

Name: \_\_\_\_\_

# Twos Complement Worksheet

1. What is the standard range of numbers that can be represented by an 8-bit *signed* binary number?  
\_\_\_\_\_

2. How many bits do you need to represent -33 using two's complement?

3. Write -1 through -9 in twos complement:

- 1: \_\_\_\_\_
- 2: \_\_\_\_\_
- 3: \_\_\_\_\_
- 4: \_\_\_\_\_
- 5: \_\_\_\_\_
- 6: \_\_\_\_\_
- 7: \_\_\_\_\_
- 8: \_\_\_\_\_
- 9: \_\_\_\_\_

4. Write each number as a six-bit twos complement binary number. Work each problem by hand (no calculators or conversion problems). Show your work.

- (a) -19
- (b) -12
- (c) -17
- (d) -31
- (e) -48
- (f) -51

5. Convert each six-bit twos complement binary number to base 10.

- (a) 111011
- (b) 100010
- (c) 000010
- (d) 111000