

Factoring

Trinomials: $x^2 + bx + c$

Worked Out Solutions

Factoring $x^2 + bx + c$

$x^2 + bx + c = (x + \underline{\quad})(x + \underline{\quad})$

where $\underline{\quad} \cdot \underline{\quad} = c$

and $\underline{\quad} + \underline{\quad} = b$

Name: _____

Factor the following. Don't forget to factor out the GCF if necessary.

<p>1. $x^2 - 2x - 15$ $= (x - 5)(x + 3)$ since $(-5) \cdot 3 = -15$ and $(-5) + 3 = -2$</p>	<p>2. $x^2 + 7x + 6$ $= (x + 6)(x + 1)$ since $6 \cdot 1 = 6$ and $6 + 1 = 7$</p>	<p>3. $y^2 - 6y + 9$ $= (y - 3)(y - 3)$ $= (y - 3)^2$ since $(-3) \cdot (-3) = 9$ and $(-3) + (-3) = -6$</p>
<p>4. $a^2 - 11a + 24$ $= (a - 3)(a - 8)$ since $(-3) \cdot (-8) = 24$ and $(-3) + (-8) = -11$</p>	<p>5. $b^2 - 4b - 12$ $= (b - 6)(b + 2)$ since $(-6) \cdot 2 = -12$ and $(-6) + 2 = -4$</p>	<p>6. $x^2 - 7x + 10$ $= (x - 5)(x - 2)$ since $(-5) \cdot (-2) = 10$ and $(-5) + (-2) = -7$</p>
<p>7. $p^2 - 7p + 8$ does not factor no two numbers multiply to 8 and add to -7</p>	<p>8. $x^2 + 9x + 18$ $= (x + 6)(x + 3)$ since $6 \cdot 3 = 18$ and $6 + 3 = 9$</p>	<p>9. $x^2 + 16x - 36$ $= (x - 2)(x + 18)$ since $(-2) \cdot 18 = -36$ and $(-2) + 18 = 16$</p>
<p>10. $w^2 - w - 20$ $= (w - 5)(w + 4)$ since $(-5) \cdot 4 = -20$ and $(-5) + 4 = -1$</p>	<p>11. $x^2 + 10x - 16$ does not factor no two numbers multiply to -16 and add to 10</p>	<p>12. $m^2 - 19m + 48$ $= (m - 5)(m + 3)$ since $(-5) \cdot 3 = -15$ and $(-5) + 3 = -2$</p>
<p>13. $x^2 + 12x - 28$ $= (x - 2)(x + 14)$ since $(-2) \cdot 14 = -28$ and $(-2) + 14 = 12$</p>	<p>14. $x^2 - 8xy - 20y^2$ $= (x - 10y)(x + 2y)$ since $(-10) \cdot 2 = -20$ and $(-10) + 2 = -8$</p>	<p>15. $u^2 - 10uv + 16v^2$ $= (u - 8v)(u - 2v)$ since $(-8) \cdot (-2) = 16$ and $(-8) + (-2) = -10$</p>
<p>16. $x^2 + 13xy + 30y^2$ $= (x + 10y)(x + 3y)$ since $10 \cdot 3 = 30$ and $10 + 3 = 13$</p>	<p>17. $-x^2 - 9x + 36$ $= -(x^2 + 9x - 36)$ $= -(x - 3)(x + 12)$ since $(-3) \cdot 12 = -36$ and $(-3) + 12 = 9$</p>	<p>18. $a^3 + 2a^2 - 8a$ $= a(a^2 + 2a - 8)$ $= a(a - 2)(a + 4)$ since $(-2) \cdot 4 = -8$ and $(-2) + 4 = 2$</p>
<p>19. $-2x^2 - 6x + 8$ $= -2(x^2 + 3x - 4)$ $= -2(x - 1)(x + 4)$ since $(-1) \cdot 4 = -4$ and $(-1) + 4 = 3$</p>	<p>20. $3x^3 - 6x^2 + 3x$ $= 3x(x^2 - 2x + 1)$ $= 3x(x - 1)(x - 1)$ $= 3x(x - 1)^2$ since $(-1) \cdot (-1) = 1$ and $(-1) + (-1) = -2$</p>	<p>21. $-x^3 + 10x^2 + 24x$ $= -x(x^2 - 10x - 24)$ $= -x(x - 12)(x + 2)$ since $(-12) \cdot 2 = -24$ and $(-12) + 2 = -10$</p>