2

1. <https://www.homeschoolmath.net/worksheets/>
2. <http://www.mathopenref.com/>
3. <http://aaamath.com/>
4. <http://www.coolmath.com/>
5. www.mathforum.com.
6. www.mathcats.com.
7. www.fleetkids.com.
8. www.funbrain.com/numbers.html.

Answers- Please remove from your book.

Unit 1 Place Value System

I. Write the numbers in expanded notation for questions 1 and 2.

Example $42,301 = 4 \times 10,000 + 2 \times 1,000 + 3 \times 100 + 1 \times 1$

- $513,862 = 5 \times 100,000 + 1 \times 10,000 + 3 \times 1,000 + 8 \times 100 + 6 \times 10 + 2 \times 1$
- $8,308,136 = 8 \times 1,000,000 + 3 \times 100,000 + 8 \times 1,000 + 1 \times 100 + 3 \times 10 + 6 \times 1$
- Write the number 112,040,068 in words. **One hundred twelve million, forty thousand, sixty-eight**

II. Write the following words in decimal and fraction form.

Example: three and two tenths 3.2 or $3 \frac{2}{10}$

- Two and three tenths 2.3 $2 \frac{3}{10}$
- Sixty five and eleven hundredths 65.11 $65 \frac{11}{100}$
- Twenty and five hundredths 20.05 $20 \frac{5}{100}$
- Twenty two and twenty two hundredths 22.22 $22 \frac{22}{100}$

Write in standard form.

- $(9 \times 10) + (9 \times 1) + (9 \times 0.1) = 99.9$
- $9 \times 1000 + 7 \times 100 + 1 \times 1 + 5 \times 0.1 = 9,701.5$

Write the number in expanded notation. Example: $578.0053 = 5 \times 100 + 7 \times 10 + 8 \times 1 + 5 \times 0.001 + 3 \times 0.0001$

- $216.9 = 2 \times 100 + 1 \times 10 + 6 \times 1 + 9 \times 0.1$
- $97.065 = 9 \times 10 + 7 \times 1 + 6 \times 0.01 + 5 \times 0.001$
- $15.15 = 1 \times 10 + 5 \times 1 + 1 \times 0.1 + 5 \times 0.01$

III. Round each number to the given place value.

- 375 (tens) **380**
- 10,187 (thousands) **10,000**
- 400,891 (hundreds) **400,900**
- 15.48 (tenths) **15.5**
- 28.3 (ones) **28**
- 8.5161 (thousandths) **8.516**
- 5.436 rounded to the nearest tenth is **5.4**
- 6.999 rounded to the nearest hundredth is **7.00**

Write the number in scientific notation.

- $540,000 = 5.4 \times 10^5$
- $12,050 = 1.205 \times 10^4$
- $0.0089 = 8.9 \times 10^{-3}$

Unit 2 Adding, subtracting, multiplying and dividing whole numbers

I. Add or subtract

- $526 + 1599 = 2,125$
- $15906 + 15906 = 31,812$
- $35187 - 5923 = 29,264$
- $5,693 + 1,278 = 6,971$
- $13,698 - 299 = 13,399$
- $28 + 72 = 100$
- $2550 - 325 = 2,225$
- $58,978 - 29,596 = 29,382$

II. Multiply and Divide. Write the quotient in fraction form and decimal form Example $48 \div 5 = 9 \frac{3}{5}$

- $37 \div 5 = 7 \frac{2}{5} = 7.4$
- $47 \div 3 = 15 \frac{2}{3} = 15.66$
- $3157 \div 6 = 526 \frac{1}{6} = 526.1666$

4. $256 \div 5 = 51 \frac{2}{5} = 51.4$
5. $15 \times 81 = 1,215$
6. $33 \times 33 = 1,089$
7. $66 \div 11 = 6$
8. $850 \div 10 = 85$
9. $99 \div 8 = 12 \frac{3}{8} = 12.375$
10. $128 \div 6 = 21 \frac{2}{6}$ or $21 \frac{1}{3} = 21.3333$

III. In exercises 5, 6, and 7, use the divisibility test to decide whether the number is divisible by 2, 3, 4, 5, 6, 9, and 10

10. $837 = 3, 9$
11. $2940 = 2, 3, 4, 5, 6, 10$
12. $252 = 2, 3, 4, 6, 9$

IV. Exponents

1. $5^2 = 25$
2. $9^3 = 729$
3. $4^2 = 16$
4. $10^3 = 1000$

V. Solve the expressions using order of operations.

1. $5 \cdot 3 + (6-2) = 19$
2. $(13-2) + 4 \cdot 3 = 23$
3. $28 \div 7 + 32 \cdot 5 = 164$
4. $48 - 6 \cdot 7 = 6$
5. $(5-3)^2 + 5 = 9$
6. $5^2 + 5 \div 5 - 4 = 22$

VI. Distributive Property = $6(2+2) = 12 + 12 = 24$

1. $8(2+4) = 16 + 32 = 48$
2. $9(2+5) = 18 + 45 = 63$
3. $5(2+ 6) = 10 + 30 = 40$
4. $5(10 + 9) = 50 + 45 = 95$

Solve using distributive property Example- $22(22) = 22(20+2) = 440 + 44 = 484$

5. $16(75) = 16 \times 70 + 16 \times 5 = 1200$
6. $18(22) = 18 \times 20 + 18 \times 2 = 396$
7. $5(88) = 5 \times 80 + 5 \times 8 = 440$
8. $6(99) = 6 \times 90 + 6 \times 9 = 594$
9. $15(15) = 15 \times 10 + 15 \times 5 = 225$
10. $12(123) = 12 \times 100 + 12 \times 20 + 12 \times 3 = 1,476$

Unit 3 Decimals

I. Adding and Subtracting with decimals

1. $19.09 + 1.504 = 20.594$
2. $65.98 + 5.002 = 70.982$
3. $196.2 + 9.82 = 206.02$
4. $12.95 - 8.87 = 4.08$
5. $139.7 - 82.8 = 56.9$
6. $582.27 - 390.25 = 192.02$
7. $\$25.01 - \$16.99 = 8.02$
8. $4.1 - 2.1 = 2.0$
9. $15.02 - 5.0299 = 9.9901$

II. Multiplying and Dividing decimals

1. $0.07 \times 0.005 = 0.00035$
2. $8.14 \times 1.2 = 9.768$
3. $1.62 \times 0.5 = 0.81$
4. $0.0009 \times 0.8 = 0.00072$
5. $3.5 \times 2.5 = 8.75$
6. $1.5 \times 51 = 76.5$
7. $1.1 \times 1.1 = 1.21$
8. $125.6 \times 10^3 = 125,600$
9. $1.25 \times 100 = 125$
10. $9.5 \times 10 = 95$

Note the operation change!

11. $0.72 \div 10 = 0.072$
12. $8.5 \div 5 = 1.7$
13. $13.2 \div 6 = 2.2$
14. $0.816 \div 8 = 0.102$
15. $0.64 \div 8 = 0.08$
16. $5.4 \div 6 = 0.9$

17. $6.25 \div 5 = 1.25$
18. $0.416 \div 0.004 = 104$
19. $2.8 \div 10 = 0.28$
20. $170.82 \div 10^3 = 0.17082$

Unit 4 Fractions

I. Equivalent fractions: Write 3 equivalent fractions for each fraction

1. $\frac{1}{2}$ $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}$
2. $\frac{5}{8}$ $\frac{10}{16}, \frac{15}{24}, \frac{20}{32}$
3. $\frac{1}{3}$ $\frac{2}{6}, \frac{3}{9}, \frac{4}{12}$
4. $\frac{1}{5}$ $\frac{2}{10}, \frac{3}{15}, \frac{4}{20}$
5. $\frac{10}{16}$ $\frac{20}{32}, \frac{30}{48}, \frac{40}{64}, \frac{5}{8}$
6. $\frac{2}{3}$ $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}$

Find the missing number

7. $\frac{2}{5} = \frac{x}{25}$ $x = \underline{10}$

8. $\frac{1}{3} = \frac{9}{x}$ $x = 27$

9. $\frac{2}{4} = \frac{x}{20}$ $x = \underline{10}$

II. Order the fractions from least to greatest.

1. $\frac{1}{16}, \frac{1}{9}, \frac{1}{100}, \frac{1}{2}, \frac{1}{15}, \frac{1}{3}, \frac{1}{26}$ Answer-- $\frac{1}{100}, \frac{1}{26}, \frac{1}{16}, \frac{1}{15}, \frac{1}{9}, \frac{1}{3}, \frac{1}{2}$,
2. $\frac{2}{9}, \frac{1}{3}, \frac{5}{6}, \frac{7}{18}, \frac{1}{18}$ Answer $\frac{1}{18}, \frac{2}{9}, \frac{1}{3}, \frac{7}{18}, \frac{5}{6}$
3. Of the fractions $\frac{3}{4}, \frac{15}{16}$, and $\frac{32}{33}$, which is closest to 1? Answer $\frac{32}{33}$

Improper fractions and Mixed Numbers Rewrite the improper fraction as a mixed number.

4. $\frac{15}{3} = 5$
5. $\frac{13}{6} = 2 \frac{1}{6}$
6. $\frac{7}{5} = 1 \frac{2}{5}$
7. $\frac{120}{112} = 1 \frac{8}{112} = 1 \frac{1}{14}$

Rewrite the mixed number as an improper fraction

8. $2 \frac{1}{2} = \frac{5}{2}$
9. $3 \frac{1}{3} = \frac{10}{3}$
10. $2 \frac{3}{4} = \frac{11}{4}$

III. Adding and Subtracting Fractions

1. $2 \frac{1}{8} + \frac{3}{8} = 2 \frac{1}{2}$
2. $6 \frac{5}{8} + 7 \frac{11}{24} = 14 \frac{1}{12}$
3. $\frac{4}{7} + \frac{9}{28} = \frac{25}{28}$
4. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{2}{4} + \frac{2}{2} = 3$
5. $5 \frac{6}{35} + 8 \frac{8}{7} = 14 \frac{11}{35}$
6. $\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$
7. $6 \frac{1}{2} - 3 \frac{1}{4} = 3 \frac{1}{4}$
8. $8 \frac{5}{9} - 1 \frac{1}{9} = 7 \frac{4}{9}$
9. $\frac{6}{9} - \frac{1}{6} = \frac{1}{2}$

10. $6 \frac{4}{5} - 3 \frac{1}{5} = 3 \frac{3}{5}$
11. $8 \frac{8}{9} - 2 \frac{8}{9} = 6$
12. $4 \frac{1}{8} - 2 \frac{3}{8} = 1 \frac{3}{4}$
13. $3 \frac{7}{12} - 2 \frac{2}{3} = 1 \frac{1}{12}$
14. $8 - 5 \frac{2}{3} = 2 \frac{1}{3}$

IV. Multiplying and Dividing Fractions

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
2. $\frac{1 \times 10}{5 \times 1} = 2$
3. $\frac{1 \times 2}{6 \times 3} = \frac{1}{9}$
4. $\frac{3 \times 3}{7 \times 7} = \frac{9}{49}$
5. $\frac{5 \times 2}{6 \times 3} = \frac{5}{9}$
6. $\frac{2 \times 2}{3 \times 5} = \frac{4}{15}$
7. $\frac{4 \times 1}{7 \times 2} = \frac{2}{7}$
8. $10 \times \frac{1}{2} = 5$
9. $9 \times \frac{6}{9} = 6$
10. $\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$
11. $2 \frac{1}{4} \times 3 = 6 \frac{3}{4}$
12. $1 \frac{1}{2} \times 5 = 7 \frac{1}{2}$

Solve the division problems

13. $\frac{1}{5} \div 5 = \frac{1}{25}$
14. $0.2 \div 5 = 0.04$ or $\frac{2}{50}$
15. $\frac{1}{10} \div \frac{1}{10} = 1$
16. Rewrite question #15 using decimals and then solve. $0.1 \div 0.1 = 1$

17. Is the answer for question 15 and 16 the same or different? Do you prefer working with decimals or fractions. Explain
 The answers for questions 15 & 16 are the same. $\frac{1}{10} \div \frac{1}{10} = 1$ and $0.1 \div 0.1 = 1$ are the same just in different format. The first format is fraction and the second is decimals.

For questions 18-25, please check your answers by multiplication.

| Division | Check by multiplication |
|--|---|
| 18. $\frac{1}{5} \div \frac{1}{3} = \frac{3}{5}$ | $\frac{3}{5} \times \frac{1}{3} = \frac{1}{5}$ |
| 19. $\frac{1}{3} \div \frac{6}{15} = \frac{5}{6}$ | $\frac{5}{6} \times \frac{6}{15} = \frac{1}{3}$ |
| 20. $9 \div \frac{1}{3} = 27$ | $27 \times \frac{1}{3} = 9$ |
| 21. $\frac{5}{8} \div \frac{1}{8} = 5$ | $5 \times \frac{1}{8} = \frac{5}{8}$ |
| 22. $\frac{7}{9} \div \frac{1}{3} = \frac{7}{3}$ | $\frac{7}{3} \times \frac{1}{3} = \frac{7}{9}$ |
| 23. $\frac{1}{27} \div \frac{1}{9} = \frac{1}{3}$ | $\frac{1}{3} \times \frac{1}{9} = \frac{1}{27}$ |
| 24. $\frac{1}{5} \div 5 = \frac{1}{25}$ | $\frac{1}{25} \times 5 = \frac{1}{5}$ |
| 25. $9 \div \frac{18}{27} = 27 \frac{1}{2} = 13 \frac{1}{2}$ | $27 \frac{1}{2} \times \frac{18}{27} = 9$ |

V. Fractions, Decimals and Percents are related concepts.

Complete the table

| fractions | decimals | Percents |
|---------------|----------|----------|
| 1/5 | 0.2 | 20% |
| 15/100 = 3/20 | 0.15 | 15% |
| 19/100 | 0.19 | 19% |

Solve. Write an equation if necessary and then solve.

- 90 % of 144 pencils = 130pencils
- 5 % of 1058 people = 53 people
- 20% of what number is 8? 40
- 27 is what percent of 45? 60%
- What percent of 20 is 3? 15%

VI. In exercises 6 -8 use a tree diagram to write the prime factorization. Remember to make sure the factors are prime.

- 6.. $225 = 5 \times 5 \times 3 \times 3$ 7. $65 = 5 \times 13$ 8. $48 = 2 \times 2 \times 2 \times 2 \times 3$

VII. In exercises 9-11 find the GCF for the pair of numbers. (HINT: prime factorization) You may use your Pink Resource!

- 45 and 135 GCF = 45
- 45 and 75 GCF= 15
- 21 and 23 GCF = 1

VIII. Ratios, Proportions and Rates

Rewrite the quotient as a ratio. Then Simplify.

- $\frac{30 \text{ feet}}{24 \text{ inches}}$ = 30 feet/2 feet or 360 inches/ 24 inches
- $\frac{66 \text{ days}}{3 \text{ weeks}}$ = 66 days/21 days
- $\frac{56 \text{ weeks}}{2 \text{ years}}$ = 56 weeks/104 weeks

Solve the proportion using cross-multiplying or by examining the relationships.

- $\frac{4}{9} = \frac{w}{72}$ $w = 32$
- $\frac{10}{t} = \frac{2.5}{4}$ $t = 16$
- $\frac{63}{144} = \frac{t}{16}$ $t = 7$
- $\frac{30}{41} = \frac{w}{16}$ $w = 12$

Unit 5 Integers

Add or subtract.

- $12 - (-2) = 14$
- $15 - (-25) = 40$
- $-12 - (-10) = -2$
- $64 - (-4) = 68$
- $5 + - 3 = 2$
- $-9 + 5 = -4$
- $75 + (-25) = 50$

8. $-48 - 98 = -146$

9. $-215 - 584 = -799$

10. I am an integer. I am less than zero. When you subtract me from -5 the result is 0. What am I? -5 Solution $-5 - (-5) = 0$

Solve

11. $8(-2) = -16$

12. $-10 \cdot (-3) = 30$

13. $-36 \div -9 = 4$

14. $-56 \div 8 = -7$

Find the product or quotient

15. $-8 \times 0 = 0$

16. $(-2)(-9)(-1) = -18$

17. $95 \div (-5) = -19$

18. $-25 \div (-5) = 5$

In exercises 14-17 Complete the statement using $<$, $>$, or $=$

19. $-3 < |-3|$

20. $10 < |-11|$

21. $|-17| = |17|$

22. $150 > |100|$

Solve

23. $(-9)^2 = 81$

24. $(-3)^2 - (-1)^3 = 10$

25. $-(-4)^3 = 64$

Unit 6 Algebra

I. In exercises 1, 2, 3, and 4, evaluate the expression when $x = 6$, using order of operations.

1. $15 - x + 11 = 20$

2. $(4 + x) \cdot (x - 1) = 50$

3. $3^3 \cdot 10 + x = 276$

4. $x^2 + 10 - 6 = 40$

II. Solve for x

SHOW ALL OF YOUR WORK ON LINED PAPER! You must show all steps on lined paper with a check.

| |
|---|
| Example $X - 5 = 25$ $\frac{+5 \quad +5}{X = 30}$ Check $30 - 5 = 25$ |
|---|

1. $x + 19 = -45$

$x = -64$

check = $-64 + 19 = -45$

2. $-2 = x + 5$

$x = -7$

check = $-2 = -7 + 5$

3. $x - 9 = -10 + 5$

$x = 4$

check = $4 - 9 = -5$

4. $-18 + x = -26$

$x = -8$

check = $-18 + -8 = -26$

5. $x - 13 = 10 - 6$

$x = 17$

check = $17 - 13 = 4$

Evaluate the expression for $x = -4$

6. $-2x = 8$

7. $\frac{1}{4}(x) = -1$

8. $x \div (-2) = 2$

9. $-20 \div x = 5$

Unit 6 Word Problems and Miscellaneous

1. Matthew, Chris, and Trip soccer. They each scored the same amount of goals this season. If the boys scored a total of 24 goals, how many goals did each boy score? 8 each
 2. Owen's father worked thirty six hours one week and forty seven hours the next week. How many hours did he work during the two weeks? 83 hours for two weeks
 3. The space flight is expected to last 11,720 minutes. They are now 7,342 minutes into the flight. How many minutes remain? 4,378 minutes remain in the flight.
 4. What is 20% of 50 cars? 10 cars
 5. If I surveyed 50 fifth grades boys and 50% love math; how many students love math? 25 boys love math
 6. Jay bought shoes last night for \$60.00. They were on sale for 20% off. How much did the shoes cost on sale? \$48.00
 7. Jack Mac bought War hammer supplies for \$150.00. It was on sale for 25% off. How much is the discount? \$37.50 is the discount for the supplies
 8. You want to buy 4 sharpies. They sell for \$1.15 each. Tax in Maryland is 6%. How much do the 4 sharpies cost with tax? \$4.88
 9. How many days in 240 hours? 10 days
 10. How many inches in 4 yards? 144 inches
11. Find the perimeter. (Measure the length and width to the nearest 1/8 inch)
- L = $3\frac{1}{4}$ inches
W = $\frac{5}{8}$ inch
P = $7\frac{3}{4}$ inches
-
12. You spend $\frac{1}{9}$ of your allowance on a book and $\frac{1}{3}$ of your allowance on a CD and $\frac{5}{27}$ at the SP bookstore. Do you have more than half, half, or less than half of your allowance remaining? Explain by showing your number sentence. You have less than $\frac{1}{2}$ of your allowance remaining. $\frac{3}{27} + \frac{9}{27} + \frac{5}{27} = \frac{17}{27}$
 13. JT has a friend who is deaf and uses sign language to communicate. He can sign about 36 concepts per minute. How many concepts can he sign in 15 minutes? 540 concepts in 15 minutes
 14. William makes 4% commission on his sales at Lax World. For a \$70.00 purchase, how much commission does earn? \$2.80
 15. Computer disks are on sale for 25% off the regular price. This is a savings of \$15 per box. What is the regular price for a box? \$60
 16. This year, a starting salary at a computer company is \$25,000. Next year, the salary will increase to \$28,000. What is the percent of the increase in the starting salary? 12%.
 17. You deposit \$5,000 in a savings account that pays 5% interest. Find the interest you earn for a period of 6 months. \$125
 18. You borrow \$2000 from a bank. How much interest will you pay after 1 year at a rate of 16% \$320

Vocabulary

Match the vocabulary word with the definition or example

- | | |
|---------------------------------------|--|
| _k_1. factor | a. $(2 \times 3) \times 6 = 2 \times (3 \times 6)$ |
| _a_2. associative property | b. a fraction that is greater than or equal to one |
| _h_3. common denominator | c. The LCD of two or more fractions |
| _p_4. reciprocal | d. the number below the line in a fraction. |
| _i_5. Commutative property | e. a whole number and its fraction |
| _d_6. denominator | f. the smallest multiple of two or more denominators |
| _m_7. distributive property | g. the number of times a base is used as a factor |
| _g_8. exponent | h. the same denominator used in fractions |
| _l_9. multiple | i. $2 \times 3 = 3 \times 2$ |
| _b_10. improper fraction | j. per hundred |
| _c_11. least common denominator (LCD) | k. a number that divides another number evenly |
| _f_12. least common multiple (LCM) | l. 6, 12, 18, 20 are examples of _____ of 6 |
| _e_13. mixed number | m. $5(432) = 5 \times 400 + 5 \times 30 + 5 \times 2 = 2160$ |
| _n_14. numerator | n. the number above the line in a fraction |
| _j_15. percent | o. length x width is the formula for _____ |
| _q_16. perimeter | p. two numbers or fractions whose product is one |
| _o_17. area | q. the distance around a figure |

Recommended Resource:

Barron's Mathematics Study Dictionary by Frank Tapson (ISBN# 0-7641-0303-2)