**Cluster 1 –Factors and Products**

**Outcomes:**

**A1** – Demonstrate an understanding of factors of whole numbers by determining prime factors, LCM, GCF, square roots and cube roots

**A4** – Demonstrate an understanding of the multiplication of polynomial expressions

**A5** – Demonstrate an understanding of common factors and trinomial factoring

**Throughout this unit I will be increasing number sense and algebraic reasoning:**

* I can write a number as a product of its prime factors (A1)
* I can use prime factorization to determine the greatest common factor (GCF) of two numbers (A1)
* I can use prime factorization to determine the least common multiple (LCM) of two numbers (A1)
* I can use prime factorization to determine the square and cube root of a number (A1)
* I can multiply binomials and other polynomials (A4)
* I can factor trinomials of the form (A5):



**Unit 1 – Factors and Products**

**Lesson 1 - Factors and Multiples of Whole Numbers**





Write the prime factorization of 540

Try: Write the prime factorization of 3600



**The greatest common factor is:**

Determine the greatest common factor of 138 and 198

Try: Determine the greatest common factor of 126 and 144



**The least common multiple is:**

Determine the least common multiple of 18, 20 and 30

Try: Determine the least common multiple of 28, 42, 63





Try:



**Lesson 2 - Perfect Squares, Perfect Cubes and Their Roots**

**Perfect Square:**

The first 20 perfect squares are:

**Perfect Cube:**

The first 5 perfect cubes are:



Determine the square root of 1296

Try: Determine the square root of 1024



Determine the cube root of 1728

Try: Determine the cube root of 3375



A cube has a volume of 4913 cubic inches. What is the surface area of the cube?

Try: A cube has a volume of 12 167 cubic feet. What is the surface area of the cube?

**Lesson 3 - Multiplying Polynomials**





Try:





 Try: 



 



Try:



 

Try:

 



Expand and simplify:

 

## Activity: Factoring Polynomials Using Algebra Tiles

Use algebra tiles to factor each binomial. Draw a picture of your result. Write your answer in the space provided.

1. 3*x* + 9 2. 4*x* − 10

 Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. 3*x*2 + 4*x* 4. 10 − 5*x*

 Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. 3 − 9*x* 6. *x*2 − 5*x*

 Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. 2*x*2 + 6*x* 8. *x*2 + 5*x*

 Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Lesson 4 - Factoring a Greatest Common Factor**

**Factoring a polynomial means to break the polynomial down into the product of smaller polynomials (it’s the reverse of multiplying polynomials)**







Try:



**Lesson 5 – Factoring Quadratics The “Easy Way”**







Try:





 Try:



Try:

**Lesson 6 – Factoring Using Decomposition**





Try:



**Lesson 7 - Factoring Special Polynomials**







Try: 





Try:







Try:

