Find the LCM and GCF of each set of monomials.

1) $28x^2, 12x^4$	2) $40, 20x^2$
GCF: $4x^2$	GCF: 20
LCM: $12x^4 \div 4x^2 = 3x^2$	LCM: $20x^2 \div 20 = x^2$
$\quad 3x^2 \cdot 28x^2 = 84x^4$	$\quad x^2 \cdot 40 = 40x^2$
LCM: $84x^4$	LCM: $40x^2$
3) $21xy, 28xy^3$	4) $27y^3, 45y^2$
GCF: $7xy$	GCF: $9y^2$
LCM: $21xy \div 7xy = 3$	LCM: $45y^2 \div 9y^2 = 5$
$\quad 3 \cdot 28xy^3 = 84xy^3$	$\quad 5 \cdot 27y^3 = 135y^3$
LCM: $84xy^3$	LCM: $135y^3$
5) $36uv, 18v^2$	6) $46xy^2, 16xy,$
GCF: $18v$	GCF: $2xy$
LCM: $36uv \div 18v = 2u$	LCM: $16xy \div 2xy = 8$
$\quad 2u \cdot 18v^2 = 36uv^2$	$\quad 8 \cdot 46xy^2 = 368xy^2$
LCM: $36uv^2$	LCM: $368xy^2$
7) $54, 18m^2$	8) $45x^2y, 45x^2y^2$
GCF: 18	GCF: $45x^2y$
LCM: $54 \div 18 = 3$	LCM: $45x^2y \div 45x^2y = 1$
$\quad 3 \cdot 18m^2 = 54m^2$	$\quad 1 \cdot 45x^2y^2 = 45x^2y^2$
LCM $= 54m^2$	LCM: $45x^2y^2$

Factor the GCF out of each expression.

13) $-48n^6 - 30n$

GCF: $-6n$ (1st term is negative)

$-6n(8n^5 + 5)$

14) $-24 - 6k^2$

GCF: -6 (1st term is negative)

$-6(4 + k^2)$

15) $-9 + 72n^5 + 90n^8$

GCF: 9 (1st term in SF. is positive)

SF: $90n^8 + 72n^5 - 9$

$9(10n^8 + 8n^5 - 1)$

16) $6a^6 + 7a^4 + 5a^5$

GCF: a^4 (most a's all terms have)

SF: $6a^6 + 5a^5 + 7a^4$

$a^4(6a^2 + 5a + 7)$

17) $24x + 4x^4 + 32x^2 + 40x^3$

GCF: $4x$

SF: $4x^4 + 40x^3 + 32x^2 + 24x$

$4x(x^3 + 10x^2 + 8x + 6)$

18) $80n^4 + 16n^2 + 40n + 80$

GCF: 8

SF: $80n^4 + 16n^2 + 40n + 80$

$8(10n^4 + 2n^2 + 5n + 10)$

19) $9m^4n^2 + 2m^2 + 8$

GCF: 1

cannot be factored with a GCF

20) $-80x^3y + 48xy^2 - 24y$

GCF: $-8xy$ (1st term is negative)

$-8xy(10x^2 - 6y + 3x)$