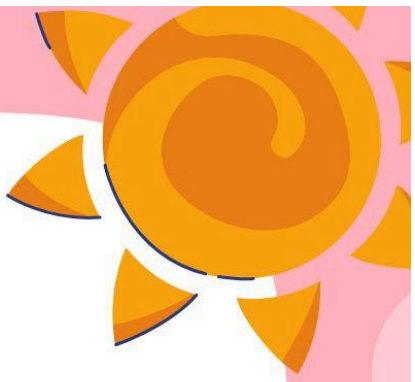
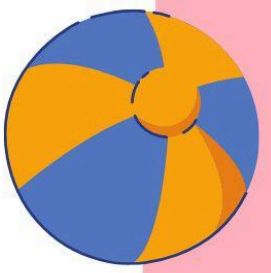




SUMMER MATH PACKET

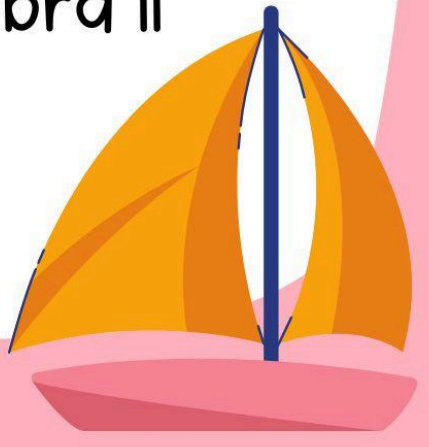


For students entering

7th Grade Pre-Algebra II





7th Grade Pre-Algebra II

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Write Numbers in Words and Digits

Hints/Guide:

In order to read numbers correctly, we need to know the order of each place value. The order is the following:

1,000,000 → one million	100,000 → one hundred thousand	10,000 → ten thousand	1,000 → one thousand	100 → one hundred
10 → ten	1 → one	0.1 → one tenth	0.01 → one hundredth	0.001 → one thousandth

So, the number 354.67 is read as, "three hundred fifty four and sixty-seven hundredths" and 3,500,607.004 is read as, "three million, five hundred thousand, six hundred seven and four thousandths." Please remember that the word "and" indicates the location of a decimal point in mathematics and should not be used anywhere else (for example, it is not correct to read 350 as "three hundred AND fifty," because "and" means a decimal point). Also, the term, "point," in mathematics is a geometry term and should not be used in naming numbers (for example, 3.5 is not three "point" five, but rather three and five tenths).

Exercises:

Write the number in word form.

1. 560.08 _____
2. 7.016 _____
3. 24.47 _____
4. 6,003 _____
5. 3,005,600.07 _____

Write the number in standard form (the number the name represents).

6. Forty-five thousandths _____

7. Seventeen and seven hundredths _____

8. Five million, three hundred thousand, twenty-nine and six tenths _____

9. Six million and five thousandths _____

10. Two hundred eight thousand, four _____

Rename Fractions, Percents and Decimals

Hints/Guide:

To convert fractions into decimals, we start with a fraction, such as $\frac{3}{5}$, and divide the numerator (the top number of a fraction) by the denominator (the bottom number of a fraction). So:

5⌐3.0 = 0.6 and the fraction $\frac{3}{5}$ is equivalent to the decimal 0.6.

OR 9⌐2.00 = 0.22.... and the fraction $\frac{2}{9}$ is equivalent to $0.\overline{2}$.

To convert a decimal to a percent, we multiply the decimal by 100 (percent means a ratio of a number compared to 100). A short-cut is sometimes used by moving the decimal point to places to the right (which is equivalent to multiplying a decimal by 100, so 0.6 x 100 = 60 and $\frac{3}{5}$= 0.6 = 60%.

To convert a percent to a decimal, we divide the percent by 100, $60\% \div 100 = 0.6$ so $60\% = 0.6$.

To convert a fraction into a percent, we can use a proportion to solve,

$\frac{3}{5} = \frac{x}{100}$, so $5x = 300$, which means that $x = 60 = 60\%$.

Exercises:

Rename each fraction as a decimal. No calculators!

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

Rename each fraction as a percent.

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

Rename each percent as a decimal.

13. $8\% =$

14. $60\% =$

15. $11\% =$

16. $12\% =$

17. $40\% =$

18. $95\% =$

Order Decimals

Hints/Guide:

To compare decimals and list them from least to greatest, it is easier to compare decimals that are the same place value. One process we can use to compare decimals is to include trailing zeros to make all of the decimals the same place value. For example, to put the following in order from least to greatest:

$0.3,\ 1.61, 0.006,\ 0.107 \rightarrow$ it's easier to compare these as:

$0.300,\ 1.610,\ 0.006,\ 0.107$ to achieve a correct order of $0.006,\ 0.107,\ 0.300,\ 1.610.$

and then return to the original form: $0.006,\ 0.107,\ 0.3,\ 1.61$

Exercises: **List each group of numbers in order from least to greatest.**

1. 20, 4, 0.6, 0.08

_____

2. 246.8, 248.6, 244.9, 246.5

_____

3. 1.03, 2.4, 0.89, 0.987

_____

4. 14.8, 2.68, 0.879, 8.47

_____

5. 5.3, 5.12, 5.38, 5.29

6. 54.89, 3.456, 64.4, 7.24

7. 4, 0.006, 0.8, 0.07

8. 297, 3.456, 64.4, 7.24

9. 794, 793.8, 794.65, 794.7

10. 9, 6.7, 7.24, 14

Add and Subtract Whole Numbers

Hints/Guide:

The key in adding and subtracting whole numbers is the idea of regrouping. If a column adds up to more than ten, then the ten digits of the sum needs to be included in the next column (the column to the left). Here is an example of the steps involved in adding:

	1	11	11
792	792	792	792
+158	+158	+158	+158
	0	50	950

For subtraction, regrouping involves transferring an amount from a higher place value to a lesser place value. For example →

$$\begin{array}{r} {\scriptstyle 1} \\ {\scriptstyle 3\ 4\ 1} \\ \not{4}\not{5}0 \\ -\ 178 \\ \hline 172 \end{array}$$

Exercises: **Solve. Show all work. No Calculators!**

1. 6,496 + 4,113 + 3,608

2. 54,398 + 64,508

3. 3,254 + 754 + 690

4. 54,678 + 7,123

5. 98,455 - 9,770

6. 14,789 - 908

7. 38,904 - 9,878

8. 908 - 774

9. 6,996 - 456

10. 12,987 - 3,499

Multiply and Divide Whole Numbers

Exercises: **Solve. No calculators!**

1. 742×17

2. 25×13

3. 659×7

4. 407×29

5. 81×5

6. $86 \overline{)2,236}$

7. $57 \overline{)13,338}$

8. $5 \overline{)205}$

9. $7 \overline{)1,463}$

10. $16 \overline{)3,840}$

Add Mixed Numbers

Hints/Guide: When adding mixed numbers, add the whole numbers and the fractions separately, then simplify the answer. For example,

$1\frac{1}{3} + 4\frac{2}{5}$

$1 + 4 = 5 \rightarrow$ add the whole numbers together

$\frac{1}{3} = \frac{5}{15} \rightarrow$ rewrite $\frac{1}{3}$ with a denominator of 15

$\frac{2}{5} = \frac{6}{15} \rightarrow$ rewrite $\frac{2}{5}$ with a denominator of 15

$\frac{5}{15} + \frac{6}{15} = \frac{11}{15} \rightarrow$ find the sum of the fractions

$5 + \frac{11}{15} = 5\frac{11}{15} \rightarrow$ add the fraction and whole number together $\rightarrow 5\frac{11}{15}$ is the final answer.

First, we convert the fractions to have the same denominator. Then, add the fractions and add the whole numbers. If needed, simplify the answer.

Exercises: Solve in simplest form. Show all work. No calculators!

1. $2\frac{1}{4} + 8\frac{1}{2}$

2. $3\frac{8}{15} + 7\frac{1}{3}$

3. $3\frac{3}{5} + 5\frac{1}{2}$

4. $5\frac{3}{8} + 4\frac{1}{4}$

5. $7\frac{3}{7} + 6\frac{1}{2}$

6. $5\frac{5}{9} + 1\frac{1}{3}$

7. $4\frac{1}{3} + 6\frac{1}{4}$

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

Add and Subtract Decimals

Steps:

1. Line up the decimals above each other. Add zeros so that all of the numbers have the same place value length.
2. Use the same rules as with adding and subtracting whole numbers.
3. Drop the decimal point in your answer.

Exercises: Solve. Show all work. Use a separate sheet of paper, if necessary. No calculators.

1. 15.7 + 2.34 + 5.06

2. 64.038 + 164.8 + 15.7

3. 2.6 + 64.89 + 4.007

4. 12.9 + 2.008 + 75.9

5. 543.8 + 27.64 + 6.9

6. 2.6 + 4.75

7. 6.45 + 54.9

8. 3.8 + 0.76 + 0.008

9. 87.4 − 56.09

10. 5.908 − 4.72

11. 68.9 − 24.74

12. 955.3 − 242.7

13. 695.42 − 44.79

14. 432.97 − 287.32

15.
$$\begin{array}{r} 78.9 \\ -\ 54.7 \\ \hline \end{array}$$

16.
$$\begin{array}{r} 43.905 \\ -\ \ 9.08 \\ \hline \end{array}$$

17.
$$\begin{array}{r} 200 \\ -\ \ 14.96 \\ \hline \end{array}$$

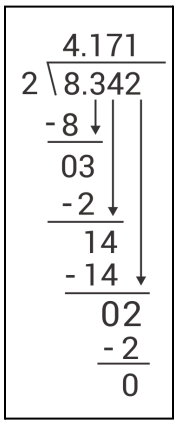
18.
$$\begin{array}{r} 15 \\ -\ \ 2.43 \\ \hline \end{array}$$

Multiply and Divide Decimals

To multiply decimals, the rules are the same as with multiplying whole numbers. Once the product is determined, the decimal point must be located. The decimal point is placed the same number of digits in from the right of the product as the number of decimal place values in the number being multiplied.

Example: To multiply 8.54×17.2, first remove the decimal points (854×172) and then, multiply. Since $854 \times 172 = 146888$, we then count the number of decimal places in the numbers being multiplied, which is 3. The final product has 3 decimal places in the answer (the decimal point is moved 3 places to the left) $8.54 \times 17.2 = 146.888$.

To divide decimals by a *whole number*, the process of division is the same but the decimal point is brought straight up from the dividend to the quotient. For example:



The decimal point moves straight up from the dividend to the quotient.

Exercises: Solve. Show all work. Use a separate sheet of paper, if necessary.

1. 63×0.14

2. 0.87×2.3

3. 8.94×2.1

4. 4.2×0.62

5. 34.5×4.7

6. $32.1 \times .45$

7. 91.4×47

8. 3.9×11

9. $35\overline{)70.35}$

10. $7\overline{)25.83}$

11. $14\overline{)45.584}$

12. $9\overline{)81.027}$

Find Percent of a Number

To determine the percent of a number, we must first convert the percent into a decimal by dividing by 100. The simple way to do this is by moving the decimal point two places to the *left* (example: 32% = 0.32). Then, multiply the decimal by the number.

For example, to find 45% of 240 → 45% × 240 = 0.45 × 240 = 108.

Exercises: Solve. Show all work. Use a separate sheet of paper, if necessary. NO calculators!

1. Find 30% of 450.
2. Find 7% of 42.
3. Find 10% of 231.
4. Find 15% of 54.
5. Find 65% of 320.
6. Find 80% of 64.
7. Find 9% of 568.
8. Find 15% of 38.
9. Find 25% of 348.
10. Find 6% of 42.
11. Find 90% of 750.
12. Find 4% of 480.

Find the Mean of a Data Set

To find the mean (*average*) of a set of numbers, first add together all of the numbers. Then, divide by how many numbers there are in the data set.

For example, if given the following test scores: 73, 87, 94, 84, 92, and 95, add them all together first. → 73 + 87 + 94 + 84 + 92 + 95 = 525. Take the total of 525 and divide by 6, since there are 6 test scores in the data set → 525 ÷ 6 = 87.5. The mean of the test scores is 87.5.

Exercises: Solve. Show all work.

1. Use the following chart to solve.

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	65°	68°	72°	74°	68°
2	68°	75°	80°	68°	75°
3	75°	74°	69°	79°	80°
4	80°	82°	76°	67°	79°

Find the mean (average) temperatures for:

a.) Monday: _____

b.) Tuesday: _____

c.) Wednesday: _____

d.) Thursday: _____

e.) Friday: _____

2. a.) If George has test scores of 85, 88, 92 and 87, what is his average score?

b.) Challenge: Using the same test scores for George, what would his fifth test score need to be to have an average (mean) grade of 90?

3. a.) If Tina's bowling scores were 120, 155, 145, 162 and 138, what was her average score?

b.) Challenge: What would Tina's score need to be in the sixth game if she wanted an average score of 145 over six games?

Solve Percent Problems

When solving percent problems, we apply the rules for finding percent of a number in realistic situations. For example, to find the amount of sales tax on a $450.00 purchase, take the sales tax rate of 5% and convert it to a decimal → 5% = 0.05. Then, multiply the sales tax rate by the purchase price → 0.05 × 450 = 22.50. Label your answer in dollars → $22.50.

Remember, when finding a tax or tip amount, those amounts are *added* to the original cost. When finding a discount on an amount, the discount amount is *subtracted* from the original cost.

Exercises: Show all work. Use a separate sheet of paper (if necessary) and staple to this page. No calculators.

1. Susie has just bought a pair of jeans for $45.00, a sweater for $24.00, and a jacket for $85.00. The sales tax is 5%. What is her total bill?

2. Jack bought a set of golf clubs for $250.00 and received a rebate of 20%. How much was the rebate?

3. A construction manager calculates it will cost $2,890 for materials for her next project. She must add in another 10% for scrap and extras. What will be the total cost?

4. The regular price for a PS5 video game system is $499.99 but it's on sale for 25% off. What is the amount of the discount?

5. Cindy earns 15% commission on all sales. On Saturday, she sold $980 worth of merchandise. What is the amount of commission she earned on Saturday?

6. The band had a fundraiser and sold $25,000 worth of candy. They received 40% of this amount for themselves. How much did they receive?

Integers I

Hints/Guides:

To add integers with the *same* sign (both positive or both negative), add their absolute values and use the same sign (*ex.* -3 + (-3) = -6).

To add integers of *opposite* signs, find the difference of their absolute values and then take the sign of the larger absolute value (*ex.* -9 + 6 = -3).

To subtract integers, add the opposite.

For example, 6 - 11 becomes 6 + (-11) = -5.

Exercises: Solve the following problems. No calculators.

1. 6 + (-7) = _____
2. (-4) + (-5) = _____
3. 6 + (-9) = _____
4. (-6) - 7 = _____
5. 6 - (-6) = _____
6. 7 - (-9) = _____
7. 5 + (-8) = _____
8. -15 + 8 = _____
9. 14 + (-4) = _____
10. -9 - (-2) = _____
11. -7 - 6 = _____
12. -8 - (-19) = _____

13. 29 - 16 + (-5) = _____
14. -15 + 8 - (-19) = _____
15. 45 - (-13) + (-14) = _____
16. -15 - 6 - 9 = _____
17. -7 + (-6) - 7 = _____
18. 29 - 56 - 78 = _____
19. 17 + (-7) - (-5) = _____
20. 45 - (-9) + 5 = _____

Integers II

Hints/Guides:

The rules for multiplying integers are:

positive • positive = positive negative • negative = positive

positive • negative = negative negative • positive = negative

The rules for dividing integers are the SAME as multiplying integers.

Exercises: Solve the following problems. No calculators.

1. $4 \bullet (-3) =$ _____

2. $(-12) \bullet (-4) =$ _____

3. $\frac{-15}{3} =$ _____

4. $\frac{28}{-4} =$ _____

5. $(-8)(-3) =$ _____

6. $\frac{-36}{-6} =$ _____

7. $6(-5) =$ _____

8. $8(-4-6) =$ _____

9. $-6(9-11) =$ _____

10. $\frac{(-5)(-6)}{-2} =$ _____

11. $\frac{6(-4)}{8} =$ _____

12. $\frac{-56}{2^3} =$ _____

13. $\frac{-6-(-8)}{-2} =$ _____

14. $-7 + \frac{4+(-6)}{-2} =$ _____

15. $45 - 4(5-(-3)) =$ _____

16. $(-4+7)(-5+3) =$ _____

17. $16 - (-3)(-7+5) =$ _____

18. $\frac{4+(-6)-5-3}{-6+4} =$ _____

19. $(-2)^3(-5-(-6)) =$ _____

20. $11(-9+7)+4 =$ _____