

Algebra 1
Test Review – Factoring

Name _____
Date _____ Period ____

Method 1: Remove the GCF

1. $7x^2 + 28x$

2. $12a^2b - 15ab^2$

3. $9m^4 - 12m^2 + 3m$

4. $2t^3 - 6t^2 + 10t$

Method 2: Trinomials with a lead coefficient of 1 ($a = 1$)

5. $x^2 + 9x + 18$

6. $w^2 - 6w - 40$

7. $y^2 - 14yz + 24z^2$

8. $x^4 + 2x^2 - 3$

Method 3: Trinomials with a lead coefficient greater than 1 ($a > 1$)

9. $2x^2 + 9x + 10$

10. $6n^2 + 13n - 8$

11. $10z^2 + 10z - 120$

12. $3x^2 + 8x + 4$

Method 4: Grouping

13. $ax + 3ay + 2x + 6y$

14. $4m^2n - 2mn^2 - 6m + 3n$

15. $4xy - 12x + 8y - 24$

16. $x^3 - 11x^2 + 20x + 32$

17. $x^4 - 4x^3 + 2x^2 - 8x$

18. $3x^3 - 6x^2 + 15x - 30$

Method 5: Difference of Squares

19. $x^2 - 100$

20. $36m^4 - 1$

21. $64a^8 - b^{20}$

22. $16x^2 + 4$

Putting it all together!

1. $x^2 - 12x + 36$

2. $5a^2 - 5a - 30$

3. $2s^2 - 3s - 5$

4. $49x^4 - 144y^{12}$

5. $n^3 + 9n^2 - 25n - 225$

6. $2x^3 + 20x^2 - 3x - 30$

Method 1: Remove the GCF

1. $7x^2 + 28x$
 $7x(x+4)$

2. $12a^2b - 15ab^2$
 $3ab(4a - 5b)$

3. $9m^4 - 12m^2 + 3m$
 $3m(3m^3 - 4m + 1)$

4. $2t^3 - 6t^2 + 10t$
 $2t(t^2 - 3t + 5)$

Method 2: Trinomials with a lead coefficient of 1 ($a = 1$)

5. $x^2 + 9x + 18$
 $(x + 6)(x + 3)$

6. $w^2 - 6w - 40$
 $(w - 10)(w + 4)$

7. $y^2 - 14yz + 24z^2$
 $(y - 12z)(y + 12z)$

8. $x^4 + 2x^2 - 3$
 $(x^2 - 1)(x^2 + 3)$

Method 3: Trinomials with a lead coefficient greater than 1 ($a > 1$)

9. $2x^2 + 9x + 10$
 $(2x + 5)(x + 2)$

10. $6n^2 + 13n - 8$

~~$(6n - 1)(n - 8)$~~
 $(3n + 8)(2n - 1)$

11. $10z^2 + 10z - 120$
 $10(z^2 + z - 12)$

$10(z + 4)(z - 3)$

12. $3x^2 + 8x + 4$
 $(3x + 2)(x + 2)$

Method 4: Grouping

13. $ax + 3ay + 2x + 6y$
 $a(x + 3y) + 2(x + 3y)$
 $(a + 2)(x + 3y)$

14. $4m^2n - 2mn^2 - 6m + 3n$
 $2mn(2m - n) - 3(2m - n)$
 $(2mn - 3)(2m - n)$

15. $4xy - 12x + 8y - 24$
 $4x(y - 3) + 8(y - 3)$
 $(4x + 8)(y - 3)$
 $4(x + 2)(y - 3)$

16. $x^3 - 11x^2 + 20x + 32$
 $x^2(x - 11) + 4(5x + 8)$

17. $x^4 - 4x^3 + 2x^2 - 8x$
 $x^3(x - 4) + 2x(x - 4)$
 $(x^3 + 2x)(x - 4)$
 $x(x^2 + 2)(x - 4)$

18. $3x^3 - 6x^2 + 15x - 30$
 $3x^2(x - 2) + 15(x - 2)$
 $(3x^2 + 15)(x - 2)$
 $3(x^2 + 5)(x - 2)$

Method 5: Difference of Squares

19. $x^2 - 100$
 $(x + 10)(x - 10)$

20. $36m^4 - 1$
 $(6m^2 - 1)(6m^2 + 1)$

21. $64a^8 - b^{20}$
 $(8a^4 - b^{10})(8a^4 + b^{10})$

22. $16x^2 + 4$
 $4(4x^2 + 1)$

Putting it all together!

1. $x^2 - 12x + 36$
 $(x - 6)(x - 6)$
 $(x - 6)^2$

2. $5a^2 - 5a - 30$
 $5(a^2 - a - 6)$
 $5(a - 3)(a + 2)$

3. $2s^2 - 3s - 5$
 $(2s - 5)(s + 1)$

4. $49x^4 - 144y^{12}$
 $(7x^2 - 12y^6)(7x^2 + 12y^6)$

5. $n^3 + 9n^2 - 25n - 225$
 $n^2(n + 9) - 25(n + 9)$
 $(n^2 - 25)(n + 9)$
 $(n + 5)(n - 5)(n + 9)$

6. $2x^3 + 20x^2 - 3x - 30$
 $2x^2(x + 10) - 3(x + 10)$
 $(2x^2 - 3)(x + 10)$