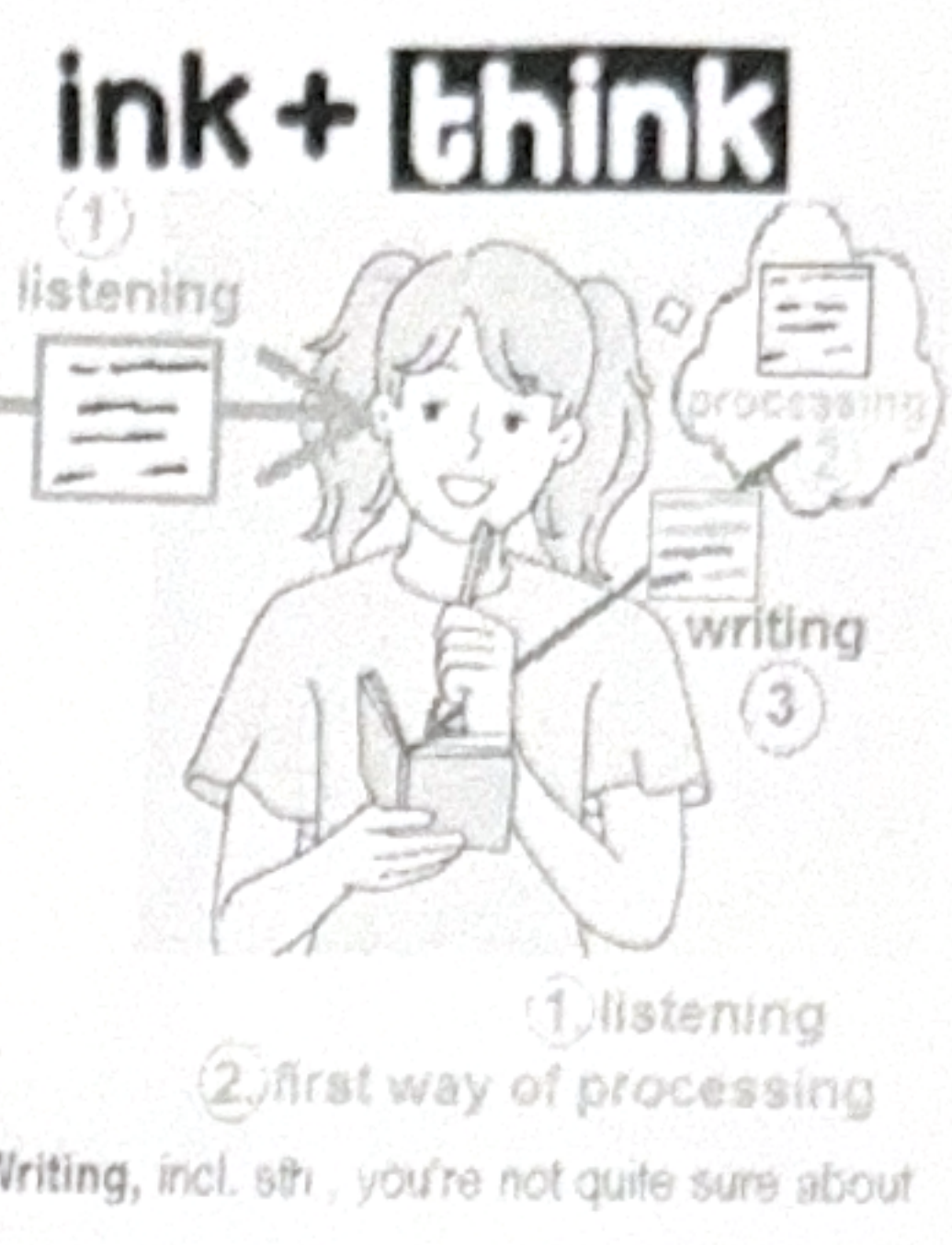


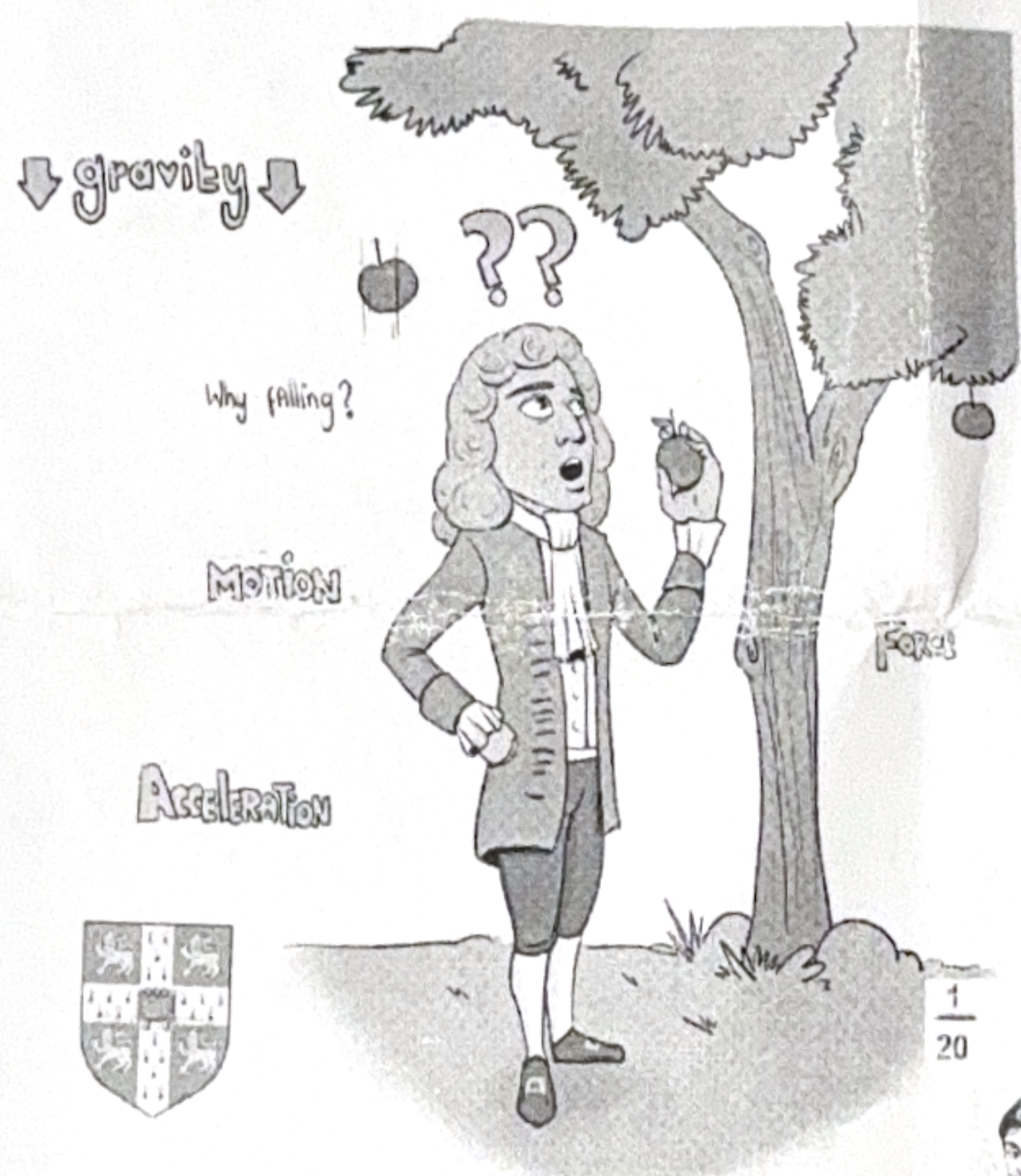
+0.1 11.2.26

+0.1 17.6

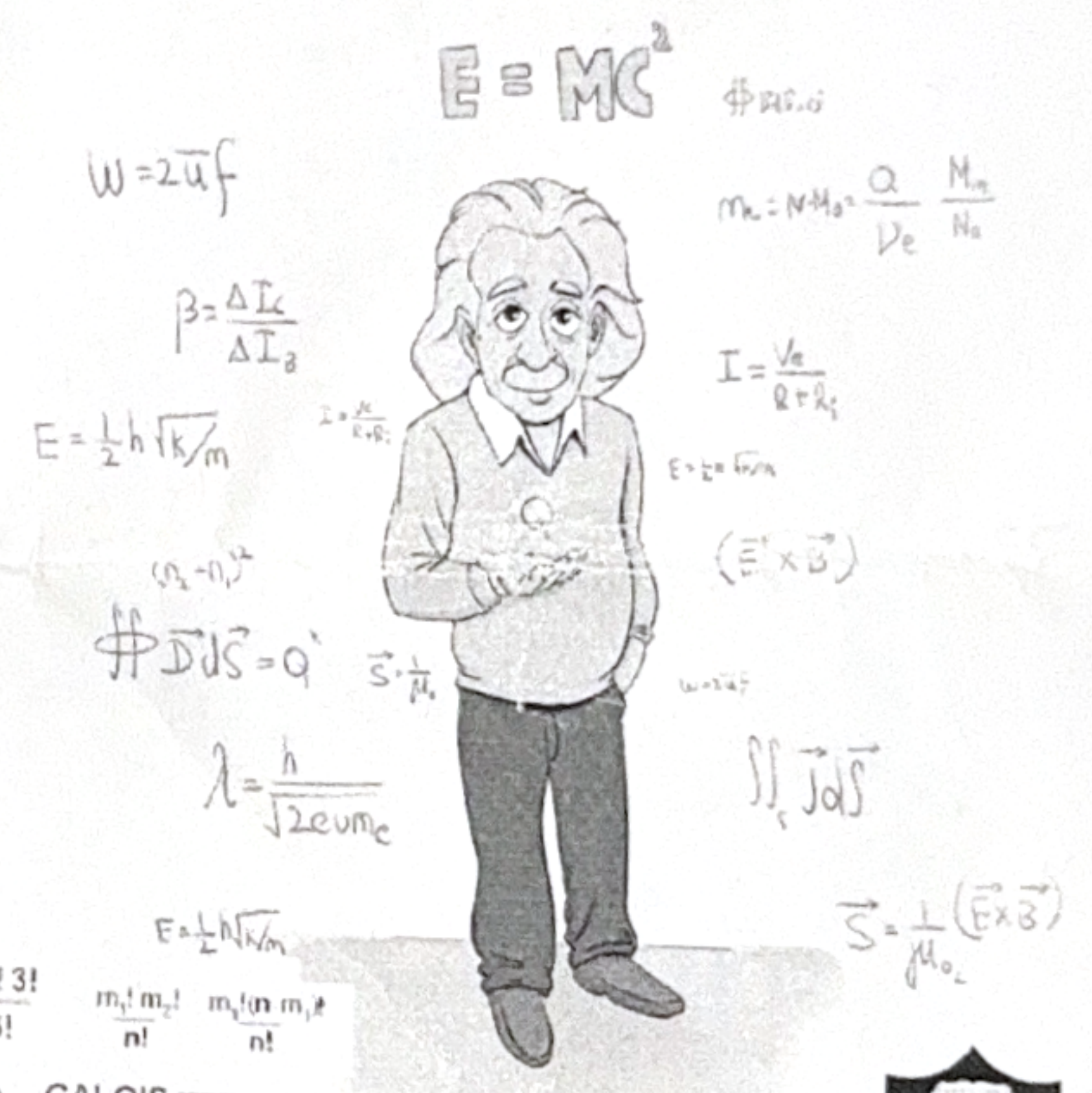


School $\downarrow$ gravity $\downarrow$ MOTION ==formalism==> University $E=MC^2$ $\oint \vec{A} \cdot d\vec{s} = \oint \vec{J} \cdot d\vec{s}$

CONCRETE AND ABSTRACT THINKING



ISAAC NEWTON



ALBERT EINSTEIN



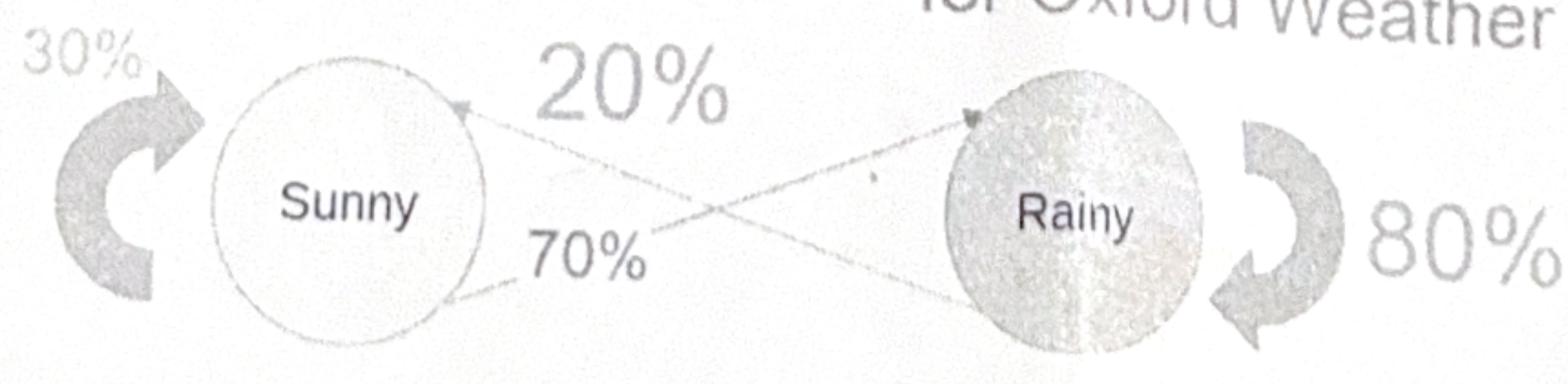
Motivation: 80% chance of rain
Let A_j be the event of rain at 9am on day j of this term, $1 \leq j \leq n$

Suppose the events A_i each have probability p , independently

Oxford				
Tue 13th	Wed 14th	Thu 15th	Fri 16th	
10° 9° 70%	13° 10° 70%	13° 8° 70%	11° 7° 90%	

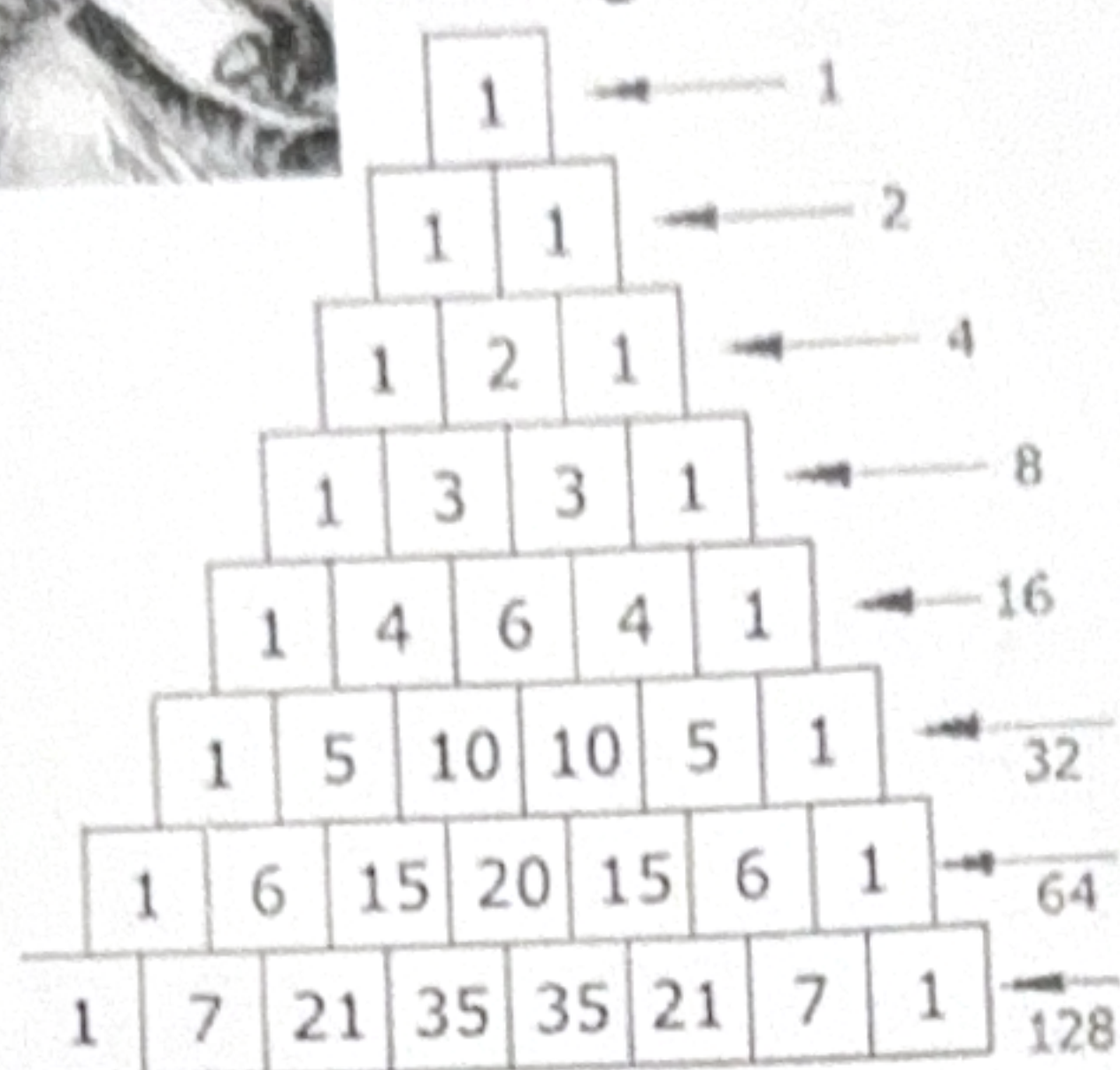


Markoff Chain Probability Model
for Oxford Weather





Pascal's triangle



$$(a + b)^0 =$$

$$(a + b)^1 =$$

$$(a + b)^2 =$$

$$(a + b)^3 =$$

$$(a + b)^4 =$$

$$(a + b)^5 = a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + b^5$$

1

$$a + b$$

$$a^2 + 2ab + b^2$$

$$a^3 + 3a^2b + 3ab^2 + b^3$$

$$a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$$

Newton's Binomial



0 0 0 0 0 0

0 0 0

0

0

0.6

0.3

0.1

0.1

1.0.6

2.0.3

3.0.1

3.0.1

0.5

0.6

0.3

0.3

1.8

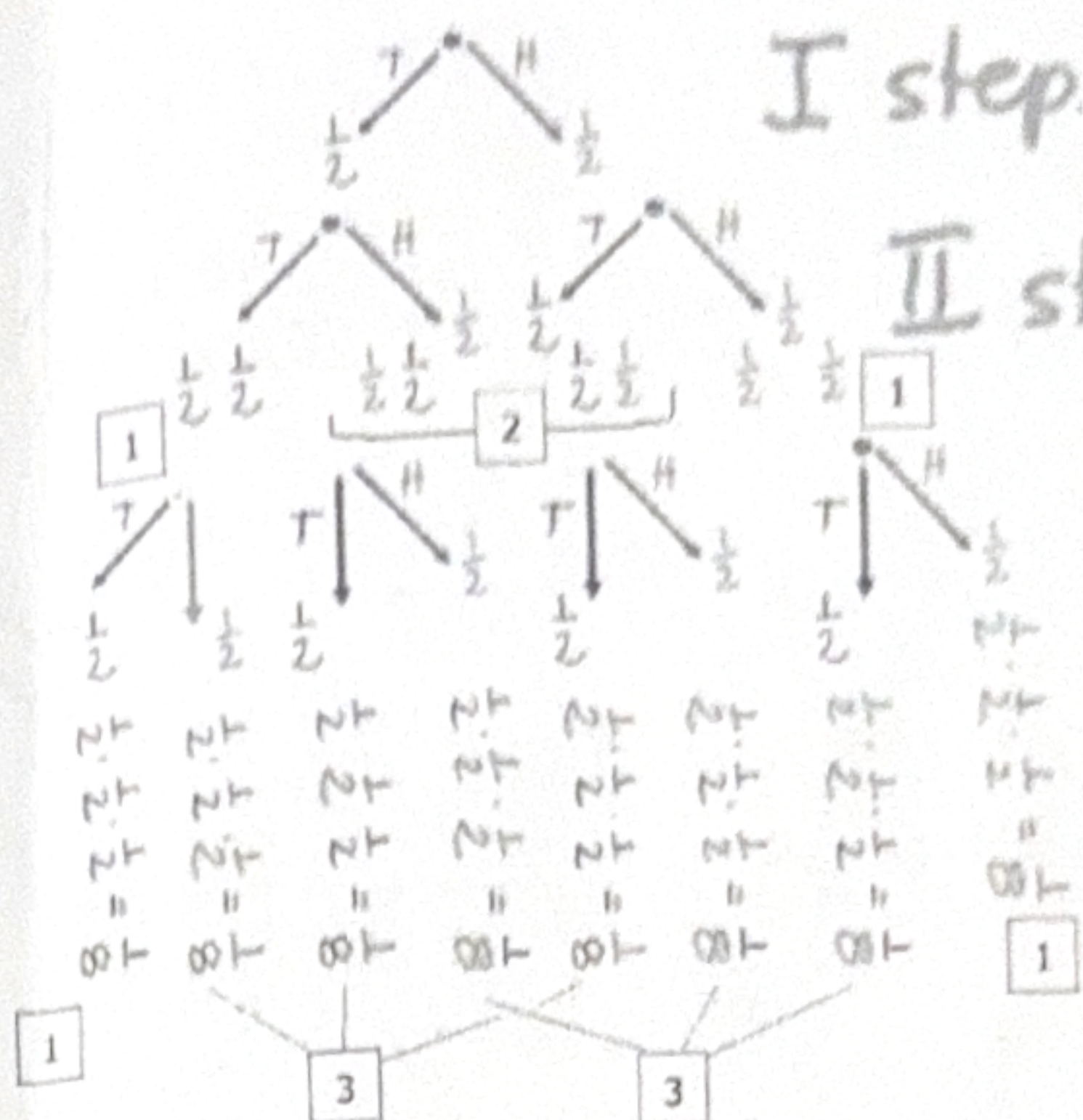


2

I step

II steps

III steps

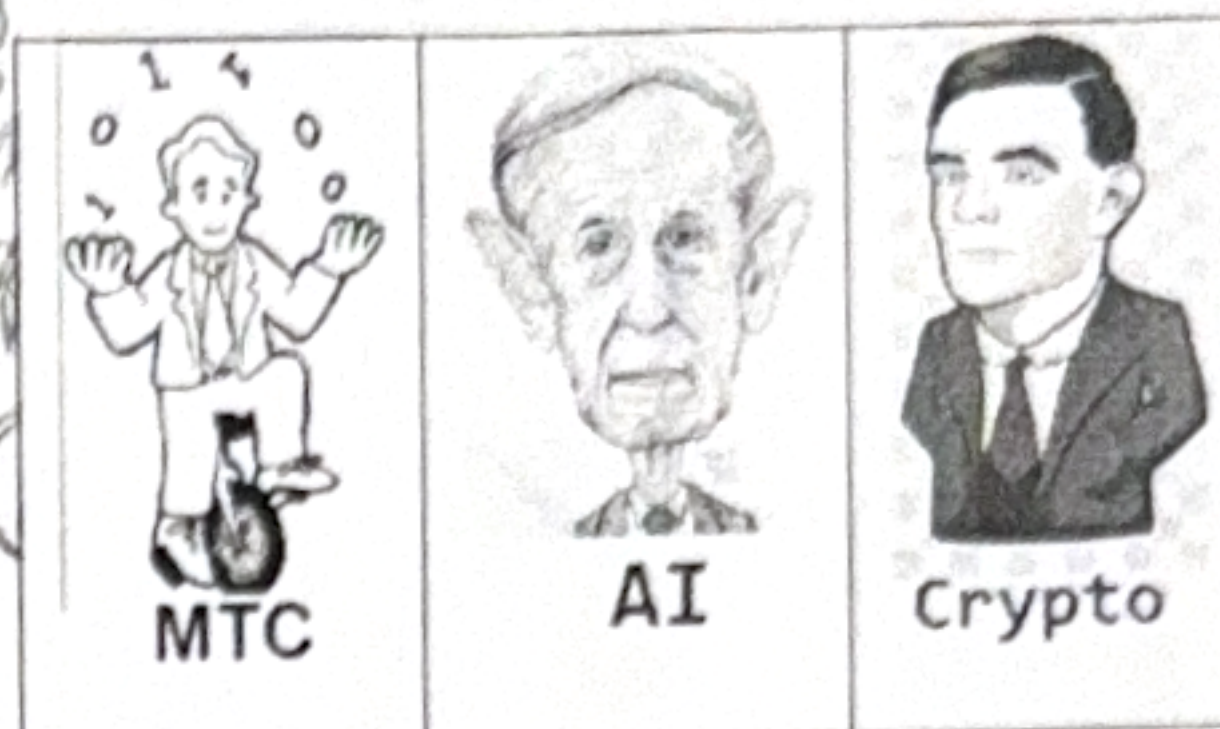


+0.1 +0.1 +0.1 (+0.1) 9.4

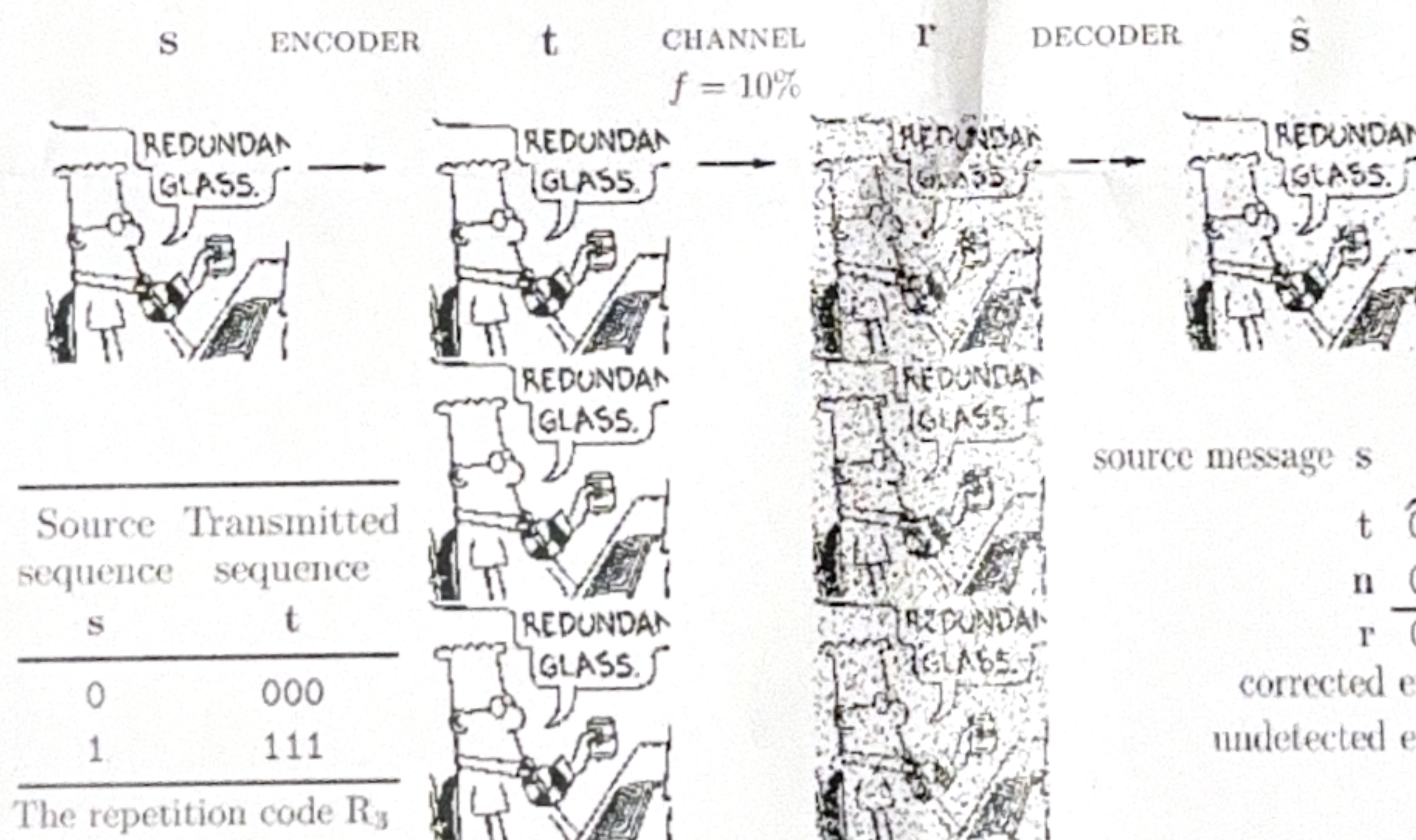
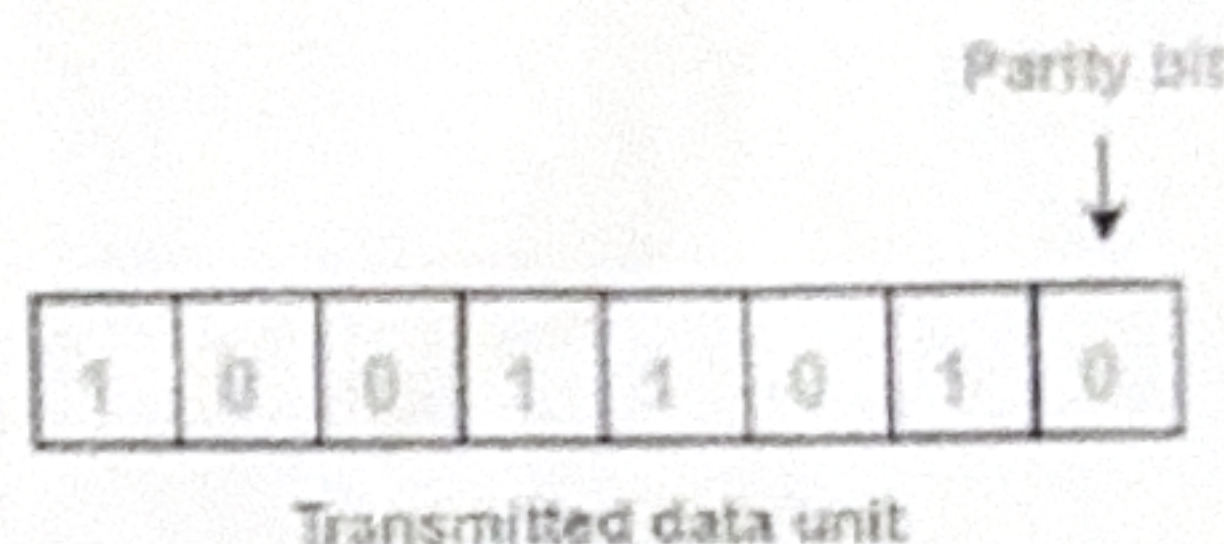
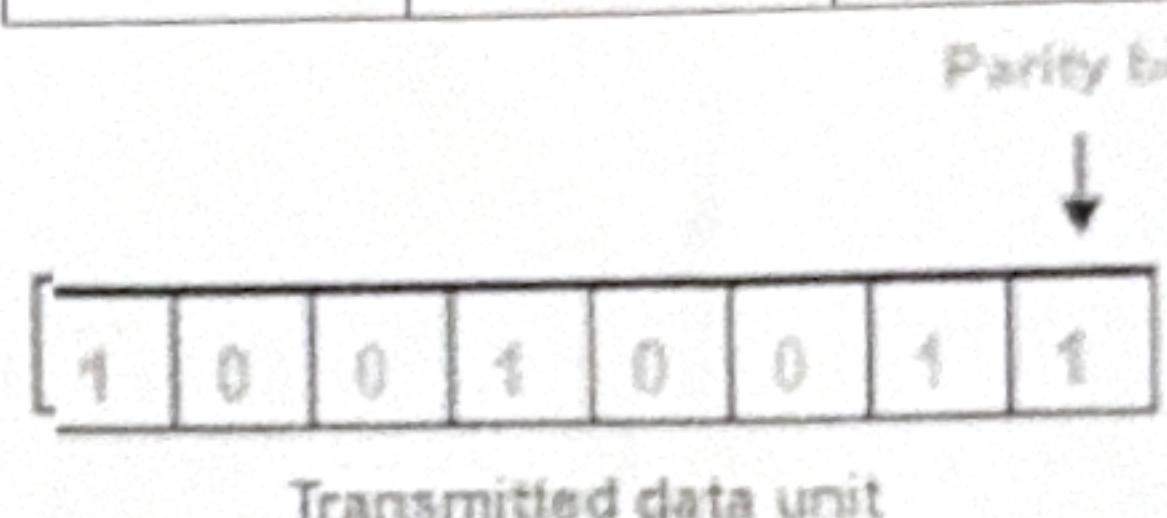
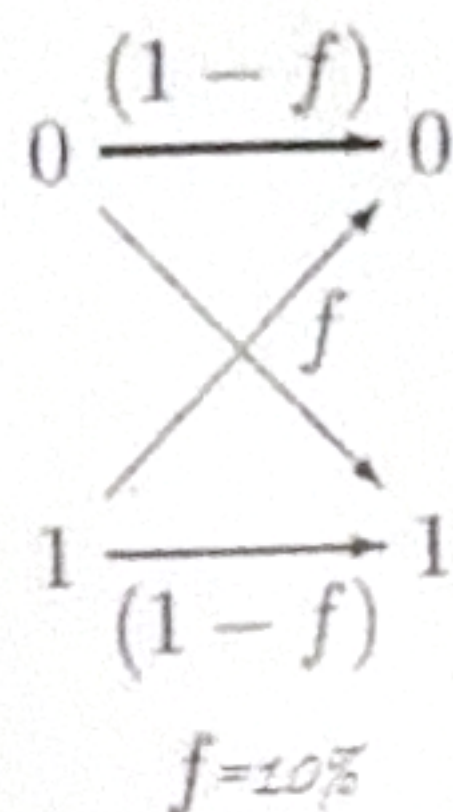
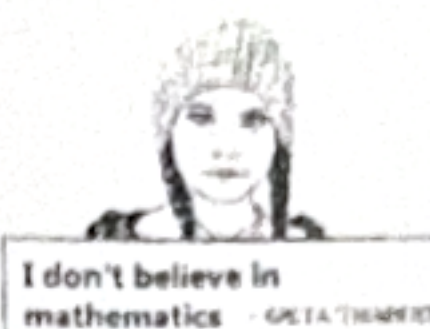
Do tip if I make error



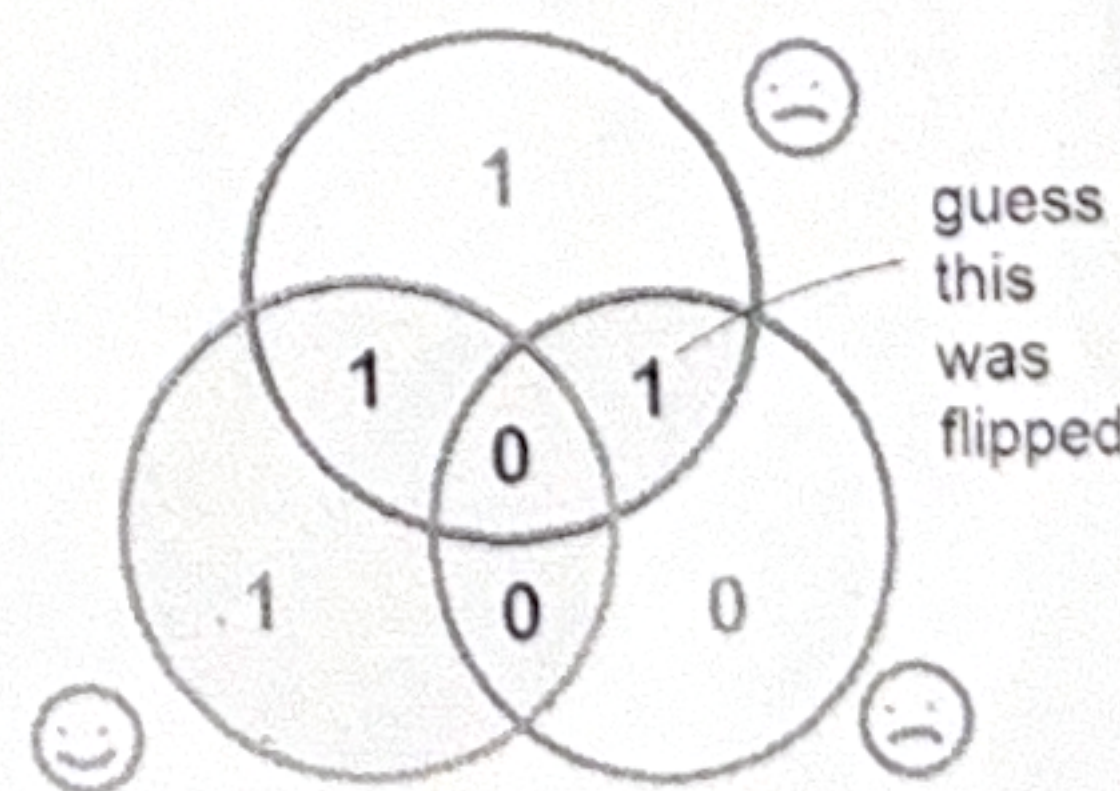
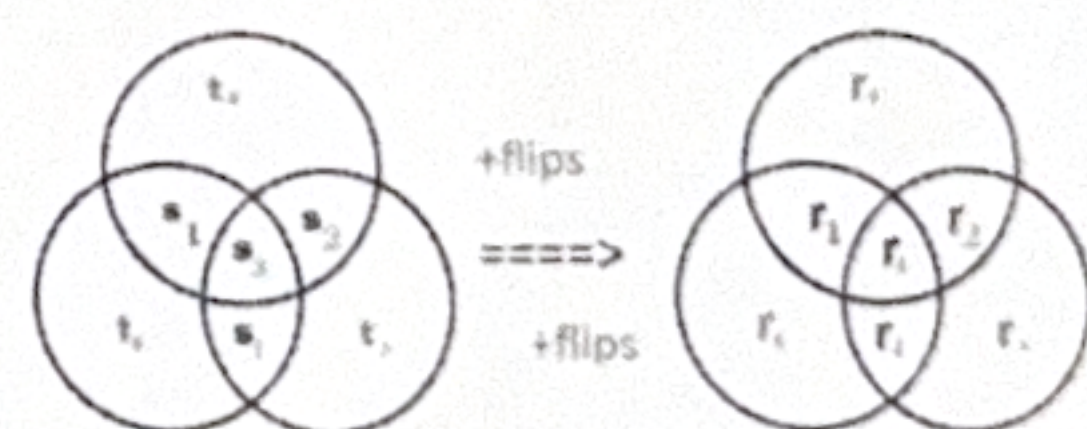
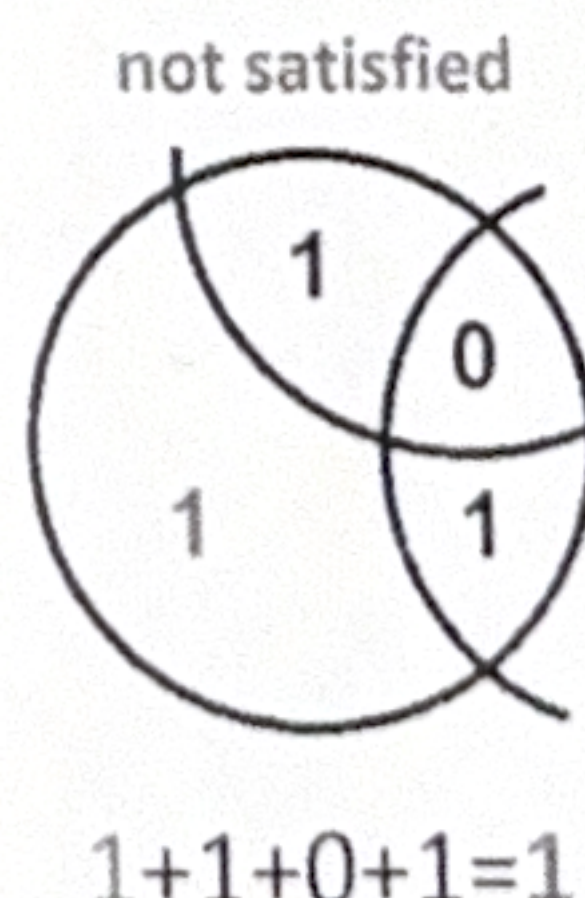
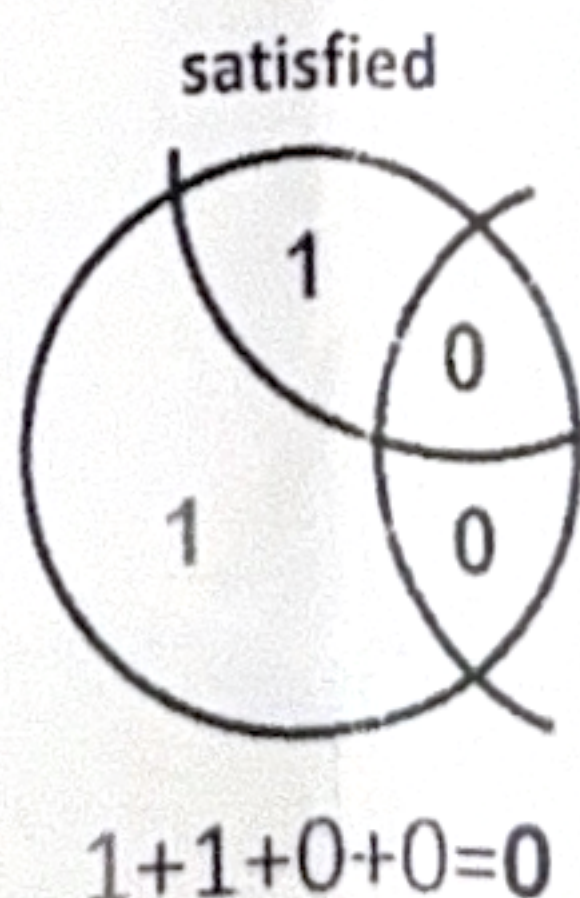
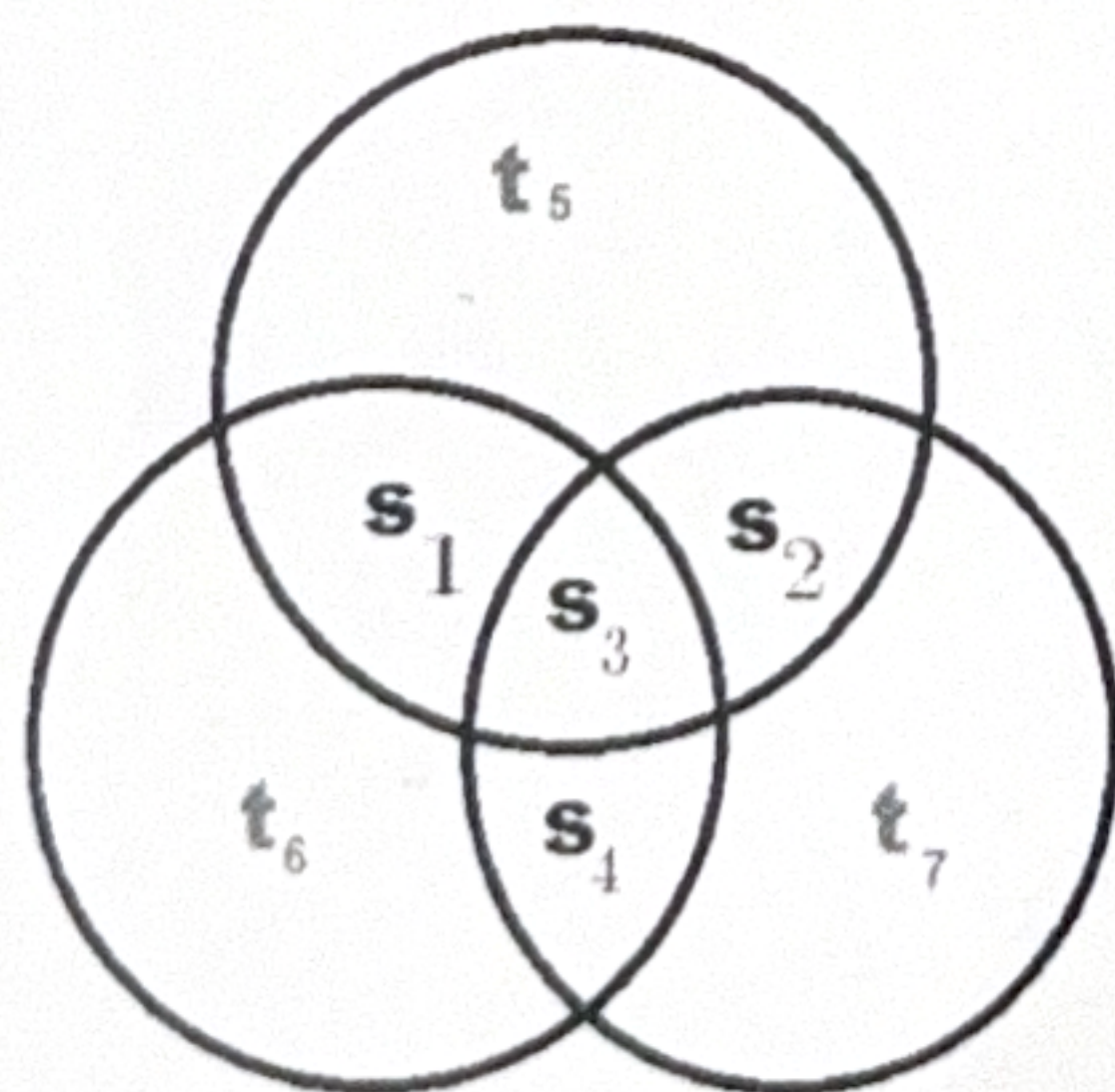
Sir Dr. D. MacKay,
University of Cambridge
(22 April 1967 – 14 April 2016)



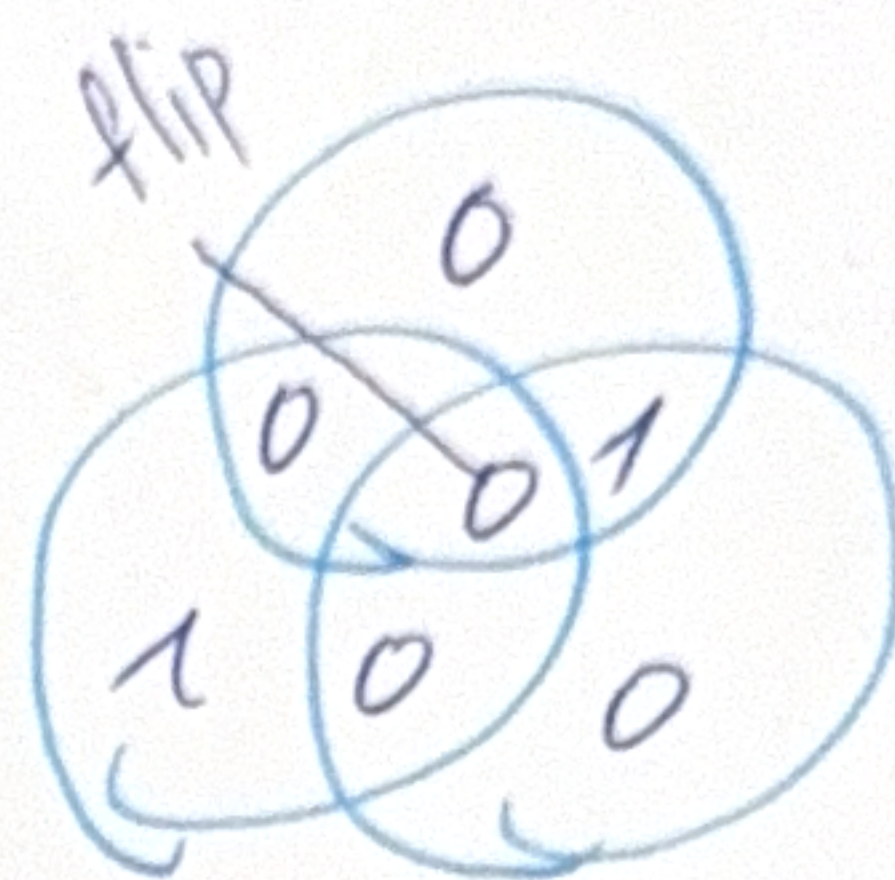
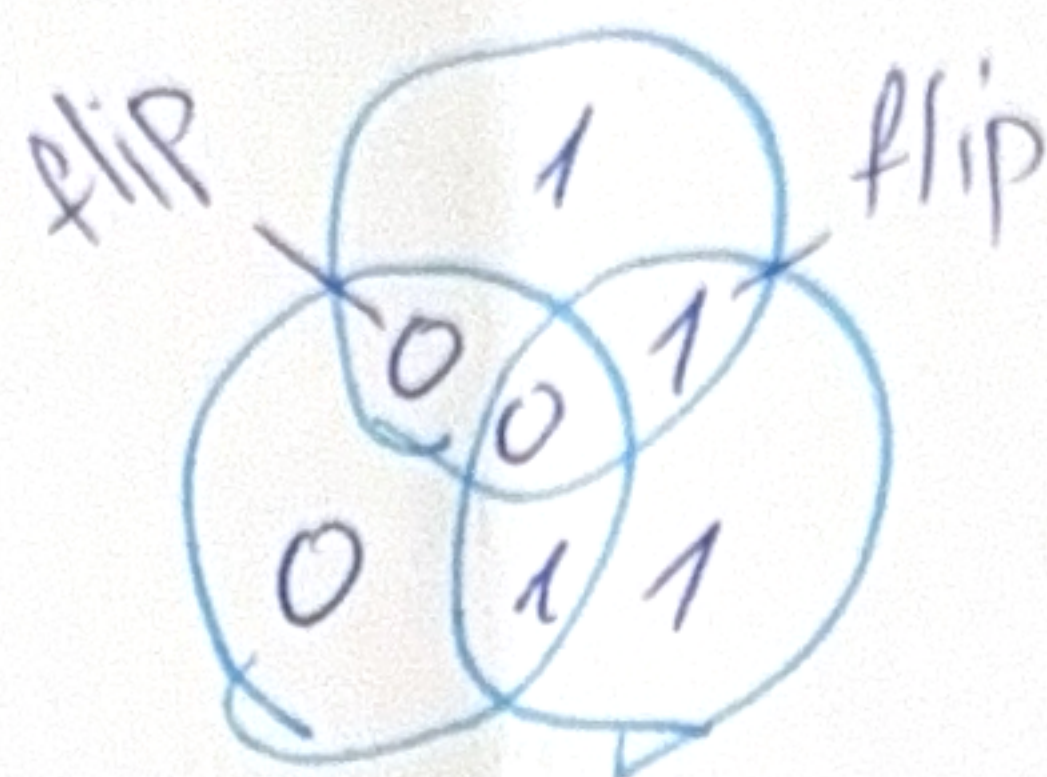
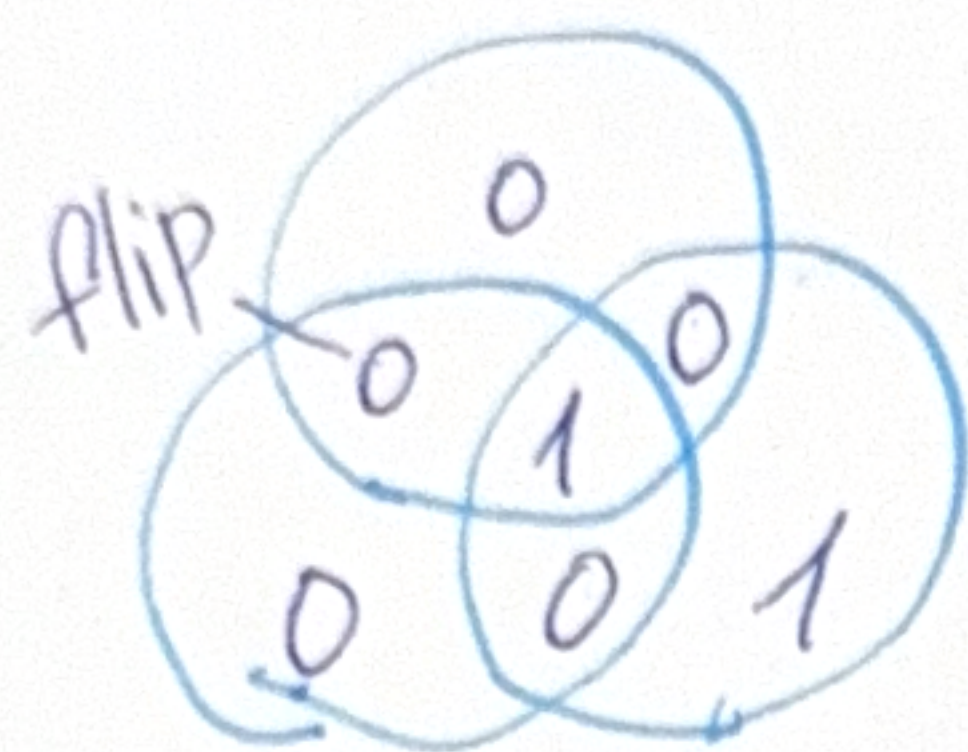
"I believe in clean energy,
but I also believe in mathematics"

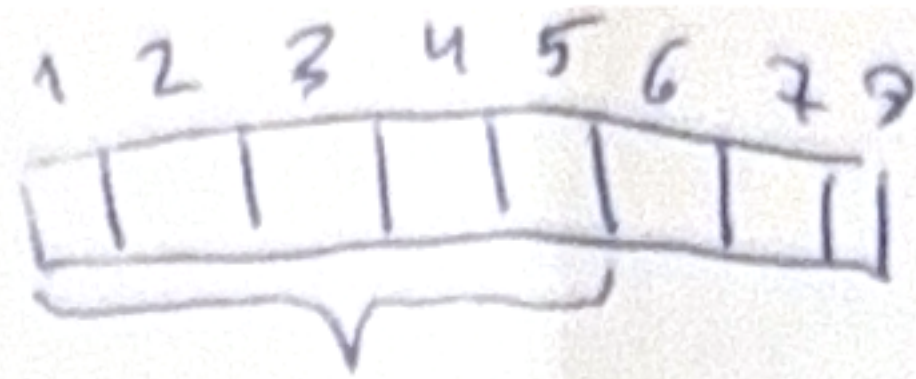


7.4. Hamming code. $\frac{4}{\Sigma} \rightarrow \frac{7}{t}$



+0.1





$$\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc - \frac{5}{8} = 0,625$$

$$\bullet - \frac{1}{8} = 0,125$$

$$\square - \frac{1}{8} = 0,125$$

$$\blacksquare - \frac{1}{8} = 0,125$$

$$1 \cdot 0,625$$

$$2 \cdot 0,125$$

$$3 \cdot 0,125$$

$$4 \cdot 0,125$$

$$0,625 + 0,25 + 0,375 + 0,5 = 1,75$$