

Math 0995 CBE 1 Review

UtahStateUniversity®

Aggie**MathLearning**Center

CBE 1

Covers lessons 1-6,19

Factors

Fractions

Real
Numbers

Exponents

Order of
Operations

Algebraic
Expressions

Algebraic
Equations

Logarithms

Problem 1

- Find all factors of the number 36

Solution: 1, 2, 3, 4, 6, 9, 12, 18, 36

Factors

A factor is a number that divides another number exactly, with no remainder.

Example:

1,2,3,6 are all the factors of 6

Prime Factorization is writing a number as a product of prime numbers only.

Problem 2

- Find the prime factorization for 300

Solution: $2 \cdot 2 \cdot 3 \cdot 5 \cdot 5$

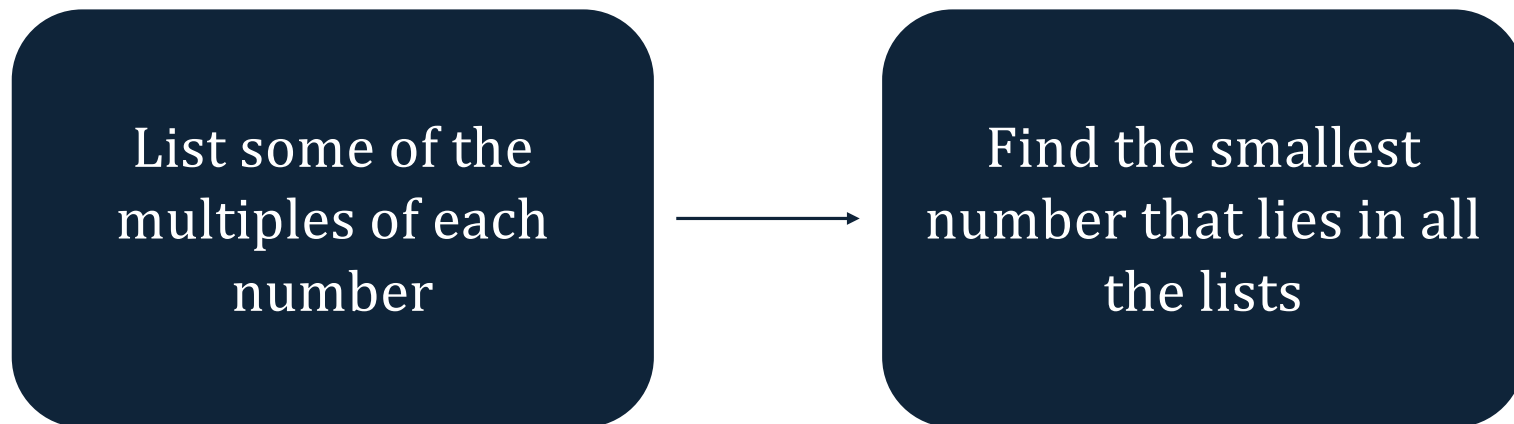
Problem 3

- Find the LCM of the following numbers: 3, 6, 8

Solution: 24

Least Common Multiple

The Least Common Multiple (LCM) of two or more numbers is the smallest number that is a multiple of all of them.



- Sometimes the LCM is one of the numbers in the given set!

Problem 4

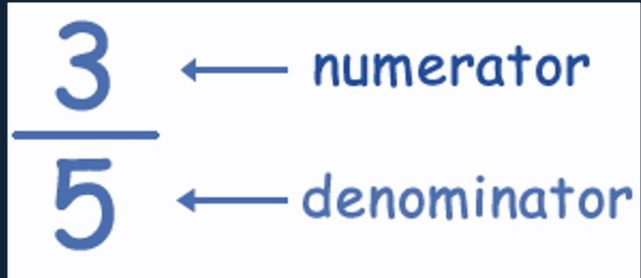
- Perform the indicated operation and give your answer in simplest form:

$$\frac{35}{24} \div \frac{15}{8}$$

Solution: $\frac{7}{9}$

Fractions

A fraction represents a part of a whole or division between two numbers.



The diagram shows the fraction $\frac{3}{5}$ inside a white box with a dark blue border. The number 3 is above a horizontal line, and the number 5 is below it. To the right of the 3, there is a blue arrow pointing left to the 3, followed by the text "numerator". To the right of the 5, there is a blue arrow pointing left to the 5, followed by the text "denominator".

$$\frac{3}{5}$$

← numerator

← denominator

Multiplying and Dividing Fractions

Multiplication

Multiply straight across

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{a \cdot c}{b \cdot d}$$

Division

Flip and multiply

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{a \cdot d}{b \cdot c}$$

- Tip: You can simplify while you are multiplying!

Problem 5

- Perform the indicated operation and give your answer in simplest form:

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

Solution: $\frac{5}{4}$

Adding and Subtracting Fractions

Find common denominator

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



Denominator stays the same

$$\frac{4 + 3}{12}$$



Add/subtract numerators

$$\frac{7}{12}$$

Problem 6

- Simplify the complex fraction. Give your answer in lowest terms.

$$\frac{\frac{-5}{6}}{\frac{1}{3} - \frac{1}{4}}$$

Solution: -10

Problem 7

- What number set(s) do the following numbers belong to?

-15.25 , 4 , π

Solutions:

- -15.25 : Rational Numbers, Real Numbers
- 4 : Natural Numbers, Whole Numbers, Integers, Rational Numbers, Real Numbers
- π : Irrational Numbers, Real Numbers

The Real Number System

Natural Numbers

$\{1, 2, 3, \dots\}$

No decimals, no fractions,
no negatives, and no 0

Whole Numbers

$\{0, 1, 2, 3, \dots\}$

No decimals, no fractions,
and no negatives

Integers

$\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$

No decimals and
no fractions

Rational Numbers

Any number that can be
written as a fraction

Irrational Numbers

Decimals that never
terminate and never repeat

Real Numbers

Any number that is
rational or irrational

Problem 8

- Simplify the following expression

$$(2y^4)(-5y^3)$$

Solution: $-10y^7$

Exponent Rules

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

$$(a^b)(a^c) = a^{(b+c)}$$

$$(a^b)^c = a^{(bc)}$$

$$\frac{a^b}{a^c} = a^{(b-c)}$$

$$a^{-b} = \frac{1}{a^b}$$

$$a^0 = 1$$

Problem 9

- Simplify the following expression. Write the result with no negative exponents.

$$\frac{(2x^{-1})^{-4}}{(2x)^2}$$

Solution: $\frac{x}{32}$

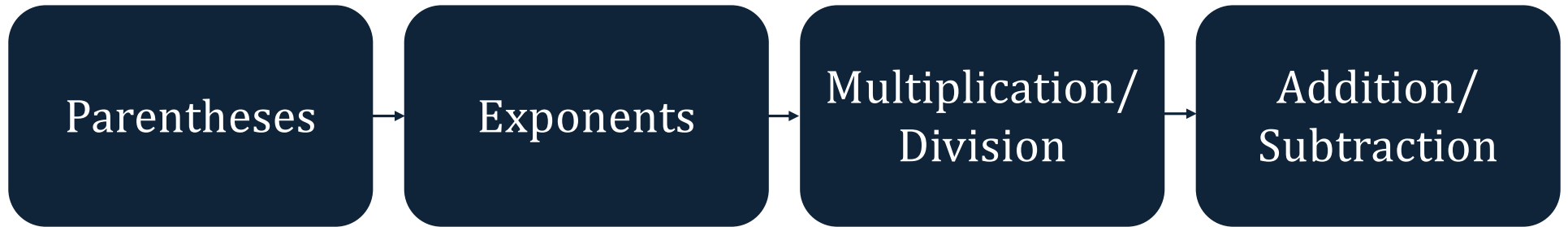
Problem 10

- Evaluate the following expression:

$$\frac{8 + |3 - 6| - 3^2}{8 - 4}$$

Solution: $\frac{1}{2}$

Order of Operations



- Reminder: Work left to right in the multiplication/division and addition/subtraction steps!

Problem 11

- Simplify the following expression:

$$2(4k - 1) - 5(k + 2)$$

Solution: $3k - 12$

Other Resources

Aggie Math Learning Center

- Visit usu.edu/math/amlc for more videos, resources, tutoring times, and recitation leader office hours

