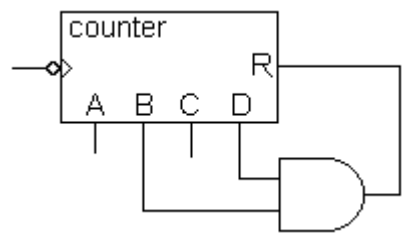
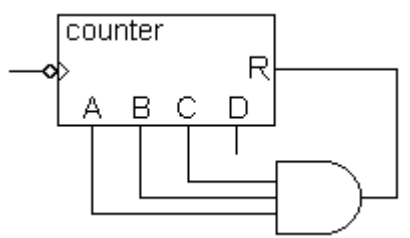
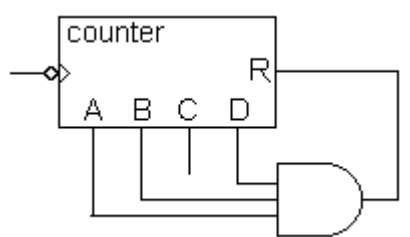
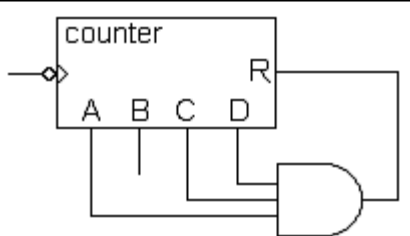
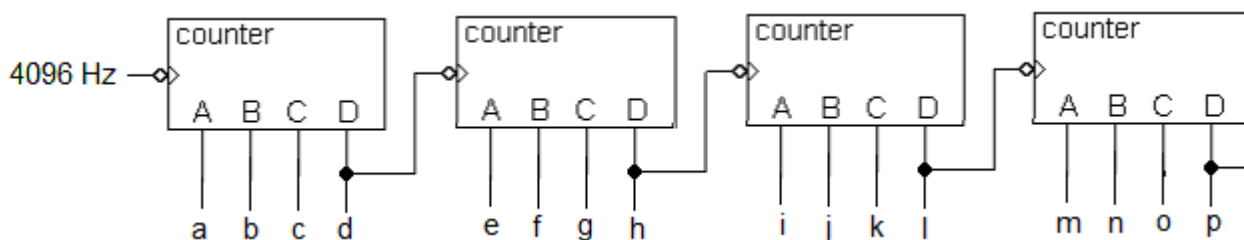


1 Link each **counting system** with the **number of pulses** it can count before it resets.

| counting system   | number of pulses |
|---|------------------|
|    | seven            |
|    | ten              |
|   | eleven           |
|  | thirteen         |

2 A signal at 4096 Hz enters the counter chain shown below. Link each of the frequencies listed below with the counter output (a to p) at which they appear.



1 Hz
8 Hz
32 Hz
64 Hz
256 Hz
2048 Hz

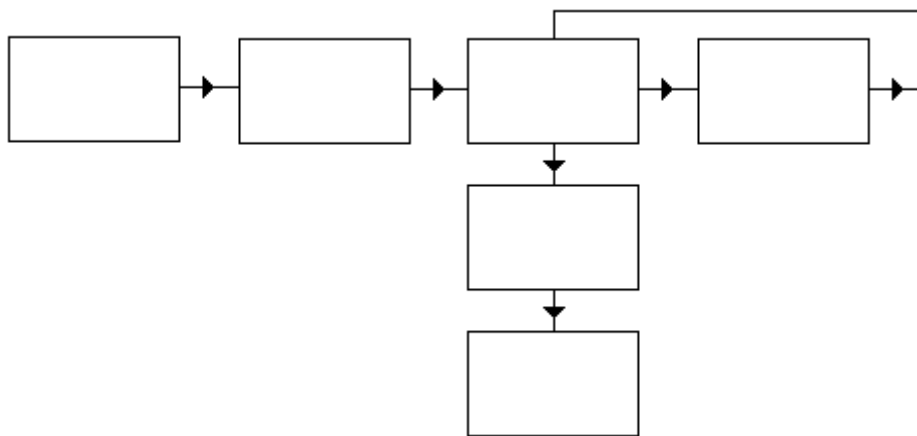
3 Link each **block** in an electronic clock with its **function**.

| block                 |
|-----------------------|
| decoder               |
| counter chain         |
| crystal oscillator    |
| reset logic system    |
| seven-segment display |

| function                                  |
|---|
| an output block                           |
| produces edges at a fixed rate            |
| reduces the frequency of a signal         |
| goes high when all of its inputs are high |
| four-bit word to seven-bit word converter |

4 Complete the block diagram for a clock. Choose from these words.

**counter**    **decoder**    **display**    **crystal oscillator**    **frequency divider**    **reset logic**



5 The timing diagram opposite is for the four-bit counter shown above it. Label each row of the diagram with the output (**A**, **B**, **C** or **D**) that it represents.

