2a) If ~~Prov~~ A = ~~the for every~~ ~~write~~ $n \mid (12k+5)$ and $n \mid (18k-1)$ for some integer k

$B = n = 17$

- then the original statement is equivalent to: for every $n > 1$ $(A \Rightarrow B) \wedge (B \Rightarrow A)$
- If Both $(A \Rightarrow B)$ and $(B \Rightarrow A)$ is true then the original Statement is true.

Case $\boxed{1}$: $(A \Rightarrow B)$

- we will assume that for every $n > 1$ that $n \mid 12k+5$ and $n \mid 18k-1$ for some integer k

~~from DIC we~~

$\therefore n \mid (12k+5)x + (18k-1)y$ for ~~several~~ ~~intis~~ each x, y ← from DIC

$\Rightarrow n \mid (12k+5)3 + (18k-1)\cdot -2$ ← pick $x = 3$ and $y = -2$

$\Rightarrow n \mid 36k + 15 - 36k + 2$ ~~for cases where k is~~

$\Rightarrow n \mid 17 \Rightarrow n = 17$

$\therefore$ In order for $n \mid (12k+5)x + (18k-1)y$ to be divisible for any integer x, y, n must be 17. This means B is true so Case $\boxed{1}$ is true.

Case $\boxed{2}$ $(B \Rightarrow A)$

- we will assume $n = 17$, we will show that a k exsists such that

$\Rightarrow n \mid (12k+5)$ and $n \mid (18k-1)$

$\Rightarrow 17 \mid (12k+5)$ and $17 \mid (18k-1)$ ← Assume B

$\Rightarrow 17 \mid (12\cdot(1)+5)$ and $17 \mid (18(1)-1)$ ← plug $k=1$

$\Rightarrow 17 \mid 17$ and $17 \mid 17$

~~∴ if k~~

$\therefore$ a k exsits such that a is true

$\therefore$ Since both the cases are true we know that $A \Leftrightarrow B$ is true.