

Exercises: Number Bases 2

Exercises

1. (a) Find the ten's complement of:
 - i. 3201,
 - ii. 4312.
- (b) Use these to subtract the numbers from 4123.
- (c) Check your answers using ordinary subtraction or a calculator.
2. Use ten's complement to evaluate the following in denary:
 - (a) $12345 - 5678$,
 - (b) $5678 - 12345$.
3. Use two's complement to evaluate the following in binary:
 - (a) $01110011 - 01011001$
 - (b) $01011001 - 01110011$
 - (c) $01100111 - 00010111$
 - (d) $00001011 - 00100110$
 - (e) $00001101 - 00001110$

Solutions

1. (a) Find the ten's complement of:
 - i. 3201: 6799,
 - ii. 4312: 5688.
- (b) Use these to subtract the numbers from 4123.
 - i. $4123 + 6799 = 10922$. Ignore the first 1, to get 922 (positive).
 - ii. $4123 + 5688 = 9811$: take the ten's complement to get $0188 + 1 = 189$, so the answer is -189 .
- (c) Check your answers using ordinary subtraction or a calculator.
2. Use ten's complement to evaluate the following in denary:
 - (a) $12345 - 5678$: 6667,

(b) $5678 - 12345: -6667.$

3. Use two's complement to evaluate the following in binary:

(a) $01110011 - 01011001 = 0001\ 1010$

(b) $01011001 - 01110011 = -01\ 1010$

(c) $01100111 - 00010111 = 0101\ 0000$

(d) $00001011 - 00100110 = -0001\ 1011$

(e) $00001101 - 00001110 = -1$