FACTOR:

① $4n^3 - 8n^2$

$4 \cdot n \cdot n \cdot n - 4 \cdot 2 \cdot n \cdot n$

$4n^2(n-2)$

② $x^2 - x - 6$ * to -6

Add to -1

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

③ $2x^2 + 14x - 16$

$2(x^2 + 7x - 8)$

$2(x+8)(x-1)$

④ $-x^2+3x+54$

$-1(x^2-3x-54)$

$-1(x-9)(x+6)$

Factor by Grouping

★ 4 terms ★

Ex. $7x^3+5x^2+56x+40$

no GCF

$7x^3+5x^2+56x+40$

$x^2(7x+5)+8(7x+5)$

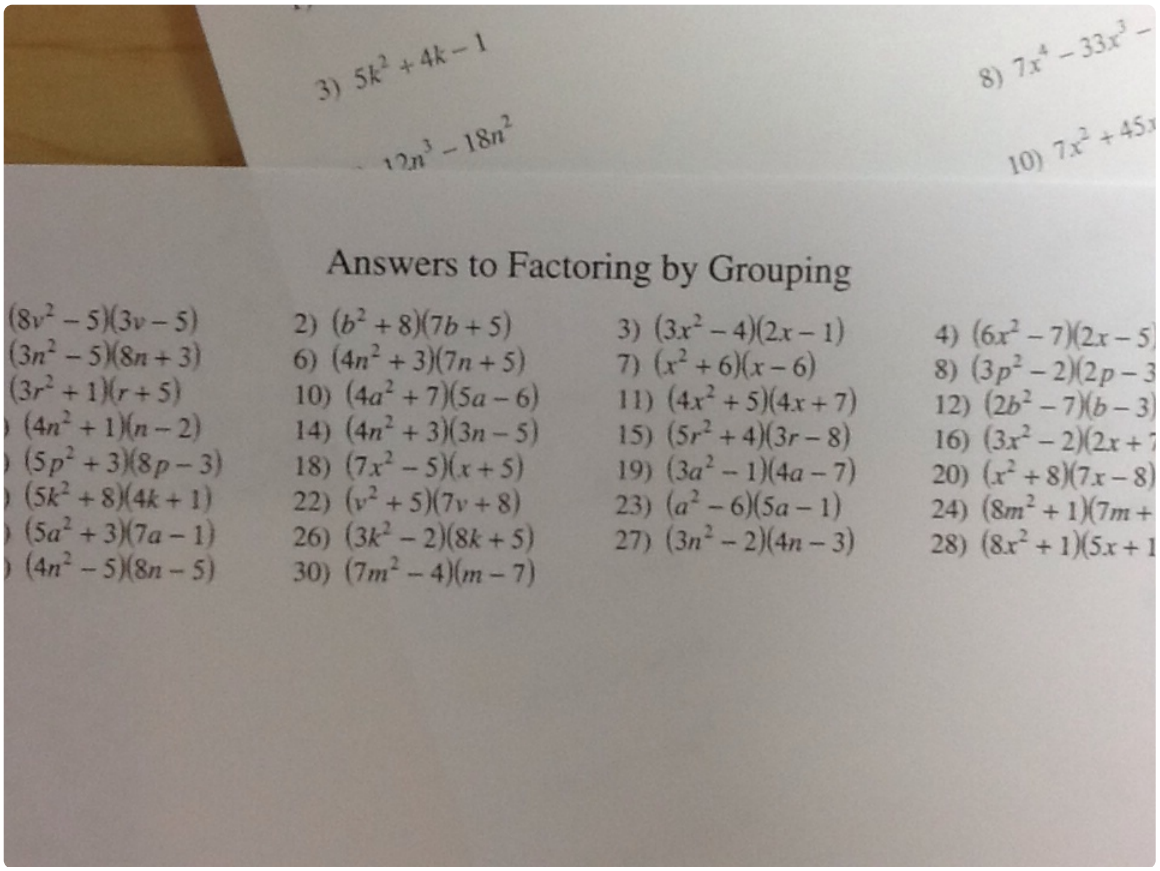
$(7x+5)(x^2+8)$

↓ if we multiplied this out, we get $7x^3+5x^2+56x+40$

Ex. $24x^3 + 9x^2 - 40x - 15$ no gcf

$3x^2(8x+3) - 5(8x+3)$

$(8x+3)(3x^2-5)$



3) $5k^2 + 4k - 1$

$12n^3 - 18n^2$

8) $7x^4 - 33x^3 -$

10) $7x^2 + 45x$

Answers to Factoring by Grouping

$(8v^2 - 5)(3v - 5)$
$(3n^2 - 5)(8n + 3)$
$(3r^2 + 1)(r + 5)$
$(4n^2 + 1)(n - 2)$
$(5p^2 + 3)(8p - 3)$
$(5k^2 + 8)(4k + 1)$
$(5a^2 + 3)(7a - 1)$
$(4n^2 - 5)(8n - 5)$

2) $(b^2 + 8)(7b + 5)$
6) $(4n^2 + 3)(7n + 5)$
10) $(4a^2 + 7)(5a - 6)$
14) $(4n^2 + 3)(3n - 5)$
18) $(7x^2 - 5)(x + 5)$
22) $(v^2 + 5)(7v + 8)$
26) $(3k^2 - 2)(8k + 5)$
30) $(7m^2 - 4)(m - 7)$

3) $(3x^2 - 4)(2x - 1)$
7) $(x^2 + 6)(x - 6)$
11) $(4x^2 + 5)(4x + 7)$
15) $(5r^2 + 4)(3r - 8)$
19) $(3a^2 - 1)(4a - 7)$
23) $(a^2 - 6)(5a - 1)$
27) $(3n^2 - 2)(4n - 3)$

4) $(6x^2 - 7)(2x - 5)$
8) $(3p^2 - 2)(2p - 3$
12) $(2b^2 - 7)(b - 3)$
16) $(3x^2 - 2)(2x +$
20) $(x^2 + 8)(7x - 8)$
24) $(8m^2 + 1)(7m +$
28) $(8x^2 + 1)(5x +$

(2) $7b^3 + 5b^2 + 56b + 40$

$b^2(7b+5) + 8(7b+5)$

$(7b+5)(b^2+8)$

(7) $x^3 - 6x^2 + 6x - 36$

$x^2(x-6) + 6(x-6)$

$(x-6)(x^2+6)$

20 → total problems from WS

Factor:

① $12a^4 + 40a^3$

$4a^3(3a + 10)$

② $1x^2 - 10x + 21$

$(x-3)(x-7)$

③ $2x^2 - 8x - 24$

$2(x^2 - 4x - 12)$

$\boxed{2(x-6)(x+2)}$

FACTOR by GROUPING

4 terms

$x^3 - 6x^2 + 6x - 36$

no overall GCF

$x^2(x-6) + 6(x-6)$

$x-6 \qquad x-6$

$(x-6)(x^2+6)$

check by multiplying.

$x^3 + 6x - 6x^2 - 36$

Ex. $28x^3+20x^2+21x+15$

$4x^2(7x+5)+3(7x+5)$

$(7x+5)(4x^2+3)$

Ex.

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

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

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

$2x^3-6x^2-7x+21$

$2x^2(x-3)-7(x-3)$

$(x-3)(2x^2-7)$