

**KNOWLEDGE PROBE 2: MICRO & EMBEDDED CONTROLLERS**  
**Part 2: Popular Microcontrollers and Software**  
**Digital Signal Processing**

**Learning Objectives**

- Identify and distinguish between the most common and popular 8, 16, 32 and 64-bit microcontrollers.
  - Describe digital signal processing (DSP).
1. DSP permits almost any analog signal processing operation to be performed digitally.
    - a. True
    - b. False
  2. What is at the input of any DSP circuit?
    - a. Amplifiers
    - b. Analog-to-digital converter
    - c. Mixer
    - d. Phase shifter.
  3. Which of the following is NOT a typical DSP operation?
    - a. Amplification
    - b. Demodulation
    - c. Filtering
    - d. Mixing
  4. The basic math operation performed by a DSP algorithm is
    - a. Add-divide
    - b. Add-subtract
    - c. Multiply-add
    - d. Subtract-multiply
  5. Which of the following is generally NOT true about most DSP chips?
    - a. Harvard architecture
    - b. MAC circuits
    - c. Pipelined operation
    - d. Shifters
  6. A DSP is not considered as an embedded controller.
    - a. True
    - b. False
  7. Any type of CPU can be programmed to do DSP.
    - a. True
    - b. False



8. Which can be used to perform DSP?
  - a. 8-bit embedded controller
  - b. 32-core
  - c. ASIC
  - d. FPGA
  - e. All of the above
  
9. Which company is not a leading supplier of DSP chips?
  - a. Analog Devices
  - b. Freescale
  - c. Intel
  - d. Texas Instruments