6502 Quick Reference Card

| ADC \$nn ADC \$nn, X ADC \$nnnn, X ADC \$nnnn, X ADC \$nnnn, X ADC \$nnnn, Y ADC (\$nn), Y ADC (\$nn), Y AND #nn AND \$nn AND \$nn AND \$nnnn, X AND \$nnnnn, X AND \$nnnn, X | N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C N Z C N Z C N Z C Z C | 69 65 75 6d 779 61 71 29 25 33 39 21 30 06 16 0e 1e 90 50 60 60 60 60 60 60 60 60 60 60 60 60 60 | 2 3 4 4 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ 2+ 2+ 2+ 3 4 4 4+ 4+ 6 5+ 6 6 7 2+ 6 | 2 2 2 3 3 3 2 2 2 2 3 3 3 2 2 2 3 3 3 2 2 2 3 3 3 2 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 3 2 2 3 | LDA #nn LDA \$nn, X LDA \$nnnn, X LDA \$nnnn, X LDA \$nnnn, Y LDA (\$nn, X) LDA (\$nn, Y LDX #nn LDX \$nn, Y LDX \$nn, Y LDX \$nnnn, Y LDX \$nnnn LDX \$nnnn, Y LDY #nn LDY \$nn LDY \$nn LDY \$nn LDY \$nnn, X LDY \$nnnn, X LSR \$nn LSR \$nn, X LSR \$nn | N Z - N Z - N Z - N Z - Z | a9 a5 b5 ad bd b9 a1 a2 a6 b6 ae be a0 a4 46 56 a6 b6 | 2 3 4 4 4+ 6 5+ 2 3 4 4 4+ 2 5 6 | 2 2 3 3 3 2 2 2 3 3 3 1 2 | A = nn A != nn A < nn A <= nn A >= nn |
|---|---|--|---|---|---|---|---|--|---|---|
| ADC \$nn, X 1 ADC \$nnnn, X ADC \$nnnn, X ADC \$nnnn, X ADC \$nnnn, Y ADC \$nnn, X ADC \$nnn, X ADC \$nnn, X AND \$nnn AND \$nnnn, X AND \$nnnnn, X AND \$nnnn, X AND \$nnnnn, X AND \$nnnnnn, X AND \$nnnnnn, X AND \$nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn | N V Z C N V Z C N V Z C N V Z C N V Z C N V Z C N V Z C N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N | 75 6d 7d 79 61 71 29 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 1e 90 60 60 60 60 60 60 60 60 60 60 60 60 60 | 4 4+ 4+ 6 5+ 2 3 4 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 3 3 3 2 2 2 2 2 3 3 3 2 2 2 2 2 2 2 2 | LDA \$nn,X LDA \$nnnn LDA \$nnnn,X LDA \$nnnn,Y LDA (\$nn,X) LDA (\$nn),Y LDX #nn LDX \$nn LDX \$nn LDX \$nnnn LDX \$nnnn LDX \$nnnn LDY \$nnn LDY \$nn LDY \$nn LDY \$nn LDY \$nn LDY \$nn LDY \$nnnn LDY \$nnn LDY \$nnnn LDY \$n | N Z - N Z - N Z - N Z - Z | b5 ad bd b9 a1 b1 a2 a6 b6 ae be a0 a4 b4 ac bc | 4 4+ 4+ 6 5+ 2 3 4 4+ 2 3 4 4 4+ 2 5 | 2 3 3 2 2 2 2 2 3 3 2 2 2 2 3 3 3 2 2 2 2 2 3 3 3 3 2 2 2 2 2 3 | A != nn A < nn A <= nn A >= nn |
| ADC \$nnnn 1 ADC \$nnnn, X 1 ADC \$nnnn, X 1 ADC \$nnnn, Y 1 ADC \$nnn N N N N N N N N N | N V Z C N V Z C N V Z C N V Z C N V Z C N V Z C N | 6d 7d 79 61 71 29 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 50 60 60 60 60 60 60 60 60 60 60 60 60 60 | 4 4+ 4+ 6 5+ 2 3 4 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 3 3 2 2 2 2 2 3 3 3 2 2 2 2 2 2 2 2 2 2 | LDA \$nnnn LDA \$nnnn, X LDA \$nnnn, Y LDA (\$nn, X) LDA (\$nn), Y LDX #nn LDX \$nn LDX \$nnnn, Y LDX #nn LDY \$nnnn, Y LDY \$nn LDY \$nn LDY \$nnnn, X LDY \$nnnn, X LSR \$nn LSR \$nn LSR \$nn, X LSR \$nn | N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N | ad bd b9 a1 b1 a2 a6 b6 ae be a0 a4 b4 ac bc 4a 46 56 | 4 4+ 4+ 6 5+ 2 3 4 4 4+ 2 3 4 4 4+ 2 5 | 3 3 2 2 2 2 2 2 3 3 2 2 2 2 2 3 3 3 1 2 2 2 2 | A != nn A < nn A <= nn A >= nn |
| ADC \$nnnn, X ADC \$nnnn, Y ADC \$nnnn, Y ADC (\$nn, X) ADC (\$nn), Y ADC (\$nn), Y ADC (\$nn), Y AND \$nn AND \$nnnn, X AND \$nnnn, Y AND \$nnnn, Y AND (\$nn), Y ASL \$nn ASL \$nnn ASL \$nnnn, X ASL \$nnnnn, X ASL \$nnnnn, X ASL | N V Z C N V Z C N V Z C N V Z C N V Z C N V Z C N Z - N Z - N Z - N Z - N Z - N Z C N | 7d 79 61 71 29 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 4+ 4+ 6 5+ 2 3 4 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 3 3 2 2 2 2 2 2 3 3 3 2 2 2 2 2 2 2 2 2 | LDA \$nnnn, X LDA \$nnnn, Y LDA (\$nn), Y LDA (\$nn), Y LDX #nn LDX \$nn LDX \$nnnn LDX \$nnnn, Y LDX \$nnnn LDX \$nnnn LDX \$nnnn LDY \$nnnn LDY \$nn LDY \$nn LDY \$nn LDY \$nn LDY \$nnnn LSR \$nn LSR \$nn LSR \$nn | N Z - N Z - N Z - Z - | bd b9 a1 b1 a2 a6 b6 ae be a0 a4 b4 ac bc 4a 46 56 | 4+ 4+ 6 5+ 2 3 4 4 4+ 2 3 4 4 4+ 2 5 | 3 2 2 2 2 2 3 3 2 2 2 2 3 3 3 | A < nn A <= nn A >= nn |
| ADC \$nnnn, Y ADC (\$nn, X) ADC (\$nn, X) ADC (\$nn), Y AND #nn AND \$nn, X AND \$nnnn, X AND \$nnnn, X AND \$nnnn, Y AND \$nnnn, X AND \$nnnnn, X AND \$nnnnnn, X AND \$nnnnnn, X AND \$nnnnn, X AND \$nnnnnn, X AND \$nnnnnnn, X AND \$nnnnnnn, X AND \$nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn | N V Z C N V Z C N V Z C N V Z C N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C N Z C N Z C N Z C N Z C N Z C N Z C N Z C Z C | 79 61 71 29 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 4+ 6 5+ 2 3 4 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 3 2 2 2 2 3 3 3 2 2 2 3 3 3 2 2 2 2 2 2 | LDA \$nnnn, Y LDA (\$nn, X) LDA (\$nn), Y LDX #nn LDX \$nn LDX \$nnn LDX \$nnnn, Y LDY \$nnnn LDY \$nn LDY \$nn LDY \$nn LDY \$nn LDY \$nn LDY \$nn LDY \$nnn LDY \$nn LDY \$nnnn, X LSR LSR LSR \$nn LSR \$nn LSR \$nn LSR \$nn LSR \$nn LSR \$nn | N Z - N Z - N Z - Z - | b9 a1 b1 a2 a6 b6 ae be a0 a4 b4 ac bc 4a 46 56 | 4+ 6 5+ 2 3 4 4 4+ 2 3 4 4 4+ 2 5 | 3 2 2 2 2 2 3 3 2 2 2 2 3 3 3 1 2 | A <= nn A >= nn |
| ADC (\$nn,X) 1 ADC (\$nn),Y 1 AND #nn 1 AND \$nn 1 AND \$nnnn 1 AND \$nnnn,X 1 AND \$nnnn,X 1 AND \$nnnn,Y 1 AND (\$nn,X) 1 AND (\$nn,X 1 AND | N V Z C N V Z C N V Z C N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C N Z C N Z C N Z C N Z C N Z C N Z C N Z C Z C | 61 71 29 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 6 5+ 2 3 4 4 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 2 2 2 3 3 3 2 2 1 2 2 3 3 3 2 2 2 2 2 | LDA (\$nn,X) LDA (\$nn),Y LDX #nn LDX \$nn LDX \$nnn LDX \$nnnn LDX \$nnnn LDX \$nnnn LDX \$nnnn,Y LDY #nn LDY \$nn LDY \$nnn LDY \$nnnn LDY \$nnnn,X LSR LSR LSR LSR \$nn LSR \$nn,X LSR \$nnnn | N Z - N Z - N Z - Z - | a1 b1 a2 a6 b6 ae be a0 a4 b4 ac bc 4a 46 56 | 6 5+ 2 3 4 4 4+ 2 3 4 4 4+ 2 5 | 2 2 2 2 2 3 3 2 2 2 2 3 3 3 1 2 | A <= nn A >= nn |
| ADC (\$nn),Y AND #nn ND \$nn ND \$nn ND \$nnnn ND \$nnnn, X AND \$nnnn, X ND \$nnnn, Y ND (\$nn, X) ND (| N V Z C N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C N Z C N Z C N Z C N Z C N Z C N Z C Z C | 71 29 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 5+ 2 3 4 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 2 2 3 3 3 2 2 1 2 2 3 3 3 2 2 2 2 2 2 | LDA (\$nn),Y LDX #nn LDX \$nn LDX \$nn,Y LDX \$nnnn,Y LDX \$nnnn,Y LDY #nn LDY \$nn LDY \$nn,X LDY \$nnnn,X LDY \$nnnn,X LSR \$nn LSR \$nn LSR \$nn,X LSR \$nnnn | N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - C Z - C Z - C Z - | b1 a2 a6 b6 ae be a0 a4 b4 ac bc 4a 46 56 | 5+ 2 3 4 4 4+ 2 3 4 4 4+ 2 5 | 2 2 2 3 3 2 2 2 2 3 3 1 2 | A >= nn |
| AND #nn 1 AND \$nn, X 1 AND \$nn, X 1 AND \$nnnn, X 1 AND \$nnnn, X 1 AND \$nnnn, Y 1 AND (\$nn, X) 1 AND (\$nn, X) 1 AND (\$nn, X) 1 AND (\$nn, X) 1 AND (\$nn, X | N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C N Z C N Z C N Z C Z C | 29 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 2 3 4 4 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 2 3 3 2 2 1 2 2 3 3 2 2 2 2 2 | LDX #nn LDX \$nn, Y LDX \$nnnn, Y LDX \$nnnn, Y LDY #nn LDY \$nn LDY \$nn LDY \$nnnn, X LDY \$nnnn, X LSR \$nn LSR \$nn LSR \$nn, X LSR \$nnnn | N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C | a2 a6 b6 ae be a0 a4 b4 ac bc 4a 46 56 | 2 3 4 4 4+ 2 3 4 4 4+ 2 5 | 2 2 2 3 3 2 2 2 2 3 3 | |
| AND \$nn | N Z - N Z - N | 25 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 3 4 4 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 2 3 3 2 2 1 2 2 3 3 2 2 2 2 2 2 2 2 2 | LDX \$nn LDX \$nn, Y LDX \$nnnn, Y LDX \$nnnn, Y LDY #nn LDY \$nn, X LDY \$nnnn, X LDY \$nnnn, X LSR \$nn LSR \$nn LSR \$nn, X LSR \$nnnn | N Z - N Z - X - Z - X - X - X - X - X - X - | a6 b6 ae be a0 a4 b4 ac bc 4a 46 56 | 3 4 4 4+ 2 3 4 4 4+ 2 5 | 2 2 3 3 2 2 2 2 3 3 3 | |
| AND \$nn, X 1 AND \$nnnn 1 AND \$nnnn, X 1 AND \$nnnn, Y 1 AND (\$nn, X) 1 AND (\$nn, X 1 AND (\$nn, | N Z - N Z - X - N Z - Z - N Z - Z - N | 35 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 4 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 3 3 2 2 1 2 2 3 3 2 2 2 2 | LDX \$nn, Y LDX \$nnnn LDX \$nnnn, Y LDY #nn LDY \$nn LDY \$nn, X LDY \$nnnn, X LDY \$nnnn, X LSR LSR \$nn LSR \$nn, X LSR \$nnnn | N Z - N Z - Z - N Z - Z | b6 ae be a0 a4 b4 ac bc 4a 46 56 | 4 4 4+ 2 3 4 4 4 4+ 2 5 | 2 3 2 2 2 3 3 1 2 | A > nn |
| AND \$nnnn 1 AND \$nnnn,X 1 AND \$nnnn,Y 1 AND (\$nn,X) 1 AND (\$nn),Y 1 ASL \$nn 1 ASL \$nn 1 ASL \$nnnn 1 ASL \$nnnn,X 1 BCC BCS BCS BEQ BMI BNE BVC BVS | N Z - N Z - N Z - N Z - N Z C N Z C N Z C N Z C N Z C N Z C | 2d 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 4 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 3 3 2 2 1 2 2 3 3 2 2 | LDX \$nnnn LDX \$nnnn, Y LDY #nn LDY \$nn LDY \$nn, X LDY \$nnnn, X LDY \$nnnn, X LSR LSR \$nn LSR \$nn, X LSR \$nnnn | N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C | ae be a0 a4 b4 ac bc 4a 46 56 | 4 4+ 2 3 4 4 4+ 2 5 | 3 2 2 2 2 3 3 1 2 | |
| AND \$nnnn, X AND \$nnnn, Y AND \$nnnn, Y AND \$nnnn, Y AND \$nnn, Y AND \$nnn, Y AND \$nnn, Y AND \$nnn, X AND \$nnnn, X AND \$nnnnn, X AND \$nnnnnn, X AND \$nnnnnn, X AND \$nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn | N Z - N Z - Z - N | 3d 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 4+ 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 3 2 2 1 2 2 3 3 2 2 | LDX \$nnnn, Y LDY #nn LDY \$nn LDY \$nn, X LDY \$nnnn, X LDY \$nnnn, X LSR \$nn LSR \$nn LSR \$nn, X LSR \$nnnn | N Z - N Z - N Z - N Z - N Z - N Z - N Z - N Z C N Z C | be a0 a4 b4 ac bc 4a 46 56 | 4+ 2 3 4 4 4+ 2 5 | 3 2 2 2 3 3 1 2 | |
| AND \$nnnn, Y AND (\$nn, X) AND (\$nn, X) AND (\$nn), Y ASL ASL \$nn ASL \$nnnn, X ASL \$nnnn, X BCC BCS BEQ BMI BNE BVC BVS | N Z - N Z - Z - N | 39 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 4+ 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 3 2 2 1 2 2 3 3 2 2 | LDY #nn LDY \$nn,X LDY \$nnnn,X LDY \$nnnn,X LSR \$nn LSR \$nn LSR \$nn,X LSR \$nnnn | N Z - N Z - N Z - N Z - N Z - N Z C N Z C | a0 a4 b4 ac bc 4a 46 56 | 2 3 4 4 4+ 2 5 | 2 2 3 3 1 2 | |
| AND (\$nn, X) 1 AND (\$nn), Y 1 ASL 1 ASL 1 ASL 5 ASL | N Z - N Z - N Z C N Z C N Z C N Z C N Z C Z C Z C | 21 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 6 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 2 1 2 2 3 3 2 2 | LDY \$nn LDY \$nn,X LDY \$nnnn LDY \$nnnn,X LSR LSR \$nn LSR \$nn,X LSR \$nnnn | N Z - N Z - N Z - N Z C N Z C N Z C | a4 b4 ac bc 4a 46 56 | 3 4 4 4+ 2 5 | 2 2 3 3 1 2 | |
| AND (\$nn),Y I ASL I ASL \$nn I ASL \$nn,X I ASL \$nnnn I ASL \$nnnn I ASL \$nnnn,X I BCC BCS BEQ BBMI BMI BNE BVC BVS | N Z - N Z C N Z C N Z C N Z C N Z C Z C | 31 0a 06 16 0e 1e 90 b0 f0 30 d0 | 5+ 2 5 6 6 7 2+ 2+ 2+ | 2 1 2 2 3 3 2 2 | LDY \$nn,X LDY \$nnnn LDY \$nnnn,X LSR LSR \$nn LSR \$nn,X LSR \$nnnn | N Z - N Z - N Z - N Z C N Z C N Z C | b4 ac bc 4a 46 56 | 4 4 4+ 2 5 | 2 3 3 1 2 | |
| ASL \$nn I ASL \$nn, X I ASL \$nn, X I ASL \$nnnn, X I ASL \$nnnnn, X I ASL \$nnn | N Z C N Z C N Z C N Z C N Z C Z C | 0a 06 16 0e 1e 90 b0 f0 30 d0 | 2 5 6 6 7 2+ 2+ 2+ | 1 2 3 3 2 2 | LDY \$nnnn LDY \$nnnn,X LSR LSR \$nn LSR \$nn,X LSR \$nnnn | N Z - N Z - N Z C N Z C N Z C | ac bc 4a 46 56 | 4 4+ 2 5 | 3 3 1 2 | |
| ASL \$nn r ASL \$nn,X r ASL \$nnnn r ASL \$nnnn,X r BCC BCS BCS BEQ BMI BNE BVC BVS | N Z C N Z C N Z C N Z C | 06 16 0e 1e 90 b0 f0 30 d0 | 5 6 7 2+ 2+ 2+ | 2 2 3 3 2 2 | LDY \$nnnn,X LSR LSR \$nn LSR \$nn,X LSR \$nnnn | N Z - N Z C N Z C N Z C | bc 4a 46 56 | 4+ 2 5 | 3 1 2 | |
| ASL \$nn,X I ASL \$nnnn I ASL \$nnnn,X I BCC BCS BEQ BMI BNE BVC BVS | N Z C N Z C N Z C | 16 0e 1e 90 b0 f0 30 d0 | 6 7 2+ 2+ 2+ | 2 3 3 2 2 | LSR LSR \$nn LSR \$nn,X LSR \$nnnn | N Z C N Z C N Z C | 4a 46 56 | 2 5 | 1 2 | |
| ASL \$nnnn r ASL \$nnnn,X r BCC BCS BEQ BBEQ BMI BNE BVC BVS | N Z C N Z C | 0e 1e 90 b0 f0 30 d0 | 6 7 2+ 2+ 2+ | 3 3 2 2 | LSR \$nn LSR \$nn,X LSR \$nnnn | N Z C N Z C | 46 56 | 5 | 2 | |
| ASL \$nnnn,X I BCC BCS BEQ BBQ BMI BNE BVC BVS | N Z C | 90 b0 f0 30 d0 | 7 2+ 2+ 2+ | 3 2 2 | LSR \$nn,X LSR \$nnnn | N Z C | 56 | | | |
| BCC BCS BEQ BMI BNE BVC BVS | | 90 b0 f0 30 d0 | 2+ 2+ 2+ | 2 | LSR \$nnnn | | | 6 | | |
| BCS BEQ BMI BNE BVC BVS | | b0 f0 30 d0 | 2+ 2+ | 2 | | | | _ | 2 | |
| BEQ | | f0 30 d0 | 2+ | | | | 4e | 6 | 3 | |
| BMI BNE BVC BVS | | 30 d0 | | | LSR \$nnnn,X | N Z C | 5e | 7 | 3 | |
| BNE - BVC - BVS - | | d0 | | 2 | NOP | | ea | 2 | 1_ | |
| BVC BVS | | | 2+ | 2 | ORA #nn | N Z - | 09 | 2 | 2 | |
| BVS - | | | 2+ | 2 | ORA \$nn | N Z - | 05 | 3 | 2 | |
| | | 50 | 2+ | 2 | ORA \$nn,X | N Z - | 15 | 4 | 2 | |
| | | 70 | 2+ | 2 | ORA \$nnnn | N Z - | 0d | 4 | 3 | |
| BPL · | NI 1/ | 10 | 2+ | 2 | ORA \$nnnn,X | N Z - | 1d | 4+ | 3 | |
| : | N V Z - | 24 | 3 | | ORA \$nnnn,Y | N Z - | 19 | 4+ | 3 | |
| | N V Z - | 2c | 4 | 3 | ORA (\$nn,X) | N Z - N Z - | 01 | 6 | 2 | |
| | 1 - 1 0 | 00 18 | 7 | $\frac{1}{1}$ | ORA (\$nn),Y PHA | N Z - | 11 48 | 5+ | 1 | |
| | U 0 | d8 | 2 | 1 | PHP | | 40 08 | 3 | 1 | |
| | - | uo 58 | | 1 | | N Z - | оо 68 | 4 | 1 | |
| | | b8 | 2 | 1 | PLA PLP | N V D I Z C | 28 | 4 | 1 | |
| | N Z C | c9 | 2 | 2 | ROL | N Z C | 2a | 2 | † | |
| | N Z C | c5 | 3 | 2 | ROL \$nn | N Z C | 26 | 5 | 2 | |
| | N Z C | d5 | 4 | 2 | ROL \$nn,X | N Z C | 36 | 6 | 2 | |
| | | cd | 4 | 3 | ROL \$nnnn | N Z C | 2e | 6 | 3 | |
| - · · · · · · · · · · · · · · · · · · · | N Z C | dd | 4+ | 3 | ROL \$nnnn,X | N Z C | 3e | 7 | 3 | |
| | N Z C | d9 | 4+ | 3 | ROR | N Z C | 6a | 2 | 1 | |
| | | c1 | 6 | 2 | ROR \$nn | N Z C | 66 | 5 | 2 | |
| i) ! ; ./. | N Z C | d1 | 5+ | 2 | ROR \$nn,X | N Z C | 76 | 6 | 2 | |
| | N Z C | e0 | 2 | 2 | ROR \$nnnn | N Z C | 6e | 6 | 3 | |
| CPX \$nn r | N Z C | e4 | 3 | 2 | ROR \$nnnn,X | N Z C | 7e | 7 | 3 | |
| | N Z C | ec | 4 | 3 | RTI | NVDIZC | 40 | 6 | 1 | |
| CPY #nn I | N Z C | c0 | 2 | 2 | RTS | | 60 | 6 | 1 | |
| CPY \$nn r | N Z C | c4 | 3 | 2 | SBC #nn | N V Z C | e9 | 2 | 2 | |
| CPY \$nnnn r | N Z C | CC | 4 | 3 | SBC \$nn | N V Z C | e5 | 3 | 2 | |
| DEC \$nn r | N Z - | c6 | 5 | 2 | SBC \$nn,X | N V Z C | f5 | 4 | 2 | |
| | N Z - | d6 | 6 | 2 | SBC \$nnnn | N V Z C | ed | 4 | 3 | |
| DEC \$nnnn r | N Z - | ce | 3 | 3 | SBC \$nnnn,X | N V Z C | fd | 4+ | 3 | |
| DEC \$nnnn,X I | N Z - | | 7 | 3 | SBC \$nnnn,Y | N V Z C | f9 | 4+ | 3 | |
| | N Z - | | 2 | 1 | SBC (\$nn,X) | N V Z C | _ | 6 | 2 | |
| | N Z - | 88 | 2 | 1 | SBC (\$nn),Y | N V Z C | f1 | 5+ | 2 | |
| | N Z - | 49 | 2 | 2 | SEC | 1 | 38 | 2 | 1 | |
| | N Z - | 45 | 3 | 2 | SED | 1 | f8 | 2 | 1 | |
| _1_ ' | N Z - | 55 | 4 | 2 | SEI | 1 | 78 | 2 | 1 | |
| | | 4d | 4 | 3 | STA \$nn | | 85 | 3 | 2 | |
| | N Z - | | 4+ | 3 | STA \$nn,X | | 95 | 4 | 2 | |
| _1_ 1 | | | 4+ | 3 | STA \$nnnn | | 8d | 4 | 3 | |
| | N Z - | | 6 | 2 | STA \$nnnn,X | | 9d | 5 | 3 | |
| | N Z - | | 5+ | 2 | STA \$nnnn,Y | | 99 | 5 | 3 | |
| III T''' | N Z - | | 5 | 2 | STA (\$nn,X) | | 81 | 6 | 2 | |
| ' | | f6 | 6 | 2 | STA (\$nn),Y | | 91 | 6 | 2 | |
| | N Z - | ee | 6 | 3 | STX \$nn | | 86 | 3 | 2 | |
| | N Z - | _ | 7 | 3 | STX \$nn,Y | | 96 | 4 | 2 | |
| | N Z - | e8 | 2 | 1 | STX \$nnnn | | 8e | 4 | 3 | |
| | N Z - | <u>c8</u> | 2 | 1 | STY \$nn | | 84 | 3 | 2 | |
| T. T | | 4c | 3 | 3 | STY \$nn,X | | 94 | 4 | 2 | |
| σ | | 6c | 5 | 3 | STY \$nnnn | | 8c | 4 | 3 | |
| JSR \$nnnn | | 20 | 6 | 3 | TAX | N Z - | aa | 2 | 1 | |
| FYT | RA CYCLE | S | | | TAY | N Z - | a8 | 2 | 1 | |
| | | | +-1 | n F | TSX | N Z - | ba | 2 | 1 | |
| BRANCHES: +1 i | it taken, +2 sses page bo | | | :11 & | TXA | N Z - | 8a | 2 | 1 | |
| INDEXING: +1 i | | | | lary | TXS TYA | | | 2 | 1 | |
| THEFTHU. TI | αειυσο μα | ge D | Junu | ur y | LIA | Ν Δ - | 30 | 2 | 1 | |

| | Unsigned | Signed | | | | | |
|-------------------|----------------|-----------------------------|--|--|--|--|--|
| | CMP #nn | SEC SBC #nn | | | | | |
| A = nn A != nn | BEQ y BNE y | BEQ y BNE y | | | | | |
| A < nn | BCC y | BVS ? [y & BMI y n & BMI n | | | | | |
| A <= nn | BCC y & BEQ y | BEQ y & A <nn< td=""></nn<> | | | | | |
| A >= nn | BCS y | BVS ? [n & BMI y y & BMI n | | | | | |
| A > nn | BEQ n & BCS y | | | | | | |