Combining All Methods of Factoring
(Cheat Sheet)

1. Factor out the GCF. $4x^2 - 2x$
$= 2x (2x - 1)$

2. Look for DOTS (binomial) pattern: $a^2 - b^2$
$= (a + b) (a - b)$

3. If a trinomial:

Is it a Perfect Square Trinomial? $4x^2 + 12x + 9$
$= (2x + 3)^2$

Is the leading coefficient 1?

Yes – fast way $x^2 + 9x - 10$
$= (x + 10) (x - 1)$

No – Grouping $5x^2 - 7x + 2$
$= 5x^2 - 5x - 2x + 2$
$= 5x (x - 1) - 2 (x - 1)$
$= (5x - 2) (x - 1)$

Throw Away $5x^2 - 7x + 2$
$= (5x - 5) (5x - 2)$
$= (x - 1) (5x - 2)$

or Guess and Check $5x^2 - 7x + 2$
$= (x - 1) (5x - 2)$

4. Make sure that each (factor) is prime. (It won't break down any farther)

$3x (2x + 7) (3x - 6)$
Not prime b/c you can factor out a 3
$= 3 * 3x (2x + 7) (x - 2)$
$= 9x (2x + 7) (x - 2)$

Factor Completely.

1. $3x^3 - 12x$ 2. $5m^3 - 45m$ 3. $3x^2 + 6x - 45$

This document is 100% funded by the MoSTEMWINs $19.7 million grant from the U.S. Department of Labor, Employment and Training Administration (TAACCCT). The product was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.