

It's *Not* All Greek to Me

An Introductory lesson for Math prefixes using the Magic Square

Overview:

Students will recognize prefixes that relate to numbers and use their creative abilities to extrapolate new words to describe numerical phenomena and definitions of unfamiliar words with and without a dictionary. They will be able to define and name the most common polygons and polyhedra found in geometry, as well as other Math terms.

Benchmarks:

3-4th Grades

Number, Number Sense and Operations

L. Use a variety of methods and appropriate tools for computing with whole numbers.

Geometry and Spatial Sense

- A. Provide rationale for groupings and comparisons of two-dimensional figures.
- E. Use attributes to describe, classify, and sketch plane figures.
- F. Develop definitions of classes of shapes

Mathematical Processes

- G. Recognize relationships among different topics within Mathematics.
- H. Represent problem situations in a variety of forms (words, or symbols)

5-7th Grades

Number, Number Sense and Operations

H. Use and analyze the steps in standard and non-standard algorithms for computing

Geometry and Spatial Sense

- D. Identify, describe and classify type of two-dimensional figures and three-dimensional objects using their properties.
- I. Identify and draw three-dimensional objects

Patterns, Functions and Algebra

A. Describe, extend, and determine the rule for patterns and relationships occurring in geometry applications.

Mathematical Processes:

B. Use more than one strategy to solve a problem, and recognize there are advantages associated with various methods.

8-10th Grades

Number, Number Sense and Operations

G. Estimate, compute and solve problems involving real numbers

Geometry and Spatial Sense

A. Formally define geometric figures

Mathematical Processes:

- A. Formulate a problem of mathematical model in response to a specific need or situation, determine information required to solve the problem, choose method for obtaining this information, and set limits for acceptable solution.
- E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.
- F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.

Materials:

Dictionaries

Laptops (dictionary.com)

Calculators

Copy of Magic Square (general, accelerated) per student

Math prefixes riddle page

Procedure:

1. Ask for recall of the job of a prefix.
2. Ask students to think of as many words as they can using the prefix bi- They will have one minute to write them down on scrap paper.
3. Ask for volunteers to share their lists.
4. Say, “What is the connection between an octagon and an octopus?”
5. Ask, “Do you have a hard time remembering definitions of words, or the names of polygons?”
6. Say, “There is an easy way of remembering specific Math words if you know their prefix meanings.”
 - a.
7. We will be performing an activity to help you discover the meaning of many Math prefixes.

Our activity today is a little twist on the old traditional way of matching definitions to their words, or word parts. Yes, we will need to discover prefix meanings using a dictionary, but we will be using a puzzle to sort the answers. By the time you are finished with this Magic Square puzzle you will not only discover the meaning of many Math Prefixes, but you will also discover a Magic Number.

8. Pass out the worksheets

Ask student to read Directions on the Magic Square worksheet.

9. “Say, “We will begin with our first prefix on the list: Nano”

Allow time for students to look up the meaning of nano.

A. Ask student to share their answer with the class and place the number 16 in Box A because definition number 16 is a match.

Explain once again, how the magic square “works”.

B. Allow students to work in pairs to complete the puzzle.

C. After @ 40 minutes-1hour review the answers and ask for the magic number to the puzzle.

D. Ask students if they can name some geometric figures or other Math terms using the prefixes. Allow time for response. (This is only an introduction to using prefixes to name geometric figures)

Assessment:

Teacher will observe students completing their puzzle, but also using the magic square strategy for unknown prefixes.

A prefix test will also be used for accuracy of answers

Extensions:

1. Math Prefixes Riddle worksheet

2. Use student Math glossaries to sort math terms under prefix headers.

3. Put students into groups and give them a card with a Math prefix written on it. Ask them to use manipulatives(Polyhedra, cubes, base ten blocks, etc..... to demonstrate at least two complete words that use their prefix.

4. Technology: Using PAINT, ask students to draw strange looking creatures from outer space with unusual number of legs, eyes, heads, or ears. Have the students come up with a name for the creatures based on number prefixes. Ex: A Triped Quadarmed Unieye.

Math Prefixes

A. nano-	1. six
B. micro-	2. ten(th)
C. bi, du, duo, do, dou	3. one thousand
D. giga-	4. billion 10^9
E. dec, deca, deci	5. millionth 10^{-6}
F. qua, quad, quadr, tetra	6. eight
G. sept, hept	7. seven
H. quin, quint, pent, penta	8. one
I. milli, mille	9. two
J. non, nov	10. nine
K. oct, octa, Octo	11. four
L. tri	12. many
M. cent	13. one hundred
N. un, uni, mono, solo	14. five
O. poly	15. three
P. hex, hexa-	16. billionth 10^{-9}

Math Prefixes

Name _____

Directions:

Look up the selected math prefixes in a dictionary. Match the prefix to its definition. Place the corresponding number of the definition in the proper space on the grid. The total numbers will be the same across each row, diagonally, and down each column. Find the magic number. You will have a test on these prefixes and their meanings Next Tuesday, May 2009.

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

The magic number is _____

Math Prefixes

<p>A. milli, mille B. exa C. zeta D. yotta E. bi, du, duo, do, dou F. mega G. tri H. xenna I. nano J. micro K. vendeka L. non, nov M. hex, hexa N. cent O. dec, deca, deci P. qua, quad, quadr, tetra Q. sept, hept R. tera S. poly T. peta U. oct, octa, Octo V. un, uni, mono, solo W. quin, quint, pent, penta X. pico Y. giga</p>	<p>1. decillion 10^{33} 2. quintillion 10^{18} 3. trillion 10^{12} 4. billionth 10^{-9} 5. billion 10^9 6. two 7. four 8. three 9. five 10. one hundred 11. many 12. millionth 10^{-6} 13. eight 14. nine 15. sextillion 10^{21} 16. octillion 10^{27} 17. trillionth 10^{-12} 18. ten(th) 19. one thousand 20. seven 21. one 22. six 23. septillion 10^{24} 24. quadrillion 10^{15} 25. million 10^6</p>
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A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y

The magic number is _____.

NAME _____

DATE _____

Math Prefixes



ONE: un or uni, mono, solo	TWO: bi, du or duo, do or dou
THREE: tri	FOUR: qua or quad or quadr, tetra or tetr
FIVE: quin or quint, pent or penta	SIX: sex, hex or hexa
SEVEN: sept or hept	EIGHT: oct or octa or octo
NINE: non or nov	TEN: dec or deca or deci
ONE HUNDRED: cent	ONE THOUSAND: mille or milli
MANY: poly	

1. Why is a **unicorn** called by that name?

2. If a **millipede** lived up to its name, how many legs would it have?

3. If a **tripod** has three legs, a **quadruped** has **four** legs and a **hexapod** has **six** legs, then a man could be called a _____

4. What makes a **monorail** a **monorail**?

5. If a **unicycle** has one wheel, a **bicycle** has two wheels and a **tricycle** has **three** wheels, then a car could be called a _____

6. A man with one wife is called a **monogamist**, a man with two wives is called a **bigamist**, and a man with many wives is called a **polygamist**.
What could you call a man with **six** wives?

7. What is wrong with the naming of the months **September**, **October**, **November** and **December**? _____

8. If there are four people in a **quartet**, five people in a **quintet**, and six people in a **sextet**, what would you call a group of **eight** musicians?

9. If you needed glasses with **three** different types of lens, what should you ask for?

10. In the Olympic Games the **Triathlon** has **three** events, the **Pentathlon** has **five**, and the **Decathlon** has **ten**. What would you call a contest of **seven** events?

11. **Double** is **two** times a number. **Triple** is **three** times a number. How many times is **nonuple**? _____

12. Since we call a **ten-sided** shape a **decagon**, an **eight-sided** shape an **octagon**, a **six-sided** shape an **hexagon**, and a **five-sided** shape a **pentagon**, can you suggest a different name for a **triangle**?

13. A **centurian** was a roman soldier in command of this many soldiers.

14. If a **monarchy** is **one** ruler leading a country, what is a **tetrarchy**?

15. An **octahedron** is a solid with **eight** faces and looks like a diamond. A **tetrahedron** has **four** triangular faces and looks like a pyramid. A **hexahedron** has square faces. What would it look like?

16. How many books are in the **Pentateuch**? _____

17. **Two** babies born together are called **twins**, **three** babies are **triplets** and **four** babies **quadruplets**. What might you call **ten** babies born at one time?

18. If an **octopus** loses one leg, what should he be called?

19. A **novena** is a special kind of prayer or devotion. According to the prefix, for how many days would you expect to repeat these prayers? _____

20. When the United States army is organized into **units**, dressed in **unique uniforms**, and gives a **unified** attack on the enemy, what number are they trying to be?

21. How many sides are there on a **pentagon**? _____

22. What part of the word "dominoes" tells you that each bone has **two** on it?

23. An **octagenarian** is someone who is **eighty** years old. What could you call someone who is **sixty** years old?

24. Something that happens every **two** years is said to be **biennial**. What would you call something that happens every **three** years? _____

25. At a musical audition, several groups are hoping to be booked for an upcoming rock concert. One group calls itself the **Fourplex** and another The Soul **Twins**. There is also **Triple** Play and a group known as **Quintessential**. Lastly there are the **Decamaniacs**.

If each of these groups has used correct prefixes,

(a) Which is the largest group? _____

(b) Which is the smallest group? _____

(c) What is the total number of members in attendance? _____