1. Determine the prime factorization of each of the following:
   a) 240   b) 800

   _____   _____

2. Use prime factorization to determine the greatest common factor and least common multiple of 25 and 60.

GCF=_____

LCM=_____

3. Use prime factorization to determine

   a) the square root of 784.

   _____

   b) the cube root of 5832.

   _____

4. Determine all perfect squares and perfect cubes between 500 and 700.

perfect squares:_____

perfect cubes:_____

5. Factor each of the following by removing the GCF:

a) $4x^3 - 6x$

b) $18x^4y^2 - 24x^3y^4 + 30x^5y^3$

6. Expand and simplify:

a) $(x+5)(x+3)$

b) $(x-3)(x+7)$

c) $(2x+5)(x-3)$

d) $(3x-1)(2x-9)$

7. Factor:

a) $x^2 + 8x + 12$

b) $x^2 - 9x + 20$

c) $x^2 - x - 42$

d) $x^2 - 10x + 9$

8. Factor using the method of decomposition:

a) $3x^2 + 16x + 5$

b) $3x^2 + 8x + 4$

c) $8x^2 - 10x - 3$

d) $9x^2 - x - 8$

9. Factor completely:

a) $3x^2 - 6x - 24$

b) $10x^2 + 25x + 10$

<u>Answers</u>

1a) $2^4 \cdot 3 \cdot 5$ b) $2^5 \cdot 5^2$

2. GCF=5   LCM=300

3a) 28   b) 18

4. perfect squares: 529, 576, 625, 676   perfect cube: 512

5a) $2x(2x^2 - 3)$ b) $6x^3 y^2 (3x - 4y^2 + 5x^2 y)$

6a) $x^2 + 8x + 15$ b) $x^2 + 4x - 21$ c) $2x^2 - x - 15$ d) $6x^2 - 29x + 9$

7a) $(x+2)(x+6)$ b) $(x+2)(x+6)$ c) $(x-7)(x+6)$ d) $(x-1)(x-9)$

8a) $(3x+1)(x+5)$ b) $(3x+2)(x+2)$ c) $(4x+1)(2x-3)$ d) $(9x+8)(x-1)$

9a) $3(x-4)(x+2)$ b) $5(2x+1)(x+2)$