TITLE: NUMBER PREFIXES

SUJECT: Mathematics and English language.

OVERVIEW: Many students have a hard time remembering the names of various polygons and polyhedral, and usually see no connection between the language of mathematics and the language of the "real world." This exercise will help the students see how simply understanding prefixes can help them interpret the meaning of unfamiliar words, both mathematical and non-mathematical.

PURPOSE: This exercise will help students recognize the "number prefixes" used throughout the English language, and thus make it easier to remember the names of various geometric shapes and solids.

OBJECTIVE(s): Students will be able to:
1. Use a dictionary to gather appropriate information for writing simple definitions.
2. Identify prefixes, especially those that are related to numbers, such as mono-, bi- and tri-.
3. Use their creative abilities to extrapolate new words to describe numerical phenomena and definitions of unfamiliar words without the use of a dictionary.
4. Name or define the most common polygons and polyhedral found in geometry.

RESOURCES/MATERIALS: Each student should have:
1. A dictionary
2. Worksheets 1, 2 and 3, and a pencil.
3. A good imagination.

ACTIVITIES AND PROCEDURES:
1. This lesson can be introduced by quizzing the students on their knowledge of polygons, such as quadrilaterals, pentagons and octagons.
2. Ask the questions: "Is there an easy way of remembering these names?" "Do you notice anything about some of the endings of the words?" "What about the beginning of the words?" "What do we sometimes call the beginning of a word." "What is the connection between an octagon and an octopus?"
3. Give each student a dictionary and a Worksheet 1. Be sure to have them use a number in each definition.
4. At the end of Worksheet 1, have the students make a list on the board of all the prefixes they know that have a numerical meaning. Try to think of some other words that have these prefixes.
5. When doing Worksheet 2, students should freely use a dictionary to discover both new and familiar words with numerical connections. Watch out for such prefixes as "un-" and "non-" which may or may not indicate a numerical connection.
6. As you move around the classroom you should find plenty discussion in how the students one by one receive a new revelation of how words are formed.

7. Worksheet 3 should be done without a dictionary and should be treated as fun, not a test. Answers may   vary, as there are often several choices of prefixes and different vowels may be used. Some words are not in the English dictionary....yet.

TYING IT ALL TOGETHER:

Draw a strange looking creature from outer space with an unusual number of legs, eyes, heads, or ears. Have the student come up with a name for the creature based on" number prefixes." You could also have the students invent a name for their band based on what they have learned and create their own questions similar to Worksheet 3. Post the questions around the school or classroom.

WORKSHEET 1

NAME _____

DATE _____

MATH WORDS - Part 1

PART A: Use a dictionary to help you write a good
definition for each of these words.

Note: Be sure to include a number in your definition.

1. UNIQUE: _____
     _____

2. BIFOCALS: _____
     _____

3. TRIPLE: _____
     _____

4. QUADRILLE: _____
     _____

5. PENTATHLON: _____
     _____

6. HEXAGRAM: _____
     _____

7. SEPTET: _____
     _____

8. OCTOPUS: _____
     _____

9. NONAGON: _____

_____

10. DECADE: _____

_____

PART B:

Use the information in Part A to answer these questions.
HINT: Be sure to look at the prefix (the first 2 to 4 letters) of each word.

1. Athletes in the 'Decathlon' compete in this many Olympic events.   _____

2. How many pieces are in a 'bikini' bathing suit?   _____
3. If you walk around a 'quadrangle', in how many directions do you travel to?   _____

5. How many legs would you expect to find on a camera 'tripod'?   _____

6. A man who rides a 'unicycle' is riding on how many wheels?   _____

7. Would you expect a 'nonagenarian' to be 80-years-old or 90-years-old?   _____

8. The famous 'Pentagon' building has this many outside walls.   _____

9. A "Stop Sign" is shaped like an 'octagon.' How many sides does it have?   _____

10. An insect may be called a 'hexapod' because it has this number of legs.   _____

WORKSHEET 2
NAME _____
DATE _____

MATH WORDS - Part 2

Here are some common "number prefixes":

ONE: un or uni	TWO: bi
Mono	du or duo
solo	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 hept	EIGHT: oct or octa or octo
NINE: non nov	TEN: dec or deca or deci
ONE HUNDRED: cent ONE THOUSAND: mille or milli MANY: poly	

EXERCISE:

Using a dictionary and the list of prefixes above, write the definitions of 20 words that have "number prefixes." Try to get a good variety and use at least 5 different prefixes.

WORKSHEET 3

NAME _____
DATE _____

MATH WORDS - Part 3

NOTE: It should be possible to answer all these questions without the use of a dictionary.

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 centurion 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. Tow 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 on a pentagon?

_____

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

23. An octogenarian 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?   _____