Factorisation - Lesson 2

Common Factors
(2 Terms, 3 Variables Max.)

LI

- Factorise expressions of the form $pq \pm pr$, $pq^2 \pm pr$ and $p^2q \pm p^2r$ (no numbers).

SC

- Finding algebraic factors.

Reminders

$$2 \times x = 2x$$

$$x \times x = x^2$$

$$x \times y = xy$$

etc . . .

An algebraic factor is a letter that divides exactly into another expression (no remainder)

Example 1

$p\,q$

Factors : $1, p, q, pq$

Example 2

y^2

Factors : $1, y, y^2$

Example 3

$x^2 y$

Factors : $1, x, y, xy, x^2, x^2 y$

A common algebraic factor is an algebraic factor that is the same for two or more expressions

Example 4

$x\,y$ and $x\,d$

Factors of $x\,y$: $1, x, y, x\,y$

Factors of $x\,d$: $1, x, d, x\,d$

Common factors : $1, x$

Example 5

$p\,q$ and $p\,q^2$

Factors of $p\,q$: $1, p, q, p\,q$

Factors of $p\,q^2$: $1, p, q, p\,q, q^2, p\,q^2$

Common factors : $1, p, q, pq$

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Factorising Expressions

(Look for the Highest Common Factor)

(Biggest common factor in both)

Example 6

Factorise $bx - by$.

$bx - by$

$= \boxed{b(x - y)}$

Example 7

Factorise $px^2 - py$.

$px^2 - py$

$= \boxed{p(x^2 - y)}$

Example 8

Factorise $bm^2 + nm$.

$bm^2 + nm$

$= \boxed{m(bm + n)}$

Example 9

Factorise $w^2c - kw^2$.

$w^2c - kw^2$

$= \boxed{w^2(c - k)}$

Example 10

Factorise $p^2q + q^2p$.

$p^2q + q^2p$

$= \boxed{pq(p + q)}$

19. $bu + bv$	20. $cx + cy$	21. $dp + dq$
22. $mu^2 + mv^2$	23. $nr^2 + ns^2$	24. $px^2 + py^2$
25. $qa^2 + qb^2$	26. $mx - my$	27. $nu - nv$
28. $pa - pb$	29. $qc - qd$	30. $ar^2 - as^2$
31. $bp^2 - bq^2$	32. $cx^2 - cy^2$	33. $dm^2 - dn^2$
34. $x^2 + xy$	35. $p^2 + pq$	36. $u^2 + uv$
37. $a^2 + ab$	38. $r^2 + rs$	39. $c^2 - cd$
40. $y^2 - yz$	41. $m^2 - mn$	42. $t^2 - tu$
43. $bc + c^2$	44. $de + e^2$	45. $yz + z^2$
46. $np + p^2$	47. $kl + l^2$	48. $qr - r^2$
49. $ef - f^2$	50. $st - t^2$	51. $lm - m^2$
52. $cd - d^2$	53. $ax^2 + bx^2$	54. $cy^2 + dy^2$
55. $mt^2 + nt^2$	56. $pz^2 + qz^2$	57. $ku^2 - lu^2$
58. $qv^2 - rv^2$	59. $br^2 - cr^2$	60. $ds^2 - es^2$

Answers

19. $bu + bv$ $b(u + v)$	20. $cx + cy$ $c(x + y)$	21. $dp + dq$ $d(p + q)$
22. $mu^2 + mv^2$ $m(u^2 + v^2)$	23. $nr^2 + ns^2$ $n(r^2 + s^2)$	24. $px^2 + py^2$ $p(x^2 + y^2)$
25. $qa^2 + qb^2$ $q(a^2 + b^2)$	26. $mx - my$ $m(x - y)$	27. $nu - nv$ $n(u - v)$
28. $pa - pb$ $p(a - b)$	29. $qc - qd$ $q(c - d)$	30. $ar^2 - as^2$ $a(r^2 - s^2)$
31. $bp^2 - bq^2$ $b(p^2 - q^2)$	32. $cx^2 - cy^2$ $c(x^2 - y^2)$	33. $dm^2 - dn^2$ $d(m^2 - n^2)$
34. $x^2 + xy$ $x(x + y)$	35. $p^2 + pq$ $p(p + q)$	36. $u^2 + uv$ $u(u + v)$
37. $a^2 + ab$ $a(a + b)$	38. $r^2 + rs$ $r(r + s)$	39. $c^2 - cd$ $c(c - d)$
40. $y^2 - yz$ $y(y - z)$	41. $m^2 - mn$ $m(m - n)$	42. $t^2 - tu$ $t(t - u)$
43. $bc + c^2$ $c(b + c)$	44. $de + e^2$ $e(d + e)$	45. $yz + z^2$ $z(y + z)$
46. $np + p^2$ $p(n + p)$	47. $kl + l^2$ $l(k + l)$	48. $qr - r^2$ $r(q - r)$
49. $ef - f^2$ $f(e - f)$	50. $st - t^2$ $t(s - t)$	51. $lm - m^2$ $m(l - m)$
52. $cd - d^2$ $d(c - d)$	53. $ax^2 + bx^2$ $x^2(a + b)$	54. $cy^2 + dy^2$ $y^2(c + d)$
55. $mt^2 + nt^2$ $t^2(m + n)$	56. $pz^2 + qz^2$ $z^2(p + q)$	57. $ku^2 - lu^2$ $u^2(k - l)$
58. $qv^2 - rv^2$ $v^2(q - r)$	59. $br^2 - cr^2$ $r^2(b - c)$	60. $ds^2 - es^2$ $s^2(d - e)$