|             |   |                 | LSB              |              |   |             |              |             |             |                |                |                |   |                |                |               |               |  |
|-------------|---|-----------------|------------------|--------------|---|-------------|--------------|-------------|-------------|----------------|----------------|----------------|---|----------------|----------------|---------------|---------------|--|
|             |   | 0               | 1                | 2            | 3 | 4           | 5            | 6           | 7           | 8              | 9              | A              | В | С              | D              | Е             | F             |  |
| M<br>S<br>B | 0 | BRK             | ORA              |              |   | TSB         | ORA          | ASL         | RMB0        | PHP            | ORA            | ASL            |   | TSB            | ORA            | ASL           | BBR0          | 0  |
|             |   | Implied<br>1 7  | (IND,X)<br>2 6   |              |   | ZP<br>2 5   | ZP<br>2 3    | ZP<br>2 5   | ZP<br>2 5   | Implied 1 3    | IMM<br>2 2     | Accum<br>1 2   |   | ABS<br>3 6     | ABS<br>3 4     | ABS<br>3 6    | ZP<br>3 5**   |  |
|             | 1 | BPL             | ORA              | ORA          |   | TRB         | ORA          | ASL         | RMB1        | CLC            | ORA            | INC            |   | TRB            | ORA            | ASL           | BBR1          | 1  |
|             | - | Relative 2 2**  | (IND),Y          | (IND)<br>2 5 |   | ZP<br>2 5   | ZP,X<br>2 4  | ZP,X<br>2 6 | ZP<br>2 5   | Implied 1 3    | ABS,Y<br>3 4*  | Accum<br>1 2   |   | ABS<br>3 6     | ABS,X<br>3 4*  | ABS,X<br>3 6* | ZP<br>3 5**   | 1  |
|             | 2 | JSR             | 2 5*<br>AND      | 2 3          |   | BIT         | AND          | ROL         | RMB2        | PLP            | AND            | ROL            |   | BIT            | AND            | ROL           | BBR2          | 2  |
|             | 2 | ABS             | (IND,X)          |              |   | ZP          | ZP           | ZP          | ZP          | Implied        | IMM            | Accum          |   | ABS            | ABS            | ABS           | ZP            | 2  |
|             | _ | 3 6             | 2 6              | 1375         |   | 2 3         | 2 3          | 2 5         | 2 5         | 1 4            | 2 2            | 1 2            |   | 3 4            | 3 4            | 3 6           | 3 5**         | <u>.                                    </u> |
|             | 3 | BMI<br>Relative | AND<br>(IND),Y   | AND<br>(IND) |   | BIT<br>ZP,X | AND<br>ZP,X  | ROL<br>ZP,X | RMB3<br>ZP  | SEC<br>Implied | AND<br>ABS,Y   | DEC<br>Accum   |   | BIT<br>ABS,X   | AND<br>ABS,X   | ROL<br>ABS,X  | BBR3<br>ZP    | 3  |
|             |   | 2 2**           | 2 5*             | 2 5          |   | 2 4         | 2 4          | 2 6         | 2 5         | 1 3            | 2 4*           | 1 2            |   | 3 4*           | 3 4*           | 3 6*          | 3 5**         |  |
|             | 4 | RTI             | EOR              |              |   |             | EOR          | LSR         | RMB4        | PHA            | EOR            | LSR            |   | JMP            | EOR            | LSR           | BBR4          | 4  |
|             |   | Implied<br>1 6  | (IND,X)<br>2 6   |              |   |             | ZP<br>2 3    | ZP<br>2 5   | ZP<br>2 5   | Implied 1 3    | IMM<br>2 2     | Accum<br>1 2   |   | ABS<br>3 3     | ABS<br>3 4     | ABS<br>3 6    | ZP<br>3 5**   |  |
|             | 5 | BVC             | EOR              | EOR          |   |             | EOR          | LSR         | RMB5        | CLI            | EOR            | PHY            |   | <i>J J</i>     | EOR            | LSR           | BBR5          | 5  |
|             | 5 | Relative        | (IND),Y          | (IND)        |   |             | ZP,X         | ZP,X        | ZP          | Implied        | ABS,Y          | Implied        |   |                | ABS,X          | ABS,X         | ZP            |  |
|             |   | 2 2**<br>RTS    | 2 5*<br>ADC      | 2 5          |   | STZ         | 2 4<br>ADC   | 2 6         | 2 5<br>RMB6 | 1 3<br>PLA     | 3 4*<br>ADC    | 1 3<br>ROR     |   | JMP            | 3 4*<br>ADC    | 3 6*          | 3 5**         | _  |
|             | 6 | Implied         | (IND,X)          |              |   | S1Z<br>ZP   | ADC<br>ZP    | ROR<br>ZP   | ZP          | PLA<br>Implied | IMM            | Accum          |   | JMP<br>(IND)   | ABS            | ROR<br>ABS    | BBR6<br>ZP    | 6  |
|             |   | 1 6             | 2 6              |              |   | 2 3         | 2 3+         | 2 5         | 2 5         | 1 4            | 2 2+           | 1 2            |   | 3 6            | 3 4+           | 3 6           | 3 5**         |  |
|             | 7 | BVS             | ADC              | ADC          |   | STZ         | ADC          | ROR         | RMB7        | SEI            | ADC            | PLY            |   | JMP            | ADC            | ROR           | BBR7          | 7  |
|             |   | Relative 2 2**  | (IND),Y<br>2 5*+ | (IND)<br>2 5 |   | ZP,X<br>2 4 | ZP,X<br>2 4+ | ZP,X<br>2 6 | ZP<br>2 5   | Implied 1 3    | ABS,Y<br>3 4*+ | Implied<br>1 4 |   | (IND,X)<br>3 6 | ABS,X<br>3 4*+ | ABS,X<br>3 6* | ZP<br>3 5**   |  |
|             | 8 | BRA             | STA              |              |   | STY         | STA          | STX         | SMB0        | DEY            | BIT            | TXA            |   | STY            | STA            | STX           | BBS0          | 8  |
|             | G | Relative        | (IND,X)          |              |   | ZP          | ZP           | ZP          | ZP          | Implied        | IMM            | Implied        |   | ABS            | ABS            | ABS           | ZP            | 0  |
|             | 0 | 2 3*<br>BCC     | 2 6<br>STA       | STA          |   | 2 3<br>STY  | 2 3<br>STA   | 2 3<br>STX  | 2 5<br>SMB1 | 1 3<br>TYA     | 2 2<br>STA     | 1 2<br>TXS     |   | 3 4<br>STZ     | 3 4<br>STA     | 3 4<br>STZ    | 3 5**<br>BBS1 | <u> </u>                                     |
|             | 9 | Relative        | (IND),Y          | (IND)        |   | ZP,X        | ZP,X         | ZP,Y        | ZP          | Implied        | ABS,Y          | Implied        |   | ABS            | ABS,X          | ABS,X         | ZP            | 9  |
|             |   | 2 2**           | 2 6*             | 2 5          |   | 2 4         | 2 4          | 2 4         | 2 5         | 1 3            | 3 5*           | 1 2            |   | 3 4            | 3 5*           | 3 5*          | 3 5**         |  |
|             | Α | LDY             | LDA              | LDX          |   | LDY<br>ZP   | LDA          | LDX         | SMB2        | TAY            | LDA            | TAX            |   | LDY            | LDA            | LDX           | BBS2          | Α  |
|             |   | IMM<br>2 2      | (IND,X)<br>2 6   | IMM<br>2 2   |   | 2 3         | ZP<br>2 3    | ZP<br>2 3   | ZP<br>2 5   | Implied 1 3    | IMM<br>2 2     | Implied 1 2    |   | ABS<br>3 4     | ABS<br>3 4     | ABS<br>3 4    | ZP<br>3 5**   |  |
|             | В | BCS             | LDA              | LDA          |   | LDY         | LDA          | LDX         | SMB3        | CLV            | LDA            | TSX            |   | LDY            | LDA            | LDX           | BBS3          | В  |
|             |   | Relative 2 2**  | (IND),Y<br>2 5*  | (IND)        |   | ZP,X<br>2 4 | ZP,X<br>2 4  | ZP,Y<br>2 4 | ZP<br>2 5   | Implied 1 3    | ABS,Y<br>3 4*  | Implied 1 2    |   | ABS,X<br>3 4*  | ABS,X          | ABS,Y<br>3 4* | ZP<br>3 5**   |  |
|             | C | CPY             | CMP              | 2 5          |   | CPY         | CMP          | DEC         | SMB4        | INY            | CMP            | DEX            |   | CPY            | 3 4*<br>CMP    | DEC           | BBS4          | С  |
|             | C | IMM             | (IND,X)          |              |   | ZP          | ZP           | ZP          | ZP          | Implied        | IMM            | Implied        |   | ABS            | ABS            | ABS           | ZP            |  |
|             |   | 2 2             | 2 6              |              |   | 2 3         | 2 3          | 2 5         | 2 5         | 1 3            | 2 2            | 1 2            |   | 3 4            | 3 4            | 3 6           | 3 5**         | <u> </u>                                     |
|             | D | BNE<br>Relative | CMP<br>(IND),Y   | CMP<br>(IND) |   |             | CMP<br>ZP,X  | DEC<br>ZP,X | SMB5<br>ZP  | CLD<br>Implied | CMP<br>ABS,Y   | PHX<br>Implied |   |                | CMP<br>ABS.X   | DEC<br>ABS.X  | BBS5<br>ZP    | D  |
|             |   | 2 2**           | 2 5*             | 2 5          |   |             | 2 P,X        | 2 F,X       | 2 5         | 1 3            | ABS, 1<br>3 4* | 1 3            |   |                | 3 4*           | 3 6*          | 3 5**         |  |
|             | Е | CPX             | SBC              |              |   | CPX         | SBC          | INC         | SMB6        | INX            | SBC            | NOP            |   | CPX            | SBC            | INC           | BBS6          | Е  |
|             | _ | IMM<br>2 2      | (IND,X)          |              |   | ZP<br>2 3   | ZP<br>2 3+   | ZP<br>2 5   | ZP<br>2 5   | Implied 1 3    | IMM<br>2 2+    | Implied 1 2    |   | ABX            | ABS<br>3 4+    | ABS           | ZP<br>3 5**   | <u>آ</u>                                     |
|             | F | 2 2<br>BEQ      | 2 6+<br>SBC      | SBC          |   | 2 5         | SBC          | INC         | SMB7        | SED            | SBC            | PLX            |   | 3 4            | SBC            | 3 6<br>INC    | 3 5**<br>BBS7 | F  |
|             | Г | Relative        | (IND),Y          | (IND)        |   |             | ZP,X         | ZP,X        | ZP          | Implied        | ABS,Y          | Implied        |   |                | ABS,X          | ABS,X         | ZP            | ľ  |
|             |   | 2 2**           | 2 5*+            | 2 5          |   |             | 2 4+         | 2 6         | 2 5         | 1 3            | 3 4*+          | 1 4            |   |                | 3 4*+          | 3 6*          | 3 5**         | <u> </u>                                     |
|             |   | 0               | 1                | 2            | 3 | 4           | 5            | 6           | 7           | 8              | 9              | A              | В | C              | D              | Е             | F             |  |

<sup>+</sup> Add 1 to N if in decimal mode, \* ADD 1 to N if page boundary is crossed

\*\* Add 1 to N if branch occurs to same page or add 2 to N if branch occurs to different page