3.0.0 Divisibility Tests Answers

1. n divided by 5 yields a remainder equal to 3 is written as follows

   $n = 5k + 3$, where k is an integer.

   add 2 to both sides of the above equation to obtain

   $n + 2 = 5k + 5 = 5(k + 1)$

   The above suggests that n + 2 divided by 5 yields a remainder equal to zero. The answer is B.
2. If n is divisible by 3, 5 and 12 it must a multiple of the lcm of 3, 5 and 12 which is 60.

   $n = 60k$

   n + 60 is also divisible by 60 since

   $n + 60 = 60k + 60 = 60(k + 1)$

   The answer is D.
3. It is the lcm of 5, 7 and 20 which is 140.

   The answer is E.
4. When n is divided by 8, the remainder is 3 may be written as

   $n = 8k + 3$

   multiply all terms by 6

   $6n = 6(8k + 3) = 8(6k) + 18$

   Write 18 as 16 + 2 since 16 = 8 * 2.

   $= 8(6k) + 16 + 2$

   Factor 8 out.

   $= 8(6k + 2) + 2$

   The above indicates that if 6n is divided by 8, the remainder is 2. The answer is C.
5. We first expand $(2n + 2)^2$

   $(2n + 2)^2 = 4n^2 + 8n + 4$

   Factor 4 out.

$= 4(n^2 + 2n + 1)$

$(2n + 2)^2$ is divisible by 4 and the remainder is equal to 0. The answer is A.