

Polynomials Test Review

1. Determine the prime factorization of each number:

a) 594

b) 2100

c) 4875

$$PF = 2 \cdot 3^3 \cdot 11$$

$$PF = 2^3 \cdot 3 \cdot 5^2 \cdot 7$$

$$PF = 3 \cdot 5^3 \cdot 13$$

2. Determine the greatest common factor of each set of numbers:

a) 45, 80

b) 176, 320

$$GCF = 5$$

$$GCF = 16$$

3. Determine the least common multiple of each set of numbers:

a) 36, 63

b) 90, 140

$$LCM = 252$$

$$LCM = ~~1260~~
1260$$

4. A necklace has 3 strands of beads. Each strand begins and ends with a red bead. If a red bead occurs every 6th bead on one strand, every 4th bead on the second strand, and every 10th bead on the third strand, what is the least number of beads each strand can have?

$$LCM = 60 \text{ beads}$$

5. Expand and simplify:

$$a) (g+4)(g-5) = g^2 + g - 20$$

$$b) (9y+1)(y-9) = 9y^2 - 80y - 9$$

$$c) (c+1)(c^2+3c+2) = c^3 + 4c^2 + 5c + 2$$

$$d) (5-4x)(6+3x-2x^2) = 8x^3 - 22x^2 - 9x - 30$$

$$e) (m^2+3m+2)(2m^2+m+5) = 2m^4 + 7m^3 + 12m^2 + 17m + 10$$

$$f) (-2x^2+7x+6)(3x^2-2x-3) = -6x^4 + 25x^3 + 10x^2 - 33x + 8$$

Mixed Factoring Review

1. $3rt + 6s$ $3(r + 2s)$

20. $m^{12} - 1$ $(m^6 - 1)(m^6 + 1)$

2. $2x^2 + 4x - 6$ $2(x + 3)(x - 1)$

21. $6d^2 - 5d - 21$ $(2d + 3)(3d - 7)$

3. $7x - 3xy$ $x(7 - 3y)$

22. $5r^2 + 11r - 12$ $(5r - 4)(r + 3)$

4. $a^2 - 36$ $(a - 6)(a + 6)$

23. $x^2 - 17x + 30$ $(x - 15)(x - 2)$

5. $t^2 - 4t + 4$ $(t - 2)^2$

24. $81n^2 - 121p^2$ $(9n - 11p)(9n + 11p)$

6. $15b^2 - 26b + 8$ $(3b - 4)(3b - 2)$

25. $t^2 + 2t - 3$ $(t + 3)(t - 1)$

7. $10y^2 + 19y - 15$ $(2y + 5)(5y - 3)$

26. $2x^2 + x - 3$ $(x - 1)(2x + 3)$

8. $3xy - 4yz^2 + 4yx^2$ $y(3x - 4z^2 + 4yx)$

27. $9t^2 - 4s^8$ $(3t - 2s^4)(3t + 2s^4)$

9. $7x^2 + 42x + 63$ $7(x + 3)^2$

28. $3u^2 - 13u - 10$ $(3u + 2)(u - 5)$

10. $9cy^2 - d^2c$ $c(3y - d)(3y + d)$

29. $8x - 12$ $4(2x - 3)$

11. $y^3 - 6y$ $y(y^2 - 6)$

30. $y^5 - 4y$ $y(y + 2)(y - 2)$

12. $9 - 81z^4$ $(3 - 9z^2)(3 + 9z^2)$

31. $r^2t - r^2t^2$ $r^2t(1 - t)$

13. $3a^2 + 24$ $3(a^2 + 8)$

32. $8x^2y^3 - 2xy$ $2xy(4xy^2 - 1)$

14. $3d^2 + 3d - 90$ $3(d + 6)(d - 5)$

33. $8a^2 + 2a - 1$ $(4a - 1)(2a + 1)$

15. $6xy - 9 + 3z$ $3(2xy - 3 + z)$

34. $16a^2 - 25b^2$ $(4a - 5b)(4a + 5b)$

16. $n^2 - 3n - 4$ $(n - 4)(n + 1)$

35. $ax + ay^2$ $a(x + y^2)$

17. $3x^2 + 11x + 8$ $(x + 1)(3x + 8)$

36. $4x^2 + x - 3$ $(4x - 3)(x + 1)$

18. $2k^2 - 5k + 2$ $(2k - 1)(k - 2)$

37. $3k^2 - 17k + 20$ $(3k - 5)(k - 4)$

19. $6p^2 - 35p + 50$ $(3p - 10)(2p - 5)$

38. $9x^2 - 16y^6$ $(3x - 4y^3)(3x + 4y^3)$