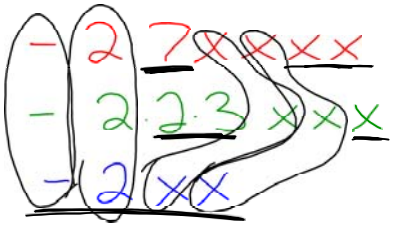
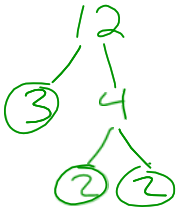
Factor by Grouping

Factoring with GCF

$-14x^4 - 12x^3 - 2x^2$





$-2xx$

$-2x^2(7x^2+6x+1)$

$-14x^4 - 12x^3 - 2x^2$ ✓

Factoring out a Common Binomial

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

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

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

$-t^3(t^2 + 4) + (t^2 + 4)$

$-t^3(t^2+4) + 1(t^2+4)$

$(t^2+4)(-t^3+1)$

$4x(z^2 - 7) + 9(2z^3 + 1)$

$22x(z^2-7)$ cannot factor further

$33(2z^3+1)$

Try These!!

5. $4s(s + 6) - 5(s + 6)$

6. $3x(y + 4) - 2y(x + 4)$

7. $7x(2x + 3) - (2x + 3)$

Try These!!

5. $4s(s + 6) - 5(s + 6)$

$(s+6)(4s-5)$

6. $3x(y + 4) - 2y(x + 4)$

$(y+4)(3x-2y)$

7. $7x(2x + 3) - (2x + 3)$

$(2x+3)(7x-1)$

Factoring by Grouping

$(6h^4 - 4h^3) + (12h - 8)$

$2((3h^4 - 2h^3) + (6h - 4))$

$3hhhh \quad 2\ 3h$

$-2hhh \quad -2\ 2$

$2(h^3(3h-2) + 2(3h-2))$

$2(3h-2)(h^3+2)$

Factoring by Grouping

$(12a^3 - 9a^2) + (20a - 15)$

$2 \cdot 2 \cdot 3 \cdot a \cdot a \cdot a \quad 2 \cdot 2 \cdot 5 \cdot a$

$-3 \cdot 3 \cdot a \cdot a \quad -3 \cdot 5$

$3a^2(4a - 3) + 5(4a - 3)$

$(4a-3)(3a^2+5)$

check

	$4a$	-3
$3a^2$	$12a^3$	$-9a^2$
$+5$	$20a$	-15

$12a^3 - 9a^2 + 20a - 15$ ✓

$(4r^3 + 24r) + (r^2 + 6)$

$2 \cdot 2 \cdot r \cdot r \quad r \cdot r$

$2 \cdot 2 \cdot 2 \cdot 3 \cdot r \quad 2 \cdot 3$

$4r(r^2+6) + (r^2+6)$

$(r^2+6)(4r+1)$

check

	$4r$	$+1$
r^2	$4r^3$	$+r^2$
$+6$	$24r$	6

$4r^3 + r^2 + 24r + 6$ ✓

Try These! (check your answers)

Factor.

1. $6b^3 + 8b^2 + 9b + 12$

2. $4r^3 + 24r + r^2 + 6$

Try These! (check your answers)

Factor.

1. $(6b^3 + 8b^2) + (9b + 12)$

$(3b+4)(2b^2+3)$

$2 \cdot 3 \cdot b \cdot b \cdot b$ $\quad 2 \cdot 2 \cdot 2 \cdot b \cdot b$ $\quad 3 \cdot 3 \cdot b$ $\quad 2 \cdot 2 \cdot 3$

$2b^2(3b+4) + 3(3b+4)$

$(3b+4)(2b^2+3)$

check

	$3b$	4
$2b^2$	$6b^3$	$8b^2$
3	$9b$	12

$6b^3+8b^2+9b+12$ ✓

2. $4r^3 + 24r + r^2 + 6$

$(r^2+6)(4r+1)$

$2 \cdot 2 \cdot r \cdot r \cdot r$ $\quad 2 \cdot 2 \cdot 2 \cdot 3 \cdot r$ $\quad r \cdot r$ $\quad 2 \cdot 3$

$4r(r^2+6) + 1(r^2+6)$

$(r^2+6)(4r+1)$

check

	r^2	6
$4r$	$4r^3$	$24r$
1	r^2	6

$4r^3+r^2+24r+6$ ✓

Factoring with opposites

$3x^3 - 15x^2 - 2x + 10$

$10x^3 - 15x^2 - 8x + 12$

Try These! (check your answers)

Factor.

1. $-6b^3 + 8b^2 + 9b - 12$

2. $4r^3 - 24r - r^2 + 6$

Try These! (check your answers)

Factor.

1. $(-6b^3 + 8b^2) + (9b - 12)$

$-2 \cdot 3 \cdot b \cdot b \cdot b \quad 3 \cdot 3 \cdot b$

$2 \cdot 2 \cdot 2 \cdot b \cdot b \quad -2 \cdot 2 \cdot 3$

$-1(2b^2(-3b+4)) + 3(3b-4)$

$-2b^2(3b-4) + 3(3b-4)$

$(3b-4)(-2b^2+3)$

Check

	$3b$	-4
$-2b^2$	$-6b^3$	$+8b^2$
3	$9b$	-12

$-6b^3+8b^2+9b-12$ ✓

2. $(4r^3 - 24r) + (r^2 + 6)$

$2 \cdot 2 \cdot r \cdot r \cdot r \quad -r \cdot r$

$2 \cdot 2 \cdot 2 \cdot 3 \cdot r \quad 2 \cdot 3$

$4r(r^2-6) + -1(-r^2+6)$

$4r \cdot r^2 - 4r \cdot 6 - 1 \cdot r^2 - 1 \cdot -6$

$(r^2-6)(4r-1)$

Check

	r^2	-6
$4r$	$4r^3$	$-24r$
-1	$-r^2$	$+6$

$4r^3-r^2-24r+6$ ✓

Homework

pg. 467 37-49 (odd)