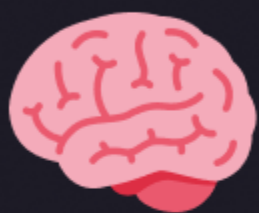




As 3 partes principais

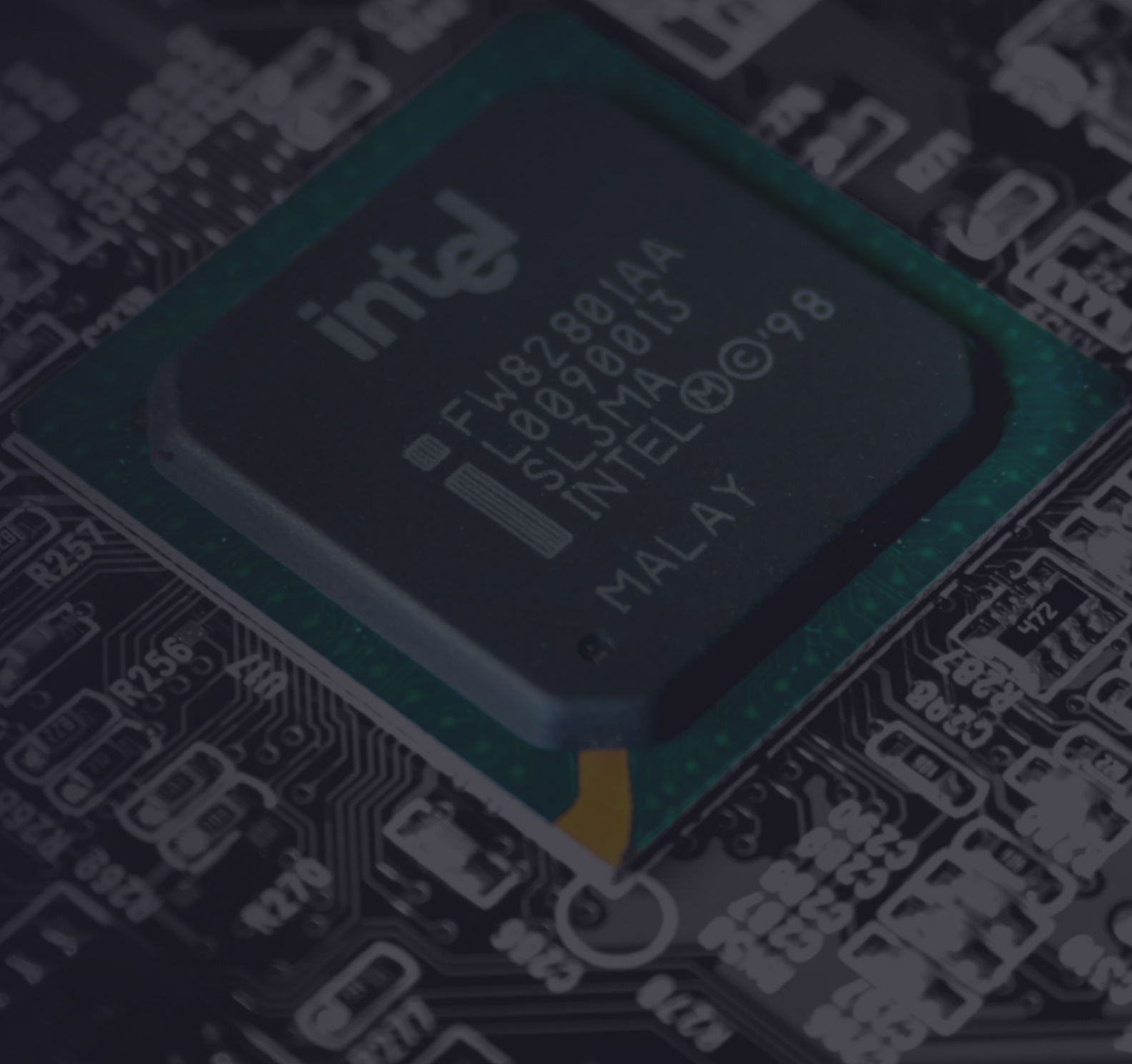
Processador, HD e memória



O Cérebro

Processador

É responsável por executar operações matemáticas.





Dispositivos de Armazenamento

HDs e SSDs

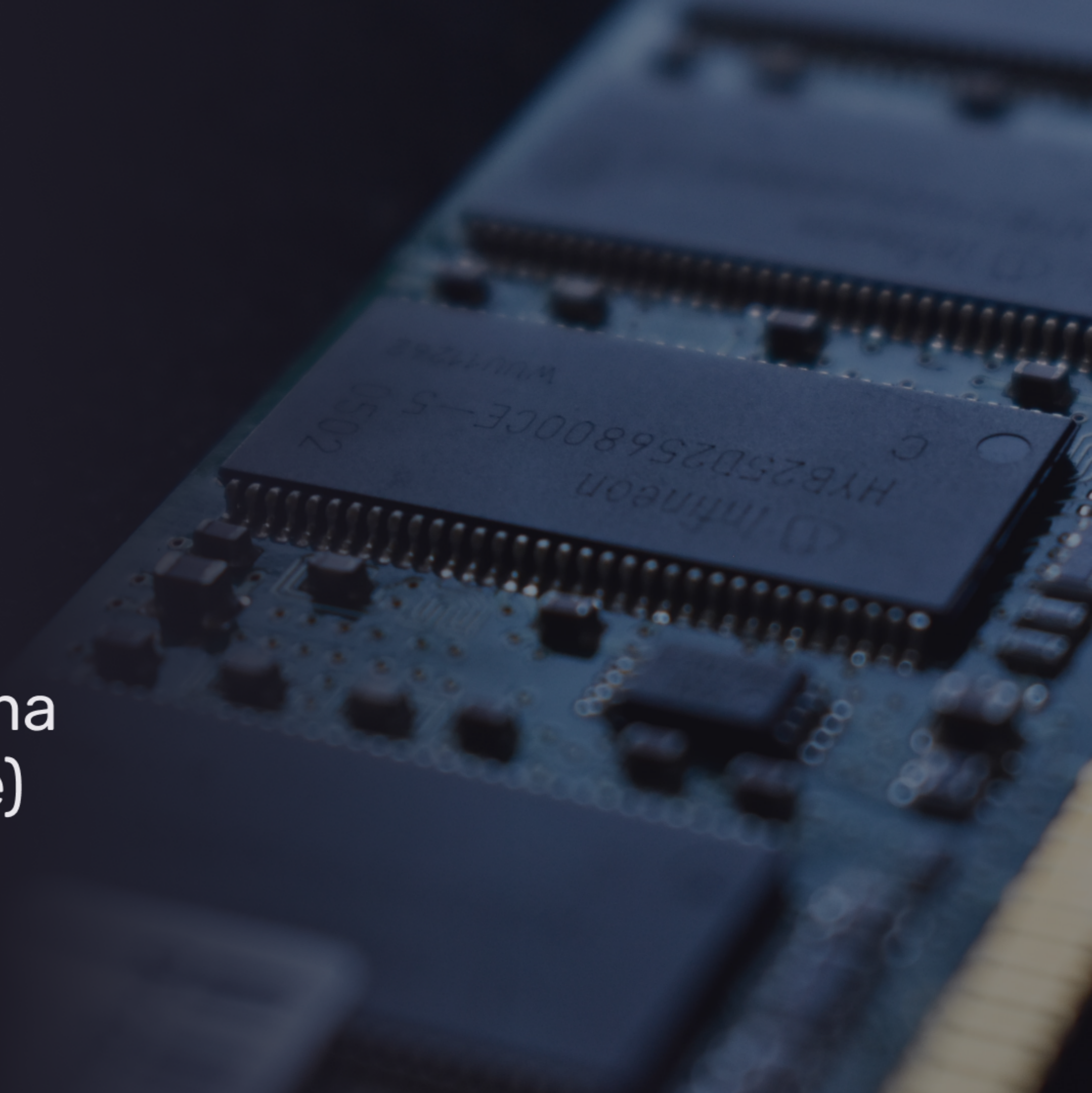
Armazenam dados de forma não volátil (permanente).



Memória

RAM - Memória de Acesso Aleatório

Armazena dados de forma volátil (não permanente)

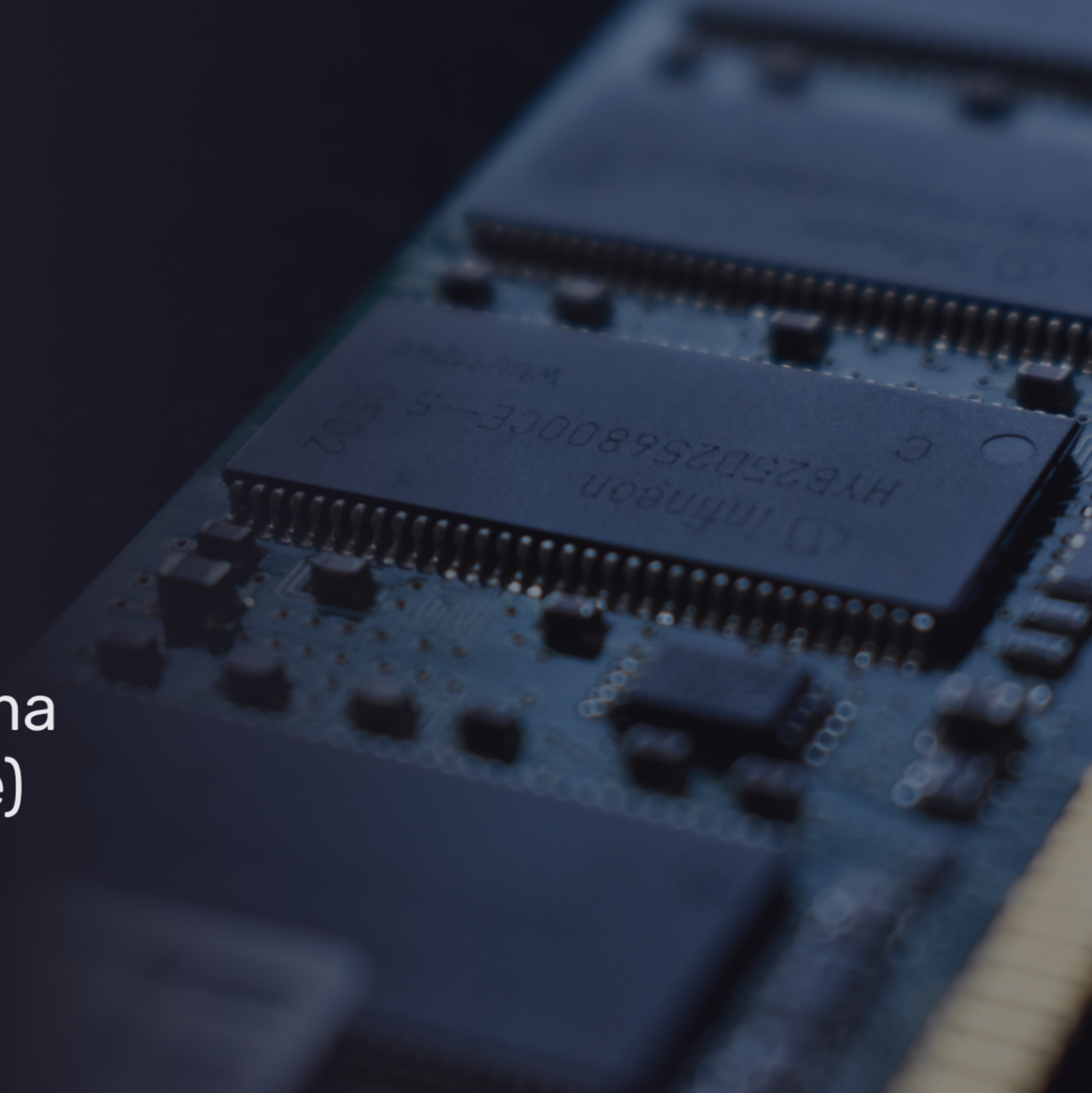


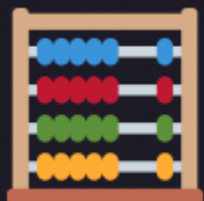


Memória

RAM - Memória de Acesso Aleatório

Armazena dados de forma
volátil (não permanente)





Entre zeros e uns.

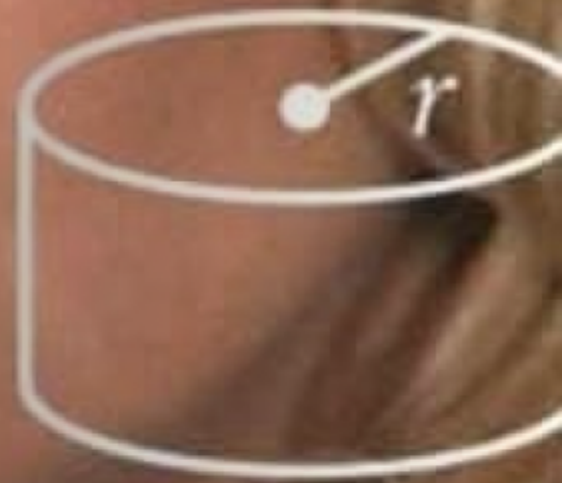
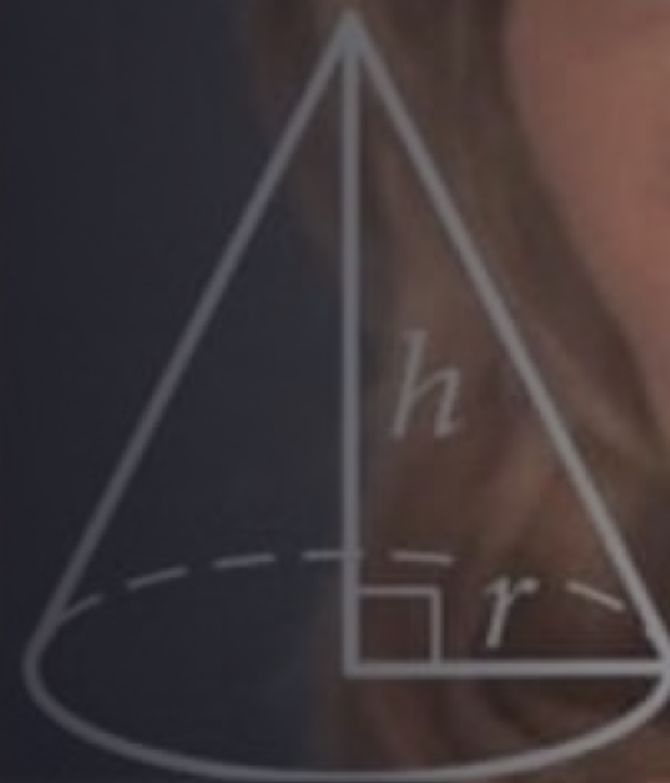
0 tal código binário.

Matemática

mas não muito, fica calmo!

Você não precisa saber matemática
avançada hoje em dia para ser um
desenvolvedor web

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$

$$-\cos x + C$$

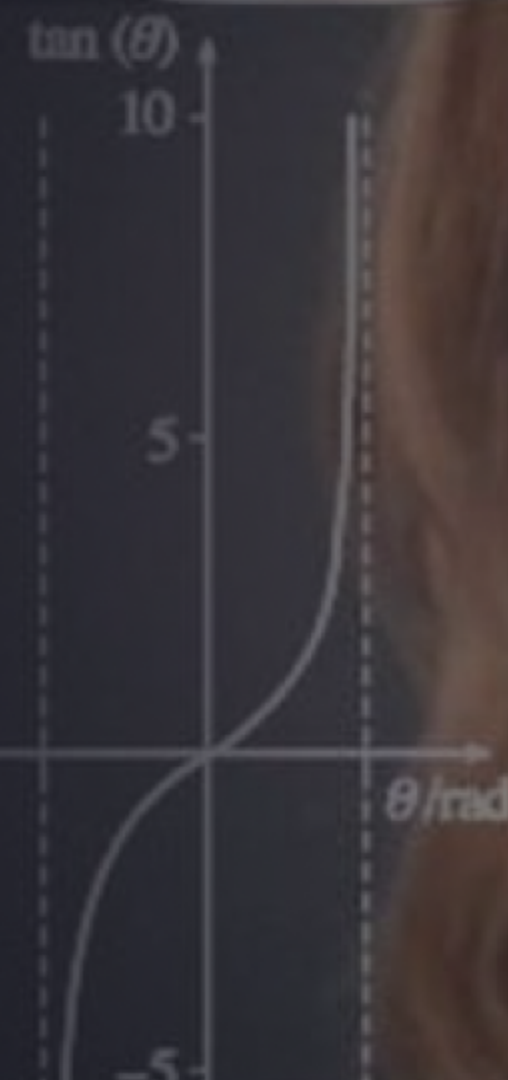
$$\lg x + C$$

$$\ln|\cos x| +$$

$$\left| \lg \frac{x}{2} \right| + C$$

$$= \frac{1}{a} \operatorname{arctg} \frac{b}{a}$$

$$= \frac{1}{a} \ln \left| \frac{x-b}{x-a} \right|$$



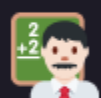
$$ax^2 + bx + c = 0$$

$$a\left(x^2 + \frac{b}{a}x + \frac{c}{a}\right) = 0$$

$$x^2 + 2\frac{b}{2a}x + \left(\frac{b}{2a}\right)^2 - \left(\frac{b}{2a}\right)^2 +$$

$$\left(x + \frac{b}{2a}\right)^2 - \frac{b^2 - 4ac}{4a^2} = 0$$

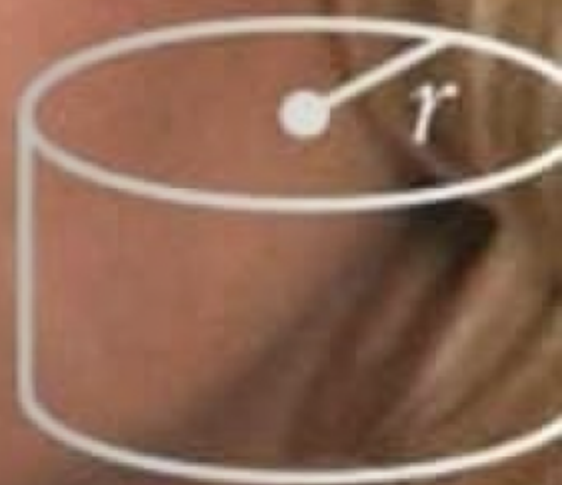
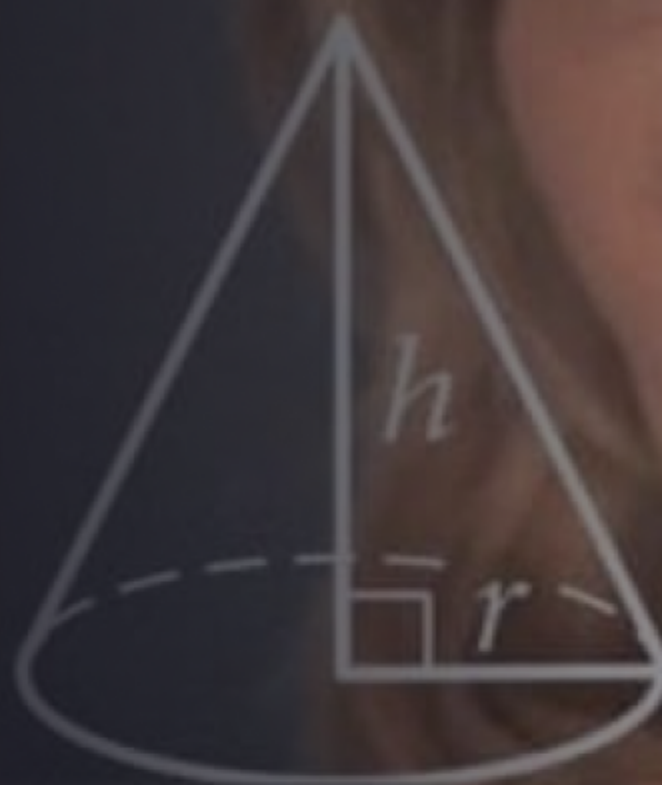
Sistemas numéricos



Decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$

$$-\cos x + C$$

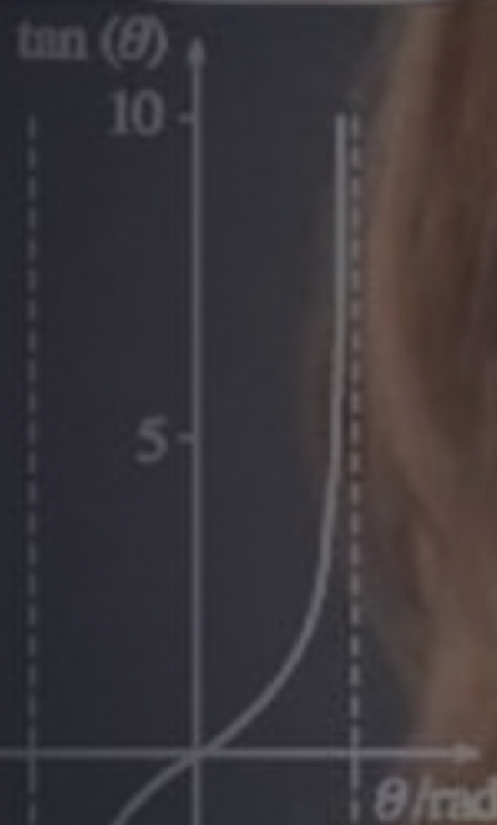
$$\lg x + C$$

$$\ln|\cos x| +$$

$$\ln\left|\lg \frac{x}{2}\right| + C$$

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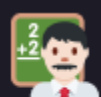
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Sistemas numéricos



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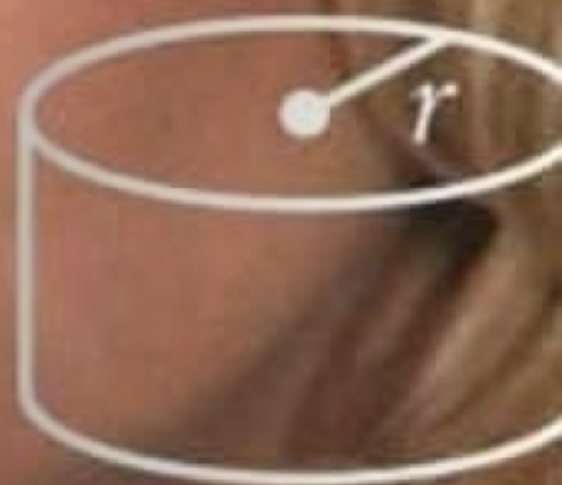
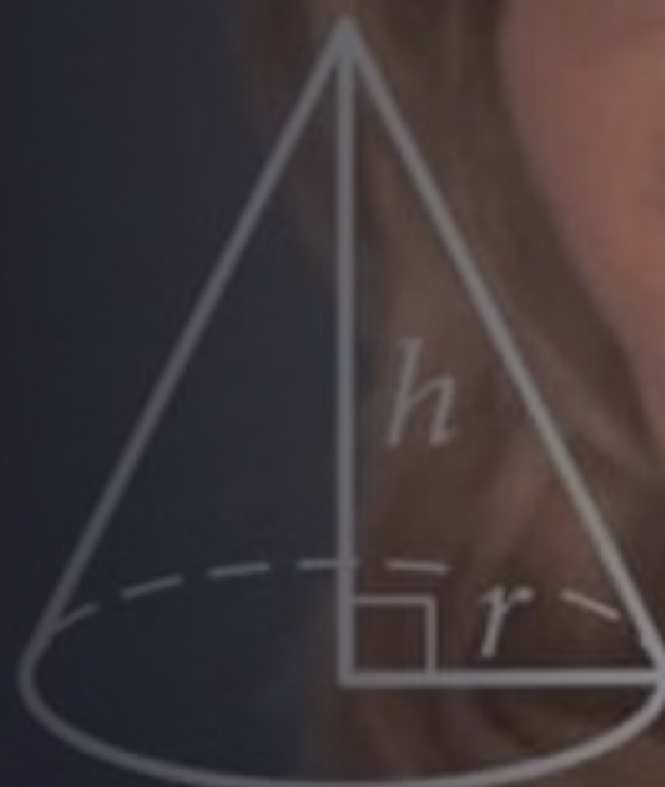
0, 1, 2, 3, 4, 5, 6, 7, 8, 9



Romano

I, V, X, L, C, D e M

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$

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$$\lg x + C$$

$$\ln |\cos x| +$$

$$\ln \left| \lg \frac{x}{2} \right| + C$$

$$= \frac{1}{a} \operatorname{arctg} \frac{b}{a}$$

$$= \frac{1}{a} \ln \left| \frac{x - b}{x + b} \right| + C$$



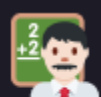
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Sistemas numéricos



Decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9



Romano

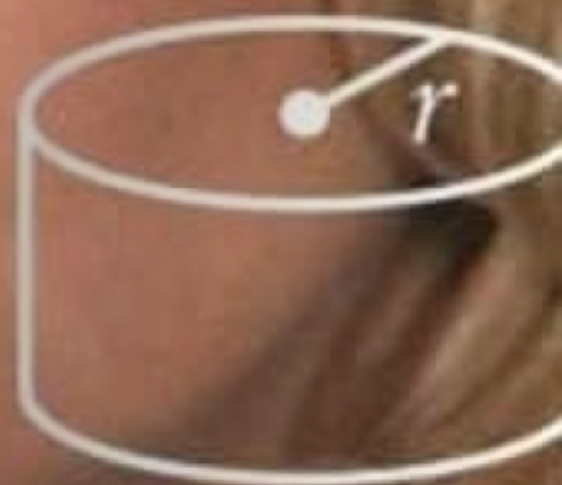
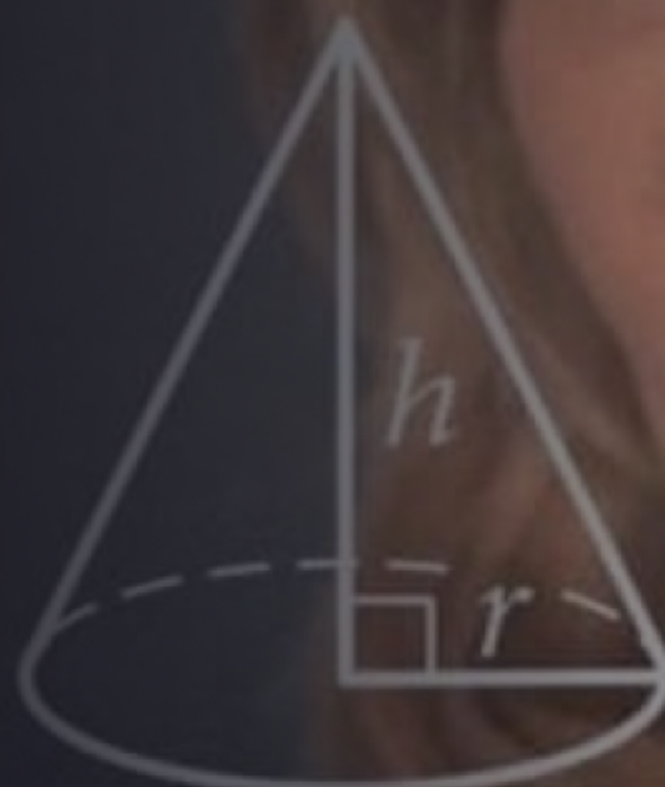
I, V, X, L, C, D e M



Hexadecimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

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$$V = \pi r^2 h$$



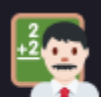
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Sistemas numéricos



Decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9



Romano

I, V, X, L, C, D e M



Hexadecimal

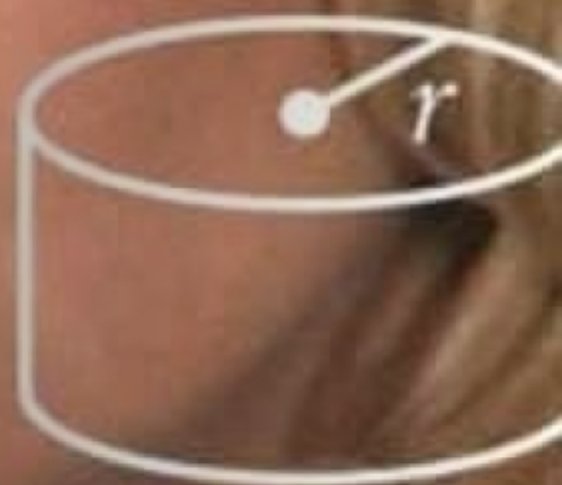
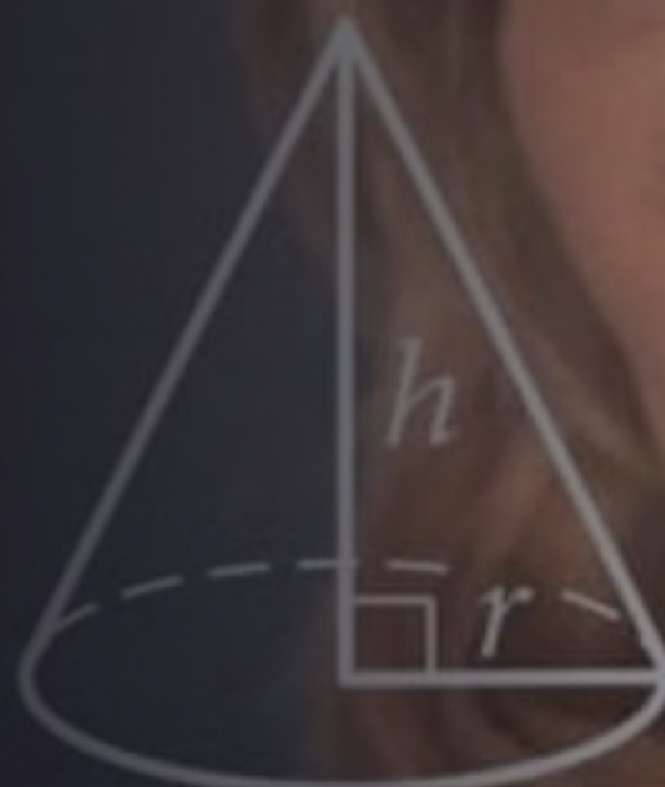
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F



Binário

0, 1

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$

$$\tan(\theta)$$

$$10$$

$$5$$

$$0$$

$$-5$$

$$-10$$

$$-15$$

$$-20$$

$$-25$$

$$-30$$

$$-35$$

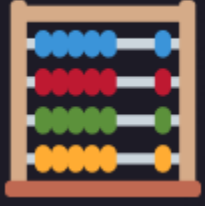
$$\theta/\text{rad}$$

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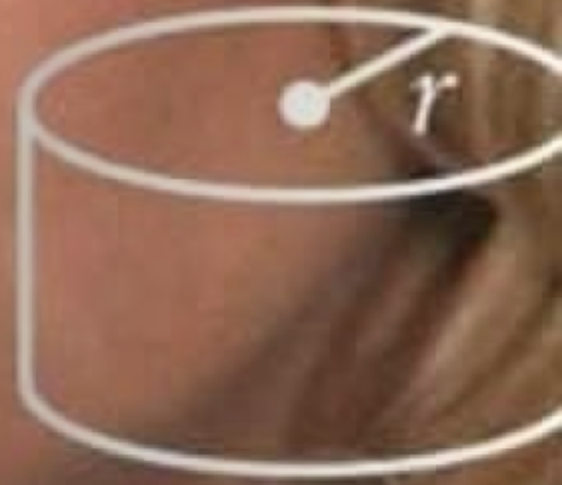
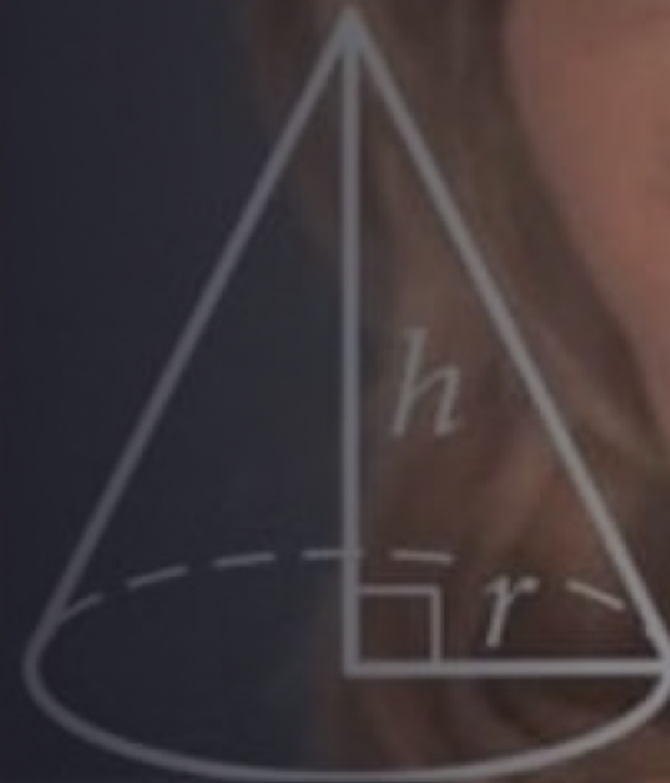
$$\left(x + \frac{b}{2a}\right)^2 - \frac{b^2 - 4ac}{4a^2} = 0$$



Ábaco



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$$V = \pi r^2 h$$

$$-\cos x + C$$

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$$\left| \lg \frac{x}{2} \right| + C$$

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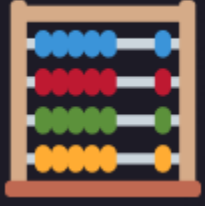


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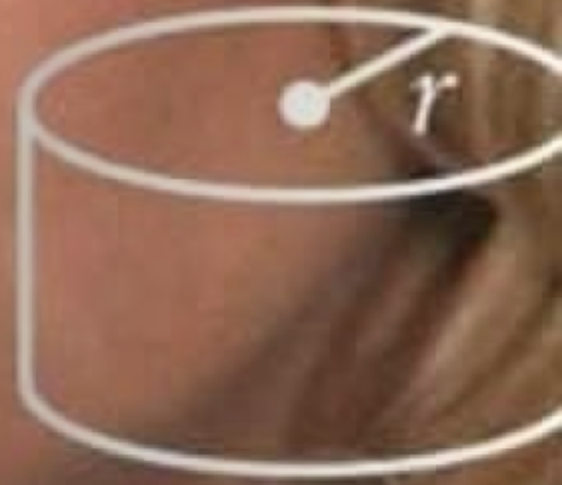
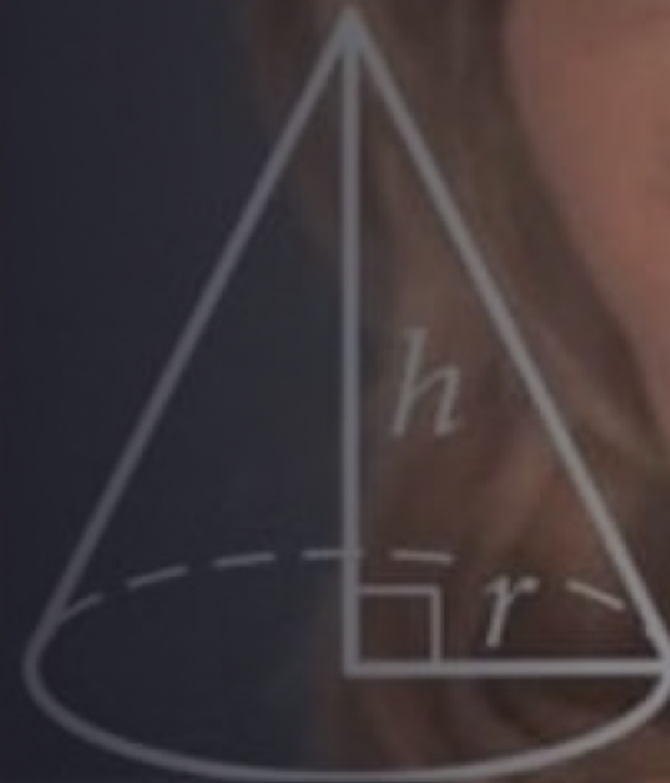
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Qual valor?



$$V = \frac{1}{3} \pi r^2 h$$



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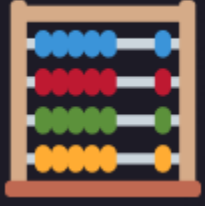


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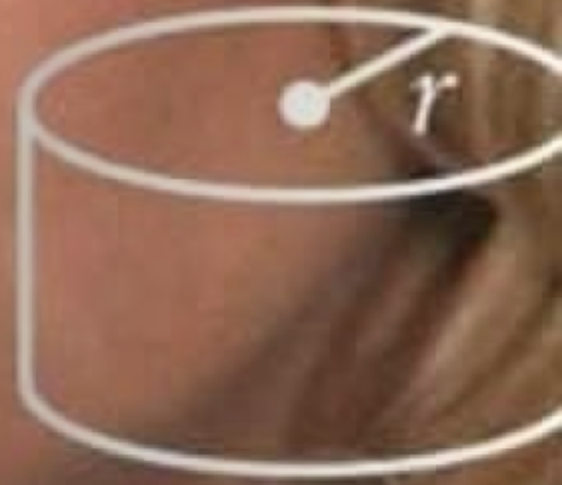
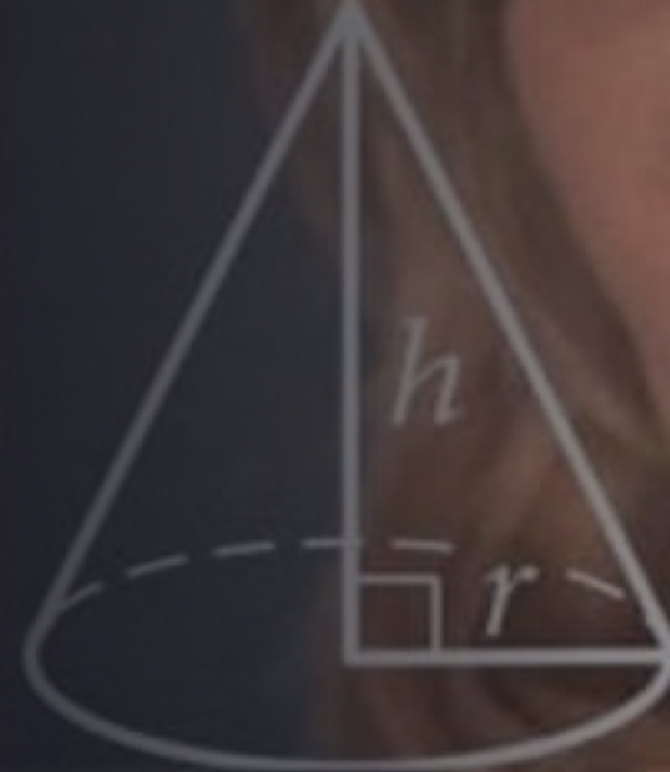
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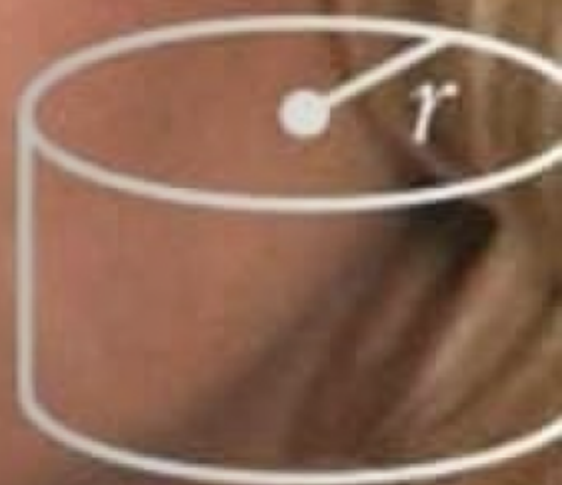
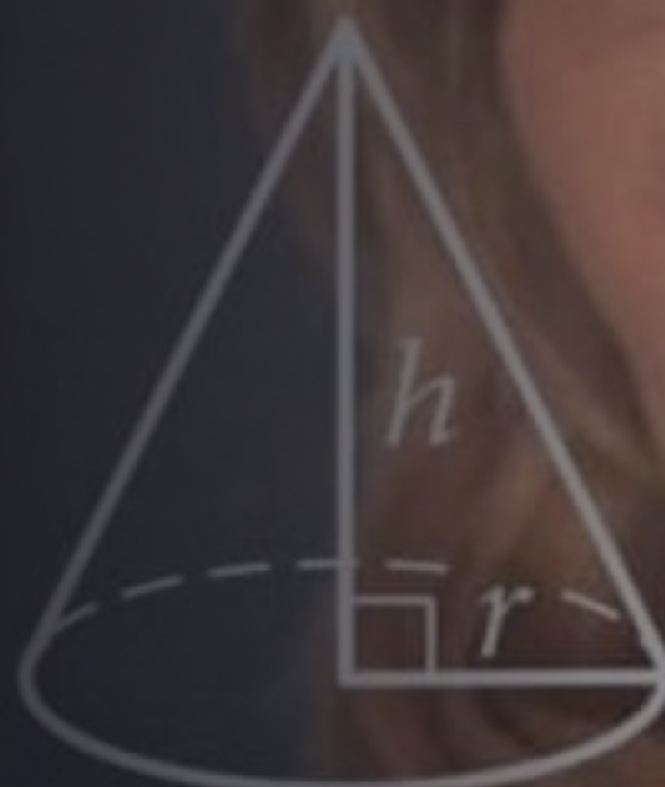
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E o binário?



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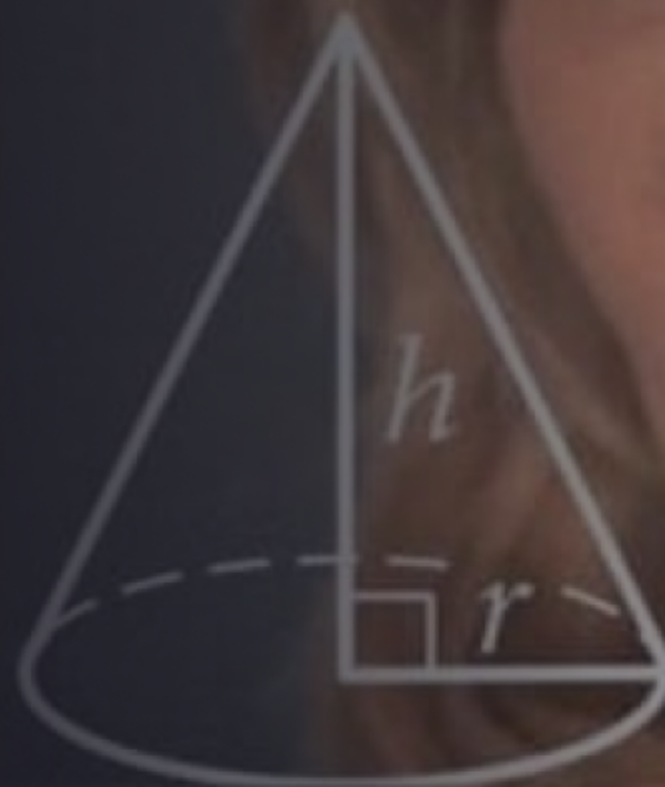
$$\left(x + \frac{b}{2a}\right)^2 - \frac{b^2 - 4ac}{4a^2} = 0$$

E o binário?



0 0 1 1 0 1

$$V = \frac{1}{3} \pi r^2 h$$



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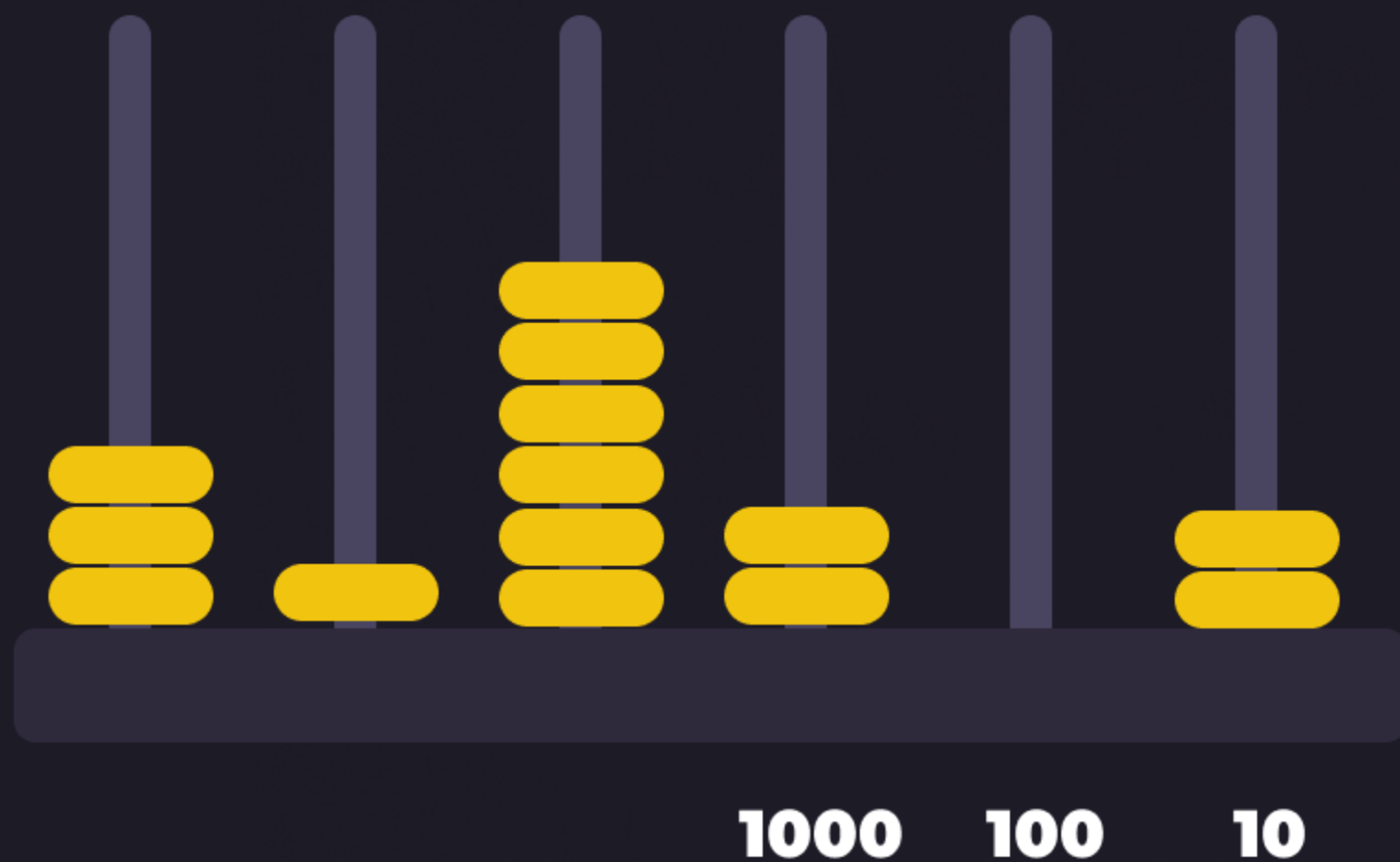
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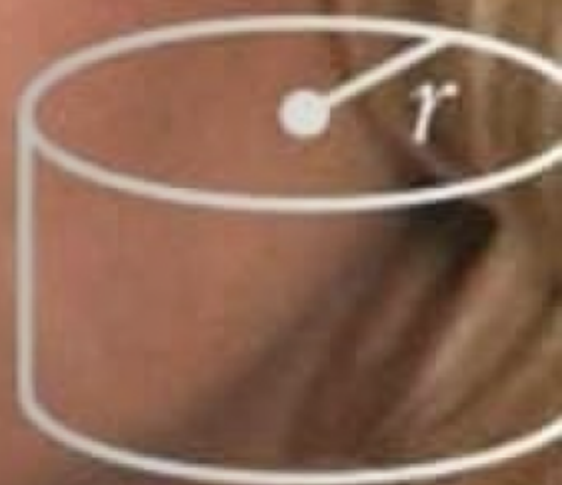
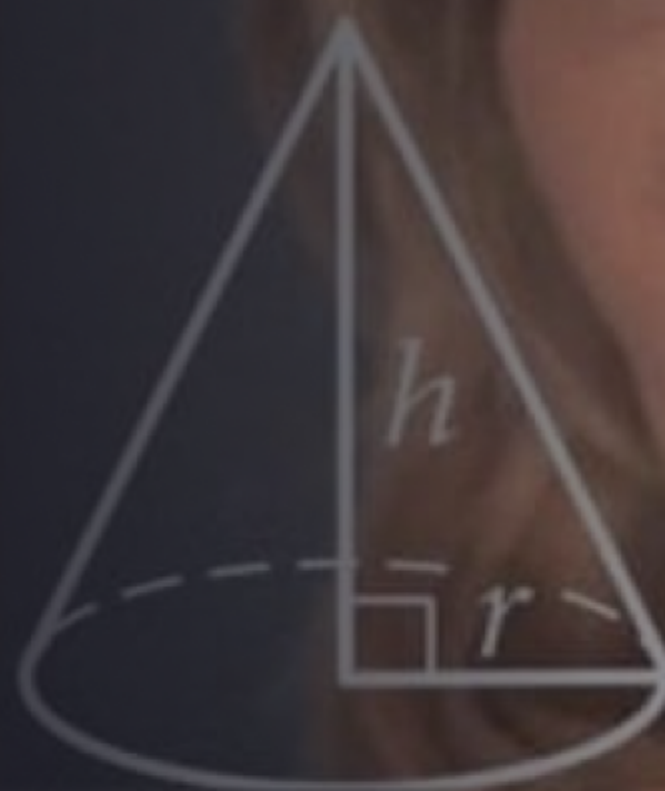
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E o binário?



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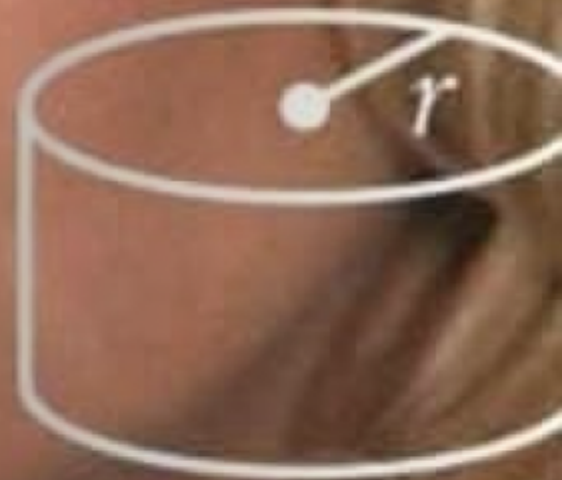
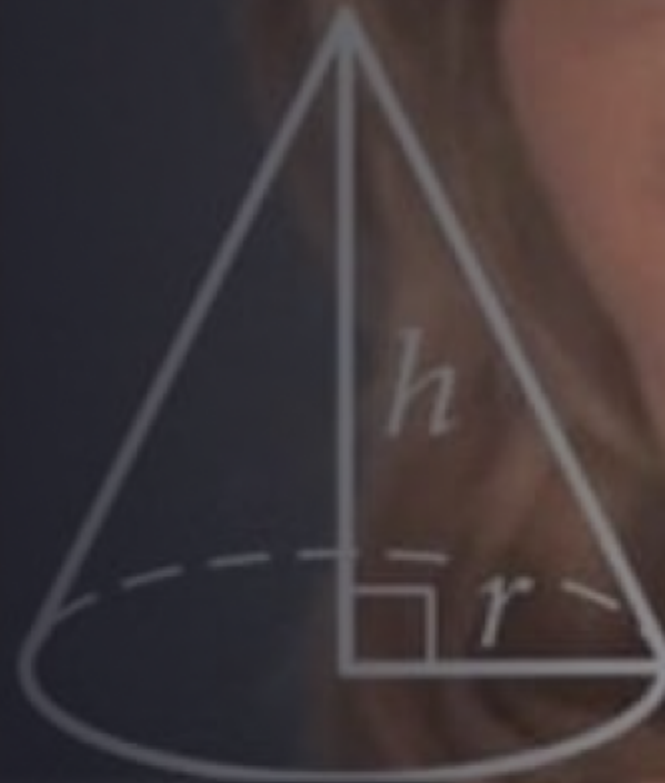
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E o binário?



1

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$

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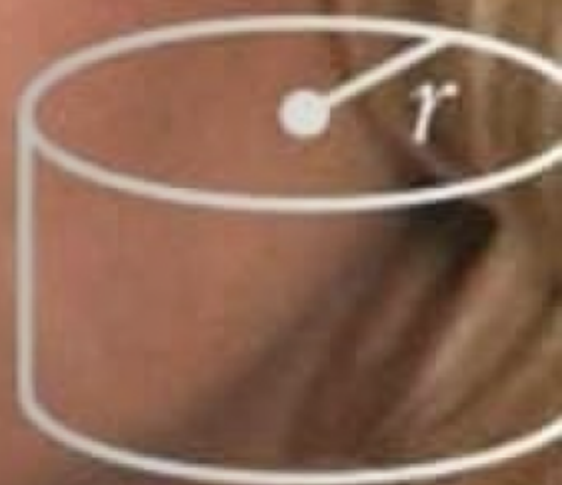
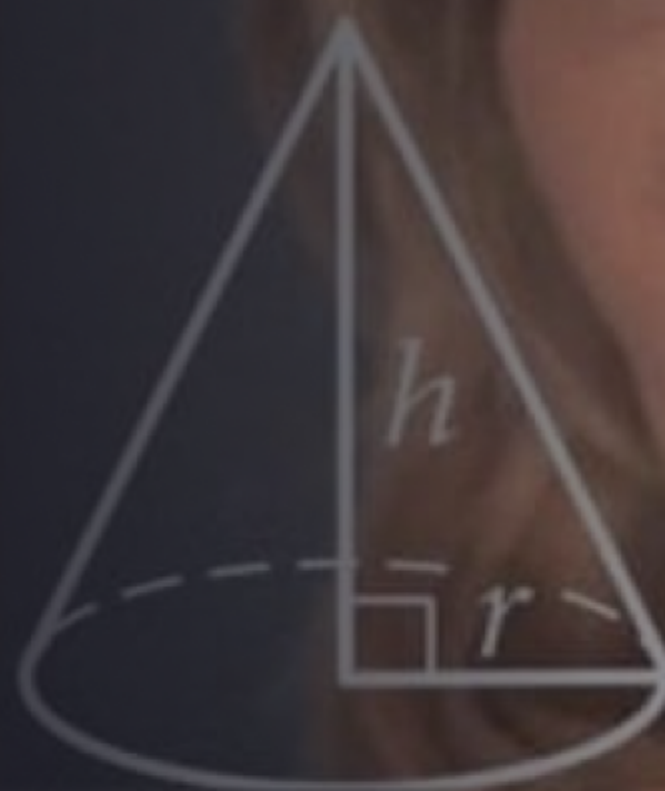
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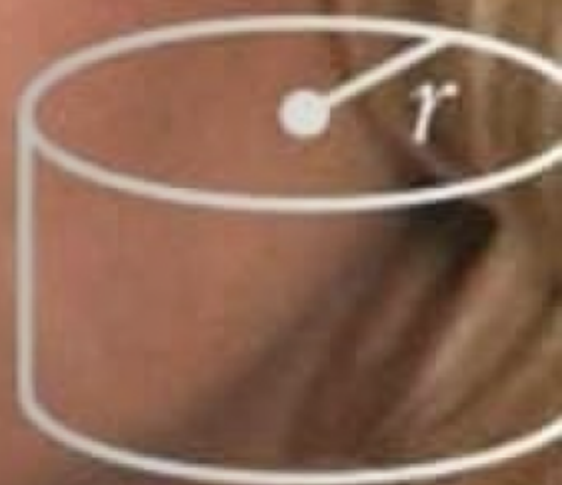
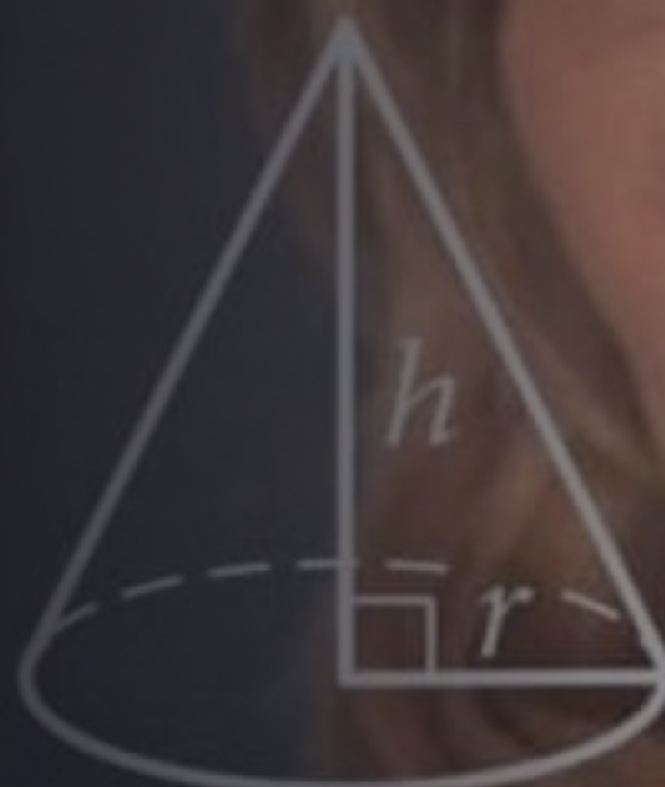
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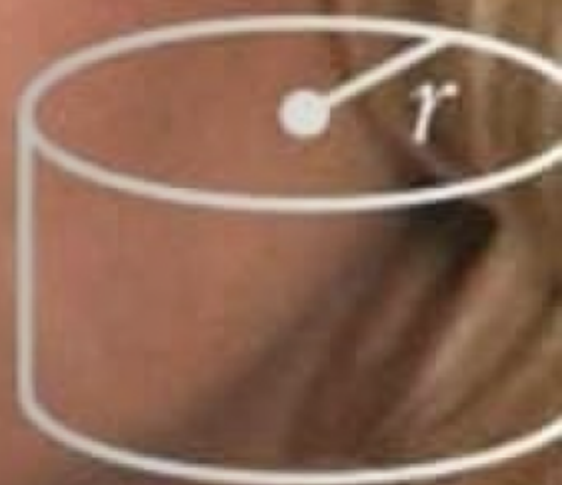
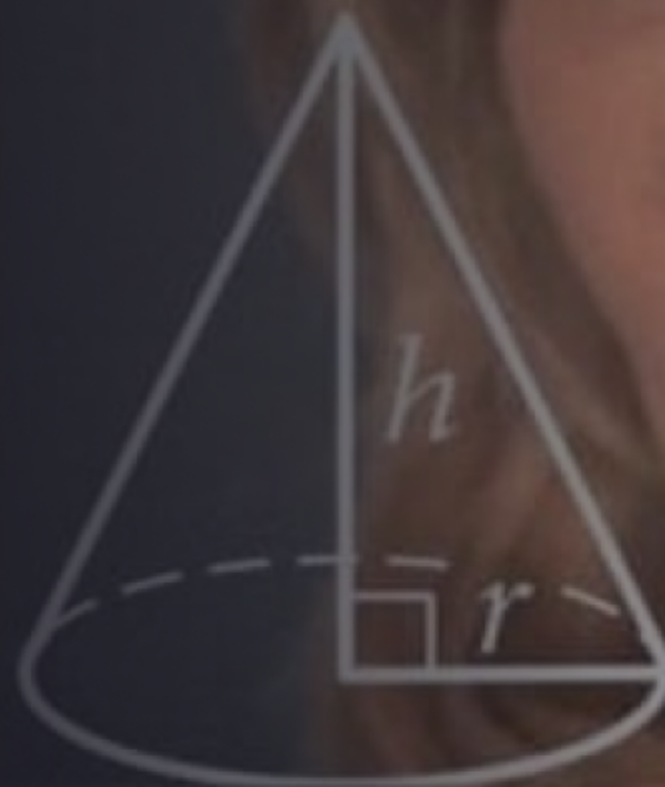
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E o binário?



45

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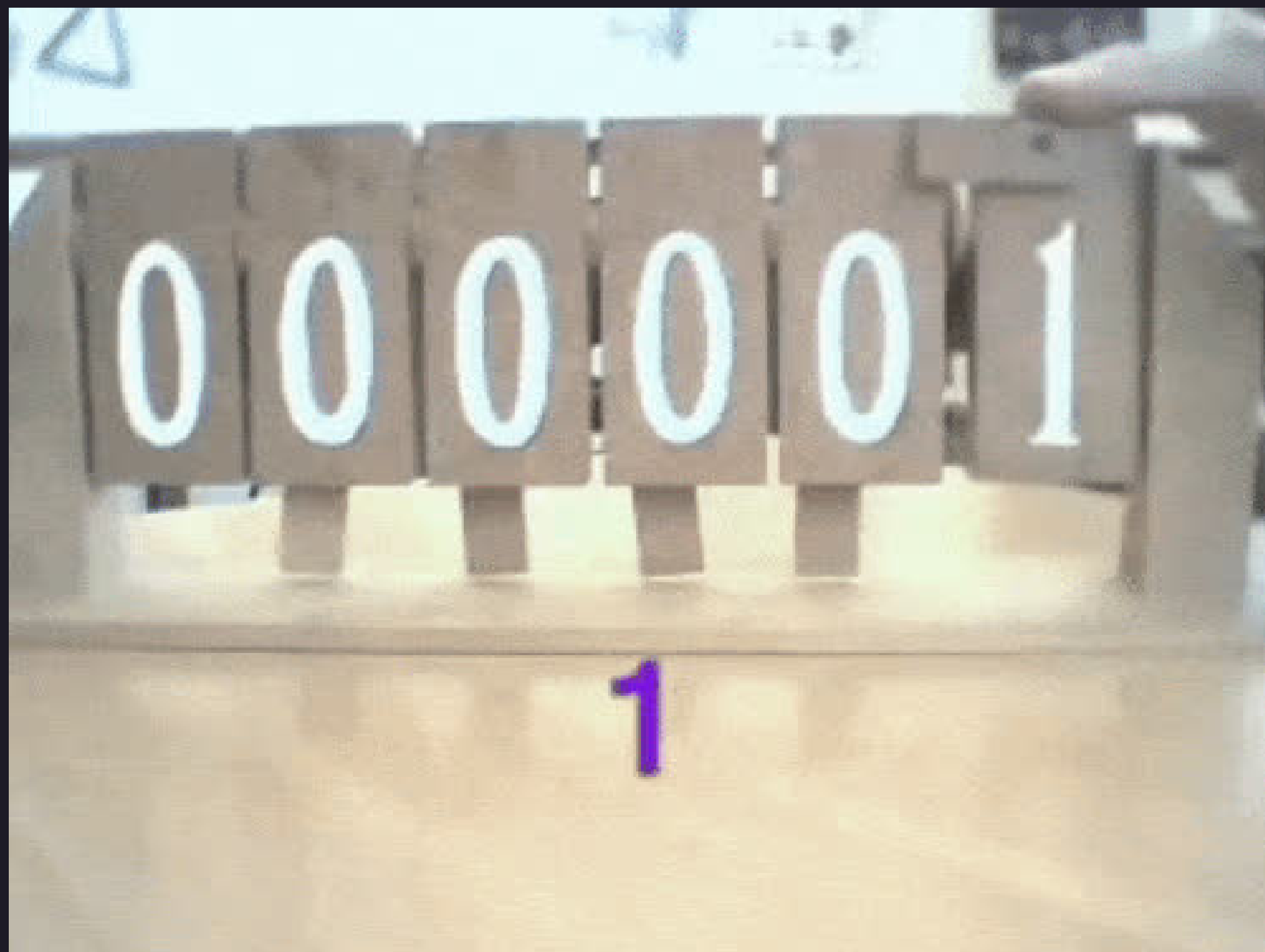


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A tabela ASCII



Dec	Hx	Oct	Char	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr
0	0	000	NUL (null)	32	20	040	 	Space	64	40	100	@	@	96	60	140	`	`
1	1	001	SOH (start of heading)	33	21	041	!	!	65	41	101	A	A	97	61	141	a	a
2	2	002	STX (start of text)	34	22	042	"	"	66	42	102	B	B	98	62	142	b	b
3	3	003	ETX (end of text)	35	23	043	#	#	67	43	103	C	C	99	63	143	c	c
4	4	004	EOT (end of transmission)	36	24	044	$	\$	68	44	104	D	D	100	64	144	d	d
5	5	005	ENQ (enquiry)	37	25	045	%	%	69	45	105	E	E	101	65	145	e	e
6	6	006	ACK (acknowledge)	38	26	046	&	&	70	46	106	F	F	102	66	146	f	f
7	7	007	BEL (bell)	39	27	047	'	'	71	47	107	G	G	103	67	147	g	g
8	8	010	BS (backspace)	40	28	050	(	(	72	48	110	H	H	104	68	150	h	h
9	9	011	TAB (horizontal tab)	41	29	051	)	)	73	49	111	I	I	105	69	151	i	i
10	A	012	LF (NL line feed, new line)	42	2A	052	*	*	74	4A	112	J	J	106	6A	152	j	j
11	B	013	VT (vertical tab)	43	2B	053	+	+	75	4B	113	K	K	107	6B	153	k	k
12	C	014	FF (NP form feed, new page)	44	2C	054	,	,	76	4C	114	L	L	108	6C	154	l	l
13	D	015	CR (carriage return)	45	2D	055	-	-	77	4D	115	M	M	109	6D	155	m	m
14	E	016	SO (shift out)	46	2E	056	.	.	78	4E	116	N	N	110	6E	156	n	n
15	F	017	SI (shift in)	47	2F	057	/	/	79	4F	117	O	O	111	6F	157	o	o
16	10	020	DLE (data link escape)	48	30	060	0	0	80	50	120	P	P	112	70	160	p	p
17	11	021	DC1 (device control 1)	49	31	061	1	1	81	51	121	Q	Q	113	71	161	q	q
18	12	022	DC2 (device control 2)	50	32	062	2	2	82	52	122	R	R	114	72	162	r	r
19	13	023	DC3 (device control 3)	51	33	063	3	3	83	53	123	S	S	115	73	163	s	s
20	14	024	DC4 (device control 4)	52	34	064	4	4	84	54	124	T	T	116	74	164	t	t
21	15	025	NAK (negative acknowledge)	53	35	065	5	5	85	55	125	U	U	117	75	165	u	u
22	16	026	SYN (synchronous idle)	54	36	066	6	6	86	56	126	V	V	118	76	166	v	v
23	17	027	ETB (end of trans. block)	55	37	067	7	7	87	57	127	W	W	119	77	167	w	w
24	18	030	CAN (cancel)	56	38	070	8	8	88	58	130	X	X	120	78	170	x	x
25	19	031	EM (end of medium)	57	39	071	9	9	89	59	131	Y	Y	121	79	171	y	y
26	1A	032	SUB (substitute)	58	3A	072	:	:	90	5A	132	Z	Z	122	7A	172	z	z
27	1B	033	ESC (escape)	59	3B	073	;	;	91	5B	133	[	[	123	7B	173	{	{
28	1C	034	FS (file separator)	60	3C	074	<	<	92	5C	134	\	\	124	7C	174	|	
29	1D	035	GS (group separator)	61	3D	075	=	=	93	5D	135	]	]	125	7D	175	}	}
30	1E	036	RS (record separator)	62	3E	076	>	>	94	5E	136	^	^	126	7E	176	~	~
31	1F	037	US (unit separator)	63	3F	077	?	?	95	5F	137	_	_	127	7F	177		DEL


```
0000 JFIF.....` ` 00;CREATOR: gd-jpeg v1.0 (using IJG JPEG v62), quality = 80
00 C.....
```


	Charset	Description	Default collation	Maxlen
	big5	Big5 Traditional Chinese	big5_chinese_ci	2
	dec8	DEC West European	dec8_swedish_ci	1
	cp850	DOS West European	cp850_general_ci	1
	hp8	HP West European	hp8_english_ci	1
	koi8r	KOI8-R Relcom Russian	koi8r_general_ci	1
	latin1	cp1252 West European	latin1_swedish_ci	1
	latin2	ISO 8859-2 Central European	latin2_general_ci	1
	swe7	7bit Swedish	swe7_swedish_ci	1
	ascii	US ASCII	ascii_general_ci	1
	ujis	EUC-JP Japanese	ujis_japanese_ci	3
	sjis	Shift-JIS Japanese	sjis_japanese_ci	2
	hebrew	ISO 8859-8 Hebrew	hebrew_general_ci	1
	tis620	TIS620 Thai	tis620_thai_ci	1

Entre bits e bytes

Bit

1 dígito (0 ou 1)



Entre bits e bytes

Bit

1 dígito (0 ou 1)

Byte

Agrupamento de 8 bits



Entre bits e bytes

$2^{10} = 1024$

KiloByte - KB

1024 KB: 1 MegaByte (MB) 2^{20}

1024 MB: 1 GigaByte (GB) 2^{30}

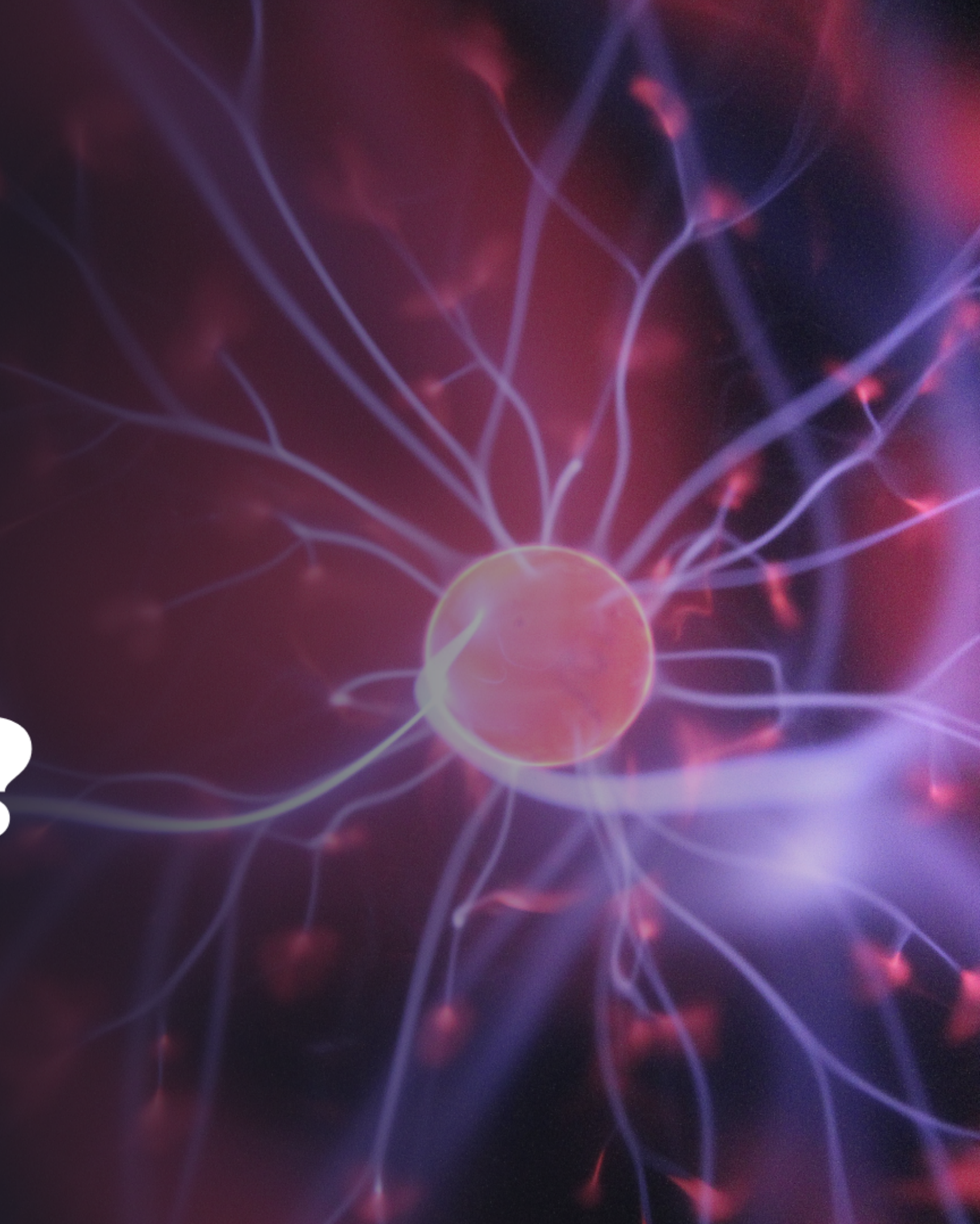
1024 GB: 1 TeraByte (TB) 2^{40}

Peta, Exa, Zetta, Yotta...



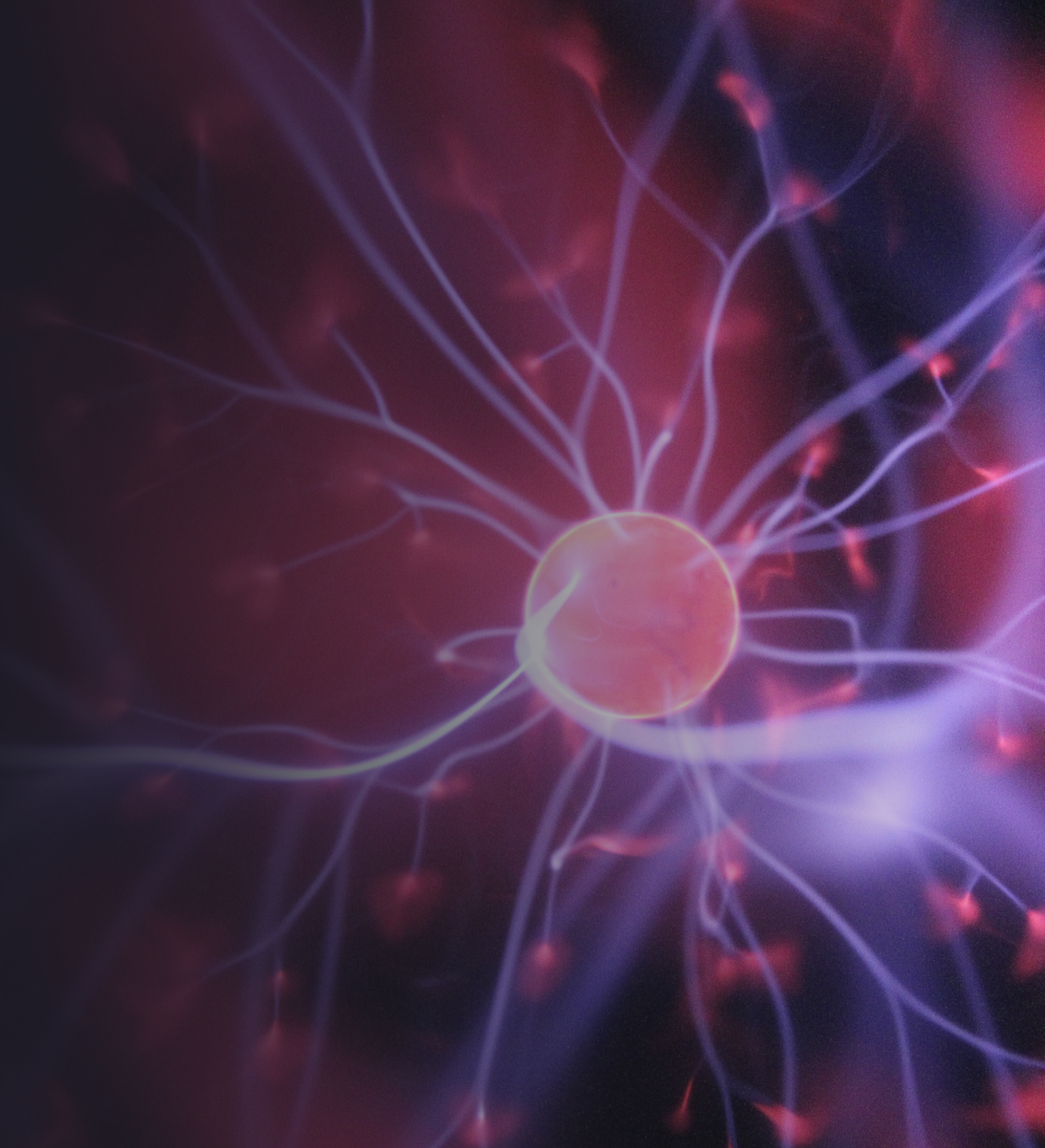


**E por que
usar base 2?**





Eletricidade



Exercícios

1. Escreva seu nome em código binário.
2. Quantos bytes tem em seu nome completo?

⚠ Importante!

Publique na comunidade, no canal  | `exercicios` e use hashtag **#execícioBinário**