

# CLIL MultiKey lesson plan

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## LESSON PLAN

**Subject:** Mathematics

**Topic:** Why prime numbers aren't perfect?

**Content aims:**

After completing the lesson, the student will be able to:

Define prime and composite numbers.

Distinguish a prime number from composite number.

Explain what the perfect number is.

Find the greatest common factor for two numbers.

**Language aims:**

After completing the lesson, the student will be able to:

Use new vocabulary within the topics.

Interpret and communicate mathematics in a variety of forms.

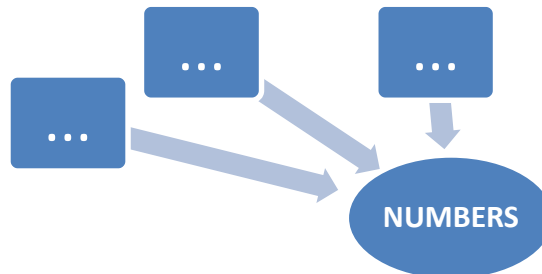
Discuss his or hers decisions about number properties.

Content-obligatory language	Content-compatible language
Whole numbers, natural numbers, real numbers; Odd numbers, even numbers; Prime number, composite number, perfect number; Divide, Divisors, divisible; Number theory; The greatest common factor; Integers;	To distinguish To factor To match Definition Positive, negative

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## Procedure

1. Students are working in 4-5 persons group. They are creating a brainstorm diagram with word NUMBERS.



After 5 minutes they are showing results in front of the whole class.

2. Pair work with worksheet. Students are asked to decide if sentences are true or false.

	TRUE OR FALSE
1. Every $n > 1$ is divisible by some prime	
2. Number 1 is a prime number	
3. Composite number is any natural number that is not a prime number.	
4. The only even prime number is 2.	
5. Every composite number can be factored into prime factors and each of these is unique in nature.	

Students are discussing their decisions.

3. Students are working in 4 groups. Each group is receiving the different worksheet with the same instruction: *“Find divisors of each number and next add these divisors together except the biggest one.”*

a) 6 Divisors: Result:	a) 9 Divisors: Result:
b) 84 Divisors: Result:	b) 42 Divisors: Result:

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<p>c) 105 Divisors: Result:</p>	<p>c) 496 Divisors: Result:</p>
<p>a) 8 Divisors: Result:</p> <p>b) 28 Divisors: Result:</p> <p>c) 612 Divisors: Result:</p>	<p>a) 4 Divisors: Result:</p> <p>b) 57 Divisors: Result:</p> <p>c) 228 Divisors: Result:</p>

In the next step students are asked to read three different definitions and find numbers described by it.

- 1) Two positive numbers are said to be relatively prime if they have no common factor other than 1.
- 2) A number is called a perfect number if by adding all the positive divisors of the number ( except itself), the result is the number itself.
- 3) A square number is a number you can write as a product of two equal factors of natural numbers.

4. Students are watching video about perfect numbers

<https://www.youtube.com/watch?v=PLL0mo5rHhk>

5. Students complete gap-fill to consolidate new vocabulary items. The gap-fill exercise may be given with or without the items in the box.

factors	relatively prime	the smallest	even
divisors	prime number	odd	composite number



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Some facts about numbers:

Except 0 and 1, a natural number is either a prime number or a .....

The only ..... prime number is 2. All other prime numbers are ..... . No ..... greater than 5 ends in a 5. Any number greater than 5 that ends in a 5 can be divided by 5. Perfect number is a number that is half the sum of all of its positive ..... ( including itself). 6 is ..... perfect number. Two prime numbers are always ..... If any two positive integers are relatively prime means both two numbers do not share any common ..... apart from 1.

4. Homework. Crossword: natural numbers