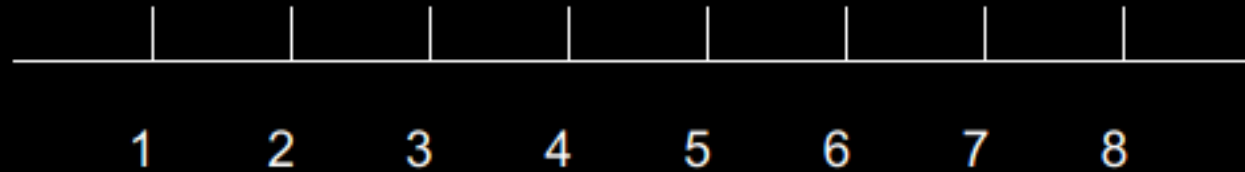


*Providing accessible & extendible images to
support connection-making*

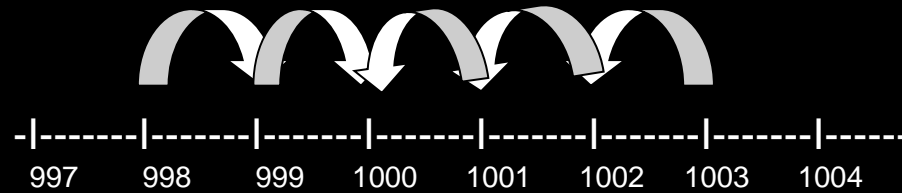
The top diagram shows some counting numbers located onto a segment of "number line".

A number line extends to infinity in both directions.

The bottom number line segment is an extension into higher counting numbers on the right and to zero and negative numbers on the left.



For example, the calculation $1003 - 998$ is straightforward if the image below can be brought to mind.



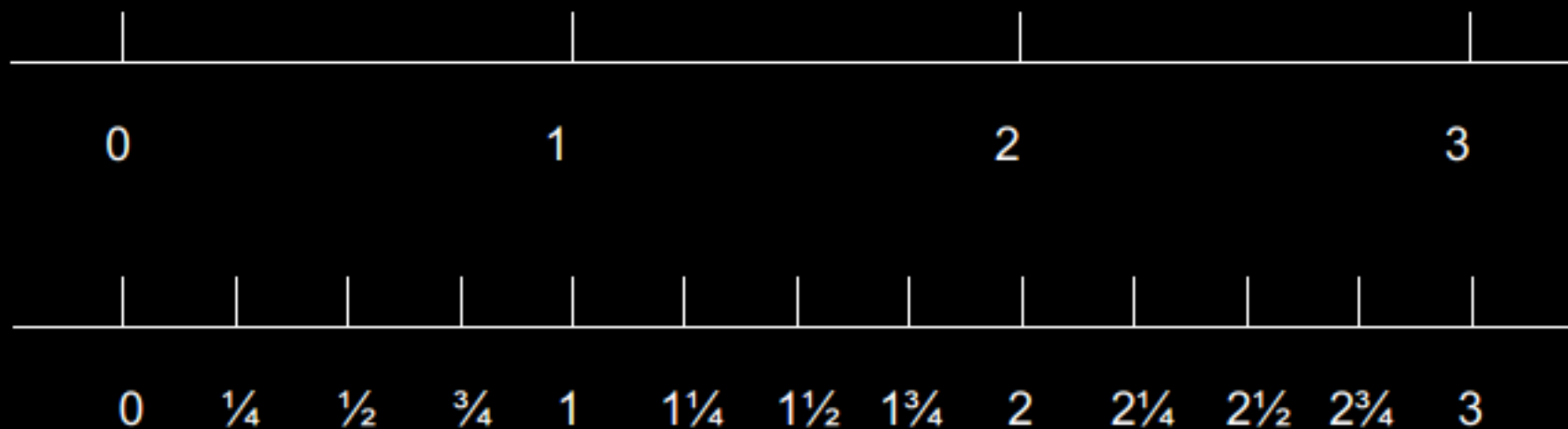
Pupils who can calculate $1003 - 998$ by mentally seeing and adding 2 to 3 are at an advantage over those who are dependent on only using a 'written method', such as decomposition.

A green arrow points from the text above to the written method below.

$$\begin{array}{r} 1 \text{ } 10^9 \text{ } 10^9 \text{ } 13 \\ 9 \quad 9 \quad 8 \quad - \\ \hline 5 \end{array}$$

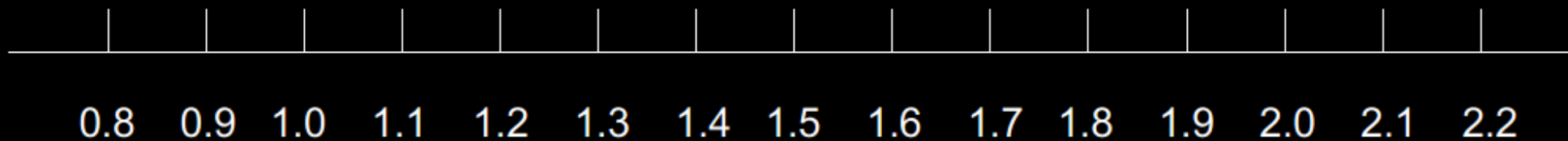
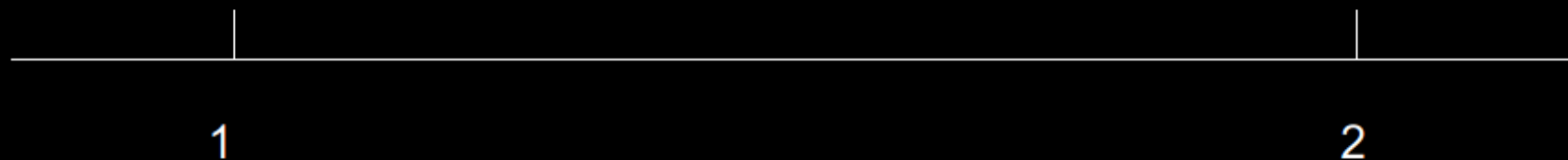
The top diagram shows some counting numbers located onto a segment of a "number line".

The bottom number line segment shows numbers between the counting numbers. They are shown as vulgar (or common) fractions.



The top diagram shows two counting numbers located onto a segment of a "number line".

The bottom number line segment shows numbers between the counting numbers. They are shown as decimal fractions.



This square array of numbers extends upwards, downwards, leftwards and rightwards into an infinite array.

-44	-43	-42	-41	-40	-39	-38	-37	-36	-35	-34	-33	-32	-31	-30	-29	-28
-34	-33	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18
-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8
-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2
-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122
116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132

This shaded number square sits inside the infinite array of numbers.

It is often called the 100 square.

This one covers the range 1 to 100

-44	-43	-42	-41	-40	-39	-38	-37	-36	-35	-34	-33	-32	-31	-30	-29	-28
-34	-33	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18
-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8
-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2
-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122
116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132

This shaded number square sits inside the infinite array of numbers.

It is often called the 100 square.

This one covers the range 0 to 99

-44	-43	-42	-41	-40	-39	-38	-37	-36	-35	-34	-33	-32	-31	-30	-29	-28
-34	-33	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18
-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8
-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2
-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12
6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122
116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132

This array of numbers is often called a Gattegno tens chart.

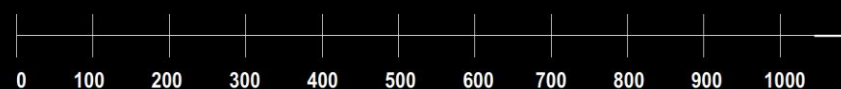
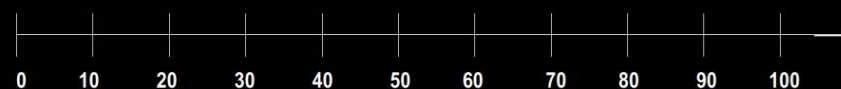
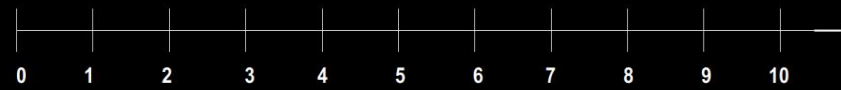
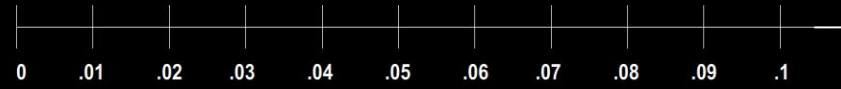
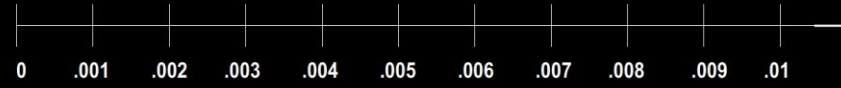
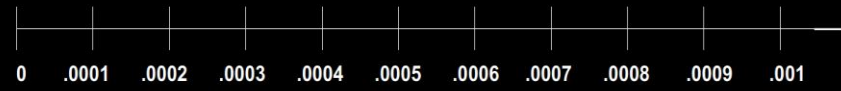
1	2	3	4	5	6	7	8	9
10	20	30	40	50	60	70	80	90
100	200	300	400	500	600	700	800	900
1 000	2 000	3 000	4 000	5 000	6 000	7 000	8 000	9 000
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000
100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000

This array of numbers is often called a *Gallegno tens chart*.

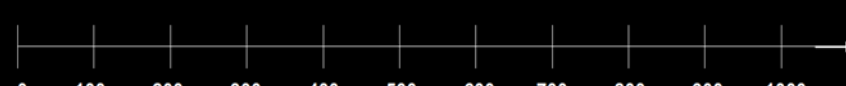
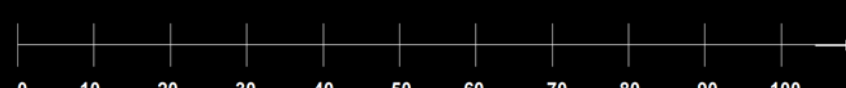
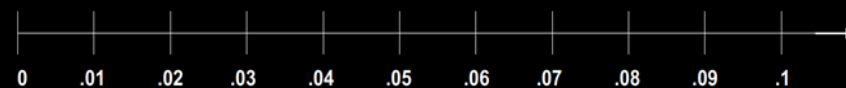
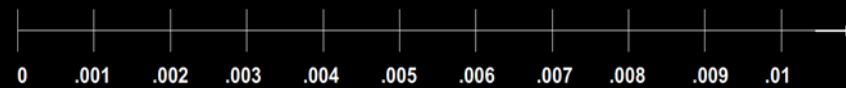
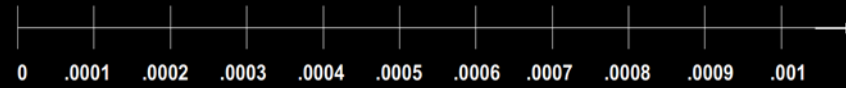
It extends the chart shown in the previous picture.

0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1	2	3	4	5	6	7	8	9
10	20	30	40	50	60	70	80	90
100	200	300	400	500	600	700	800	900
1 000	2 000	3 000	4 000	5 000	6 000	7 000	8 000	9 000
10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000
100 000	200 000	300 000	400 000	500 000	600 000	700 000	800 000	900 000

Here the number line segments have been scaled and stacked in order to show the relationships between measures.



Next to the stacked scales are the names of the metric units which, when cut out, may move up and down alongside the scales to show the relationship between units of measurement.



The green star could show, for example, that 7 metres is equivalent to 700 cm, 7000 mm or .007 Km

←	Mega	M
←	Kilo	K or k
←	Hecta	H or h
←	Deca	D or da
←	[name of unit]	
←	Deci	d
←	centi	c
←	milli	m