

Fractions, Decimals, & Percents

Fractions, decimals, and percents are related.

Converting from one to another is EASY!!

Fraction to Decimal: The fraction bar is just division. So, divide the numerator by the denominator to get a decimal.

Fraction to Percent: Percent is always out of 100!

- If the denominator is 100 then the percent is the numerator.
- If the denominator is a factor of 100, then find the equivalent fraction
- If the denominator is not factor of 100, then turn the fraction into a decimal and multiply that decimal by 100.

DO NOT FORGET to add the % after each answer!!

Decimal to Percent: Multiply your decimal by 100 or you can just move your decimal point two place to the right!

DO NOT FORGET to add the % after each answer!!

Decimal to Fraction: Write it as you read it. Read the decimal using correct place value. EXAMPLE: 0.43, you would say "forty three hundredths" so you would write 43/100.

DO NOT FORGET to simplify your answer!!

Percent to Fraction: Drop the percent sign and place your number over 100, then simplify your fraction.

Percent to Decimal: Write your percent as a fraction (see above) and then convert the fraction to a decimal. Orrrrr you can drop the percent sign and move the decimal two places to the left. If you don't see your decimal it is located at the back of your number.

What's the Word

These key words can help you determine the correct operation.

Add: Sum, more than, deposit, credit, all together, increase

Subtract: Difference, below, spent, debit, withdraw, decrease

Multiply: Product, times, of, per

Divide: Quotient, out of, rate, share, split, per

Decimals

A decimal is a number that falls between two integers

Adding and Subtracting Decimals: You must line up your decimals when you add or subtract.

Multiplying Decimals: You do not need to line up the decimals. Multiply the numbers like you normally would (box method or traditional). After you get your answer go back and count the decimal places in the original numbers you started with. Then start from the last number of your answer; move your decimal to the left the number of places there were in your original two numbers.

Dividing Decimals (long division): If your divisor has a decimal then you will move the decimal to the back of the number (to the right). You will move the decimal in the dividend the same number of places (to the right) as the divisor. Move that decimal place up to your answer and divide normally.

Angles

Acute: measures less than 90°

Obtuse: measures greater than 90°

Right: measures exactly 90°

Straight: measures exactly 180°

Complementary Angles: Two angles are complementary if the sum of their angles is 90°

Supplementary Angles: Two angles are supplementary if the sum of their angles is 180°

Triangles: The sum of all the angles are 180°

Quadrilaterals: The sum of all the angles are 360°

Fractions

What is a fraction? A fraction is a number that represents a part of a whole. It is also called a ratio.

Example: $\frac{3}{4}$ = $\frac{3 \text{ parts}}{\text{whole (with 4 parts)}}$

A fraction bar means divide the numerator (top number) by the denominator (bottom number)

Adding and Subtracting Fractions: You must have common denominators.

Multiplying Fractions: Multiply straight across. Numerator times Numerator and Denominator times Denominator. Mixed numbers MUST be turned into improper fractions. You can cross simplify but never cross multiply. (KISS Method)

Dividing Fractions: Turn mixed numbers into improper fractions first. Keep the first fraction, switch the division sign to a multiplication sign; finally flip the last fraction (reciprocal). Then multiply across.

Formulas

Perimeter: The distance around an object (think fence around a garden)

Area: The space covered inside a 2 dimensional object (think grass inside of fenced in garden)

Volume: The space inside a 3 dimensional object (think water in a pool)

Surface Area: Space covered on 3 dimensional object (think wrapping paper on present)

Order of Operations

GEMDAS (New) or PEMDAS (Old School)

G-Grouping { () }

E-Exponents and Square Roots

M/D- Multiplication or Division (calculate the one you see first as you read from left to right)

A/S-Addition or Subtraction (calculate as you read from left to right)

Properties

Zero Property: Any number multiplied by zero is zero, $2 \times 0 = 0$

Identity Property: Any number multiplied by 1 or added to zero will equal that number.

$2 \times 1 = 2$ or $2 + 0 = 2$

Commutative Property: The order of numbers does not matter when adding and multiplying.

$2 + 1 + 2 = 1 + 2 + 2$ OR $1 \times 2 \times 2 = 2 \times 1 \times 2$

Distributive Property: Distribute the number on the outside of the parenthesis to all the numbers on the inside by multiplying.

$2(1 + 4) = 2(1) + 2(4)$

Inverse Property: When you multiply a number by it's reciprocal the product is one. When you add the opposite of a number to itself the sum is zero.

Associative Property: The order of numbers stays the same but the grouping changes when multiplying and adding.

$(1+2) + 3 = 1+ (2+3)$

Integers

An integers are all positive and negative whole numbers and zero.

Integers are not fractions or decimals.

Adding and Subtracting Integers:

Use a number line.

Multiplying and Dividing Integers:

Multiply and Divide normally.

- If you multiply or divide a negative and a negative the outcome will be a positive number.
- If you multiply or divide a negative and a positive the outcome will be a negative number.

HOW TO PLAY MATH GAMES WITH A DECK OF CARDS

❖ BASIC WAR (2 or more players):

1. Deal out all the cards.
2. Each player turns one card face up. The player with the greatest number wins all those cards; placing his own and all captured cards into his prisoner pile.
3. When the players have fought their way through the entire deck, count the prisoners. Whoever has captured the most cards wins the game.

TIE BREAKER ALERT!! Whenever there is a tie for greatest card, ALL PLAYERS battle: each player lays three cards face down, then a new card face up. The greatest of these new cards will capture everything on the table. Because all players join in, someone who had a low card may ultimately win the battle. If there is no greatest card this time, keep playing the TIE BREAKER until the tie is broken.

MORE GAMES!!

- ❖ **Product War**—Turn up two cards and multiply.
- ❖ **Fraction War**—Players turn up two cards and make a fraction, using the smaller card as the numerator. Greatest fraction wins the skirmish.
- ❖ **Integer Addition War**—Black cards are positive numbers; red cards are negative. The greatest sum wins. Remember that -2 is greater than -7 .
- ❖ **Integer Product War**—Black cards are positive numbers; red cards are negative. The greatest product wins. Remember that two negative numbers make a positive product.
- ❖ **Wild War**—Players turn up three cards and may do whatever math manipulation they wish with the numbers. The greatest answer wins the skirmish.
- ❖ **Advanced Wild War**—Black cards are positive numbers; red cards are negative numbers. Players turn up four cards (or five) and may do whatever math manipulation they wish with the numbers. The greatest answer wins the skirmish.

Reverse Wild War—Players turn up three cards (or four, or five) and may do whatever math manipulation they wish with the numbers. The answer with the lowest absolute value (closest to zero) wins the skirmish.



Order of Operations Dice Center Activity



Round #1	<input type="text"/>	²	+	<input type="text"/>	-	<input type="text"/>	=	<input type="text"/>		
Round #2	(<input type="text"/>	÷	<input type="text"/>)	+	<input type="text"/>	=	<input type="text"/>	
Round #3	<input type="text"/>	-	<input type="text"/>	+	<input type="text"/>	³	=	<input type="text"/>		
Round #4	<input type="text"/>	÷	<input type="text"/>	•	<input type="text"/>	=	<input type="text"/>			
Round #5	<input type="text"/>	+	(<input type="text"/>	-	<input type="text"/>)	²	=	<input type="text"/>
Round #6	<input type="text"/>	•	(<input type="text"/>	+	<input type="text"/>)	=	<input type="text"/>	
Round #7	<input type="text"/>	²	-	<input type="text"/>	³	+	<input type="text"/>	²	=	<input type="text"/>
Round #8	(<input type="text"/>	-	<input type="text"/>)	÷	<input type="text"/>	=	<input type="text"/>	
Round #9	<input type="text"/>	-	<input type="text"/>	÷	<input type="text"/>	=	<input type="text"/>			
Round #10	<input type="text"/>	+	<input type="text"/>	³	•	<input type="text"/>	=	<input type="text"/>		

