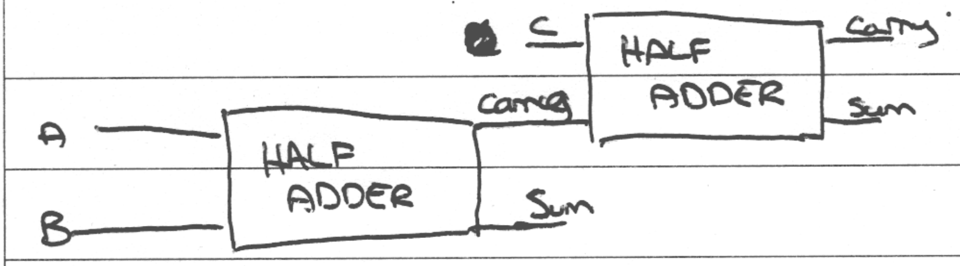
Question 25

25a.i.

A	B	C	S
1	1	1	0
1	0	0	1
0	1	0	1
0	0	0	0

ii. A full adder is used to add 3 binary digits together using 3 inputs and 2 outputs. A full adder can be constructed using 2 half adders by adding 2 bits together in a half adder, then adding the carry bit to a third bit, and keeping the sum of the 1st 2 bits



b. Integer representation is when integer numbers are represented in binary form, ~~such as~~ ~~by integers or counting numbers~~, whereas Floating point representation represents numbers as an integer, with a mantissa and an exponent in binary form.

Integer representation is useful when storing whole numbers which are not large, ~~[illegible]~~ whereas Floating Point Representation is used with large numbers or numbers that need extra precision.

c. i. Right 178 millimeters

Up 211 millimeters

ii. $\frac{211 + 178}{13}$ = remainder

$= 29\frac{12}{13}$

remainder = 12.

```
~~iii/ BEGIN~~
    ~~Packet 4 is integer~~
    ~~Extract Data from StringIn~~

    ~~IF Data Length = correct Length THEN~~
```

```
iii. BEGIN
    Correct length is integer
    Packet4 is integer
    Remainder is integer
    Extract Data from StringIn
                          =
    IF Data Length ~~≠~~ ~~<>~~ correct length THEN

        Packet4 = DataPacket1 + DataPacket2
        Packet4 = Packet4 ÷ 13
        Remainder = remainder of Packet4 ÷ 13
        IF ~~Packet~~ Remainder < > Checksum THEN
            Display Error Message
        ELSE
            IF ~~Packet4~~ DataPacket1 ≥ 128 THEN
                      Right
                Move [illegible] (Datapacket1 - 128) millimeters
            ELSE
                      Left
                Move ~~Down~~ (DataPacket1) millimeters
        ENDIF
```

```
                IF DataPacket 2 ≥ 128 THEN
                    Move up (DataPacket 2 - 128) millimeters
                ELSE
                    Move Down (Datapacket 2) millimeters.
               ENDIF
          ELSE
               Display error message
          ENDOIF
         ENDIF
     END.
```