

# CAL1 Notes

## Factoring

Factor with respect to the set of integers.

1.  $\frac{3m^2}{3m} - \frac{27m}{3m}$  ← FIND THE GCF  
 $2m(m-9)$

2.  $n^2 - 6n - 40$  ← QUADRATIC TRINOMIAL  
 $(n-10)(n+4)$

1·40  
2·20  
4·10  
5·8 } FIND FACTORS OF 40 THAT SUBTRACT TO BE 6.

3.  $x^2 + 5xy - 14y^2$   
 $(x+7y)(x-2y)$

4.  $\frac{5a^2}{5} - \frac{40a}{5} + \frac{60}{5}$  ← ALWAYS LOOK FOR A GCF FIRST, THEN FACTOR.  
 $5(a^2 - 8a + 12)$   
 $5(a-6)(a-2)$

5.  $\frac{7a^2b^2}{b^2} + \frac{37ab^3}{b^2} - \frac{30b^4}{b^2}$   
 $b^2(7a^2 + 37ab - 30b^2)$  1·30  
2·15  
3·10  
 $b^2(a+6b)(7a-5b)$  6·5

6.  $\frac{6x^2y}{3xy} + \frac{15xy^3}{3xy}$   
 $3xy(2x + 5y^2)$

7.  $121x^2 - 49y^2$  ← DIFFERENCE OF TWO SQUARES  
 $(11x-7y)(11x+7y)$

8.  $\frac{100x^2}{4} + \frac{40x}{4} + \frac{4}{4}$  ← PERFECT SQUARE TRINOMIAL.  
 $4(25x^2 + 10x + 1)$   
 $4(5x+1)(5x+1)$   
OR  
 $4(5x+1)^2$

$$9. \frac{48x^2}{3} - \frac{3y^2}{3}$$

$$3(16x^2 - y^2)$$

$$3(4x+y)(4x-y)$$

$$11. \frac{10x^4}{5} - \frac{45x^2}{5} + \frac{50}{5}$$

$$5(2x^4 - 9x^2 + 10)$$

$$5(2x^2 - 5)(x^2 - 2)$$

$$13. \frac{4ah}{2a} + \frac{14ak}{2a} + \frac{10xh}{5x} + \frac{35xk}{5x}$$

$$2a(2h+7k) + 5x(2h+7k)$$

$$(2a+5x)(2h+7k)$$

$$15. 125x^3 + 27$$

$$(5x+3)(25x^2 - 15x + 9)$$

$$10. a^4 + a^2 - 30$$

$$(a^2+6)(a^2-5)$$

← THIS IS CONSIDERED A QUADRATIC TRINOMIAL

$$12. \frac{35a^3}{7a^2} + \frac{14a^2}{7a^2} - \frac{10a}{-2} - \frac{4}{-2}$$

$$7a^2(5a+2) - 2(5a+2)$$

$$(7a^2-2)(5a+2)$$

← FACTOR BY GROUPING.

$$14. 8 - 27x^3$$

← DIFFERENCE OF TWO CUBES.

$$(2-3x)(4+6x+9x^2)$$

$$16. -4 + 256m^3$$

← THIS IS STILL A DIFFERENCE OF TWO CUBES.

$$\frac{256m^3-4}{4} \quad \frac{4}{4}$$

$$4(64m^3-1)$$

$$4(4m-1)(16m^2+4m+1)$$