Answers: Factorization

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Summary

Answers to questions relating to the guide on factorization.

These are the answers to Questions: Factorization.

Please attempt the questions before reading these answers!

Q1

Note that you can rearrange the factorized brackets — the answer stays the same because the order of multiplication doesn't matter.

1.1. $7x + 35 = 7(x + 5)$.

1.2. $3x - 51 = 3(x - 17)$.

1.3. $6m + 3n = 3(2m + n)$.

1.4. $5f + 10 + 15k = 5(f + 2 + 3k)$.

1.5. $10x - 2 + 3y^2 + 3y = 2(5x - 1) + y(3y + 3)$.

1.6. $9xy - 3x = 3x(3y - 1)$.

1.7. $a^2 + ab = a(a + b)$.

1.8. $4m^2 - 8nm + 12m = 4m(m - 2n + 3)$.

1.9. $12wx^2 + 16wx = 4wx(3x + 4)$.

1.10. $a^3b + ab^2 + ab^3 = ab(a^2 + b(1 + b))$.

1.11. $x(x - 6) + 3(6 - x) = (x - 6)(x - 3)$.

1.12. $3w + 3z + xw + xz = (w + z)(3 + x)$.

1.13. $2ab + b^2 - b - 2a = (2a + b)(b - 1)$.

1.14. $a^2b + 3a^2 + ab + 3a - 2b - 6 = (b + 3)(a - 1)(a + 2)$.

Q2

Note that you can rearrange the factorized brackets — the answer stays the same because the order of multiplication doesn't matter.

2.1. $x^2 + 6x + 5 = (x + 5)(x + 1)$.

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

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

2.4. $2x^2 - 13x + 21 = (2x - 7)(x - 3)$.

2.5. $5x^2 - 10x + 5 = 5(x - 1)(x - 1)$.

2.6. $x^2 - xy - 6y^2 = (x - 3y)(x + 2y)$.

2.7. $12x^2y^2 + 8xy^2 - 4y^2 = 4y^2(3x - 1)(x + 1)$.

2.8. $x^2 - 4yx - x + 4y = (x - 4y)(x - 1)$.

2.9. $x^2 + y^2 - 2xy = (x - y)^2$ or $(y - x)^2$.

2.10. $x^2 - y^2 = (x - y)(x + y)$.

2.11. $9x^2 + 3x - 2 = (3x - 1)(3x + 2)$.

Q3

3.1. You worked out in 1.1 that $7x + 35 = 7(x + 5)$. Solving for x gives $x = -5$.

3.2. You worked out in 1.11 that $x(x - 6) + 3(6 - x) = (x - 6)(x - 3)$. Solving for x gives $x = 3$ and $x = 6$.

3.3. You worked out in 2.3 that $x^2 - 4x + 3 = (x - 3)(x - 1)$. Solving for x gives $x = 3$ and $x = 1$.

3.4. You worked out in 2.7 that $12x^2y^2 + 8xy^2 - 4y^2 = 4y^2(3x - 1)(x + 1)$. Solving for x gives $x = 1/3$ and $x = -1$.

3.5. You worked out in 2.8 that $x^2 - 4yx - x + 4y = (x - 4y)(x - 1)$. Solving for x gives $x = 4y$ and $x = 1$.

Version history and licensing

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