Factorial Notation

Total points = 47

A.

1. $(7)(6)(5)(4)(3)(2)(1)$ ✓
   $= \boxed{5,040}$ ✓
2. $(3)(2)(1)+(5)(4)(3)(2)(1)$ ✓
   $= 6+120$ ✓
   $= \boxed{126}$ ✓
3. $(8)(7)(6)(5)(4)(3)(2)(1)-(6)(5)(4)(3)(2)(1)$ ✓
   $= 40,320-720$ ✓
   $= \boxed{39,600}$ ✓
4. $(9)(8)(7)(6)(5)(4)(3)(2)(1)-(3)(2)(1)$ ✓
   $= 362,880-6$ ✓
   $= \boxed{362,874}$ ✓
5. $\dfrac{(8)(7)(6)(5)(4)(3)(2)(1)}{(5)(4)(3)(2)(1)(4)(3)(2)(1)}$ ✓
   $= \dfrac{40,320}{2,880}$ ✓
   $= \boxed{14}$ ✓

B.

1. $\dfrac{(6)(5!)-5!}{5}$ ✓
   $= \dfrac{5!(6-1)}{5}$ ✓
   $= \dfrac{5!(5)}{5}$ ✓
   $= 5!$ ✓
   $= \boxed{120}$ ✓
2. $\dfrac{(8)(7!)-7!}{7!}$ ✓
   $= \dfrac{7!(8-1)}{7!}$ ✓
   $= \boxed{7}$ ✓
3. $\dfrac{(7)(6)(5!)+5!}{60}$ ✓
   $= \dfrac{5!(42+1)}{60}$ ✓
   $= \dfrac{120(43)}{60}$ ✓
   $= 2(43)$ ✓
   $= \boxed{86}$ ✓
4. $\dfrac{(9)(8)(7)(6)(5!)-5!}{24}$ ✓
   $= \dfrac{5!(3,024-1)}{24}$ ✓
   $= \dfrac{120(3,023)}{24}$ ✓
   $= 5(3,023)$ ✓
   $= \boxed{15,115}$ ✓
5. $= \dfrac{(6)(5)(4!)+(5)(4!)-4!}{4!}$ ✓
   $= \dfrac{(4!(30+5-1)}{4!}$ ✓
   $= \boxed{34}$ ✓

C.

1. $\dfrac{(n)(n-1)!}{(n-1)!}$ ✓
   $= \boxed{n}$ ✓
2. $\dfrac{(n-1)!}{(n)(n-1)!}$ ✓
   $= \boxed{\dfrac{1}{n}}$ ✓
3. $\dfrac{(n+2)(n+1)!}{(n+1)!}$ ✓
   $= \boxed{(n+2)}$ ✓
4. $\dfrac{(n-1)!}{(n+1)(n)(n-1)!}$ ✓
   $= \boxed{\dfrac{1}{(n+1)(n)}}$ ✓
5. $\dfrac{(n+1)(n)(n-1)!-(n)(n-1)!+(n-1)!}{(n-1)!}$ ✓
   $= \dfrac{(n-1)![(n+1)(n)-n+1]}{(n-1)!}$ ✓
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