

The timing diagram illustrates the propagation of a carry signal through a 4-bit ripple-carry adder. The horizontal axis represents time in nanoseconds (ns), ranging from 0.0 to 20.0 ns with major grid lines every 2.5 ns. The vertical axis represents the logic level of the signals.

- Carry-in (Blue):** A constant high signal labeled '0' at the top of the diagram.
- Carry-out (Orange):** A signal that transitions from low to high at 5.0 ns and back to low at 15.0 ns. It is labeled with '5' and '8' at its rising and falling edges, respectively.
- Sum (Red):** A signal that transitions from low to high at 10.0 ns and back to low at 11.0 ns.
- Carry (Green):** A signal that transitions from low to high at 11.0 ns and back to low at 12.0 ns.
- Carry Propagation (Purple):** A signal that transitions from low to high at 12.0 ns and back to low at 13.0 ns.
- Carry-out (Brown):** A signal that transitions from low to high at 13.0 ns and back to low at 14.0 ns. It is labeled with '3' at its rising edge.

A dashed black horizontal line is present at approximately one-third of the vertical scale.

0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20