

Curriculum Links

TI-15 Explorer™: Function Machines & Factor That!

C

Year 7 Number/Working Mathematically

Statement of Learning Opportunities

- Identify and use factors of numbers including prime factors to assist mental computations.
- Students construct tables of values for functions given by simple rules and input–output function machines. They interpret simple functions informally by considering the set of input values and the corresponding set of output values.

Key Ideas

- Students identify square, prime and composite numbers. They identify factor sets and relate the number of factors of a number to that number being square, prime or composite.
- A prime number has only two factors (itself and one)
- A composite number has more than two factors

Key Vocabulary

Factor, Equation, Pronumeral, Square, Prime, Composite, Array

Lesson Overview

1. Students practise using the *problem-solver* feature on their calculator
2. Students will explore simple functions such as adding five to a series of numbers, using a function machine model and the Op1 and Op2 keys on the TI-15 Explorer™ calculator
3. Students will explore inverse operations
4. Students will explore what happens when two operations are combined, eg $+ 5 + 2$
5. Students will identify prime and composite numbers
6. Students will determine the prime factors of numbers
7. **Extension** work involving
 - a) Use of ? as a pronumeral in equations
 - b) Use of $? \times ? =$ to develop factors
8. Assessment

Equipment

TI-15 Explorer™ calculators for students, copies of Worksheets, Single Function Machines, Reverse Function Machines, Joining Function Machines

Sequencing

- Identify factors and multiples of some two- and three-digit numbers
- Investigate prime numbers, determine that they have exactly two factors and identify the prime numbers to at least 20

- Identify and use factors of numbers including prime factors to assist mental computations

- Use prime numbers and factor trees to express any natural number as a product of powers of primes

Indicators of Success

Students can:

- Discuss the idea of “operations” or functions being performed upon numbers
- Determine the output number from a “function machine” given the input number and the function
- Determine the input number from a “function machine” given the function and the output number
- Use a factor tree to find factors of a composite number
- Understand the meaning of factors, prime factors, square numbers, composite numbers
- Use “ $? \times ? =$ ” in the TI-15 Explorer™ “problem-solver” feature to investigate the number of factors a number has