

Factoring WS P3 C

Name _____

Factor completely. If the polynomial is not factorable, write *prime*.

1. $24x^2 + 96x$

$24x(x+4)$

2. $5x^2 - 35x - 150$

$5(x^2 - 7x - 30)$
 $5(x-10)(x+3)$

3. $2a^3 - 6a^2b - 56b^2a$

$2a(a^2 - 3ab - 28b^2)$
 $2a(a-7b)(a+4b)$

4. $x^2 + 11xy + 24y^2$

$(x+3y)(x+8y)$

5. $y^2 - y - 72$

$(y-9)(y+8)$

6. $14b^3 - 35b^2 - 8b + 20$

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

7. $-2w^3 + 4w^2 + 16w$

$-2w(w^2 - 2w - 8)$
 $-2w(w-4)(w+2)$

8. $4x^2 - 31x - 90$

$\frac{4x^2}{40x} \quad \frac{4x^2}{-9x} \quad \begin{matrix} 360 \\ \wedge \\ -40+9 \end{matrix}$
 $(x-10)(4x+9)$

9. $a^2 - 2a + 15$

~~Prime~~
 Prime

10. $5x^3 + x^2 - 30x - 6$

$x^2(5x+1) - 6(5x+1)$
 $(x^2-6)(5x+1)$

11. $10x^3 - 41x^2 + 40x$

$x(10x^2 - 41x + 40)$
 $\frac{10x^2}{-16x} \quad \frac{10x^2}{-25x} \quad \begin{matrix} 400 \\ \wedge \\ -16-25 \end{matrix}$
 $(5x-8)(2x-5)$

12. $8x^2 + 77x - 30$

$\frac{8x^2}{80x} \quad \frac{8x^2}{-3x} \quad \begin{matrix} 240 \\ \wedge \\ +8-3 \end{matrix}$
 $(x+10)(8x-3)$

13. $m^2 + 2mn - 63n^2$

$(m+9n)(m-7n)$

14. $6v^2 + 18v + 12$

$6(v^2 + 3v + 2)$
 $6(v+1)(v+2)$

15. $30x^3 + 24x^2 + 5x + 4$

$6x^2(5x+4) + 1(5x+4)$
 $(6x^2+1)(5x+4)$

16. $24a^3 + 6a^2 - 45a$

$3a(8a^2 + 2a - 15)$
 $\frac{8a^2}{12a} \quad \frac{8a^2}{-10a} \quad \begin{matrix} 120 \\ \wedge \\ +12-10 \end{matrix}$
 $3a(2a+3)(4a-5)$

17. $x^2 - 6x + 8$

$(x-2)(x-4)$

18. $54k^2 - 36k - 210$

$6(9k^2 - 6k - 35)$
 $\frac{9k^2}{15k} \quad \frac{9k^2}{-21k} \quad \begin{matrix} 315 \\ \wedge \\ +15-21 \end{matrix}$
 $6(3k+5)(3k-7)$

Factor completely. If the polynomial is not factorable, write *prime*.

1. $-17x^2 + 51$

$-17(x^2 - 3)$

2. $-x^2 + 5x + 14$

$-1(x^2 - 5x - 14)$
 $-1(x - 7)(x + 2)$

3. $9x^3 + 6x^2 + 15x + 10$

$3x^2(3x + 2) + 5(3x + 2)$
 $(3x^2 + 5)(3x + 2)$

4. $3p^2 - 13p - 10$

$\frac{3p^2}{2p} \quad \frac{3p^2}{-15p} \quad \begin{matrix} 30 \\ \wedge \\ +2-15 \end{matrix}$
 $(3p + 2)(p - 5)$

5. $a^2 + 12 + 13a$

$a^2 + 13a + 12$
 $(a + 1)(a + 12)$

6. $10x^2 + 5x$

$5x(2x + 1)$

7. $-w^2 + 13w - 42$

$-1(w^2 - 13w + 42)$
 $-1(w - 6)(w - 7)$

8. $6x^2 + x - 35$

$\begin{matrix} 2 & 3 & 210 \\ \frac{6x^2}{18x} & \frac{6x^2}{-14x} & \wedge \\ & & +5-14 \end{matrix}$
 $(2x + 5)(3x - 7)$

9. $y^2 - 4y + 12$

~~Prime~~ Prime

10. $6y^3 - 9y^2 - 2y + 3$

$3y^2(2y - 3) - 1(2y - 3)$
 $(3y^2 - 1)(2y - 3)$

11. $-13x^2 - 52$

$-1(13x^2 + 52)$
 $-13(x^2 + 4)$

12. $21x^3 - 14x^2 + 56x$

$7x(3x^2 - 2x + 8)$
 ~~$\frac{3x^2}{3x^2} \quad \frac{3x^2}{3x^2}$~~ ~~Prime~~

13. $4x^2 + 7x - 15$

$\frac{4x^2}{12x} \quad \frac{4x^2}{-5x} \quad \begin{matrix} 60 \\ \wedge \\ +12-5 \end{matrix}$
 $(x + 3)(4x - 5)$

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

$(v - 3)(v - 8)$

15. $x^5 - 7x^3 - 5x^2 + 35$

$x^3(x^2 - 7) - 5(x^2 - 7)$
 $(x^3 - 5)(x^2 - 7)$