

8.6 Factoring WS #1

Factor each polynomial by grouping, if possible. If the polynomial cannot be factored using integers, write *prime*.

1. $t^2 + 8t + 12$
 $(t+2)(t+6)$

12	8
3 · 4	
2 · 6	

2. $p^2 + 9p + 20$
 $(p+4)(p+5)$

3. $10x^2 + 21x - 10$
 $10x^2 + 25x - 4x - 10$
 $5x(2x+5) - 2(2x+5)$
 $(5x-2)(2x+5)$

-100	21
25 · 4	

4. $14k^2 - 9k - 18$
 $(2k-3)(7k+6)$

5. $8z^2 + 20z - 48$
 $8z^2 + 32z - 12z - 48$

$8z(z+4) - 12(z+4)$

$(z+4)(8z-12)$ ← OK but can be factored more!

6. $x^2 + 2x - 8$
 $(x+4)(x-2)$

7. $y^2 - 5y - 6$
 $(y-6)(y+1)$

8. $12p^2 - 22p - 20$
 $2(3p+2)(2p-5)$

9. $3h^2 + 2h - 16$
 $(3h^2 - 6h) + (8h - 16)$
 $3h(h-2) + 8(h-2)$
 $(3h+8)(h-2)$

-48	2
1 · 48	
2 · 24	
3 · 16	
4 · 12	
-6 · 8	

10. $x^2 - x - 12$
 $(x+3)(x-4)$

11. $n^2 + 7n + 12$

$$(n+3)(n+4)$$

12. $9r^2 + 15r + 6$

$$3(3r+2)(r+1)$$

13. $12y^2 - 4y - 5$

$$(2y+1)(6y-5)$$

14. $h^2 + 9h + 18$

$$(h+6)(h+3)$$

15. $n^2 + 3n - 18$

$$(n+6)(n-3)$$

16. $12q^2 + 34q - 28$

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

17. $18h^2 + 15h - 18$

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

18. $g^2 + 3g - 10$

$$(g+5)(g-2)$$

19. $r^2 + 4r - 12$

$$(r-2)(r+6)$$

20. $15n^2 - n$

$$n(15n-1)$$

8.7 Factoring WS #2

Factor each polynomial by grouping, if possible. If the polynomial cannot be factored using integers, write *prime*.

1. $a^2 + 10a + 24$

$$(a+4)(a+6)$$

2. $2x^2 + 5x + 2$

$$(x+2)(2x+1)$$

3. $h^2 + 12h + 27$

$$(h+3)(h+9)$$

4. $2t^2 + 9t - 5$

$$(t+5)(2t-1)$$

5. $g^2 - 2g - 63$

$$(g+7)(g-9)$$

6. $3g^2 - 7g + 2$

$$(3g-1)(g-2)$$

7. $w^2 + w - 56$

$$(w+8)(w-7)$$

8. $2t^2 - 11t + 15$

$$(t-3)(2t-5)$$

9. $3n^2 + 5n + 2$

$$(3n+2)(n+1)$$

10. $n^2 - 3n - 28$

$$(n-7)(n+4)$$

11. $2y^2 + y - 1$

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

12. $z^2 - 11z + 30$

$$(z-6)(z-5)$$

13. $d^2 - 16d + 63$

$$(d-9)(d-7)$$

14. $x^2 - 11x + 24$

$$(x-3)(x-8)$$

15. $6q^2 - 13q + 6$

$$(3q-2)(2q-3)$$

WS#2 continued**Factor by Grouping w/GCF**

Factor each polynomial by first factoring out GCF, then factor by grouping.
If the polynomial cannot be factored using integers, write *prime*.

16. $12x - 45 + 9x^2$

$$9x^2 + 12x - 45$$

$$3(3x^2 + 4x - 15)$$

$$3(3x - 5)(x + 3)$$

17. $24x^2 + 108x - 60$

$$12(2x^2 + 9x - 5)$$

$$12(2x - 1)(x + 5)$$

18. $70b^2 + 98b - 84$

$$7(10b^2 + 14b - 12)$$

$$7(10b - 6)(b^2 + 2)$$

19. $12x^2 - 14x - 6$

$$2(6x^2 - 7x - 3)$$

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

20. $60y^2 + 180y + 135$

$$15(4y^2 + 12y + 9)$$

$$15(2y + 3)(2y + 3)$$

21. $2x^2 + 4x + 2$

$$2(x^2 + 2x + 1)$$

$$2(x + 1)(x + 1)$$

22. $18t^2 - 78t - 90$

$$6(3t^2 - 13t - 15)$$

$$6(3t + 3)(t - 5)$$

23. $80h^2 - 88h - 48$

$$8(10h^2 - 11h - 6)$$

$$8(5h + 2)(2h - 3)$$

24. $8x^2 + 8x - 16$

$$8(x^2 + x - 2)$$

$$8(x - 1)(x + 2)$$

25. $21b^2 + 7b - 70$

$$7(3b^2 + b - 10)$$

$$7(3b - 5)(b + 2)$$

26. $24p^2 - 96p + 96$

$$24(p^2 - 4p + 4)$$

$$24(p - 2)(p - 2)$$

27. $56q^2 - 14q - 21$

$$7(8q^2 - 2q - 3)$$

$$7(4q - 3)(2q + 1)$$

28. $20a^2 + 50a - 30$

$$10(2a^2 + 5a - 3)$$

$$10(2a - 1)(a + 3)$$

29. $9w^2 + 6w - 24$

$$3(3w^2 + 2w - 8)$$

$$3(3w - 4)(w - 2)$$

30. $4x^2 + 14x + 6$

$$2(2x^2 + 7x + 3)$$

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