

SM2 Factoring Test Review

Factor out the greatest common factor. If the leading coefficient is negative, factor out a negative GCF.

1. $10x^2 - 5x$

$$\begin{array}{c} (2x - 1) \\ 5x \left[\begin{array}{|c|c|} \hline 10x^2 & -5x \\ \hline \end{array} \right] \end{array}$$

$$\boxed{5x(2x-1)}$$

2. $-12w^3 + 21$

$$\begin{array}{c} -4w^3 \quad 7 \\ 3 \left[\begin{array}{|c|c|} \hline -12w^3 & 21 \\ \hline \end{array} \right] \end{array}$$

$$\begin{array}{c} 3(-4w^3 + 7) \\ \boxed{-3(4w^3 - 7)} \end{array}$$

3. $12p^5q + 36p^4q + 8pq$

$$\begin{array}{c} 3p^4 \quad 9p^3 \quad 2 \\ 4pq \left[\begin{array}{|c|c|c|} \hline 12p^5q & 36p^4q & 8pq \\ \hline \end{array} \right] \end{array}$$

$$\boxed{4pq(3p^4 + 9p^3 + 2)}$$

Factor by grouping. Don't forget to factor out the GCF first, if there is one.

4. $15m^3 + 5m^2 - 6m - 2$

	$3m$	1
$5m^2$	$15m^3$	$5m^2$
-2	$-6m$	-2

$$(3m+1)(5m^2-2)$$

5. $4rt - 8r + t - 2$

	t	-2
$4r$	$4rt$	$-8r$
1	t	-2

$$(t-2)(4r+1)$$

Completely factor each trinomial. If the trinomial is prime, say so. Don't forget to factor out the GCF first, if there is one.

6. $v^2 - 4v - 21$

$ac = 1 \cdot -21$

v^2	$3v$
$-7v$	-21

ac	b
-21	-4
$1 \cdot 21$	$1 + -21$
$(3 \cdot -7)$	$3 + -7$

$(v+3)(v-7)$

7. $x^2 + 6x + 14$

$ac = 14$
 $b = 6$

not factorable

Prime

ac	b
14	6
$1 \cdot 14$	$1 + 14$
$2 \cdot 7$	$2 + 7$

8. $m^2 - 6m + 9$

m^2	$-3m$
$-3m$	9

ac	b
9	-6
$1 \cdot 9$	$-1 + -9$
$(-3 \cdot 3)$	$-3 + -3$

$(m-3)(m-3)$

9. $5p^2 - 25p + 60$

GCF: 5

$5(p^2 - 5p + 12)$

p^2	
	12

No factors work

$5(p^2 - 5p + 12)$

10. $3r^3 + 15r^2 - 42r$

GCF = $3r$

$3r(r^2 + 5r - 14)$

		+	-	add
-14		5		
1 · 14		-1 + 14		
-2 · 7		-2 + 7		

$ac = -14$ $b = 5$

	r^2	$-2r$
r	r^2	$-2r$
7	$7r$	-14

$3r(r - 2)(r + 7)$

11. $4n^2 - 5n - 6$

$ac = 4 \cdot -6 = -24$

$b = -5$

		+	-	add
-24		-5		
1 · 24		1 + 24		
2 · 12		2 + 12		
3 · 8		3 + 8		
4 · 6		4 + 6		

	$4n^2$	$3n$
n	$4n^2$	$3n$
-2	$-8n$	-6

$(4n + 3)(n - 2)$

12. $7t^2 + 15t - 4$

$ac = 7 \cdot -4 = -28$

prime

		+	-	add
-28		15		
1 · 28		-1 + 28 = 27		
2 · 14		-2 + 14 = 12		
4 · 7		-4 + 7 = 3		

13. $2z^2 - 8$

GCF: 2

$2(z^2 - 4)$

	$z \cdot z$	$2 \cdot 2$
z	$z \cdot z$	$2 \cdot 2$
2	$(z + 2)$	$(z - 2)$

$2(z + 2)(z - 2)$

14. $9a^2 + 24a + 16$

$ac = 9 \cdot 16 = 144$

mult	add
144	24
1 · 144	1 + 144 = 145
2 · 72	
3 ·	
12 · 12	12 + 12 = 24

	$3a$	4
$3a$	$9a^2$	$12a$
4	$12a$	16

$(3a + 4)(3a + 4)$
or $(3a + 4)^2$

15. $-10y^2 + 35y + 20$

GCF: -5

$-5(2y^2 - 7y - 4)$

$ac = -8$

$b = -7$ add

-8	-7
$1 \cdot -8$	$1 + -8$
$2 \cdot -4$	

	$2y$	1
y	$2y^2$	$1y$
-4	$-8y$	-4

$-5(2y + 1)(y - 4)$

16. $z^2 - 16$

$z \cdot z$ $4 \cdot 4$

$(z + 4)(z - 4)$

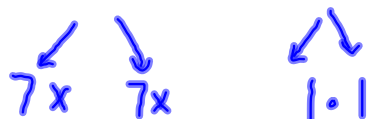
17. $x^2 + 9$

$x^2 + 0x + 9$

prime

mult	add
9	0
1 · 9	1 + 9 = 10
3 · 3	3 + 3 = 6

18. $49x^2 - 1$



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

19. $2q^2 - 13q + 20$

$ac = 2 \cdot 20 = 40$
 $b = -13$

	40	-13
-1	40	
-2	20	
-4	10	
-5	8	

+ + ---
 mult add

	$2q$	-5
q	$2q^2$	$-5q$
-4	$-8q$	20

$(2q - 5)(q - 4)$

20. $49m^2 - 16$

7.7

$(7m + 4)(7m - 4)$