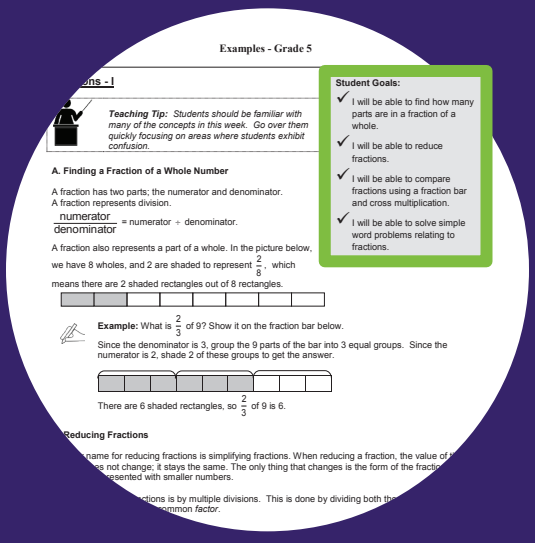
5th Grade Math

Curriculum Sample

A Grade Ahead's rigorous, year-round enrichment program will challenge your child to a higher academic standard. Our math material consists of two components: **numerical drills** and **curriculum**. Numerical drills are quick exercises that will improve your child's speed and accuracy in computational skills while our monthly curriculum includes mathematical topics that your child will see in school. Both numerical drills and curriculum work together to ensure a complete understanding and mastery of each topic.

The numerical drills and curriculum will each have an in-depth lesson (which we call Examples), as well as homework, and answers. In these next pages, we offer a closer look at what our examples, homework, and answers offer as well as a specific sample of both numerical drills and curriculum.



Examples - Grade 5

...ons - I

Teaching Tip: Students should be familiar with many of the concepts in this week. Go over them quickly focusing on areas where students exhibit confusion.

Student Goals:

- ✓ I will be able to find how many parts are in a fraction of a whole.
- ✓ I will be able to reduce fractions.
- ✓ I will be able to compare fractions using a fraction bar and cross multiplication.
- ✓ I will be able to solve simple word problems relating to fractions.

A. Finding a Fraction of a Whole Number

A fraction has two parts; the numerator and denominator.
A fraction represents division.

$\frac{\text{numerator}}{\text{denominator}}$ = numerator ÷ denominator.

A fraction also represents a part of a whole. In the picture below, we have 8 wholes, and 2 are shaded to represent $\frac{2}{8}$, which means there are 2 shaded rectangles out of 8 rectangles.

Example: What is $\frac{2}{3}$ of 9? Show it on the fraction bar below.

Since the denominator is 3, group the 9 parts of the bar into 3 equal groups. Since the numerator is 2, shade 2 of these groups to get the answer.

There are 6 shaded rectangles, so $\frac{2}{3}$ of 9 is 6.

Reducing Fractions

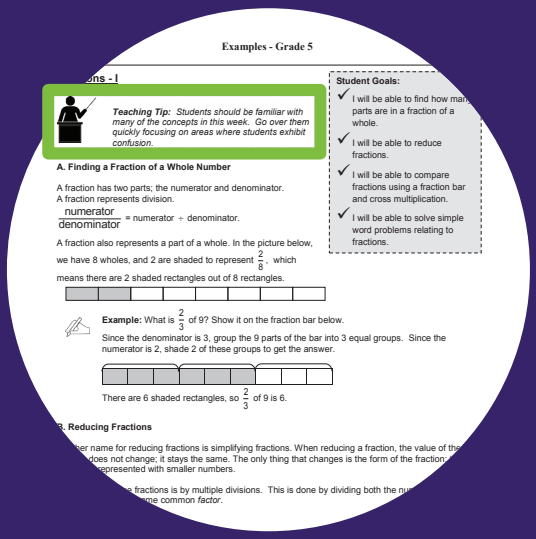
...name for reducing fractions is simplifying fractions. When reducing a fraction, the value of t... does not change; it stays the same. The only thing that changes is the form of the fractio... presented with smaller numbers.

...ctions is by multiple divisions. This is done by dividing both th... *common factor.*

Student Goals

Student goals are listed at the top right of the Examples each week. These are topics that your child should understand by the end of the week.

Lesson pages are titled "Examples – Grade 5," answer pages are titled "Answers – Grade 5," and homework pages are simply titled "Grade – 5."



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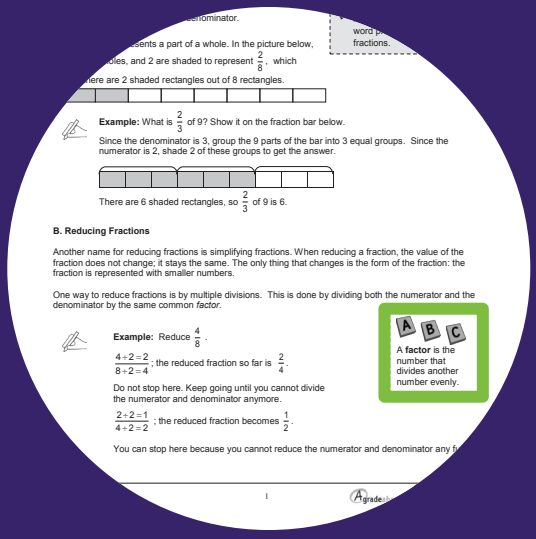
B. Reducing Fractions

Teaching Tip

Teaching tips are suggestions to help you or your teacher present the topic to your child. These could include topics to review first or even an activity to do with your child.



B. Reducing Fractions

Another name for reducing fractions is simplifying fractions. When reducing a fraction, the value of the fraction does not change; it stays the same. The only thing that changes is the form of the fraction: the fraction is represented with smaller numbers.

One way to reduce fractions is by multiple divisions. This is done by dividing both the numerator and the denominator by the same common *factor*.

Example: Reduce $\frac{4}{8}$.

$\frac{4\div2=2}{8\div2=4}$; the reduced fraction so far is $\frac{2}{4}$.

Do not stop here. Keep going until you cannot divide the numerator and denominator anymore.

$\frac{2\div2=1}{4\div2=2}$; the reduced fraction becomes $\frac{1}{2}$.

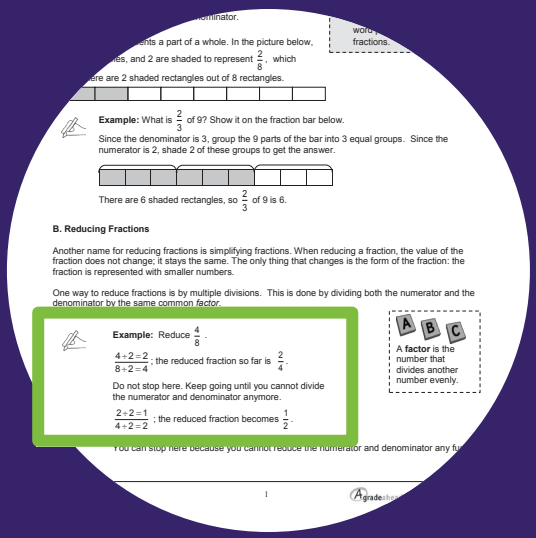
You can stop here because you cannot reduce the numerator and denominator any f

A **factor** is the number that divides another number evenly.

ABC Word Boxes

These word boxes define terms used within the lesson that your child may not know.

Each day's homework usually takes about 30 minutes to complete.



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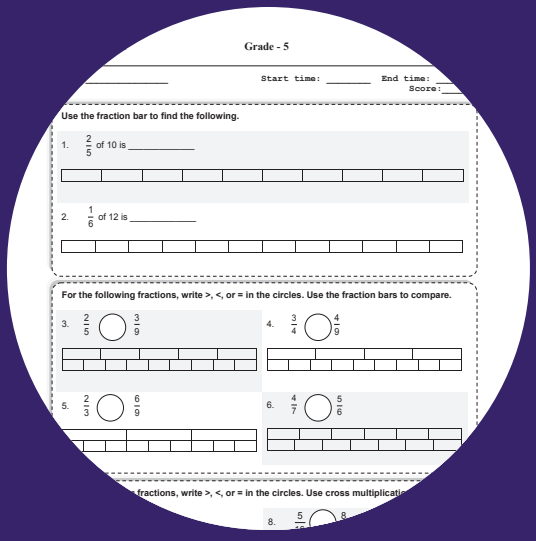
Examples

To illustrate the topic, examples are provided to you and your child. These examples help demonstrate how to solve the problem or figure out the answer.



Grade - 5

Start time: _____ End time: _____

Score: _____

Use the fraction bar to find the following.

1. $\frac{2}{5}$ of 10 is _____

2. $\frac{1}{6}$ of 12 is _____

For the following fractions, write >, <, or = in the circles. Use the fraction bars to compare.

3. $\frac{2}{5}$ ◯ $\frac{3}{9}$

4. $\frac{3}{4}$ ◯ $\frac{4}{9}$

5. $\frac{2}{3}$ ◯ $\frac{6}{9}$

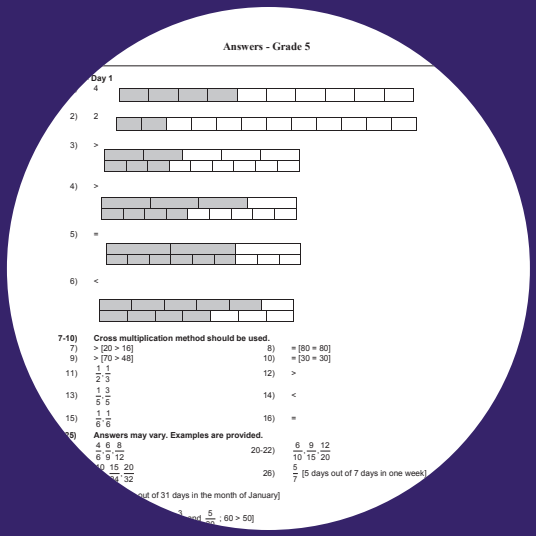
6. $\frac{4}{7}$ ◯ $\frac{5}{6}$

fractions, write >, <, or = in the circles. Use cross multiplicati

8. $\frac{5}{}$ ◯ 8

Homework

Each week, four days of homework are given to apply concepts from that week's lesson and reinforce the topic.



Answers - Grade 5

Day 1

4

2) 2

3) >

4) >

5) =

6) <

7-10) **Cross multiplication method should be used.**

7) > [20 > 16]

8) = [80 = 80]

9) > [70 > 48]

10) = [30 = 30]

11) $\frac{1}{2}$ $\frac{1}{3}$

12) >

13) $\frac{1}{5}$ $\frac{3}{5}$

14) <

15) $\frac{1}{6}$ $\frac{1}{6}$

16) =

25) **Answers may vary. Examples are provided.**

$\frac{4}{6}$ $\frac{6}{9}$ $\frac{8}{12}$

20-22) $\frac{6}{10}$ $\frac{9}{15}$ $\frac{12}{20}$

$\frac{10}{32}$ $\frac{15}{32}$ $\frac{20}{32}$

26) $\frac{5}{7}$ [5 days out of 7 days in one week]

out of 31 days in the month of January]

and $\frac{5}{20}$; 60 > 50]

Answers

Answers are provided to check your child's homework. Enter the scores into the Parent Portal to track progress and note which areas may need more work.

Day: 1

Fractions 2

(Time Goal: 10 minutes)

Score:____/24

Date: _____ Time Taken: _____

Add and subtract these fractions.

1. $\frac{4}{9} + \frac{7}{9}$
2. $\frac{5}{9} - \frac{4}{9}$
3. $\frac{7}{9} - \frac{3}{9}$
4. $\frac{6}{7} - \frac{5}{7}$
5. $\frac{8}{9} - \frac{5}{9}$
6. $\frac{2}{7} + \frac{4}{7}$
7. $\frac{5}{9} - \frac{2}{9}$
8. $\frac{2}{3} - \frac{1}{3}$
9. $\frac{6}{10} + \frac{4}{10}$
10. $\frac{2}{3} + \frac{1}{3}$
11. $\frac{1}{8} + \frac{2}{8}$
12. $\frac{6}{8} + \frac{1}{8}$
13. $\frac{3}{6} + \frac{1}{6}$
14. $\frac{2}{4} - \frac{1}{4}$
15. $\frac{3}{5} - \frac{2}{5}$
16. $\frac{7}{8} + \frac{5}{8}$
17. $\frac{3}{6} - \frac{1}{6}$
18. $\frac{6}{9} - \frac{3}{9}$
19. $\frac{3}{7} - \frac{2}{7}$
20. $\frac{4}{7} + \frac{2}{7}$
21. $\frac{3}{5} - \frac{1}{5}$
22. $\frac{5}{6} + \frac{3}{6}$
23. $\frac{4}{7} - \frac{2}{7}$
24. $\frac{3}{8} + \frac{2}{8}$

Answers – Fractions 2

Day: 1

1)	1 2/9	2)	1/9	3)	4/9
4)	1/7	5)	1/3	6)	6/7
7)	1/3	8)	1/3	9)	1
10)	1	11)	3/8	12)	7/8
13)	2/3	14)	1/4	15)	1/5
16)	1 1/2	17)	1/3	18)	1/3
19)	1/7	20)	6/7	21)	2/5
22)	1 1/3	23)	2/7	24)	5/8

Factors and Prime Factorization

Teaching Tip: *This week goes over factors and prime factorization. Use the student goals to help guide your lesson and be sure that students understand the vocabulary that is being used.*

Student Goals:

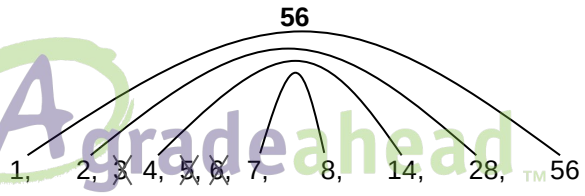
- ✓ I will be able to find factors of numbers.
- ✓ I will be able to find common factors between two or more numbers.
- ✓ I will be able to determine whether a number is a prime or composite number.
- ✓ I will be able to find the prime factorization of a number using the tree and division method.

A. Introduction

A *factor* is defined as a number that evenly divides another number. This means a factor will always evenly divide a number leaving no remainder.

Note: To find the factors of a number, start dividing the number by number 1 and continue until a factor is repeated.

Example: Write all the factors of 56.



56 ÷ 1 = 56

56 ÷ 2 = 28

56 ÷ 3 = ~~18R2~~ (not a factor since it has a remainder)

56 ÷ 4 = 14

56 ÷ 5 = ~~11R1~~ (not a factor since it has a remainder)

56 ÷ 6 = ~~9R2~~ (not a factor since it has a remainder)

56 ÷ 7 = 8

56 ÷ 8 = 7 (Stop here since 7 and 8 are repeated factors from the previous step)

The factors of 56 are 1, 2, 4, 7, 8, 14, 28, and 56.

Common factors: Common factors of two or more numbers are those factors that are shared by all numbers.

Example: Find the common factors of 24 and 36. Listing the factors of 24 and 36 will help determine the common factors.

24: 1, 2, 3, 4, 6, 8, 12, 24
36: 1, 2, 3, 4, 6, 9, 12, 18, 36

The common factors are 1, 2, 3, 4, 6, and 12 because they are shared between 24 and 36.

B. Prime and Composite Numbers

Prime and composite numbers are whole numbers.

A **prime number** is a number that has exactly two different factors: 1 and the number itself.

Example: 1, 2, 3, 5, 7, 11, 13, 17, etc.

Factors of 13 are 1, 13. There are exactly two factors, so it is a prime number, just like the other numbers listed above.

A **composite number** is a number that has more than two different factors.

Example: 4, 6, 8, 9, 10, 12, 14, 15, etc.

Factors of 9 are 1, 3, 9. There are 3 factors, so it is a composite number, just like the other numbers listed above.

Note: 0 and 1 are neither prime nor composite. 0 is neither prime nor composite because it has an endless number of factors. 1 is not prime, because it does not have exactly two different factors (the only factor of 1 is 1), and it is not composite because it does not have more than two factors.

C. Prime Factorization and Prime Factors

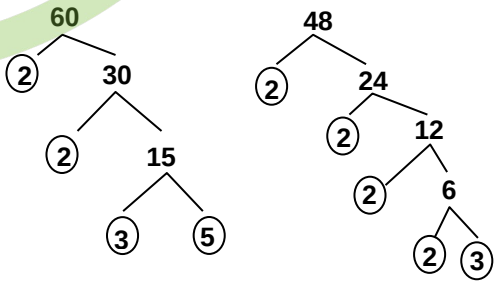
When 2 numbers are multiplied, the answer is called a **product**.

Every composite number can be expressed as a *product* of unique prime factors. This is called the **prime factorization** of the number. There are several methods you can use to find the prime factorization.

1. *Factor tree:*

Example: Using a factor tree, show the prime factorization of 60 and 48.

1. Write the number.
2. Write a pair of factors. (always try to divide by the smallest prime number first)
3. Continue to factor until all factors are prime.



The prime factorization of 60 is 2 × 2 × 3 × 5.
The prime factorization of 48 is 2 × 2 × 2 × 2 × 3.

Note: To check your prime factorization, multiply all the prime factors together. It should equal the original number. If it does not, your prime factorization is incorrect.

Example: 2 × 2 × 3 × 5 = 60

2. *Division Method:*

An additional way to find the prime factorization and prime factors is to list all prime number factors of a number. 1 as a factor is not included in the list.

Example: Perform prime factorization of 24 using the division method.

1. Divide 60 by smallest prime number, which is 2.

60 ÷ 2 = 30.

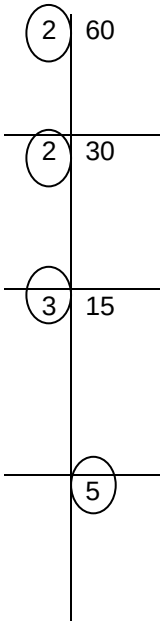
2. Continue the same step, divide 60 by the smallest prime number again, which is 2.

30 ÷ 2 = 15.

3. Continue the same step, divide 15 by the smallest prime number. Since 2 cannot divide 15 and produce a whole number, go to the next smallest prime number, 3.

15 ÷ 3 = 5

4. The number 5 is a prime number. Once you see a prime number, you can stop and make sure that this number is included in the answer of prime factorization.



5. The prime factorization of 60 is: 2 × 2 × 3 × 5. (The circled numbers).

Note: The prime factors of 60 are 2, 3, and 5. The duplicate in this example, 2 is repeated, so we delete the repeats, making only 2, 3, and 5 the prime factors.

There is a difference between the terms prime factorization and prime factors. In prime factorization, the products of all the factors must equal the number. A factor may be repeated if necessary. In listing the prime factors, duplicates are removed.

Note: This week, a few word problems will include interpreting the remainder. For example: 56 ÷ 5 = 11R1. In some cases, the remainder will force the quotient to be rounded up to 12, while in others, the remainder is dropped, and the answer remains 11. This depends on the interpretation of the remainder.

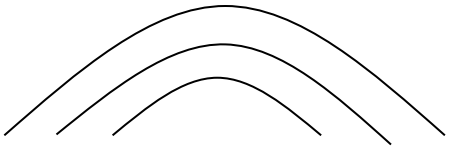
Date:_____ Start time:_____ End Time:_____
Score: _____/20

Write out all the factors of the following numbers.

1. **12**

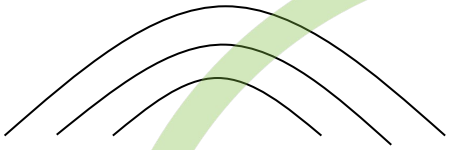
1, ____, ____ ____, ____, 12

2. **20**



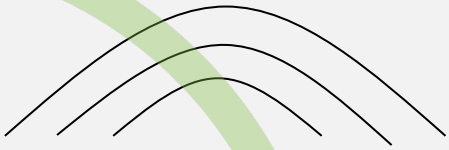
1, ____, ____ ____, ____, 20

3. **28**



1, ____, ____ ____, ____, 28

4. **45**



1, ____, ____ ____, ____, 45

Use the factor tree to write the prime factorization of the numbers in bold.	**Write the prime factors.** *[Hint: Write each prime number once from the numbers you just wrote. There should be no duplicates.]*
*Example: **18** = 2 x 3 x 3*	*2 and 3*
5. **12** =	6.
7. **20** =	8.
9. **45** =	10.

Write the factors, and then write the common factors between the two numbers.

Example:

***10** = 1, 2, 5, and 10*
***45** = 1, 3, 5, 9, 15, and 45*
Common Factors = 1 and 5

11. **18** = _____

12. **30** = _____ 13. Common Factors = _____

14. **24** = _____

15. **56** = _____ 16. Common Factors = _____

Word Problems:

17. In a park, there are 30 boys ready to play a new game. The game can only be played with 4 equal groups at most. What is the largest number of groups they can have? *[Hint: Find factors first and see the biggest, closest number to 4.]*

_____

18. How many boys are there in each group?

_____

19-20. **Interpret the remainder!** There are 453 students going to a field trip. How many busses are needed if each bus can carry 42 passengers? Show your work and explain your answer.

_____

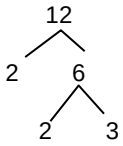
_____

_____

Week: 1 - Day 1

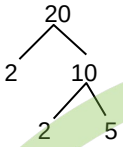
1) 2, 3, 4, 6
2) 2, 4, 5, 10
3) 2, 4, 7, 14
4) 3, 5, 9, 15

5) $2 \times 2 \times 3$



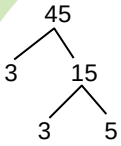
6) 2 and 3

7) $2 \times 2 \times 5$



8) 2 and 5

9) $3 \times 3 \times 5$



10) 3 and 5
11) 1, 2, 3, 6, 9, and 18
12) 1, 2, 3, 5, 6, 10, 15, and 30
13) 1, 2, 3, and 6
14) 1, 2, 3, 4, 6, 8, 12, and 24
15) 1, 2, 4, 7, 8, 14, 28, and 56
16) 1, 2, 4, and 8
17) 3 groups [Factors of 30: 1, 2, 3, 5, 6, 10, 15, and 30; 3 is closest to 4.]
18) 10 boys in each group [30 ÷ 3 = 10]
19-20) 453 ÷ 42 = 10 R 33; 10 busses will carry 42 students each, but for remaining 33 students, we will need an additional bus. Hence, the answer is 11 busses.