Take Three Numbers

3 numbers, 1 even, 2 odd. Is the sum even or odd?

Test

even		odd		odd		
4	+	11	+	7	=	22
12	+	35	+	23	=	70

The sums are both even… How do we prove it?

Proof
An odd number plus an odd number equals an even number and so does adding two even numbers. But why?

Even + even
The definition of an even number is a number that divides by two, so an even number is just a lot of twos. If you add two to an even number then it will still be an even number because it will still divide by two. And an even number is just a lot of twos, so if you add the even numbers together two by two, then it will be an even number.

Odd to Odd
There are three parts. They are odd - odd, 2x odd and odd + odd

odd - odd	2x odd	odd + odd
The difference of two odd number is even because if you subtract 2 from an odd number, it stays odd, and if you subtract 1 from an odd number, it becomes an even number, and an odd number is just a lot of twos plus one, so when you eliminate the twos and subtract the one, you will be left with an even number.	Double an odd number is even because if you divide it* by two, it will be the original odd number. $a = odd1$ $b = even$ $2a = b$ $a = b/2$ mini-test $a = 5$, $b = 10$ $2 \times 5 = 10$, $5 = 10/2$ or 5 $a = 13$, $b = 26$ $2 \times 13 = 26$, $13 = 26/2$ or 13	An odd number plus an odd number is an even number because it is just double the smaller odd number then add the difference. And an even + an even = an even. mini-test $a^1 = odd$ $a^2 = odd2$ $a^1 < a^2$ $2a + (a^2 - a^1) = even$ $a^1 = 5$ $a^2 = 19$ $10 + (19-5) = 24(even)$ Final $2a + (a^2 - a^1) + b = even$

- the double of the number