

## Correction

Parity: Odd  $\rightarrow$  1 if the number of "1"s is odd  
Even  $\rightarrow$  1 if the number of "0"s is even.

## Test answers:

### Question 1

$$\begin{aligned} 1.a) \quad -27_{10} \text{ into signed binary:} \\ +27 &= 16 + 8 + 2 + 1 \\ &= 011011 \end{aligned}$$

$$\begin{aligned} \text{Take 2's comp:} \\ -27 &= 100101 \end{aligned}$$

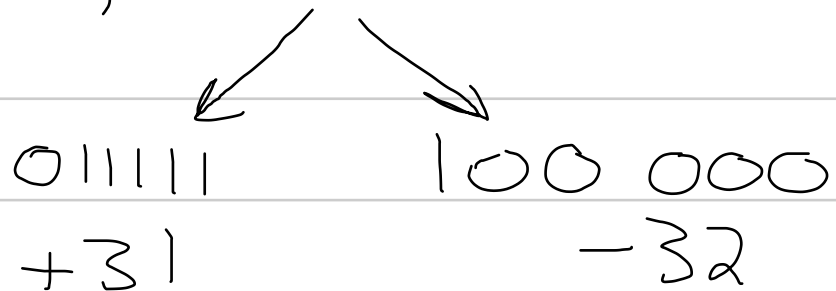
$$\begin{aligned} 1.b) \quad 49_{16} &= 4 \times 16 + 9 \\ &= 73_{10} \end{aligned}$$

$$1.c) \quad 01101011_2 = 153_8$$

$$\begin{aligned} 1.d) \quad 0101.110_2 &= 4 + 1 + 0.5 + 0.25 \\ &= 5.75 \end{aligned}$$

$$\begin{aligned} 1.e) \quad 1011.011 &= -8 + 2 + 1 + 0.25 + 0.125 \\ &= -4.625 \end{aligned}$$

2.a) 100101



Range = 63  
Precision = 1

2.b)  $73_{10}$

Range = 99  
Precision = 1

2.c) 511; 1

d) 9.99; 0.01

e) 9.999; 0.001

3.a) 010.11 + 00011.01

$$\begin{array}{r} 001010.11 \quad Q2.2 \\ + 00011.01 \quad Q4.2 \\ \hline 00110.00 \quad Q4.2 \end{array}$$

3.b)

$$\begin{array}{r} 10101.11 \\ - 0101.01 \\ \hline 0111.10 \quad Q4.2 \quad \text{carry/borrow} \end{array}$$



$$| 00.111 \div 0.1111$$

$$\downarrow$$

$$-1x (011.001 \div 0.1111)$$

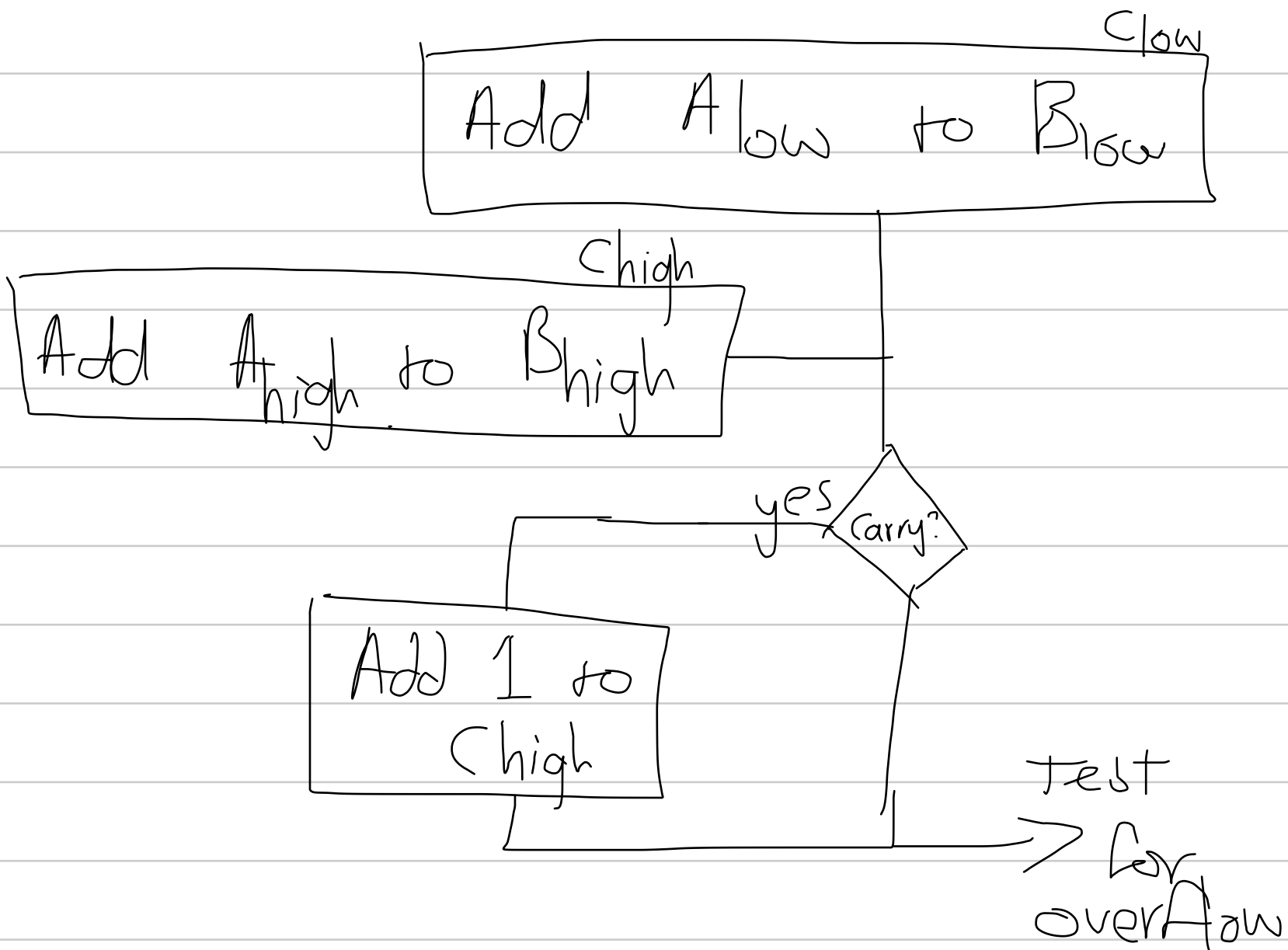
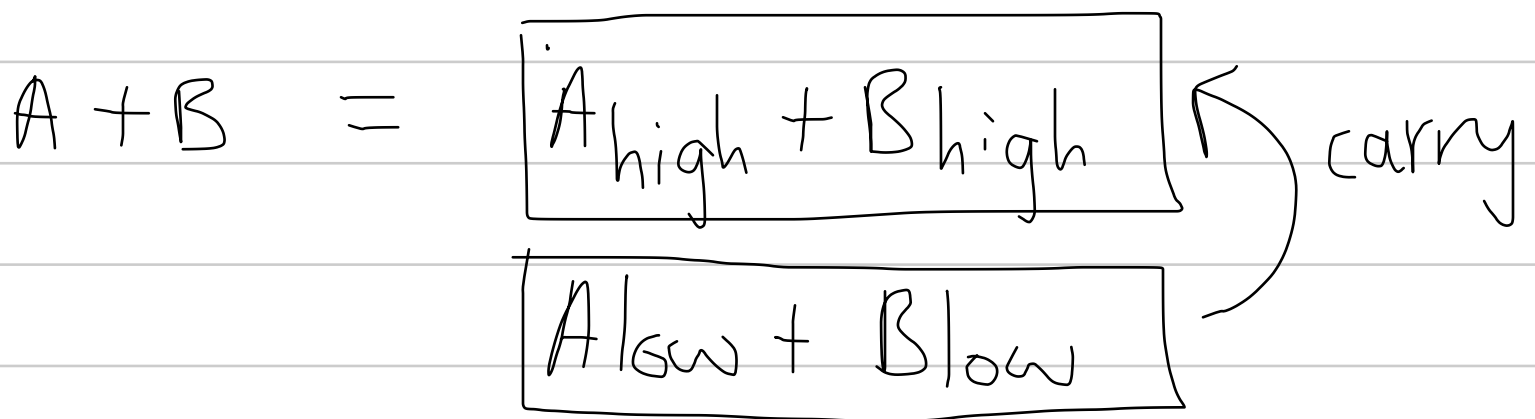
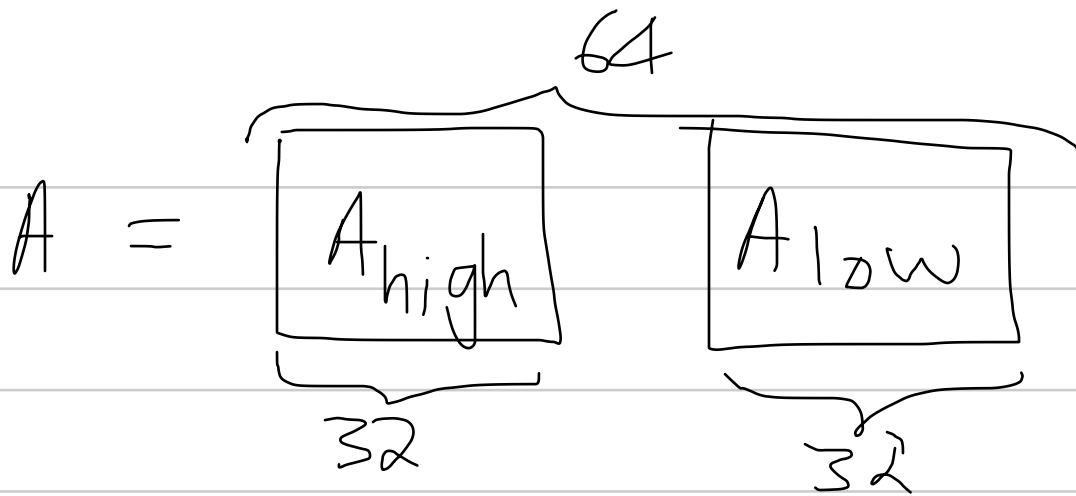
not in  
exam  
rem  
1010

0000		1010
1111		0000
<del>0000</del>		↓
- 1111		↓
<del>0000</del>		0
- 1111		↓
0000		↓
- 1111		↓
0		0
0		010

$$= -1x 00001.1010 \quad (Q 4.4)$$

$$= 11110.0110$$

$$= 10.6110 \quad Q(1.4)$$





D Grant