

Factoring Mix-up

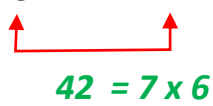
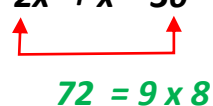
Thus far, we have focused on a specific type of factoring.

Now we will mix all 4 methods up so that we start to recognize the types

Things to watch for:

- 2 terms is a GCF or a difference of squares
- 3 terms – look at x^2 term if no number in front ... just factor $(x + \quad)(x + \quad)$
 - If a number in front could be a GCF or more likely its decomposition

Factor the following

- | | | | |
|---|--|--|--|
| a) | $9x^2 - 18x$ | <i>18 not a perfect square ... GCF</i> | $\rightarrow 9x(x - 2)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| b) | $x^2 - 2x - 48$ | <i>3 terms 2 # x 48 add -2 ... -8 x 6</i> | $\rightarrow (x - 8)(x + 6)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| c) | $45x^2y - 12xy$ | <i>all those x's and y's GCF ... only choice</i> | $\rightarrow 3xy(15x - 4)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| d) | $x^2 - 15x - 54$ | <i>3 terms 2 # x 54 add -15 ... -18 x 3</i> | $\rightarrow (x - 18)(x + 3)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| e) | $49x^2 - 144$ | <i>2 perfect squares</i> | $\rightarrow (7x - 12)(7x + 12)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| f) | $3x^2 - x - 14$
 | <i>No GCF</i> | $3x^2 - 7x + 6x - 14$
$x(3x - 7) + 2(3x - 7)$ |
| | | | $\rightarrow (3x - 7)(x + 2)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| g) | $2x^2 + x - 36$
 | <i>No GCF</i> | $2x^2 + 9x - 8x - 36$
$x(2x + 9) - 4(2x + 9)$ |
| | | | $\rightarrow (2x + 9)(x - 4)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| h) | $2x^2 - 2x + 14$ | <i>GCF of 2</i> | $\rightarrow 2(x^2 - x + 7)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| i) | $x^2 - 2x - 80$ | <i>3 terms 2 # x 80 add -2 ... -10 x 8</i> | $\rightarrow (x - 10)(x + 8)$ |
| <hr style="border-top: 1px dashed black;"/> | | | |
| j) | $x^{10} - 1$ | <i>2 perfect squares</i> | $\rightarrow (x^5 - 1)(x^5 + 1)$ |

Assignment = worksheet

A mix-up of factoring techniques

Factor the following – they all factor in some way and all 4 techniques will be used

a) $8x^2 - 12x$

b) $4x^3 - 2x^2 - 6x$

c) $x^2 + 6x + 8$

d) $x^2 - 4x - 45$

e) $x^2 - 15x + 54$

f) $x^2 - 9x - 90$

g) $x^2 - x - 20$

h) $x^2 - 7x + 12$

i) $81 - 4x^2$

j) $4x^2 - 7x + 3$

k) $6x^2 - 13x - 5$

l) $4x^2 - 5x - 6$

m) $64x^2 - y^2$

n) $8x^3 - 8x^2$

o) $x^2y^2 - xy - 6$

p) $6x^2 - 31x + 5$

q) $28x^2 + 9x - 4$

r) $urax^2 - qt\pi x^2$

s) $y^4 - x^2$

t) $9x^6 - 49x^2$

u) $21x^2 + 8x - 4$

v) $x^2y^2 - 2xyzp - 8z^2p^2$

w) $x^6 - 3x^3y - 54y^2$

x) $4x^2 + 12x + 9$

y) $20x^2 + 11x - 3$

z) $25x^2 - 70x + 49$

π) $21x^2 + 8x - 4$

2) *Explain why you can't factor*

a) $x^2 + 9$

b) $x^2 + 9x + 10$

c) $2x^2 - x + 10$

3) *factor*

a) $8x(x^2 + 4) - 5(x^2 + 4)$

b) $17x(x^2 - x - 12) - 2(x^2 - x - 12)$