Table of Contents

Adding & Subtracting Decimals

Addition

> Find the decimal
> Line up the decimals
> Fill in empty spots with zero
> Add
> Bring down the decimal in your answer

← By place value
one with ones
tenths w/tenths

EXAMPLE

10.5 + 11.74

Rewritten with decimals lined up...

$$\begin{array}{r} {}^{1}10.50 \\ +\ 11.74 \\ \hline 22.24 \end{array}$$

Subtraction

> Find the decimal
> Line up the decimals
> Fill in empty spots with zero
> Subtract
> Bring down the decimal in your answer

EXAMPLE

12.7 - 9.23

Rewritten with decimals lined up...

$$\begin{array}{r} 12.{}^{6}7{}^{10}0 \\ -\ 9.23 \\ \hline 3.47 \end{array}$$

○○ Decimals Error Analysis #1 ○○

Look at the addition or subtraction problem. Identify the error and describe it. Share a strategy this student could use to prevent the same error in the future. Then, solve the problem correctly.

$$\begin{array}{r} {}^{1}3.{}^{1}984 \\ +\ 17 \\ \hline 4.001 \end{array}$$

← Whole

Identify and Explain the Error

They were the ones adding the zeros to the thousandths.

Share a strategy...

line up by place value

Rework the problem

$$\begin{array}{r} 3.984 \\ +\ 17.000 \\ \hline 20.984 \end{array}$$

347 ones

347.0

Anytime you have a # without a decimal add .0 behind the last #.

72.7 + 6.7

19.02 - 11.3

85.3 + 18.851

Johnny went to the store and purchased a set of markers for $2.89 and a notebook for $3.50. His mom gave him a $10.00. How much money did he have left after buying supplies?

Homework
8-9-18

Jems went to the mall and purchased a new belt for $17.99 and a pair of Sperry's for $59.95. How much did the items cost altogether?

$$\begin{array}{r} {}^{1}\,{}^{1}\,{}^{1} \\ 59.95 \\ +\ 17.99 \\ \hline \$77.94 \end{array}$$ spent altogether

If Jems also purchased a pair of no show socks for $3.75, how much would his new total be?

add to previous total

$$\begin{array}{r} {}^{1}\,{}^{1} \\ 77.94 \\ +\ 3.75 \\ \hline \$81.69 \end{array}$$ new total spent

Jems had $95.00 in his wallet when he left home to go to the mall. How much would he have left after buying all three items?

$81.69

$$\begin{array}{r} {}^{4}\,{}^{9} \\ 9\cancel{8}.\cancel{0}0 \\ -\ 81.69 \\ \hline \$13.31 \end{array}$$ left in his wallet

Sarah travels for work. Below is her mileage for the week.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
~~Miles~~	54.8	126.35	82.1	47.8	106.2

How much farther did he travel Friday than Monday?

Subtract F - M

$$\begin{array}{r} {}^{9}\,{}^{5}\,{}^{1}\,{}^{1}\,{}^{1}\,{}^{2} \\ 106.2 \\ -\ 54.8 \\ \hline 51.4 \text{ miles further} \end{array}$$

4

Multiplying with Decimals

Multiplication

> The number with most digits goes on top
> Decimals do not have to line up
> Multiply like normal
> Count how many places in first number the decimal is moved over
> Count how many places in 2nd number the decimal is moved over
> This is how many places you move the decimal in your answer

EXAMPLE

1.201 < 3 DECIMAL PLACES

X .25 < 2 DECIMAL PLACES

6005

24020

.30025 < 5 DECIMAL PLACES

1. The number with most digits goes on top.
2. Decimals do not have to line up, but numbers do.
3. Multiply like normal.
4. Count how many numbers are behind the decimal for 1st number.
5. Count how many numbers are behind the decimal for 2nd number.
6. This is how many numbers that should be behind the decimal in your answer.

(1) 1.430 × 5.5

1430

× 55

7150

+ 7150 (X)

78650

4# behind

(2) 54.3 × 0.03

543

× 3

1629

can leave off

(3) 0.17 × 0.005

17

× 5

0.00085

Dividing with Decimals

Division

> Divisor can not have a decimal
> Move the divisor decimal so it is a whole number
> Move the same amount of places in dividend
> Place a decimal straight up where you write your answer, rewrite problem
> Divide like normal

Balancing act

EXAMPLE

DIVISOR > $0.3\overline{)1.41}$

$$\begin{array}{r} 4.7 \\ 3\overline{)14.1} \\ -12 \\ \hline 21 \\ -21 \\ \hline 0 \end{array}$$

$$\begin{array}{r} \times 1.41 \\ 50\overline{)70.800} \\ -50 \\ \hline 208 \\ -200 \\ \hline 80 \\ -50 \\ \hline 300 \\ -300 \\ \hline 0 \end{array}$$

If the divisor is not a whole number, move decimal point to right to make it a whole number and move decimal point in dividend the same number of places. Divide as usual. Keep dividing until the answer terminates or repeats. Put decimal point directly above decimal point in the dividend.

Find the quotient.

$55.318 \div 3.4 \rightarrow 3.4\overline{)55.318}$ Write in standard form.

$3.4\overline{)55.318}$ Move decimal point in divisor and dividend.

$$\begin{array}{r} 16.27 \\ 3.4\overline{)55.318} \\ -34 \\ \hline 213 \\ -204 \\ \hline 91 \\ -68 \\ \hline 238 \\ -238 \\ \hline 0 \end{array}$$

Keep dividing until quotient repeats or comes out evenly.

Add zeros on right of dividend as needed.

The quotient is 16.27.

$$\begin{array}{r} \times 3.31 \\ 3.1\overline{)10.261} \\ -93 \\ \hline 96 \\ -93 \\ \hline 31 \\ -31 \\ \hline 0 \end{array}$$

6

Decimal Operation Practice

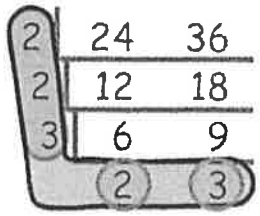
Greatest Common Factor 7

Use the Ladder for LCM, GCF and Simplifying Fractions

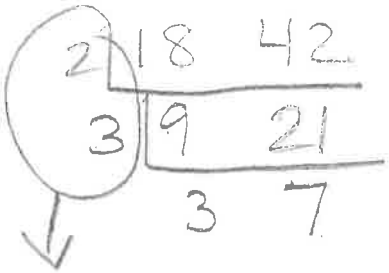
1. WRITE the two numbers on one line.
2. DRAW THE L SHAPE
3. DIVIDE out common prime numbers starting with the smallest
4. LCM makes an L: LCM = 2 • 2 • 3 • 2 • 3 = 72

GCF is down the left side: GCF = 2 • 2 • 3 = 12

Simplified fraction is on the bottom $\frac{24}{36} = \frac{2}{3}$



18 and 42 **30 and 48** 42 and 64

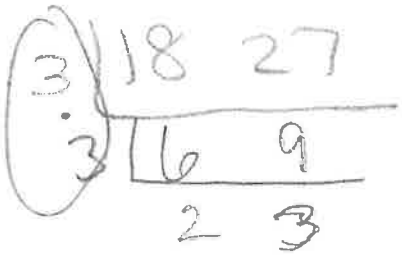


GCF = 6

1. Kiara baked 12 oatmeal cookies and 16 chocolate chip cookies to package in plastic containers for her friends at school. She wants to divide the cookies into identical containers so that each container has the same number of each kind of cookie. If she wants each container to have the greatest number of cookies possible, how many containers does she need?

2. Mrs. Jones has 18 boys and 27 girls in choir. She wants them to stand in equal rows. Only boys or girls will be in each row. What is the greatest number of students that can stand in each row?

GCF



3 x 3 = 9

students per row

Name _____

Lesson 33

COMMON CORE STANDARD CC.6.NS.4

Lesson Objective: Find the greatest common factor of two whole numbers.

Greatest Common Factor

A **common factor** is a number that is a factor of two or more numbers. The **greatest common factor**, or **GCF**, is the greatest factor that two or more numbers have in common.

Find the common factors of 9 and 27. Then find the GCF.

Step 1
List the factors of each number.
Factors of 9: 1, 3, 9
Factors of 27: 1, 3, 9, 27

Step 2
Identify the common factors.
Common factors of 9 and 27:
1, 3, 9

The greatest of the common factors is 9.
So, the GCF of 9 and 27 is 9.

You can use the GCF and the Distributive Property to express the sum of two numbers as a product.

Write 9 + 27 as a product.

Step 1
Write each number as the product of the GCF and another factor.

$9 = 9 \times 1$ $27 = 9 \times 3$

Step 2
Write an expression multiplying the GCF and the sum of the two factors from Step 1.

$9 \times (1 + 3)$

The product $9 \times (1 + 3)$ has the same value as $9 + 27$.

So, $9 + 27 = 9 \times (1 + 3)$.

Find the GCF.

1. 18, 45 _____
2. 33, 66 _____
3. 72, 96 _____
4. 50, 80 _____

Use the GCF and the Distributive Property to express the sum as a product.

5. 18 + 24 _____
6. 15 + 75 _____
7. 36 + 54 _____
8. 16 + 20 _____

Name _____

Lesson 33

CC.6.NS.4

1. Madison has 56 roses and 42 daisies to use in floral centerpieces for a party. Each centerpiece will have the same number of flowers and will contain only roses or only daisies. What is the **greatest** number of flowers that Madison can use in each centerpiece?

   (A) 14 (C) 7
   (B) 8 (D) 6

2. Manny wants to make necklaces from two pieces of jewelry wire that measure 60 inches and 36 inches. He will cut both lengths of jewelry wire into equal pieces that are as long as possible. Into what lengths should he cut the pieces of wire?

   (A) 20 inches (C) 4 inches
   (B) 12 inches (D) 3 inches

3. Mr. Gentry teaches two science classes. There are 28 students in his biology class and 21 students in his environmental science class. He divides both classes into equal-sized lab groups. Each science class has their own lab groups. What is the **greatest** number of students in each lab group?

   (A) 4 (C) 6
   (B) 5 (D) 7

4. Chauncey has two pieces of rope that measure 8 feet and 12 feet. He wants to cut the rope into equal pieces that are as long as possible. Into what lengths should Chauncey cut the pieces of rope?

   (A) 8 feet (C) 4 feet
   (B) 6 feet (D) 2 feet

Problem Solving REAL WORLD

5. Jerome is making prizes for a game at the school fair. He has two bags of different candies, one with 15 pieces of candy and one with 20 pieces. Every prize will have one kind of candy, the same number of pieces, and the greatest number of pieces possible. How many candies should be in each prize?

   _____

6. There are 24 sixth graders and 40 seventh graders. Mr. Chan wants to divide both grades into groups of equal size, with the greatest possible number of students in each group. How many students should be in each group?

   _____

Least Common Multiple

9

Multiples of 3:

0, 3, 6, 9, 12, 15, 18, 21, 24...

Multiples of 4:

0, 4, 8, 12, 16, 20, 24, 28 ...

The LCM of 3 and 4 is 12.

Finding the Least Common Multiple (LCM)

Example 1) Find the LCM of 12 and 15

Solution 1)

The multiples of 12 are 12, 24, 36, 48, 60, 72, 84.....

The multiples of 15 are 15, 30, 45, 60, 75, 90 .....

Answer: The LCM of 12 and 15 is 60

Solution 2)

The prime factors of 12 = 2 x 2 x 3

The prime factors of 15 = 3 x 5

LCM = 2 x 2 x 3 x 5 = 60

Find the LCM for each pair.

8 and 56 _____

12 and 30 _____

16 and 24 48

9 and 15 _____

2 | 16 24

2 | 8 12

2 | 4 6

2 . 3

During February, Kevin will water his ivy every third day, and water his cactus every fifth day.

a. On which date will Kevin first water both plants together?

_____

b. Will Kevin water both plants together again in February? Explain.

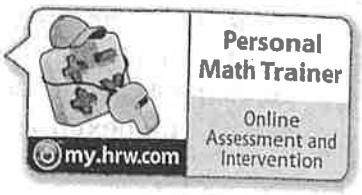
_____

_____

Name _____ Class _____ Date _____

2.2 Independent Practice

COMMON CORE 6.NS.4



Find the LCM of each pair of numbers.

3. 8 and 56 _____

4. 25 and 50 50

5. 12 and 30 _____

6. 6 and 10 _____

7. 16 and 24 _____

8. 14 and 21 _____

9. 9 and 15 _____

10. 5 and 11 55

11. During February, Kevin will water his ivy every third day, and water his cactus every fifth day.

a. On which date will Kevin first water both plants together?

_____

b. Will Kevin water both plants together again in February? Explain.

_____

_____

12. Vocabulary Given any two numbers, which is greater, the LCM of the numbers or the GCF of the numbers? Why?

_____

_____

_____

Use the subway train schedule.

13. The red line and the blue line trains just arrived at the station. When will they next arrive at the station at the same time?

In _____ minutes

14. The blue line and the yellow line trains just arrived at the station. When will they next arrive at the station at the same time?

In _____ minutes

15. All three trains just arrived at the station. When will they next all arrive at the station at the same time?

In _____ minutes

Train Schedule	
Train	**Arrives Every...**
Red line	8 minutes
Blue line	10 minutes
Yellow line	12 minutes

Distributive Property

1. Multiply the term outside of the parentheses by each term in the parentheses. To do this, you are essentially distributing the outer term into the inner terms.
2. Combine like terms. Before you can solve the equation, you will have to combine like terms.
3. Solve the equation.

Distributive Property Notes

istributive property: The sum of two addends multiplied by a number **is equal** to the sum of the roducts of each addend and the number.

xample: $5(3 + 4) = 5 \times 3 + 5 \times 4$

$5 \times 7 = 15 + 20$

$35 = 35$

note: the number 5 is being distributed or passed to the numbers on the inside of the parentheses)

ind each product. Use the distributive property. Show your work.

(7 + 3) = $2 \times 7 + 2 \times 3$ $14 + 6 = 20$

(5 + 4) = $8 \times 5 + 8 \times 4$ (① ③ ②) $40 + 32 = 72$

(6 + 9) = $5 \times 6 + 5 \times 9$

$30 + 45 = 75$