Key

Factoring Test Review

Name:
Date:

Factor each polynomial by finding the GCF.

1. $3x - 12$ $3(x-4)$
2. $8z^2 - 4z$ $4z(2z-1)$
3. $5x^2 - 5x - 20$ $5(x^2-x-4)$ (-4, -1 — None)
4. $q^6 - q^3$ $q^3(q^3-1)$
5. $9x^2 + 36x + 15$ $3(3x^2+12x+5)$ (15, 12 — None)
6. $12s^2 - 6s + 8$ $2(6s^2-3s+4)$

Factor by grouping.

25. $3a + ax + 3b + bx$ $a(3a+x)+b(3a+x)=(a+b)(3a+x)$
26. $xy - y + 3x - 3$ $y(x-1)+3(x-1)=(y+3)(x-1)$
27. $cd - 3c + 2d - 6$ $c(d-3)+2(d-3)=(c+2)(d-3)$
28. $x^2 + 5x + 3x + 15$ $x(x+5)+3(x+5)=(x+3)(x+5)$
29. $ax + 3x + ay + 3y$ $x(a+3)+y(a+3)=(x+y)(a+3)$
30. $x^2 - 5x - 2x + 10$ $x(x-5)-2(x-5)=(x-2)(x-5)$
31. $y^2 + 5y + 5y + 25$ $y(y+5)+5(y+5)$ $(y+5)(y+5)$
32. $8x^2 - 6x - 12x + 9$ $2x(4x-3)-3(4x-3)=(2x-3)(4x-3)$

Factor by using the rule for factoring the difference of two squares.

9. $w^2 - x^2$ $(w+x)(w-x)$
10. $9d^2 - c^2$ $(3d+c)(3d-c)$
11. $25 - k^2$ $(5+k)(5-k)$
12. $4f^2 - 49g^2$ $(2f+7g)(2f-7g)$
13. $16y^2 - 81z^2$ $(4y+9z)(4y-9z)$
14. $64s^2 - 25$ $(8s+5)(8s-5)$
15. $25 - 36d^2$ $(5+6d)(5-6d)$
16. $100a^2 - 9$ $(10a+3)(10a-3)$

Factor each trinomial. If a trinomial cannot be factored, write *prime*.

1. $r^2 + 16r - 36$ $(r+18)(r-2)$ (-36; 18, -2; 16)
2. $6x^2 + 13x - 5$ $\frac{(x+18)(x-2)}{6} \to \left(x+\frac{5}{3}\right)\left(x-\frac{1}{3}\right)$ $(3x+5)(3x-1)$ (-30; 15, -2; 13)
3. $5c^2 + 12c + 7$ $\frac{(c+7)(c+5)}{5} \to (5c+7)(c+1)$ (35; 7, 5; 12)
4. $2x^2 - x - 3$ $\frac{(x-3)(x+2)}{2} \to (2x-3)(x+1)$ (-6; -3, 2; -1)
5. $3h^2 + 19h + 20$ $\frac{(h+15)(h+4)}{3} \to (h+5)(3h+4)$ (60; 15, 4; 19)
6. $2d^2 + 7d - 15$ $\frac{(d+10)(d-3)}{2} \to (d+5)(2d-3)$ (-30; 10, -3; 7)
7. $2g^2 - 17g + 36$ $\frac{(g-9)(g-8)}{2} \to (2g-9)(g-4)$ (72; -9, -8; -17)
8. $4t^2 - t - 60$ $\frac{(t+15)(t-16)}{4} \to (4t+15)(t-4)$ (-240; -16, 15; -1)
9. $6w^2 - w - 35$ prime (210; -14, 15; -1)
10. $6h^2 - 31h + 30$ prime (180; -31)
11. $4z^2 + 19z - 12$ prime (-48; 19)
12. $4y^2 - 36y + 45$ $\frac{(y-30)(y-6)}{4} \to \left(y-\frac{15}{2}\right)\left(y-\frac{3}{2}\right)$ $(2y-15)(2y-3)$ (-30; -6; -36) (180)