Please do all these problems *without using a computer or calculator*. The purpose of these exercises is to help you develop your skill. Taking the time to practice will give you a better ability and understanding of the material.

Questions about carry and overflow assume signed (modular) arithmetic.

1. Hex FAC3 in binary is:

    1111101011000011 Y

2. Hex FAC3 as an unsigned decimal is:

    64,195 Y

3. Hex FAC3 as a signed decimal is:

    -1341

4. Hex 0064 in binary is:

    01100100

5. Hex 0064 as an unsigned decimal is:

    52

6. Hex 0064 as a signed decimal is:

    204

7. Hex 8000 in binary is:

    1000000000000000

8. Hex 8000 as an unsigned decimal is:

    64

9. Hex 8000 as a signed decimal is:

    32768

10. Decimal 8000 encoded in 16-bits (unsigned) is in hex:

    F40

11. Decimal 8000 encoded in 16-bits (signed) is in hex:

    -F40

12. Decimal -11 encoded in 16-bits (signed) is in hex:

    -B

13. Decimal -32717 encoded in 16-bits (signed) is in hex:

    -7FCD

14. Binary 10111101 in hex is:

    BD

15. Binary 1011110100000001 as an unsigned decimal is:

    48385

16. Binary 1011110100000001 as a signed decimal is:

    -17,151

17. If we had 20-bit registers, the smallest signed decimal value would be:

    2^0: 1

18. If we had 20-bit registers, the largest signed decimal value would be:

    2^20: 1,048,576

    Isn't the left-most bit reserved for the sign (+ -) so it would be 2^19?

19. The modular sum of 16-bit hex values 3511 + 4FFC is:

    850D

20. The saturated sum of 16-bit hex values 3511 + 4FFC is:

    9EAC

21. The 16-bit operation 3511 + 4FFC has a carry (Y or N):

    N

22. The 16-bit operation 3511 + 4FFC has a overflows (Y or N):

    N

23. The modular sum of 16-bit hex values 6159 + F702 is:

    585B (With overflow)

24. The saturated sum of 16-bit hex values 6159 + F702 is:

    FFFF

1. Two negative numbers are added and an answer comes positive or
   Two positive numbers are added and an answer comes as negative.

25. The 16-bit operation 6159 + F702 has a carry (Y or N):

    Y

26. The 16-bit operation 6159 + F702 has a overflows (Y or N):

    N

27. The modular sum of 16-bit hex values EEEE + C00C is:

    AEFA

28. The saturated sum of 16-bit hex values EEEE + C00C is:

   FFFF

29. The 16-bit operation 9EEE + AB0C has a carry (Y or N):

   Y

30. The 16-bit operation 9EEE + AB0C has a overflows (Y or N):

   N

31. The negation of 16-bit word B00F is:

   0100111111110000

   4FF0

32. The negation of 16-bit word 2232 is:

   1101110111001101

   DDCD

33. The negation of 16-bit word 8000 is:

   0111111111111111

   7FFF

34. The negation of 32-bit word FFF329BA is:

   00000000000011001101011001000101

   CD6450

40. 96.03125 as a 32-bit float, in hex is:

   0X8580400

41. -16777216 as a 32-bit float, in hex is:

46. Hex C059000000000000, when interpreted as an IEEE-754 pattern, is in decimal:

3.015625

1. Hex 43700000, when interpreted as an IEEE-754 pattern, is in decimal:

240

2. Hex C0FF0000, when interpreted as an IEEE-754 pattern, is in decimal:

7.03125