Why 24?

A) If you multiply the numbers on either side of "x" by each other you get one less than the square of "x" This can be represented as:

$$(x+1) \times (x-1) = x^2 - 1$$

one more than the x × one less than x $= x^2 - 1$

B) Because there is only two numbers between two consecutive multiples of 3, every third number is a multiple of 3.

C) If you multiply coprime factors of "x" you get another factor of "x" or "x" itself.

D) They are all divisible by 4 because even numbers are every second number. Multiples of 4 are every fourth number therefore, every second even number will be a multiple of 4. That means the one of our numbers will be a multiple of 4." Multiply a multiple of "x" by anything and you will get a multiple of "x"." Therefore the answer will be a multiple of 4.

Final Challenge.

They are all divisible by 24. Why? What if we put the numbers in the formula for A? Since we are squaring the prime (x) and subtracting one that fits the end bit. "x" (the ~~prime~~) cannot be divisible by three so one of the numbers either side must be. ($x-1$ & $x+1$) If one is multiple of 3, we are multiplying a multiple of three by something. This means that x^2-1 is a multiple of 3.

Every second even number is a multiple of 4 (see D) therefore every other even number is a multiple of 2. Since x cannot be divisible by 2, then $x+1$ is divisible by 2 & $x-1$ is divisible by 4 (it could be the other way around). We are multiplying a multiple of 2 by a multiple of 4 so x^2-1 is a multiple of 8. That means that x^2-1 is a multiple of 8 & 3.

We can't multiply normal factors but 3 & 8 are coprime and multiplying coprime factors will result in another factor so 3×8 is 24. x^2-1, the final number is divisible by 24.