In[ ]:= **Collect$\left[\text{Expand}\left[(w + x + y + z)^5\right], \{y, z\}\right]$**

Out[ ]= $w^5 + 5 w^4 x + 10 w^3 x^2 + 10 w^2 x^3 + 5 w x^4 + x^5 + y^5 + \left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4\right) z +$
$\left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3\right) z^2 + \left(10 w^2 + 20 w x + 10 x^2\right) z^3 + (5 w + 5 x) z^4 +$
$z^5 + y^4 (5 w + 5 x + 5 z) + y^3 \left(10 w^2 + 20 w x + 10 x^2 + (20 w + 20 x) z + 10 z^2\right) +$
$y^2 \left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3 + \left(30 w^2 + 60 w x + 30 x^2\right) z + (30 w + 30 x) z^2 + 10 z^3\right) +$
$y \left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4 + \right.$
$\left. \left(20 w^3 + 60 w^2 x + 60 w x^2 + 20 x^3\right) z + \left(30 w^2 + 60 w x + 30 x^2\right) z^2 + (20 w + 20 x) z^3 + 5 z^4\right)$

In[ ]:= **Collect$\left[\text{Expand}\left[(w + x + y + z)^5\right], y \mid z\right]$**

Out[ ]= $w^5 + 5 w^4 x + 10 w^3 x^2 + 10 w^2 x^3 + 5 w x^4 + x^5 + y^5 + \left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4\right) z +$
$\left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3\right) z^2 + \left(10 w^2 + 20 w x + 10 x^2\right) z^3 + (5 w + 5 x) z^4 +$
$z^5 + y^4 (5 w + 5 x + 5 z) + y^3 \left(10 w^2 + 20 w x + 10 x^2 + (20 w + 20 x) z + 10 z^2\right) +$
$y^2 \left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3 + \left(30 w^2 + 60 w x + 30 x^2\right) z + (30 w + 30 x) z^2 + 10 z^3\right) +$
$y \left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4 + \right.$
$\left. \left(20 w^3 + 60 w^2 x + 60 w x^2 + 20 x^3\right) z + \left(30 w^2 + 60 w x + 30 x^2\right) z^2 + (20 w + 20 x) z^3 + 5 z^4\right)$

In[ ]:= **Collect$\left[\text{Expand}\left[(w + x + y + z)^5\right], z \mid y\right]$**

Out[ ]= $w^5 + 5 w^4 x + 10 w^3 x^2 + 10 w^2 x^3 + 5 w x^4 + x^5 + y^5 + \left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4\right) z +$
$\left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3\right) z^2 + \left(10 w^2 + 20 w x + 10 x^2\right) z^3 + (5 w + 5 x) z^4 +$
$z^5 + y^4 (5 w + 5 x + 5 z) + y^3 \left(10 w^2 + 20 w x + 10 x^2 + (20 w + 20 x) z + 10 z^2\right) +$
$y^2 \left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3 + \left(30 w^2 + 60 w x + 30 x^2\right) z + (30 w + 30 x) z^2 + 10 z^3\right) +$
$y \left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4 + \right.$
$\left. \left(20 w^3 + 60 w^2 x + 60 w x^2 + 20 x^3\right) z + \left(30 w^2 + 60 w x + 30 x^2\right) z^2 + (20 w + 20 x) z^3 + 5 z^4\right)$

In[ ]:= **Collect$\left[\text{Expand}\left[(x_1 + x_2 + x_3 + x_4)^5\right], x_{k\_} \text{ /; } k \geq 3\right]$**

Out[ ]= $x_1^5 + 5 x_1^4 x_2 + 10 x_1^3 x_2^2 + 10 x_1^2 x_2^3 + 5 x_1 x_2^4 + x_2^5 + x_3^5 + \left(5 x_1^4 + 20 x_1^3 x_2 + 30 x_1^2 x_2^2 + 20 x_1 x_2^3 + 5 x_2^4\right) x_4 +$
$\left(10 x_1^3 + 30 x_1^2 x_2 + 30 x_1 x_2^2 + 10 x_2^3\right) x_4^2 + \left(10 x_1^2 + 20 x_1 x_2 + 10 x_2^2\right) x_4^3 + (5 x_1 + 5 x_2) x_4^4 +$
$x_4^5 + x_3^4 (5 x_1 + 5 x_2 + 5 x_4) + x_3^3 \left(10 x_1^2 + 20 x_1 x_2 + 10 x_2^2 + (20 x_1 + 20 x_2) x_4 + 10 x_4^2\right) +$
$x_3^2 \left(10 x_1^3 + 30 x_1^2 x_2 + 30 x_1 x_2^2 + 10 x_2^3 + \left(30 x_1^2 + 60 x_1 x_2 + 30 x_2^2\right) x_4 + (30 x_1 + 30 x_2) x_4^2 + 10 x_4^3\right) +$
$x_3 \left(5 x_1^4 + 20 x_1^3 x_2 + 30 x_1^2 x_2^2 + 20 x_1 x_2^3 + 5 x_2^4 + \left(20 x_1^3 + 60 x_1^2 x_2 + 60 x_1 x_2^2 + 20 x_2^3\right) x_4 + \right.$
$\left. \left(30 x_1^2 + 60 x_1 x_2 + 30 x_2^2\right) x_4^2 + (20 x_1 + 20 x_2) x_4^3 + 5 x_4^4\right)$

In[ ]:= **Total$\left[\right.$**
$\text{CoefficientRules}\left[\text{Expand}\left[(w + x + y + z)^5\right], \{y, z\}\right] \text{ /. } (ps\_ \to c\_) \Rightarrow c \left(\text{Times @@ } \{y, z\}^{ps}\right)\left.\right]$

Out[ ]= $w^5 + 5 w^4 x + 10 w^3 x^2 + 10 w^2 x^3 + 5 w x^4 + x^5 + \left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4\right) y +$
$\left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3\right) y^2 + \left(10 w^2 + 20 w x + 10 x^2\right) y^3 + (5 w + 5 x) y^4 + y^5 +$
$\left(5 w^4 + 20 w^3 x + 30 w^2 x^2 + 20 w x^3 + 5 x^4\right) z + \left(20 w^3 + 60 w^2 x + 60 w x^2 + 20 x^3\right) y z +$
$\left(30 w^2 + 60 w x + 30 x^2\right) y^2 z + (20 w + 20 x) y^3 z + 5 y^4 z + \left(10 w^3 + 30 w^2 x + 30 w x^2 + 10 x^3\right) z^2 +$
$\left(30 w^2 + 60 w x + 30 x^2\right) y z^2 + (30 w + 30 x) y^2 z^2 + 10 y^3 z^2 +$
$\left(10 w^2 + 20 w x + 10 x^2\right) z^3 + (20 w + 20 x) y z^3 + 10 y^2 z^3 + (5 w + 5 x) z^4 + 5 y z^4 + z^5$