Factoring

(1) The greatest common factor is the largest positive integer that divides evenly into a set of numbers.

Eg The GCF of 12 and 15 is 3
The GCF of 24 and 36 is 12
The GCF of 15 and 7 is 1
The GCF of 144, 64, 36, and 32 is 4

Find the GCF of these sets of numbers:

a)   72 and 54

b)   8 and 24

c)   80 and 100

d)   144 and 256

e)   45, 81 and 60

f)   10368 and 2160

(2) You can also find the GCF of algebraic expressions:

Eg The GCF of m^2 and m^3 is m^2
The GCF of xy^2 and x^2y is xy
The GCF of $6x^2y^3$ and $3x^3y$ is $3 x^2y$

Find the GCF of:

a) m^4 and m^2

b) $3k^5$ and $2k^2$

c) x^4y^3 and x^2y^7

d) $4xy$ and $2x^2y^2$

e) $3p^3q$, $12p^2q^2$ and $6p^3q^2$

f) $216x^2y^3$ and $96x^3yz^2$

(3) To "factor" an expression, you divide each term by the GCF. This is the exact opposite process of expanding by using the distributive property

Eg: Expand $3x(2x+1) \rightarrow 6x^2+3x$

Factor $6x^2+3x \rightarrow 3x(2x+1)$

Factor $12x^2+6x \rightarrow 6x(x+1)$

Factor $18x^4y+12x^3y^2 \rightarrow 6x^3y(3x+2y)$

Factor these expressions

1) $3x + x^2$

2) $5y + 25y^2$

3) $3k^2 + 18k$

4) $7k^3 + 35k^4$

5) $14x^2 + 35x$

6) $5xy^2 + 10x^2y^2$

7) $a^3 + 9a^2 + 3a$

8) $5m^2n^2 + 10m^3n^2 + 25m^2n$

9) $a(a+6) + 7(a+6)$

10) $2x(x+3) + 4(x+3)$