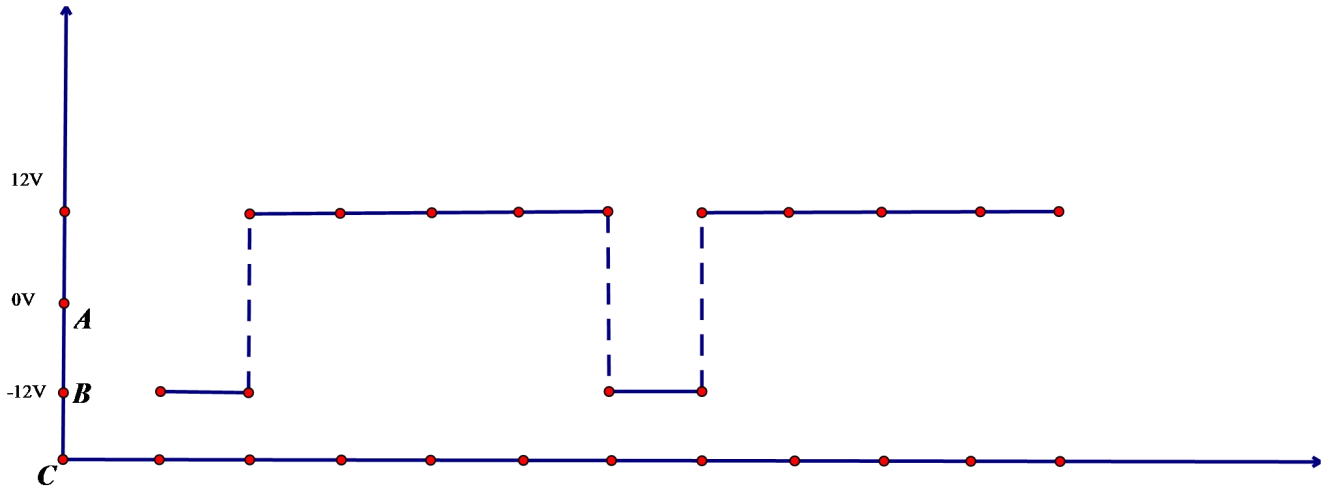
Workshop2 --Answer

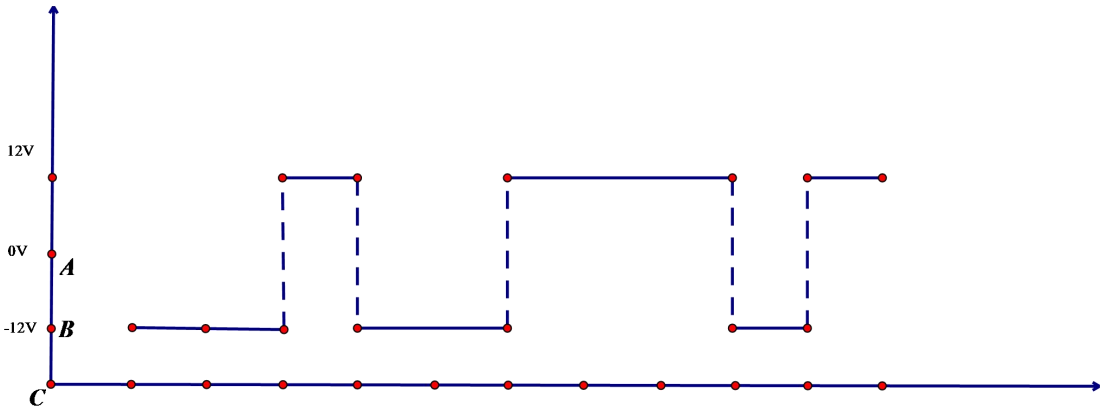
3.1

NRZ 编码坐标示意图：

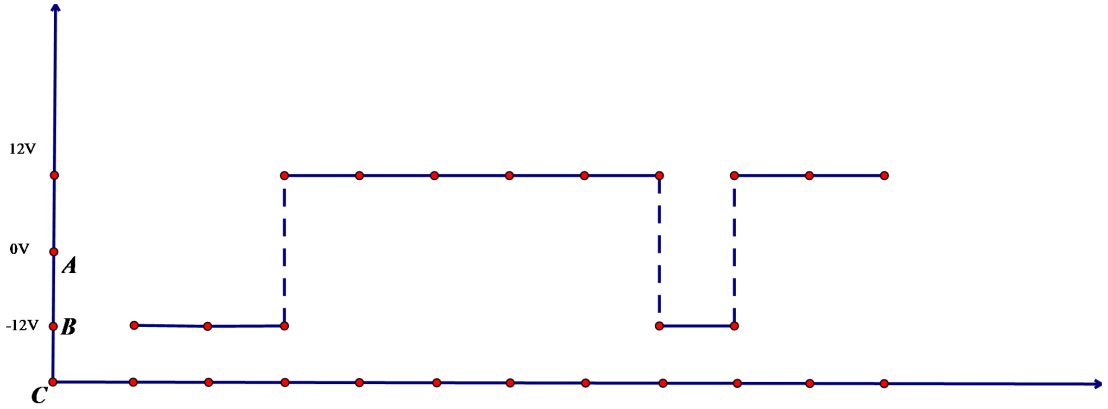
1. 00001000



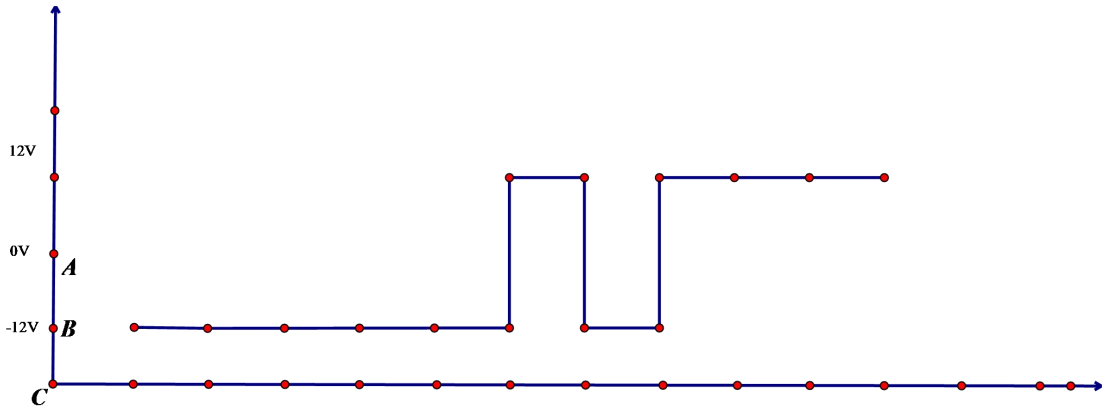
2. 10110001



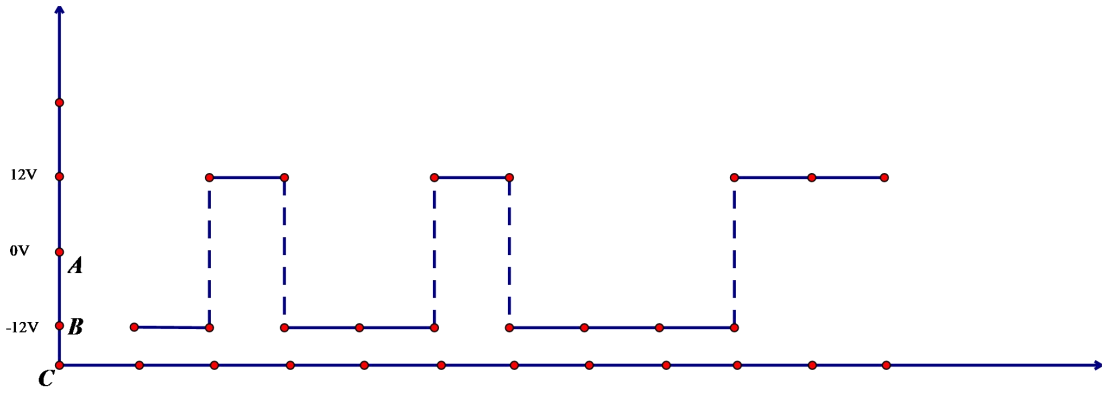
3. 10000010



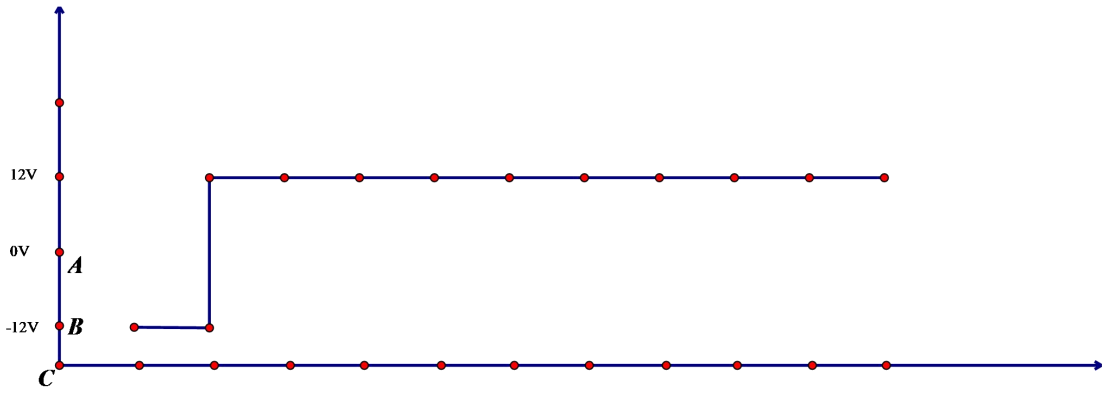
4. 11110100



5. 01101110

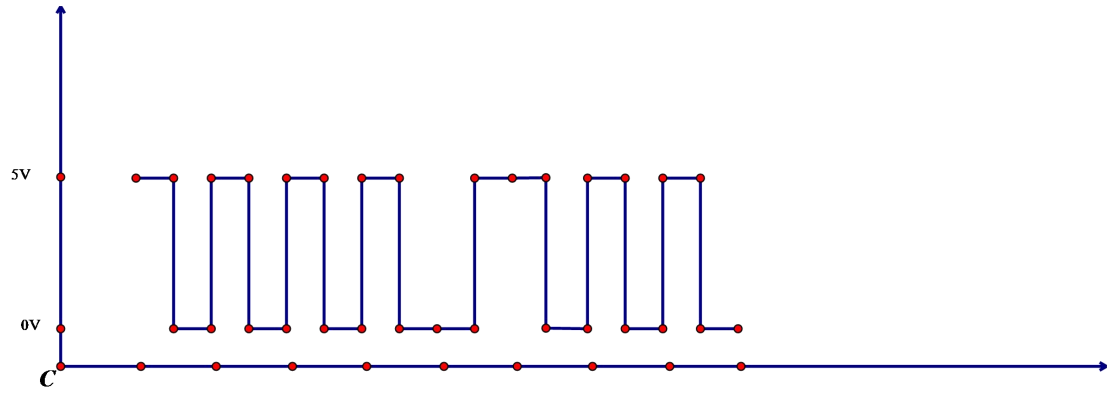


6. 00000000

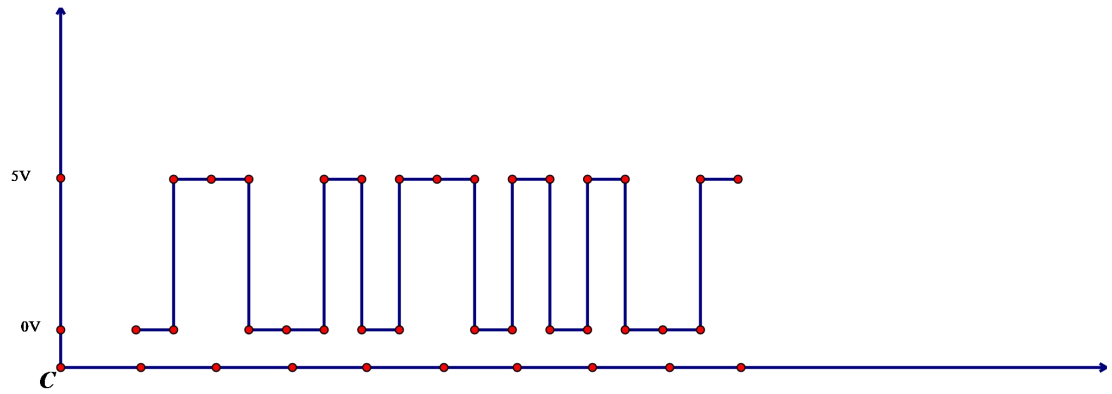


曼彻斯特编码：

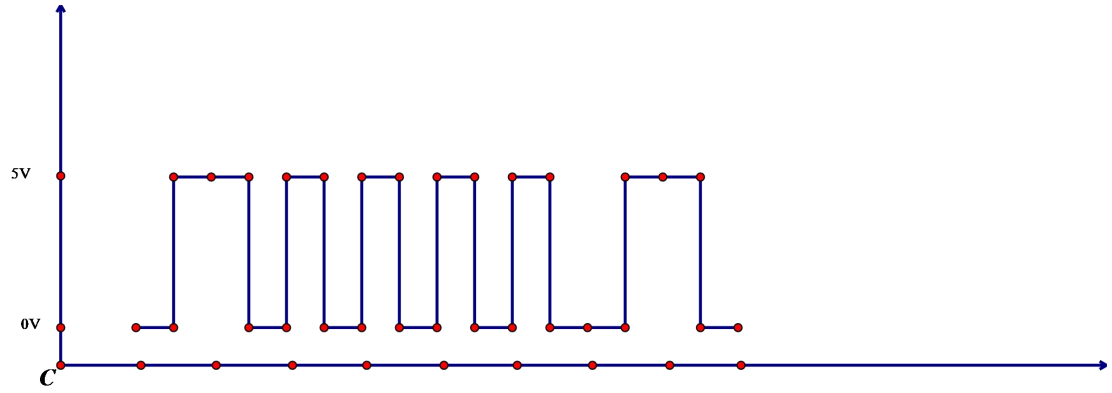
1. 00001000



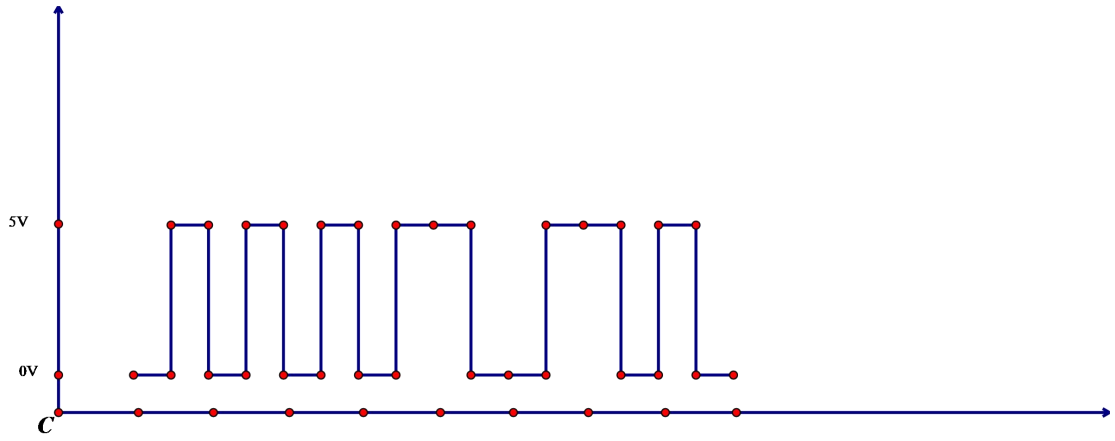
2. 10110001



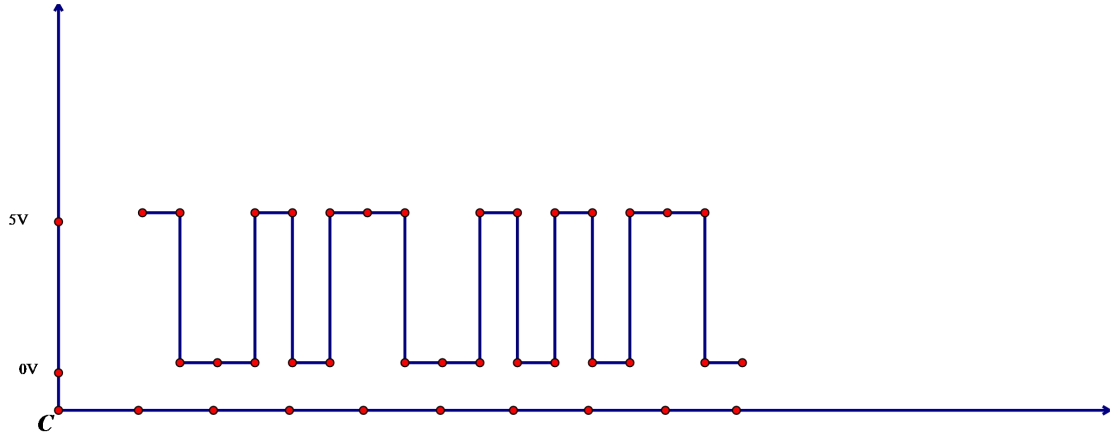
3. 10000010



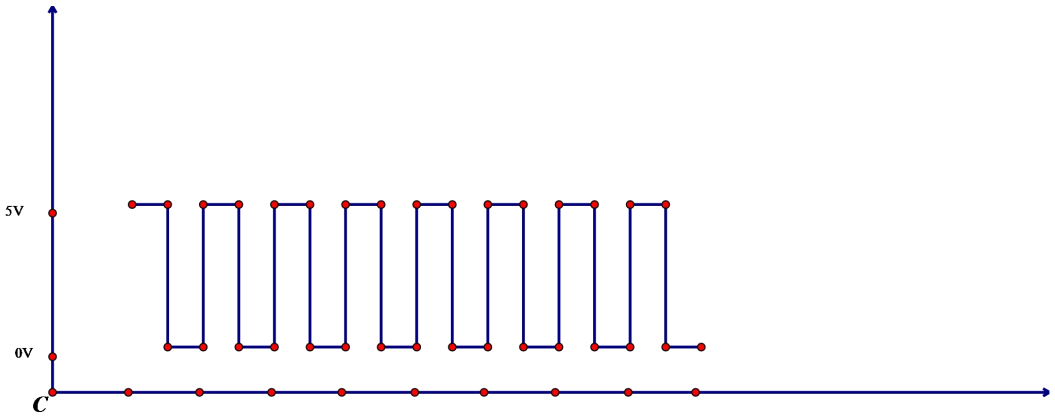
4. 11110100



5. 01101110



6. 00000000



综合练习：

1. 每个像素值可呈现 32 种颜色，故每个像素需要 5bit 位表示，每张图片有 480*500 个像素，所以表示每张图片需要 480*500*5 bit 位。每秒钟电视发送 30 张图片，即这个频道的数据传输率= 480*500*5*30 bit/s = $3.6*10^7$bit/s。
2. 根据公式可得：

   C=R*Log2（16）=20000b/s*4=80000b/s
3. 根据题意可得：

(1) $35*10^3=3100*\log_2(1+S1/N1)$ ----> S1/N1 = 2520

$35*10^3*(1+60\%)=3100*\log_2(1+S2/N2)$ ----> S2/N2 = 273275

(S2/N2)/(S1/N1) = 109 倍

(2) 10*(S2/N2) = 2732570

$C=W\log_2(1+S/N)$ = 66kb/s

(1+X)*35*(1+60%) = 66

所以 X=18%

故最大信息速率增加不足 20%