Permutation

Total points = 40

Problem Set

1. $n = 6$ ✓
   $r = 4$ ✓
   $P(n,r) = \frac{n!}{(n-r)!}$ ✓
   $P(6,4) = \frac{6!}{(6-4)!}$ ✓
   $= \frac{6!}{2!}$ ✓
   $= \frac{(6)(5)(4)(3)(2!)}{2!}$ ✓
   $= \boxed{360}$ ✓ 4-digit numbers ✓
2. $n = 10$ ✓
   $r = 6$ ✓
   $P(n,r) = \frac{n!}{(n-r)!}$ ✓
   $P(10,6) = \frac{10!}{(10-6)!}$ ✓
   $= \frac{10!}{4!}$ ✓
   $= \frac{(10)(9)(8)(7)(6)(5)(4!)}{4!}$ ✓
   $= \boxed{151,200}$ ✓ ways ✓
3. $n = 15$ ✓
   $r = 4$ ✓
   $P(n,r) = \frac{n!}{(n-r)!}$ ✓
   $P(15,4) = \frac{15!}{(15-4)!}$ ✓
   $= \frac{15!}{11!}$ ✓
   $= \frac{(15)(14)(13)(12)(11!)}{11!}$ ✓
   $= \boxed{32,760}$ ✓ ways ✓
4. $n = 8$ ✓
   $r = 3$ ✓
   $P(n,r) = \frac{n!}{(n-r)!}$ ✓
   $P(8,3) = \frac{8!}{(8-3)!}$ ✓
   $= \frac{8!}{5!}$ ✓
   $= \frac{(8)(7)(6)(5!)}{5!}$ ✓
   $= \boxed{336}$ ✓ ways ✓
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   $r = 4$ ✓
   $P(n,r) = \frac{n!}{(n-r)!}$ ✓
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   $= \frac{10!}{6!}$ ✓
   $= \frac{(10)(9)(8)(7)(6!)}{6!}$ ✓
   $= \boxed{5,040}$ ✓ ways ✓

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