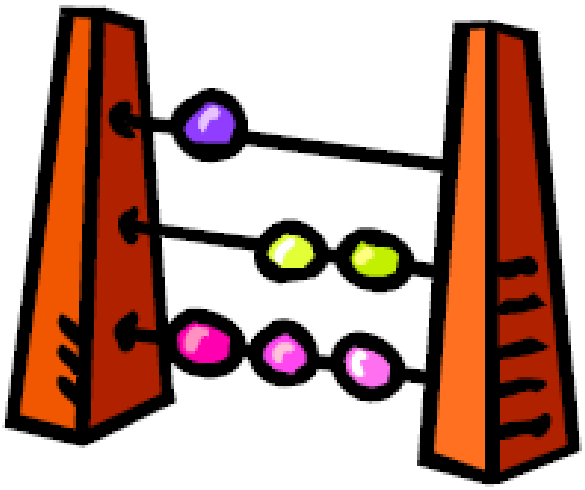
Approved and Reviewed - 10th December 2020

INFORMATION BOOKLET FOR PARENTS AND STAFF

Supporting your child with Mathematics



Whatever you do, make sure your children **ENJOY their Mathematics!**

If they struggle to understand, make mistakes or get bored; keep calm, make it easier, change the subject, tell them a joke, play football, go to the park but please don't get cross or impatient – you could put them off maths for life!

Booklet 7

Contents

Learning intentions

Year 4	Year 5	Year 6
Addition and Subtraction	Consolidate knowing by heart addition and subtraction facts for all numbers up to 20	
Multiplication	Know by heart 2, 3, 4 facts to 10 times tables 5 & 10 times tables. Begin to know 6, 7, 8 & 9 times tables. Multiply any whole number by 10 and 100 and understand the effects Multiply decimals mentally Up to 1000 by 10 and by 10 or 100 and whole numbers by 1000 and explain the effect	Know by heart Multiply any whole number up to 10,000 by 10 or 100 and understand the effects
Division	Know by heart 2, 3, 4 facts to 10 times tables 5 & 10 times tables. Begin to know 6, 7, 8 & 9 times tables. Find fractions of numbers Find fractions of numbers $\frac{1}{2}$, $\frac{1}{10}$, $\frac{1}{5}$, $\frac{1}{4}$ $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{10}$, $\frac{1}{100}$,	Know by heart Find fractions of numbers $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{100}$,

All skills are needed for word problems, real life problems including money, single and multi step.

Addition

Top Tip: Always estimate first
to give you an idea of the answer

Traditional (Column) Method

E.G.1. 56 + 87

$$\begin{array}{r} 56 \\ +\ 87 \\ \hline 143 \end{array}$$

E.G.2. 263 + 185

$$\begin{array}{r} 263 \\ +\ 185 \\ \hline 448 \end{array}$$

Expanded method

E.G.1. 56 + 87

56 = 50 + 6

8 = 80 + 7

130 + 13 =143

E.G.2. 263 + 185

263 = 200 + 60 + 3

185 = 100 + 80 + 5

= 300 + 140 + 8 =448

Adding by place value

E.G.1. 56 + 87 = (50 + 80) + (6 + 7)

= 130 + 13

= 143

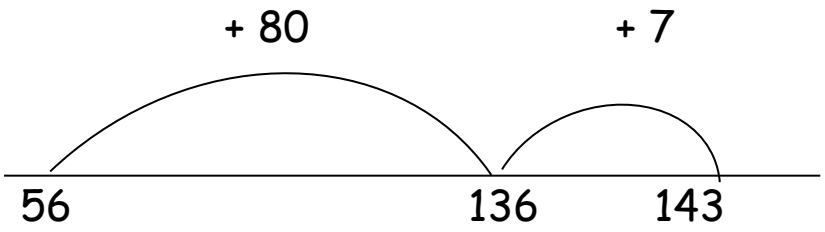
E.G.2. 263 + 185 = (200 + 100) + (60 + 80) + (3 + 5)

= 300 + 140 + 8

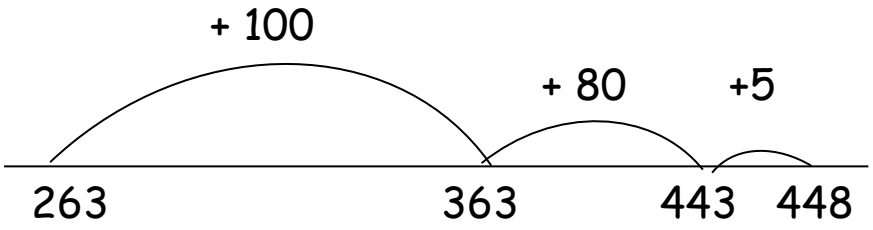
= 448

Number Line

56 + 87



263 + 185



Subtraction

Traditional Method

E.G. 1. 352 - 86

	2	14	1
	3	5	2
−		8	6
	2	6	6

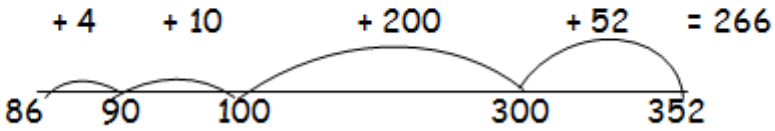
E.G.2. 363 - 175

	2	15	1
	3	6	3
−	1	7	5
	1	8	8

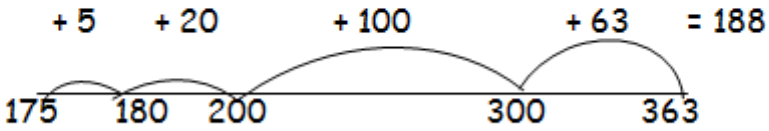
Number Line

E.G. 1. 352 - 86

352 - 86



363 - 175



Expanded Method

E.G. 1. 352 - 86

352 = 300 + 50 + 2

86 = 80 + 6

300 + 40 + 12

80 + 6

200 + 140 + 12

80 + 6

200 + 60 + 6 = 266

E.G.2. 363 - 175

363 = 300 + 60 + 3

175 = 100 + 70 + 5

300 + 50 + 13

100 + 70 + 5

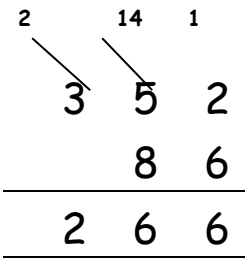
200 + 150 + 13

100 + 70 + 5

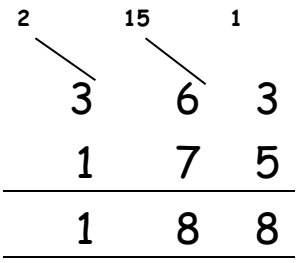
100 + 80 + 8 = 188

Austrailian Method

E.G. 1. 352 - 86



E.G.2. 363 - 175



Multiplication

Top Tip: Always estimate first to give you an idea of the answer

Traditional (Column) Method

E.G.1. 346 x 9

$$\begin{array}{r} 346 \\ \times \quad 9 \\ \hline 3114 \\ \hline {\scriptstyle 45} \end{array}$$

E.G.2. 172 x 38

$$\begin{array}{r} 172 \\ \times \\ 38 \\ \hline 1376 \\ 5160 \\ \hline 6536 \\ \hline {\scriptstyle 1} \end{array}$$

Grid Method

Split the number into hundreds, tens and units

Multiply each part separately, then add up parts

E.G.1. 346 x 9

x	300	40	6
9	2700	360	54

$$\begin{array}{r} 2700 \\ 360 \\ + \quad 54 \\ \hline 3114 \end{array}$$

E.G.2. 172 x 38

x	100	70	2	
30	3000	2100	60	= 5160
8	800	560	16	= 1376

$$\begin{array}{r} \\ \\ \\ 6536 \\ \hline {\scriptstyle 1} \end{array}$$

Long, Long Multiplication

Multiply each part of the largest by the smaller number

E.G.1. 346 x 9

346	
9	
54	(6 x 9)
360	(40 x 9)
2700	(300 x 9)
3114	

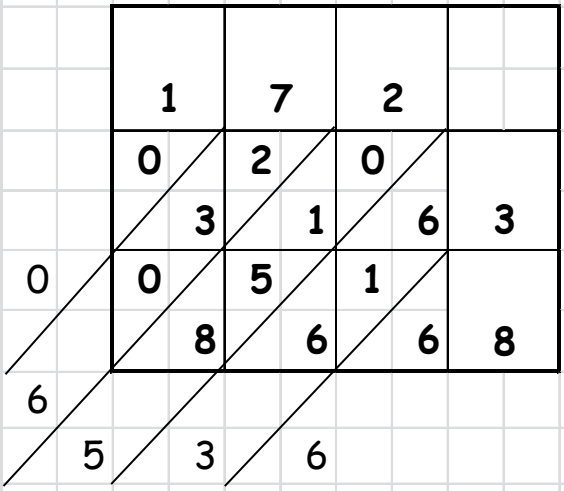
E.G.2. 172 x 38

72	
38	
16	(2 x 8)
560	(70 x 8)
800	(100 x 8)
60	(2 x 30)
2100	(70 x 30)
3000	(100 x 30)
6536	

1

Box Multiplication

3 digit number	172
2 digit number	38



Answer = **0 6 5 3 6**

Division

Short Division (using multiples)

E.G.1. 96 ÷ 6

```
    1  6
  ┌─────
  │  3
6 │ 9  6
```

1	6
2	12
3	18
4	24
5	30
6	36
7	42
8	48
9	54
10	60

E.G.2. 657 ÷ 5

```
    1  3  1 r.2
  ┌──────────
  │  1
5 │ 6  5  7
```

1	5
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50

Chuncking

E.G.1. 96 ÷ 6

```
6 │ 9  6
  │
  │ 6  0   (10 x 6)
  ├──────
  │ 3  6
  │ 3  6   (6 x 6)
  ├──────
  │    0
```

Answer = 16

No remainder

E.G.2. 657 ÷ 5

```
5 │ 6  5  7
  │
  │          (100 x
  │ 5  0  0   5)
  ├──────────
  │ 1  5  7
  │ 1  5  0   (30 x 5)
  ├──────────
  │       7
  │          (1 x
  │       5   5)
  ├──────────
  │       2
```

Answer = 131
Remainder 2

Useful websites

http://www.bbc.co.uk/schools/parents/resources/

www.mathszone.co.uk

www.ngfl-cymru.org.uk

www.mymaths.co.uk

www.kangaroomaths.co.uk

www.bitesize.co.uk

Maths is all around us and we're using it everyday!

Many of you will already be doing these mathematical activities and practising your child's numerical skills without even thinking about it!

The most important thing is to make learning maths FUN!

APPENDIX B

TEACHER GUIDE

Drawing graphs

The Basic skills agency suggests the following for the drawing of all graphs:

S – SCALE The most important yet most difficult skill to learn

A – AXES Drawn with a ruler and pencil

L – LABEL Label the axes e.g. frequency, height and include appropriate units

T – TITLE All graphs should have a title and a comment

Remember **SALT**

There are two types of data that need considering when drawing graphs:

Discrete data - when data can only be certain individual values. This type of data groups itself naturally, e.g. shoe sizes, hair colour, pets, cooking methods.

Continuous data - when data can take any value in a certain range. This type of data has to be grouped by us, e.g. lengths of earthworms, heights of pupils, weights of hamsters, rainfall.

Bar charts are generally used for discrete data. If continuous data is used it must be grouped.

BAR CHARTS

Key Words

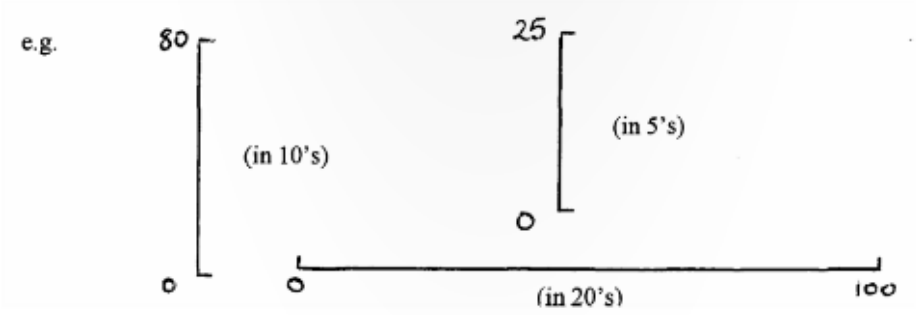
- **Survey** - where we collect information
- **Data** - another word for information
- **Statistics** - study of facts
- **Frequency** - could be used instead of "number of".

Teaching Points

A bar chart is useful for comparing data in different categories.

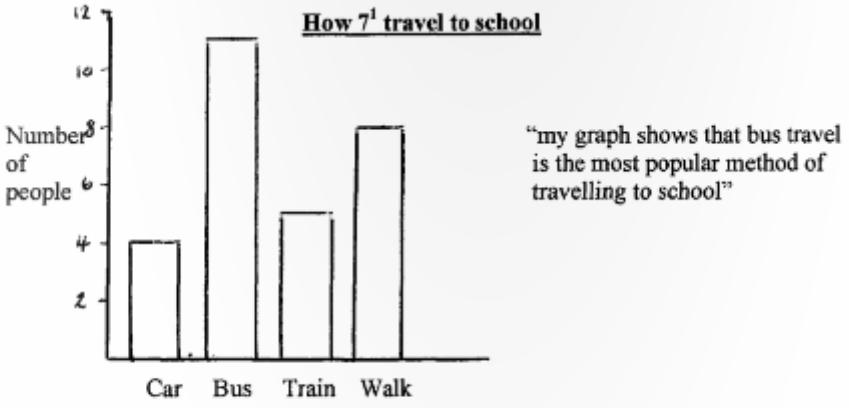
Points to emphasis when drawing a bar chart:

- A bar chart can also be called a bar graph or a grouped frequency diagram.
- Graphs should be drawn using a pencil and ruler.
- The scale should 'best' utilise the space available. Pupils find this skill very difficult. Practice is needed on planning what scale to use:



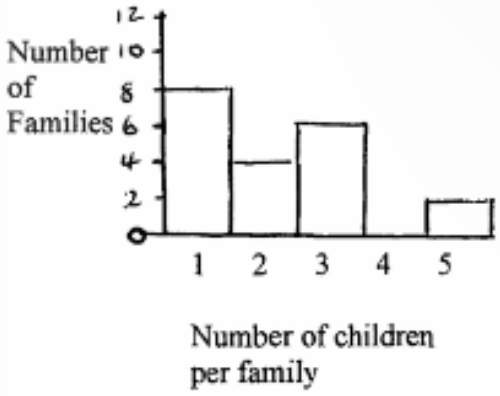
- The axes should be labelled correctly (with units where applicable)
- Each bar should be of equal width.
- There should be an equal space between each bar (the space could be zero).
- Each graph should have a title.
- A comment should accompany each graph.
- Scales (on the "Frequency or Number of axis) should be marked on the lines not in the spaces. This is a common mistake.

Examples

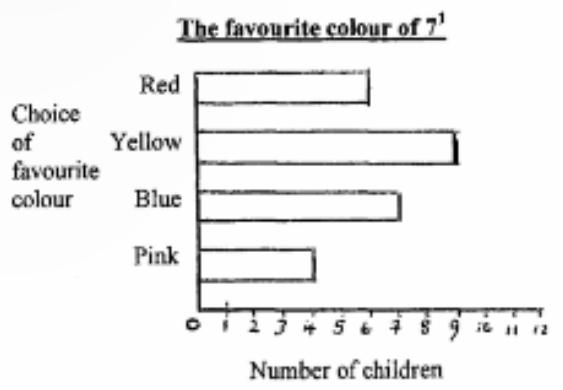


Number of children in each family

Number of children in each family



The favourite colour of 7[1]



PIE CHARTS

Teaching Points

- Pie-charts are generally used for discrete data.
- A pie-chart shows how something is divided up.
- There are 360° in a full circle. This 360° needs dividing up.
- The angle of the sector represents the number of items.
- It is not useful for reading off accurate figures.
- A comment should accompany each pie chart.

Example - Pie chart

30 people were asked which newspaper they read.
Results: Guardian 8 Sun 6 Mirror 7 Express 6 Times 3

To show these results in a pie-chart:

STEP 1. Divide up the 360°

360 (always this first) ÷ 30 (total people asked) = 12°

12° represents 1 person - you need this information for Column 3 in your table *(Step 2)*

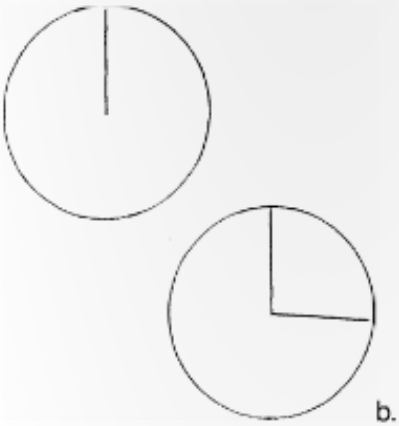
STEP 2. Draw a table:

Newspaper	Number of people	Working	Angle
Guardian	8	$8 \times 12^{o} =$	96^{o}
Mirror	7	$7 \times 12^{o} =$	84^{o}
Times	3	$3 \times 12^{o} =$	35^{o}
Sun	6	$6 \times 12^{o} =$	72^{o}
Express	6	$6 \times 12^{o} =$	72^{o}

STEP 3. Add up the angle column. It should add up to 360°.

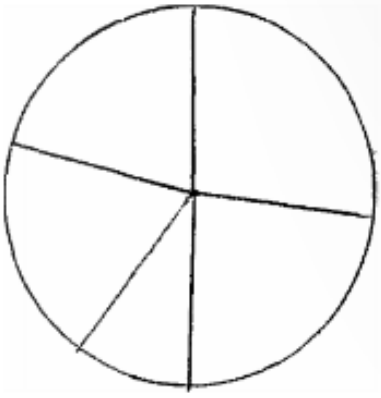
STEP 4.

a. Draw a circle. Mark the centre. Draw a line from the centre to the top of the circle.



b. Draw the first angle.

c. Draw the remaining angles.



STEP 5. Label
- Title
- Name sectors or give key (colour code)

A survey of which newspapers people read

STRAIGHT LINE GRAPHS

Key Words

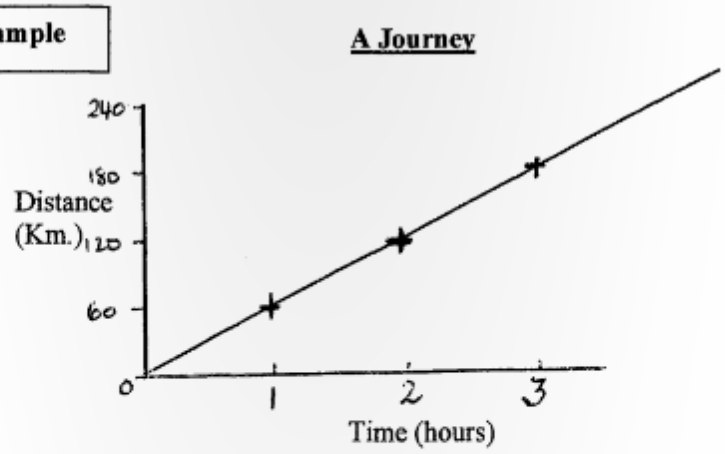
Teaching Points

- Scale - Equal divisions on an axis.
- Variable - Something that changes and can be measured.
- Frequency - Could be used instead of "number of.

Straight line graphs are generally used for continuous data.

- Straight line graphs are used to show the relationship between two variables.
- Graphs must be drawn using a pencil and a ruler.
- The scale must best utilise the space available.
- Axes must be labelled with units in brackets.
- Numbers on the axes must be written on the lines and not in the spaces, (see Bar Charts, for example).
- Data must be plotted using a (+) and not an (x).
- Title for graph must be used.

Example



PICTOGRAMS

Teaching Points

Pictograms are generally used for discrete data.

- A pictogram is a diagram which uses pictures.
- SYMMETRICAL shapes to be used so that they are easy to divide. This is an important skill.
- All pictures must be the same size.
- They must be lined up underneath each other.
- There must be a KEY to show what each picture represents.

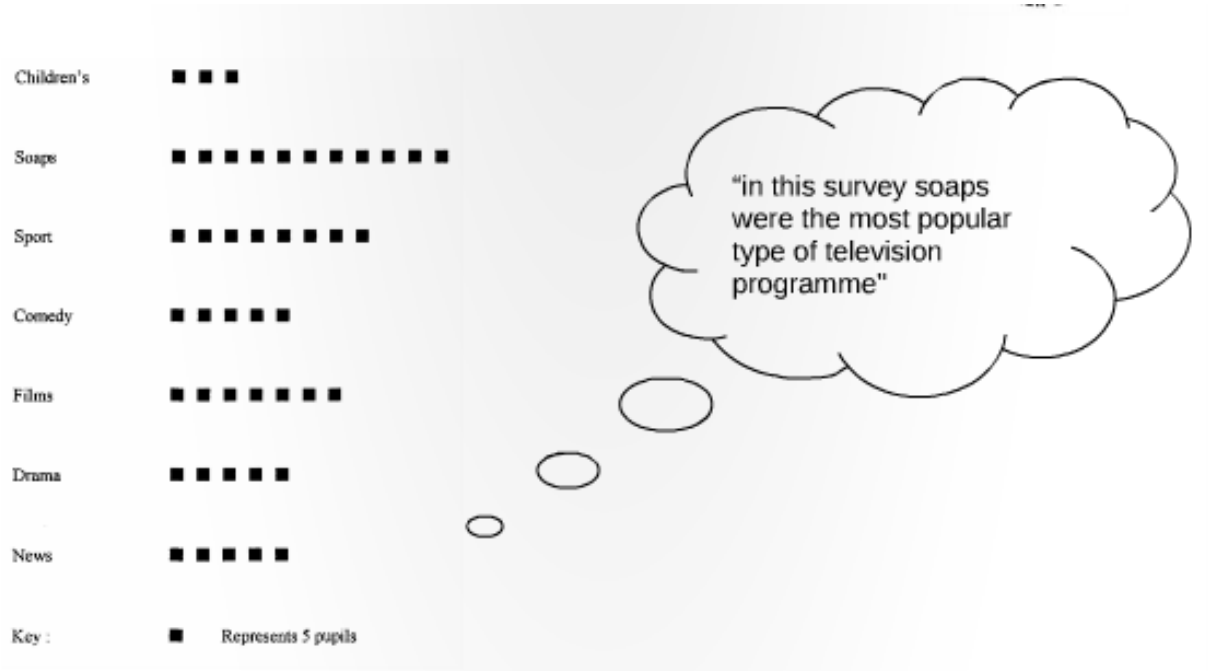
e.g. Key:  represents 2 students

With this key  represents 1 student and  represents 5 students.

Example Favourite type of TV programme

Type	Children's	Soaps	Sport	Comedy	Films	Drama	News
No. of Pupils	15	55	40	25	35	25	25

Key: ▪ Represents 5 pupils



SCATTER GRAPHS

Key Words

Line of best fit - a straight line through data points, ideally with half above the line and half below and through the mean point.

Curve of best fit - a curve line through data points, ideally with half above the curve and half below.

Correlation - describe the relationship between the data.

Anomalous result - a data point that does not fit in with other results.

Teaching Points

Scatter graphs are generally used for continuous data.

- The scale used should make the graph as big as possible, without being too difficult to use.
- Axes should be labelled with the units in brackets, e.g. "Distance (cm)".
- Data points should be plotted with (+) not (x).
- Some groups require a line of best fit, while others require a curve of best fit.

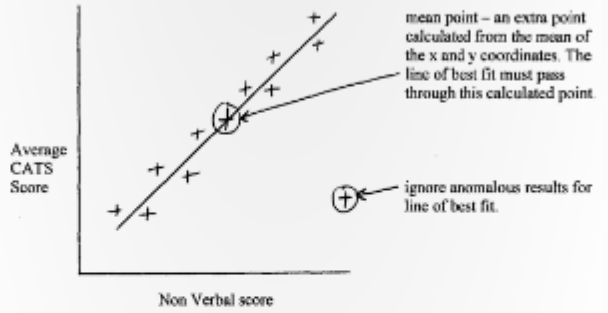
  Line of best fit - a line should be drawn through data points, ideally with half above and have below the line and through the mean point. Line should be drawn with a ruler.

  Curve of best fit - This should be as smooth as possible, going through as many data points as possible and ignore anomalous results.

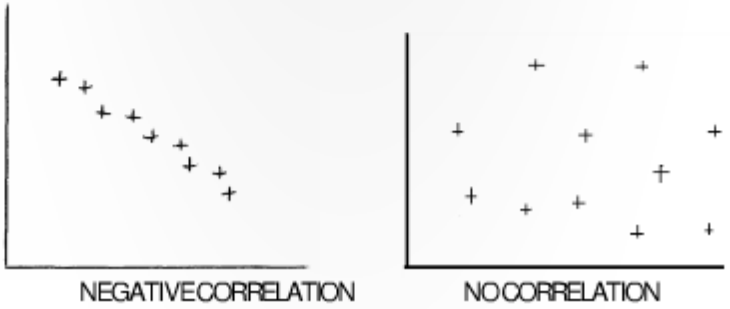
- Each graph should be given a title.

Example 1 (Line of best fit)

Graph to show relationship between average and non-verbal CATs scores.

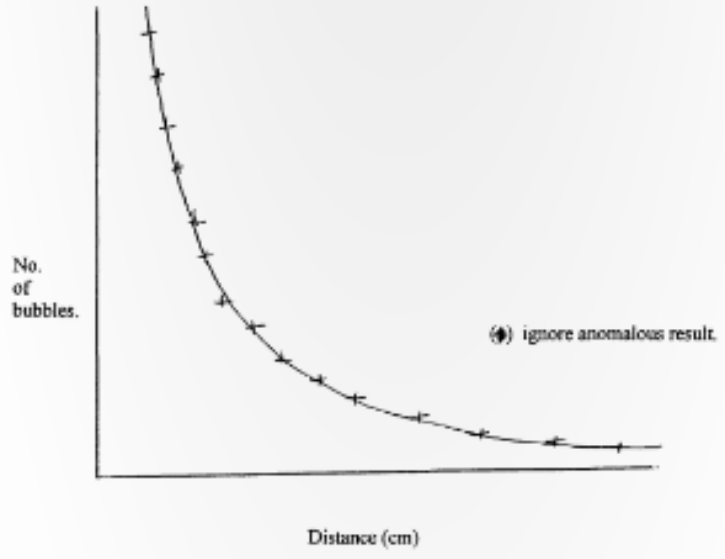


This is very useful for looking at relationships. This would be described as having POSITIVE CORRELATION.



Example 2 (Curve of best fit)

Graph to show the number of oxygen bubbles produced by pond weed when placed at different distances from a lamp.



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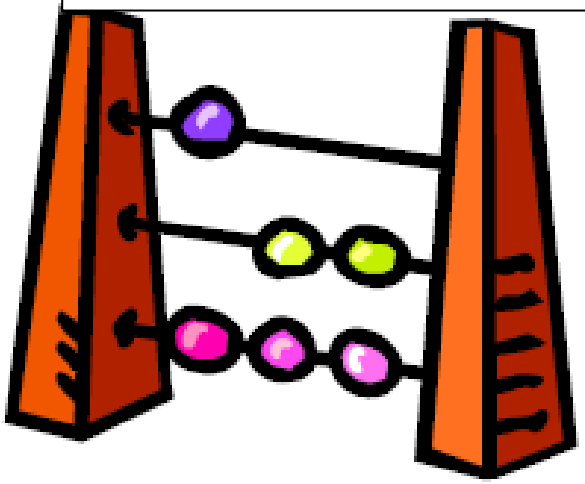
Supporting your child with Mathematics

Resource pack



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Booklet 7

Resources

- ✓ Number Lines
  (1, 2, 4 & 8)

  (1, 10 & 5)

  (1, 3, 6 & 9)

- ✓ Number squares
  Blank

  Extended

- ✓ Place Value chart

- ✓ Place Value cards
  a) Instructions

  1. Decorate the cards the stated colours.
  2. Cut them out.

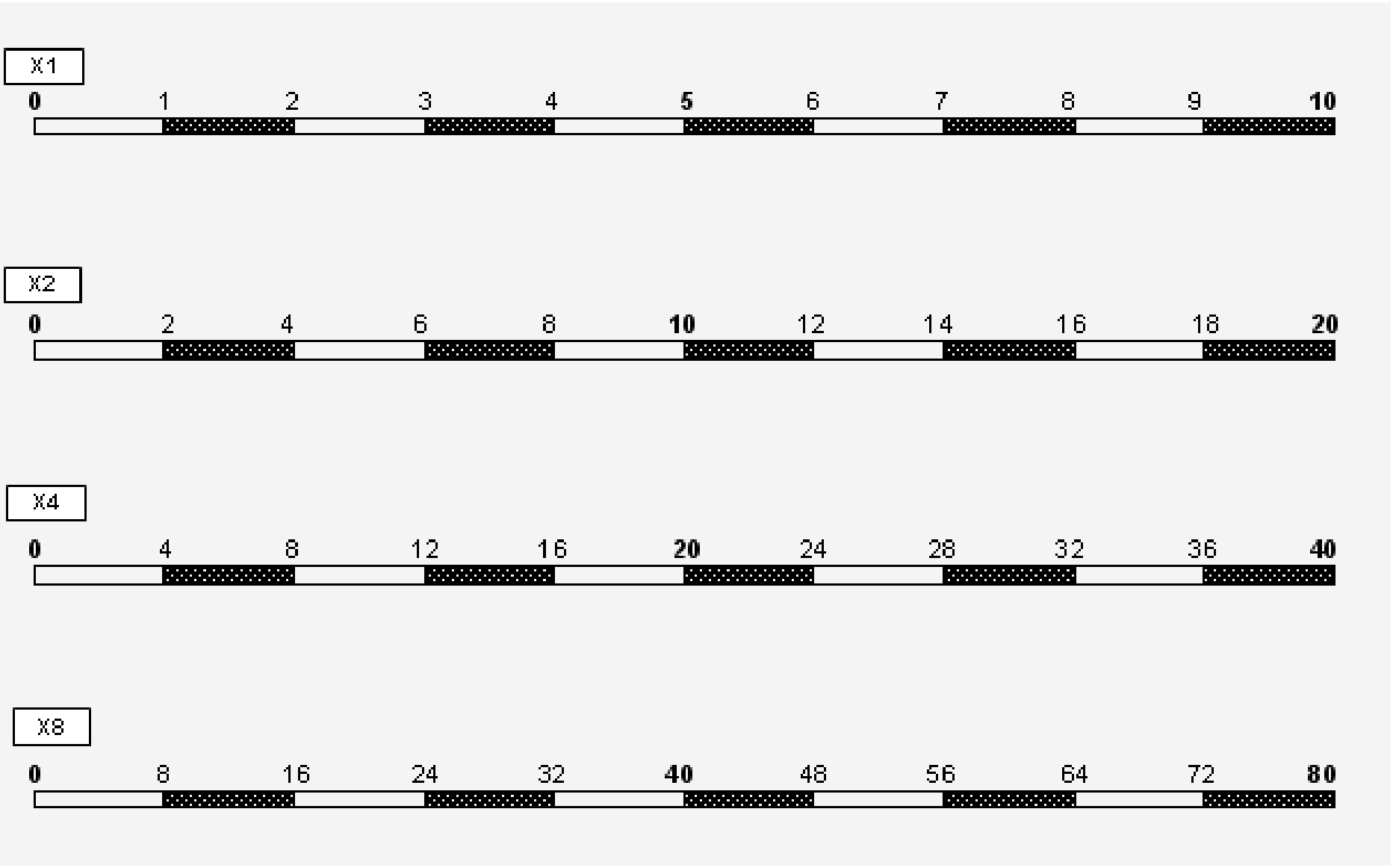
b) **Directions for use**

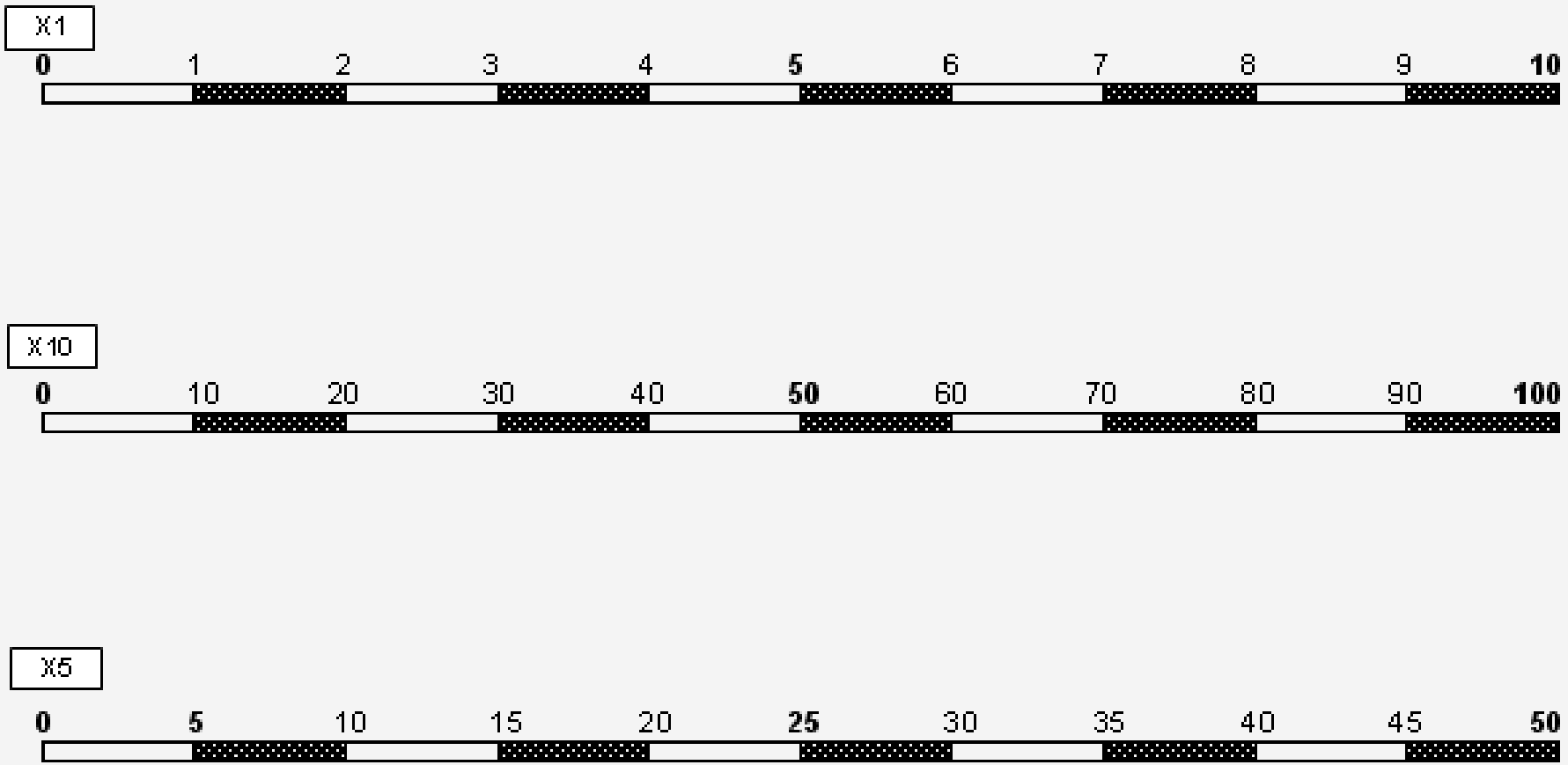
These cards overlap to enable your child to construct numbers up to 9,999 and numbers with up to three decimal places.

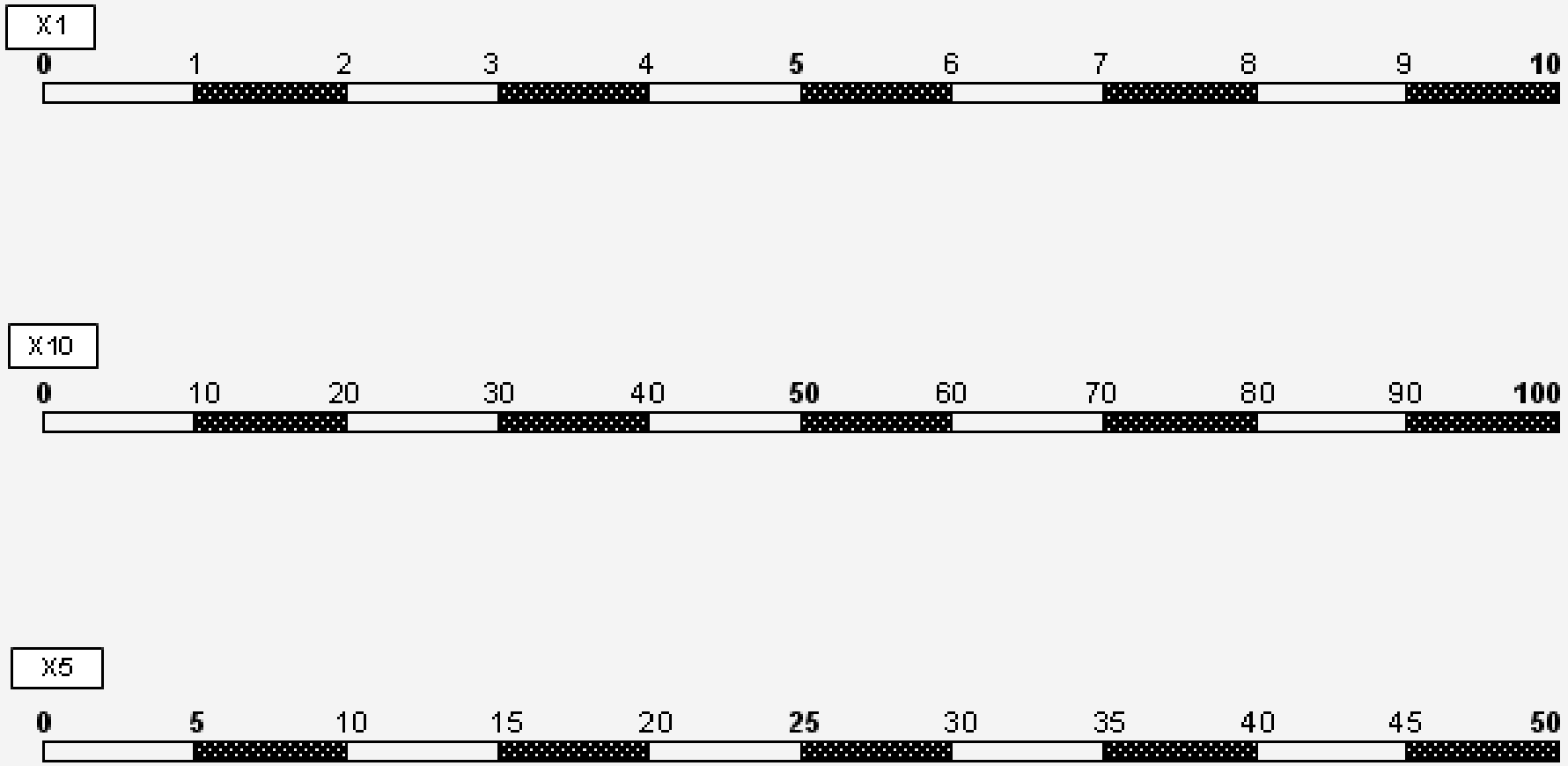
To construct the number 7,823

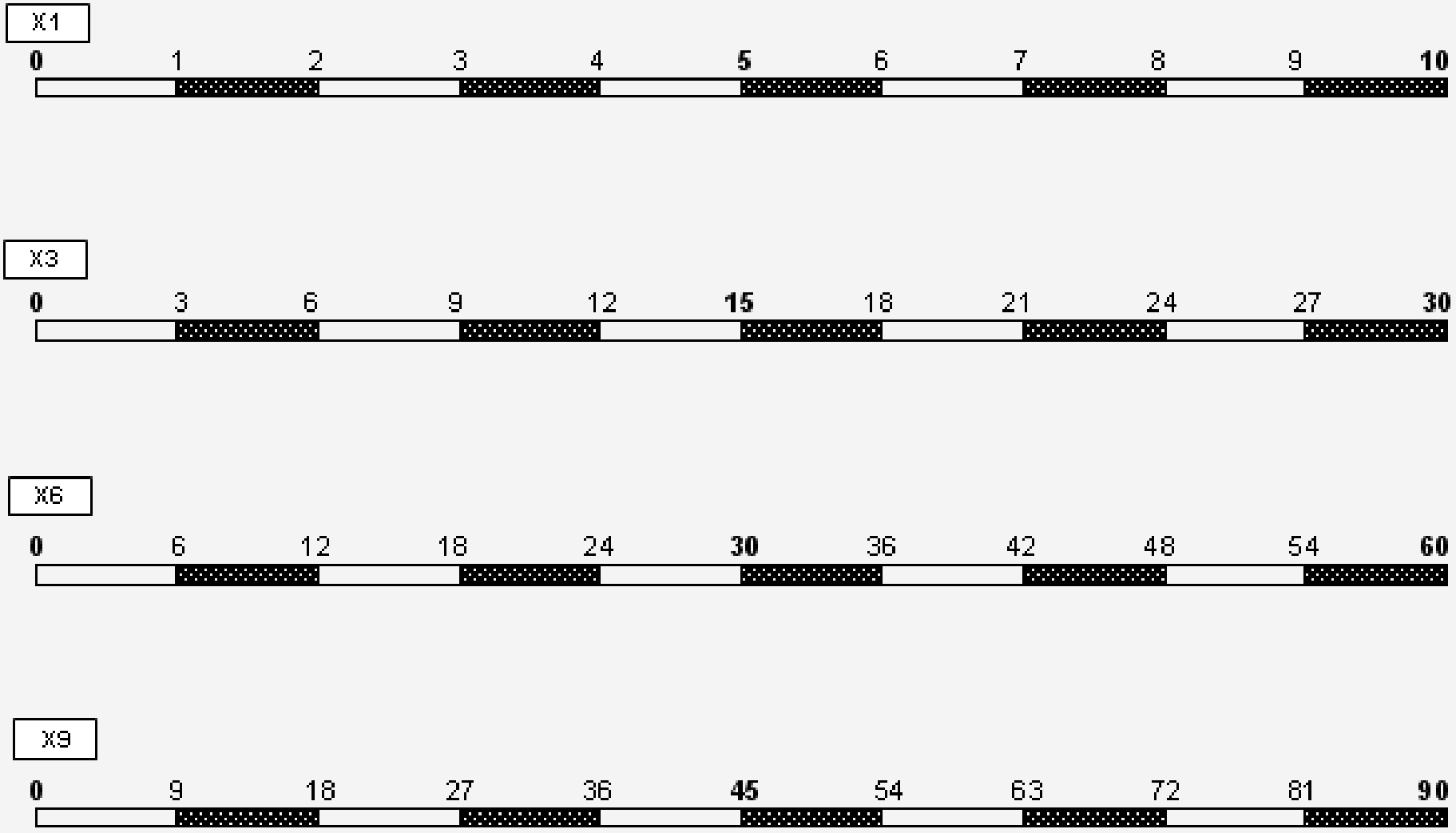
Start with the 7000 card, place the 800 card on top followed by the 20 and 3.

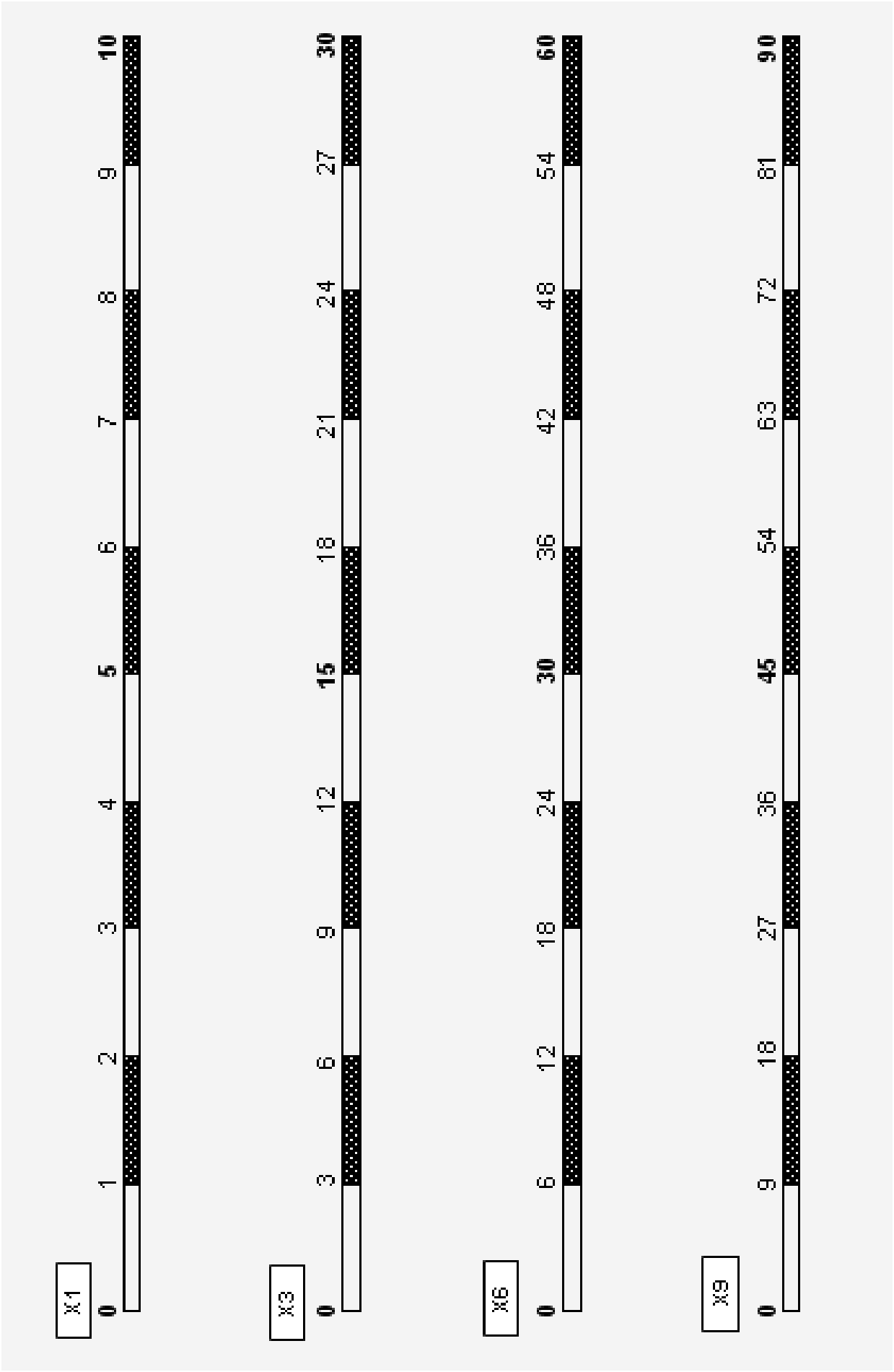
Number Lines


X1
0 1 2 3 4 5 6 7 8 9 10
X2
0 2 4 6 8 10 12 14 16 18 20
X4
0 4 8 12 16 20 24 28 32 36 40
X8
0 8 16 24 32 40 48 56 64 72 80


X1
0 1 2 3 4 5 6 7 8 9 10
X10
0 10 20 30 40 50 60 70 80 90 100
X5
0 5 10 15 20 25 30 35 40 45 50


X1
0 1 2 3 4 5 6 7 8 9 10
X10
0 10 20 30 40 50 60 70 80 90 100
X5
0 5 10 15 20 25 30 35 40 45 50

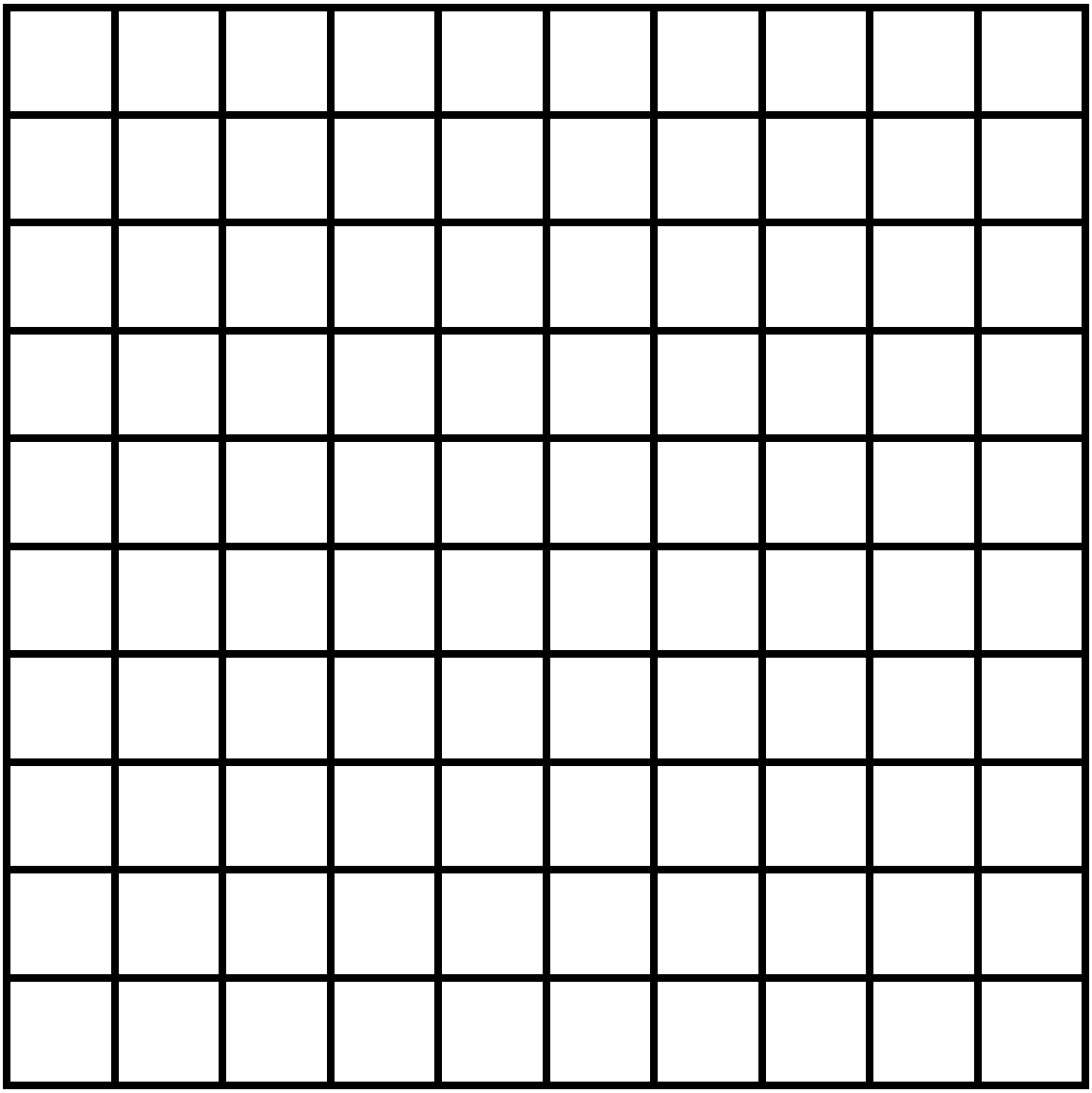

X1
0 1 2 3 4 5 6 7 8 9 10
X3
0 3 6 9 12 15 18 21 24 27 30
X6
0 6 12 18 24 30 36 42 48 54 60
X9
0 9 18 27 36 45 54 63 72 81 90


x1
0 1 2 3 4 5 6 7 8 9 10
x3
0 3 6 9 12 15 18 21 24 27 30
x6
0 6 12 18 24 30 36 42 48 54 60
x9
0 9 18 27 36 45 54 63 72 81 90

Numb

er Squares

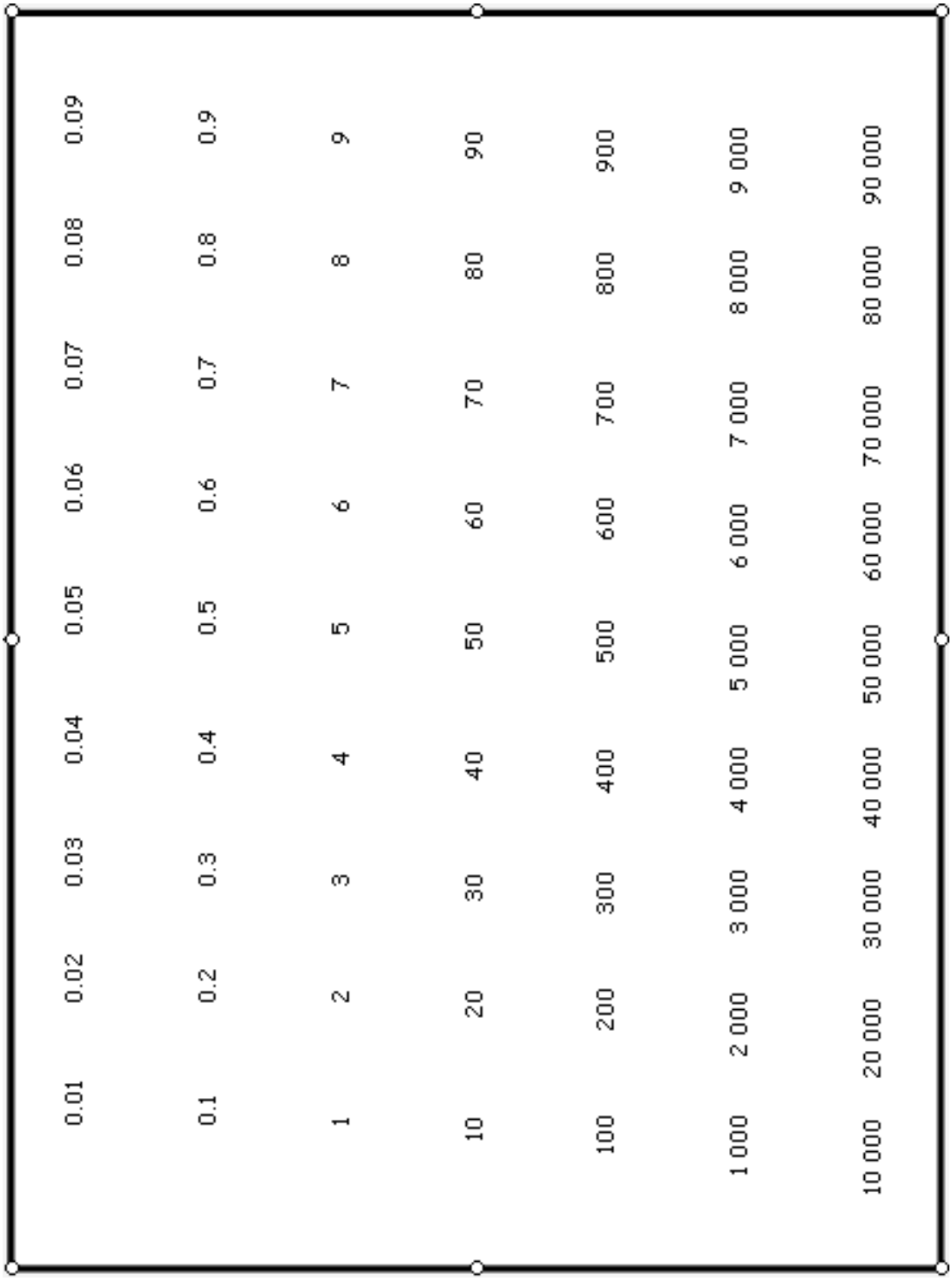
Blank



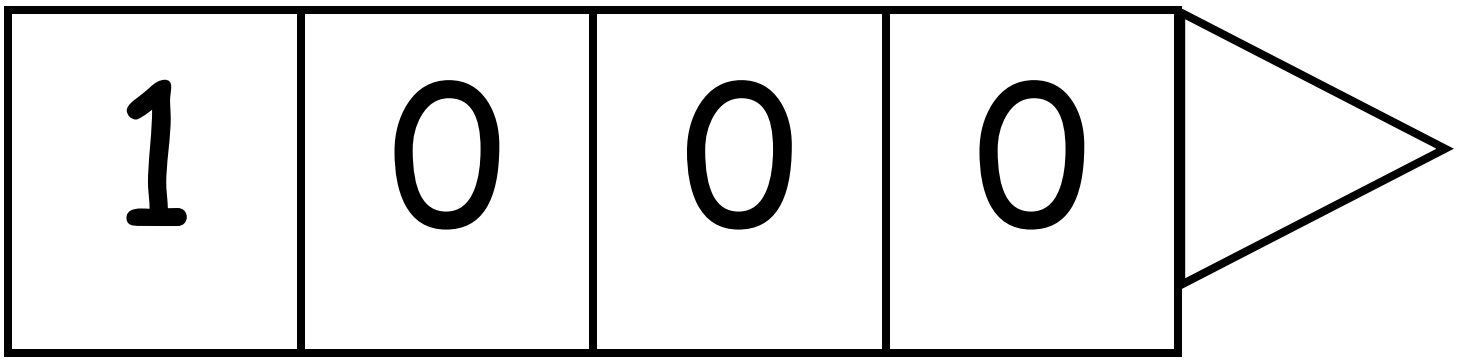
Extended

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

Place Value Chart



Place Value Cards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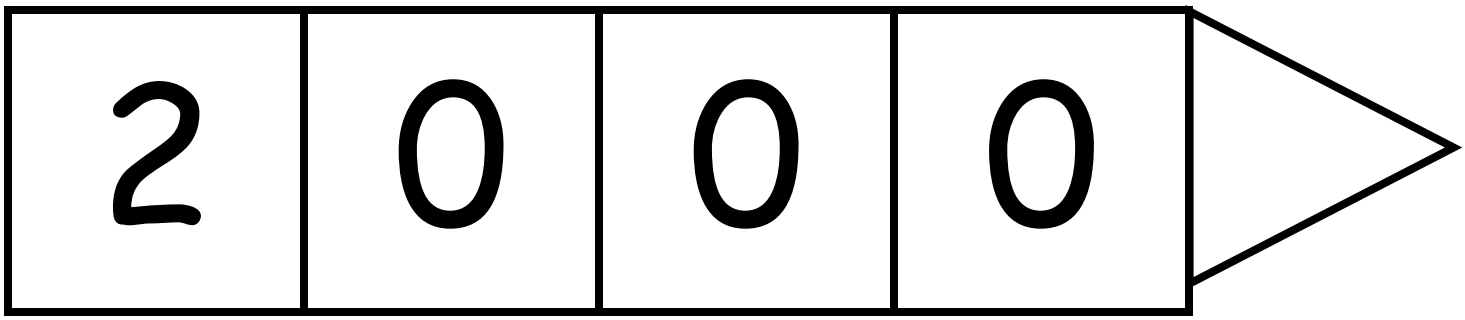
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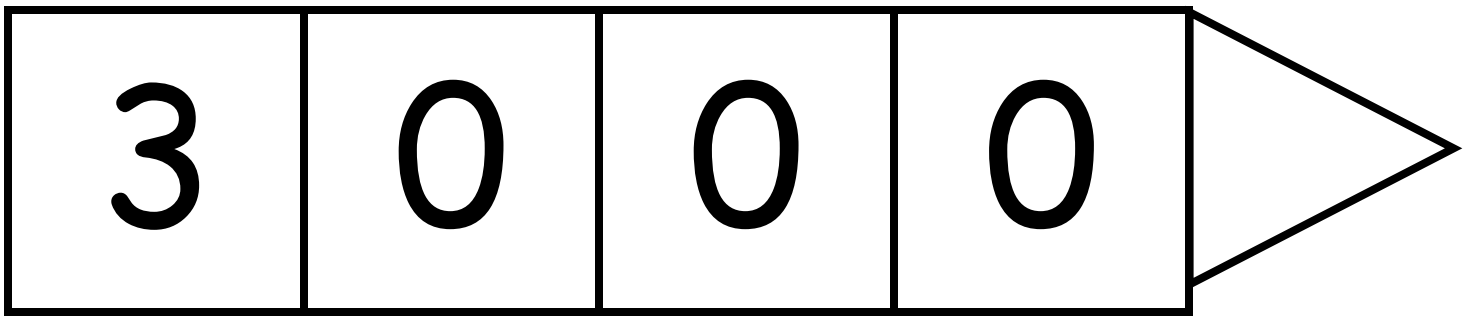
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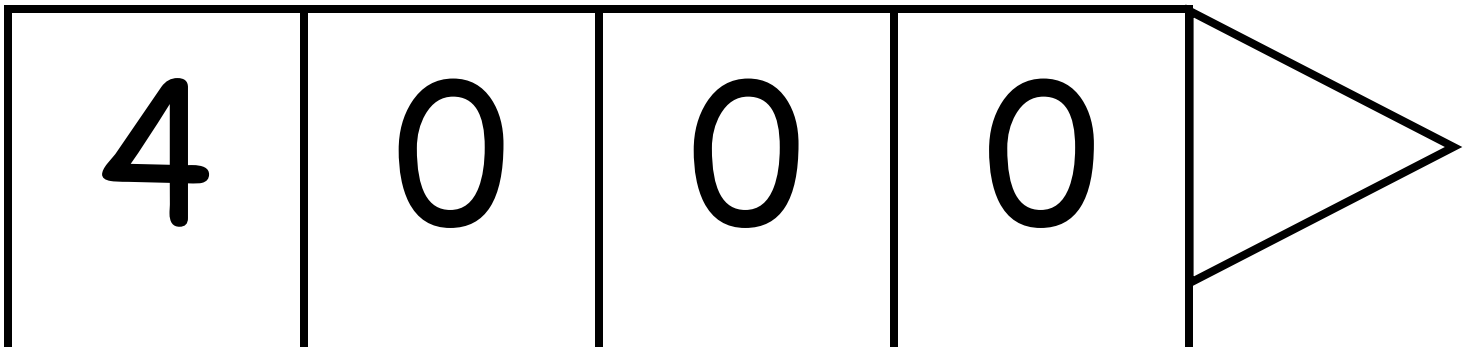
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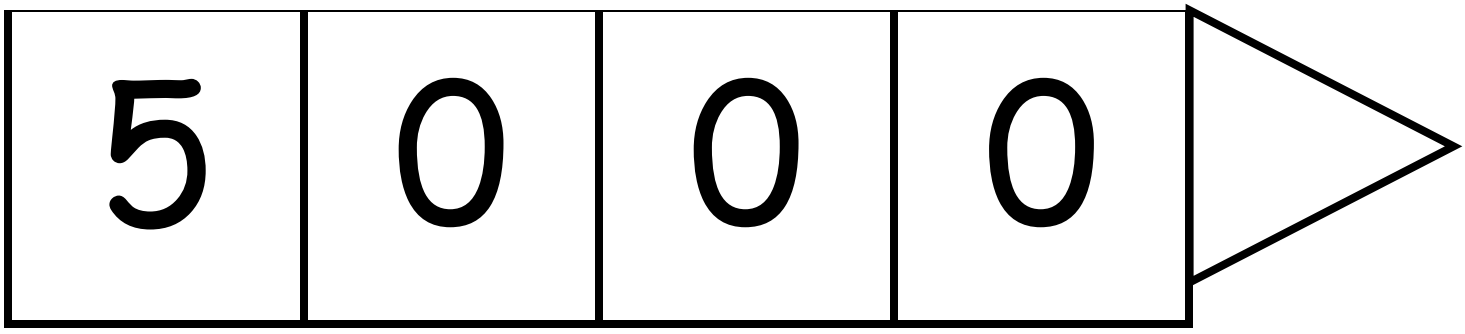
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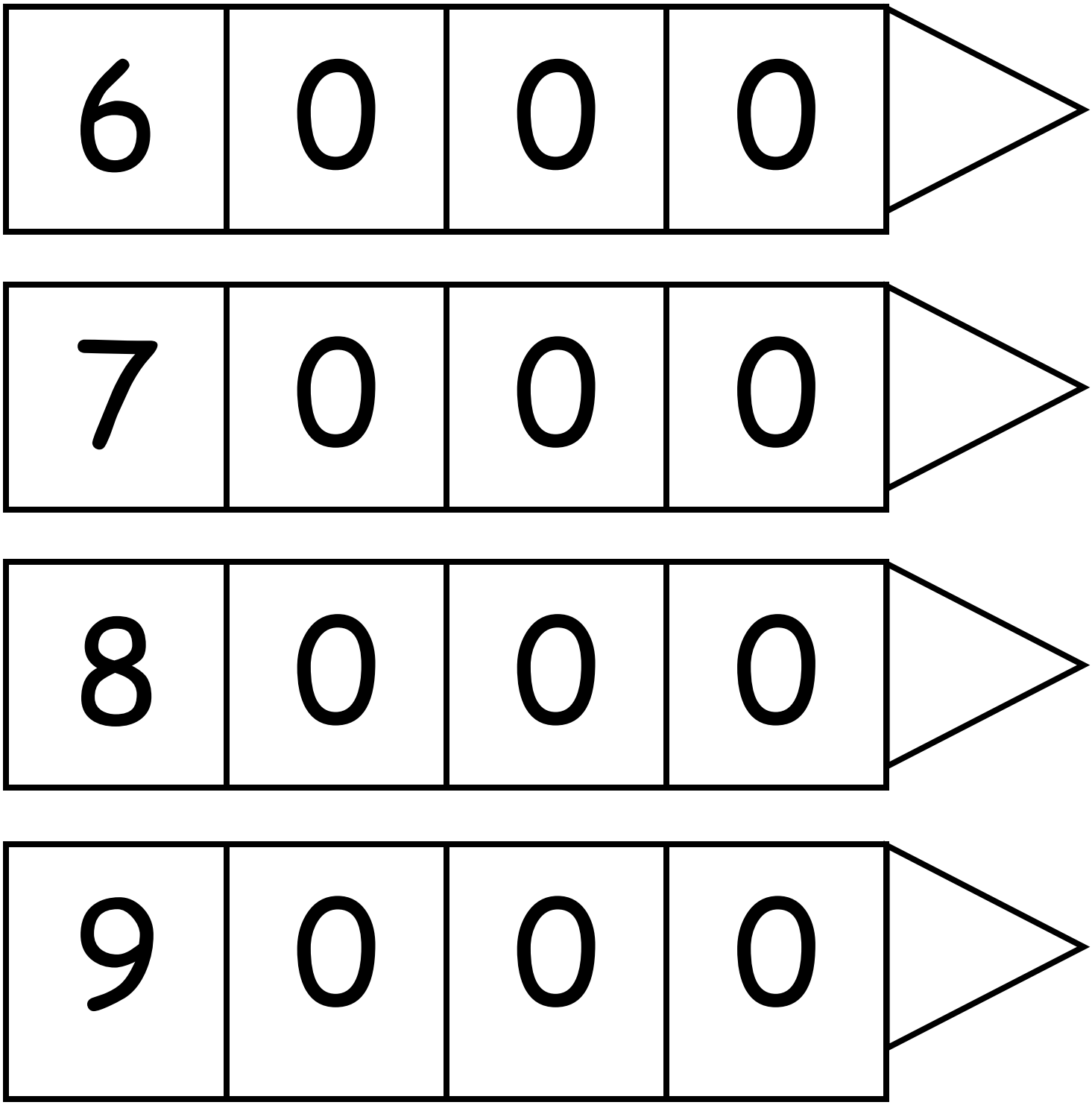
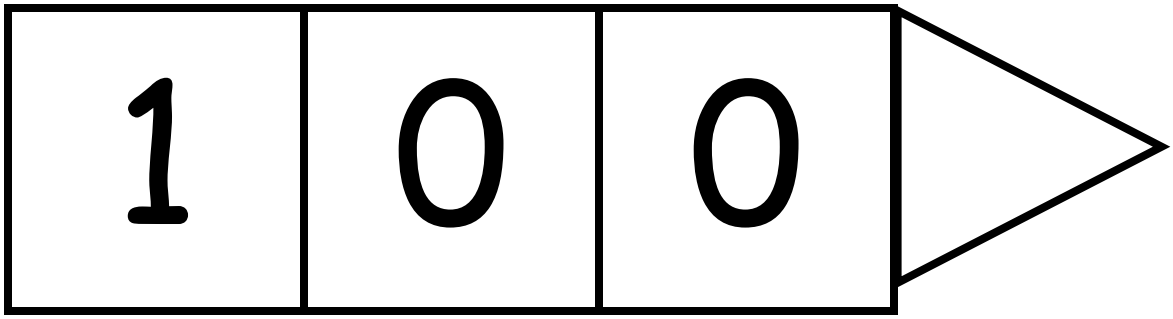


Glas/Blue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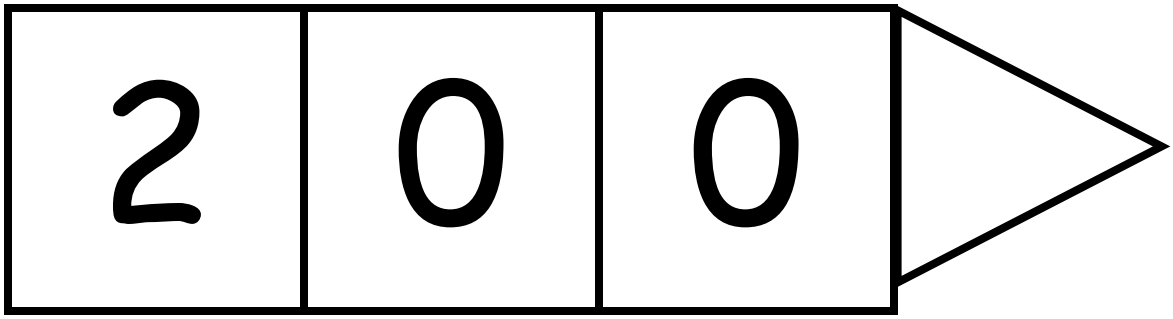
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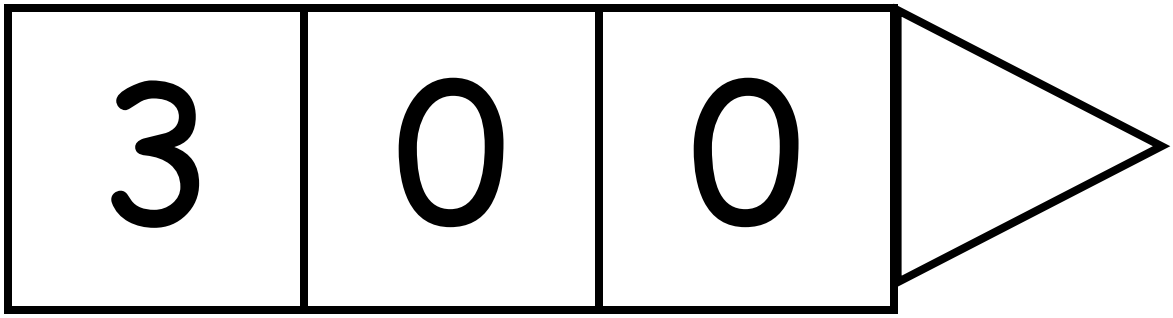
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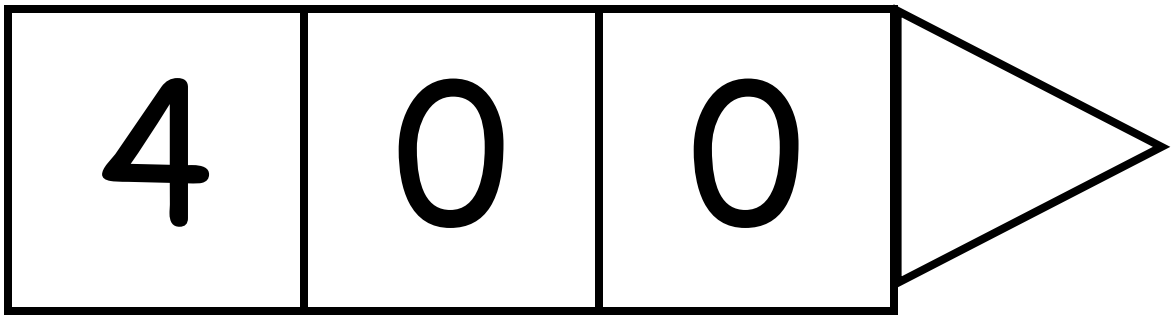
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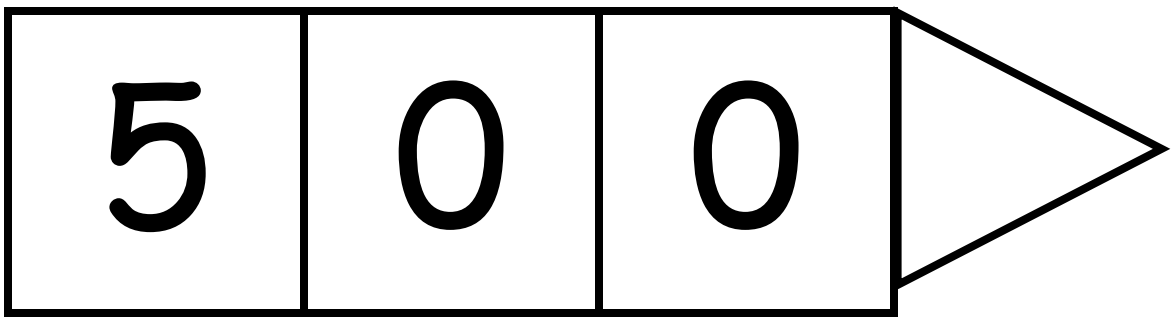
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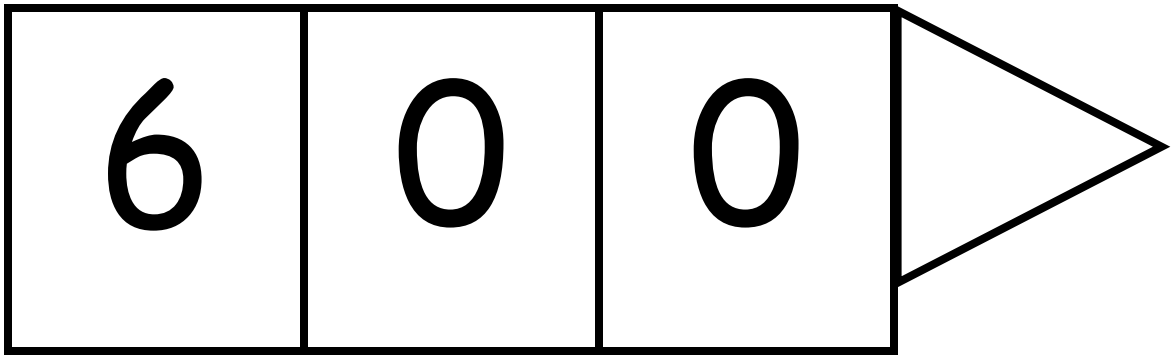
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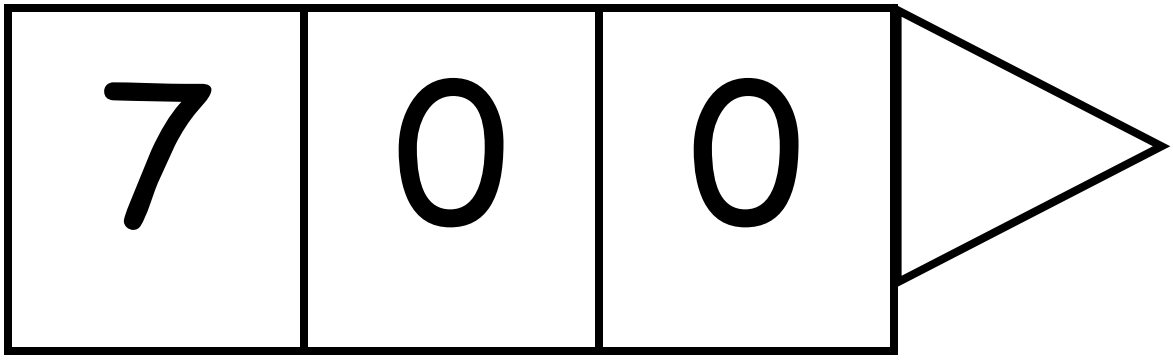
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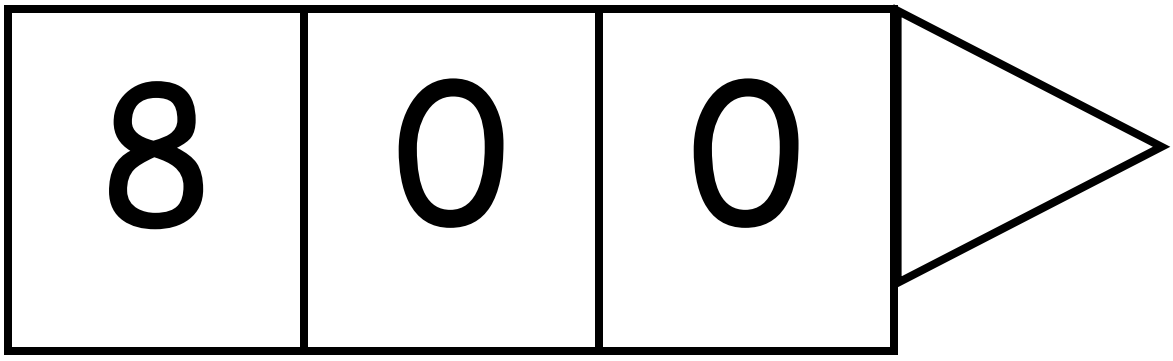
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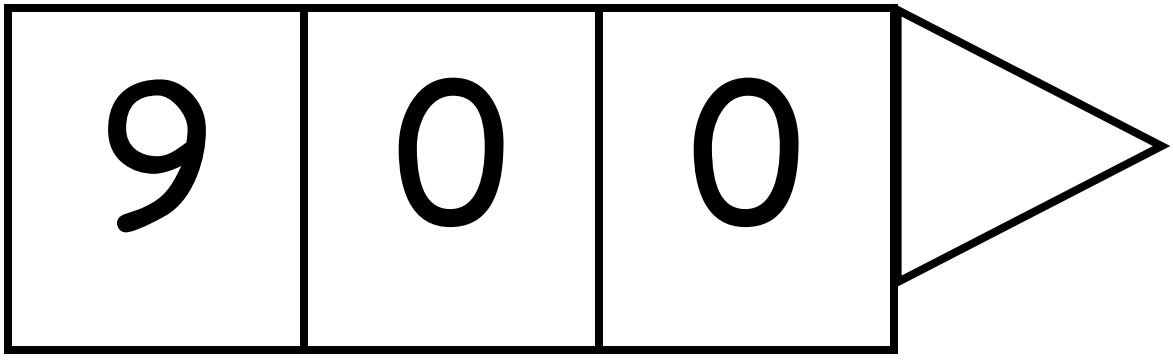
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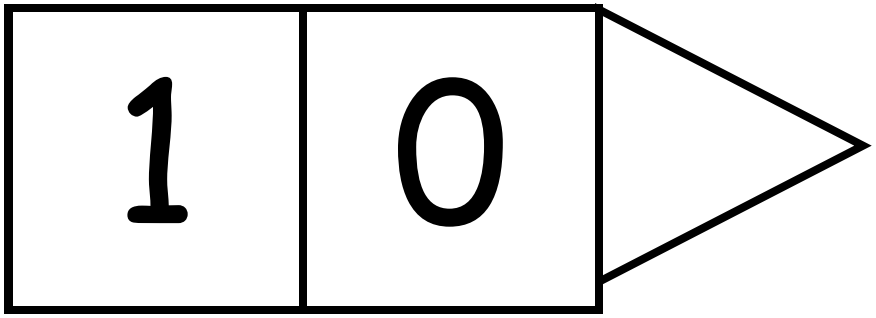
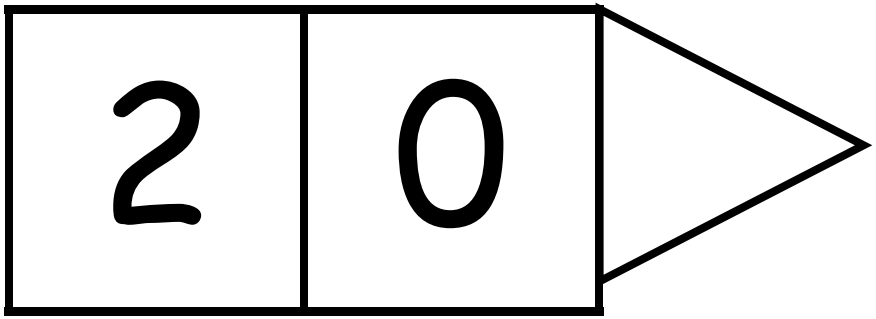
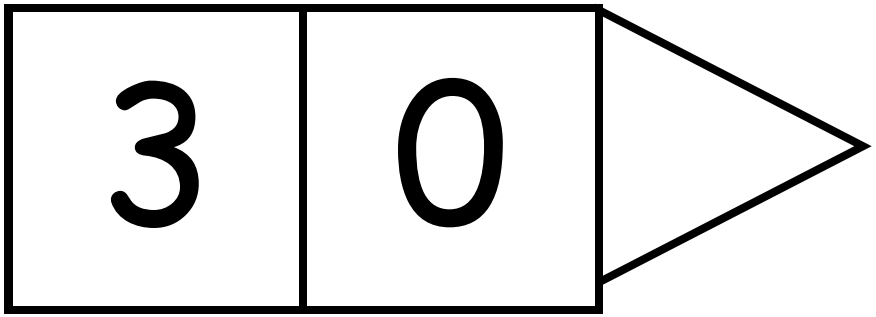
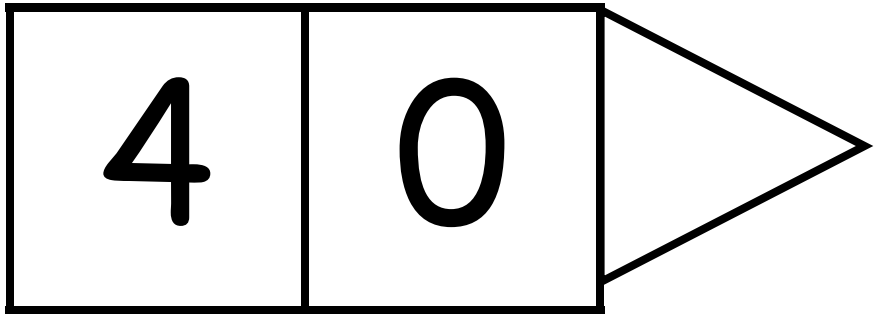
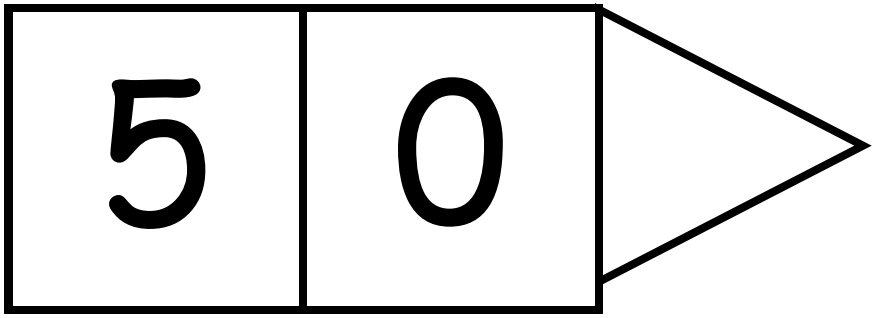


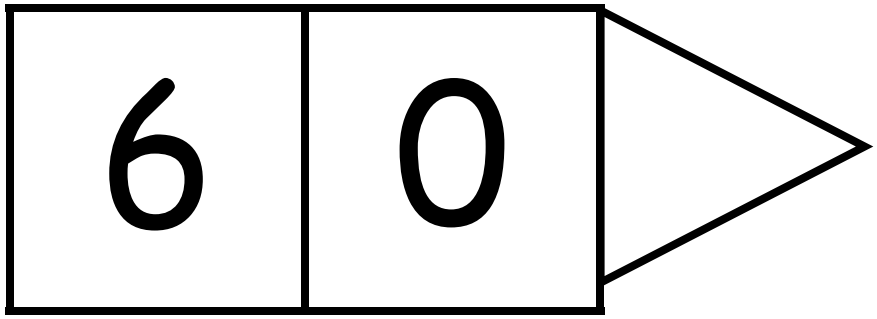


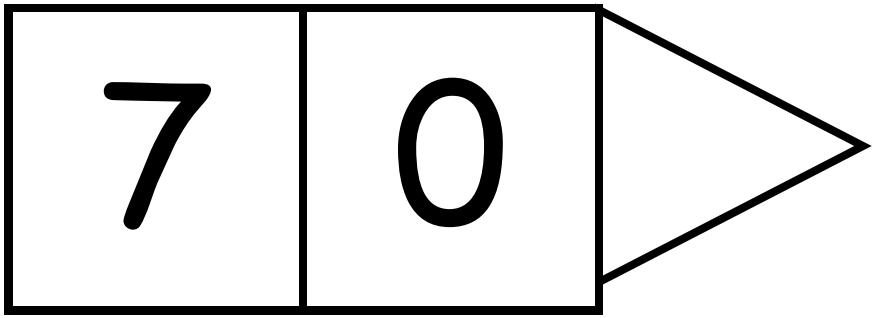


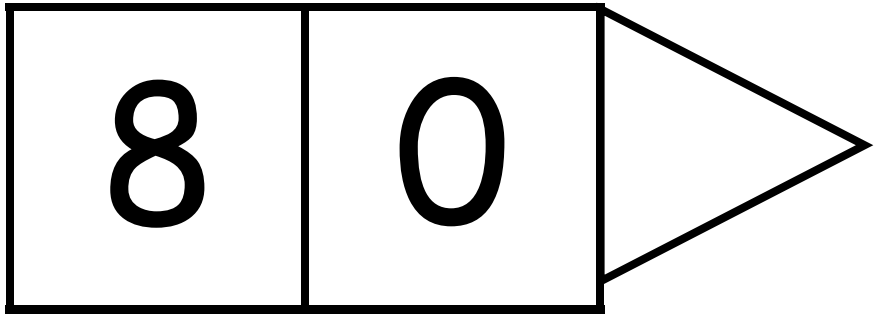


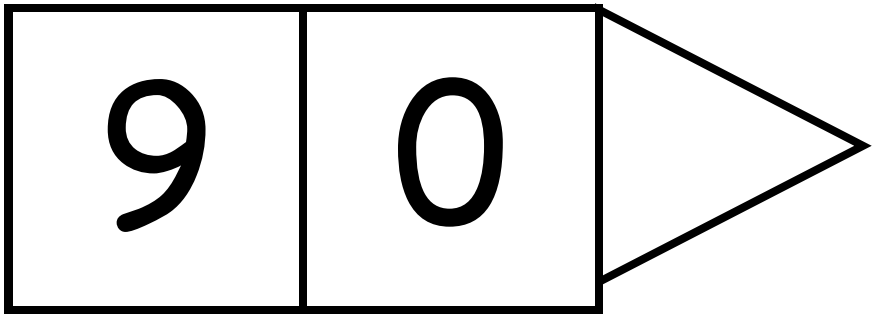
Gwyrdd/Green



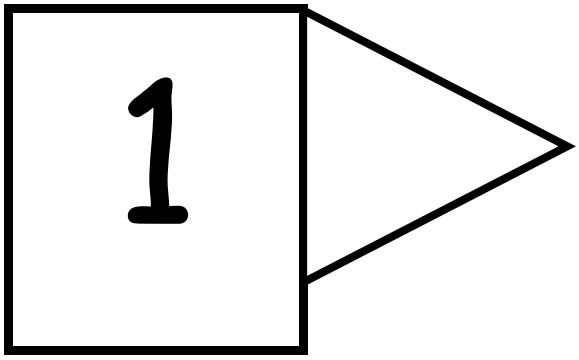








Melyn/Yellow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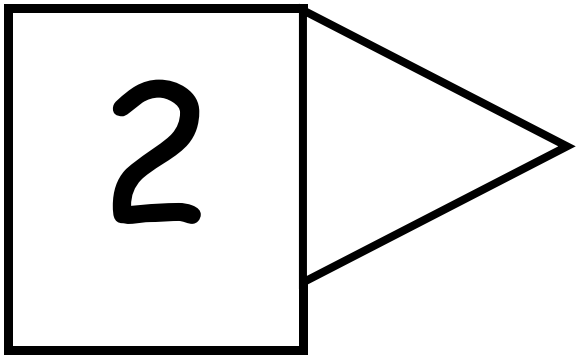
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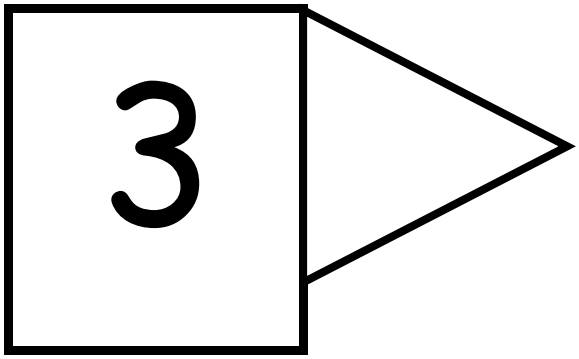
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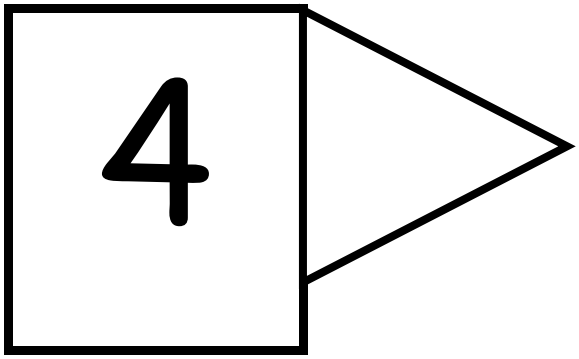
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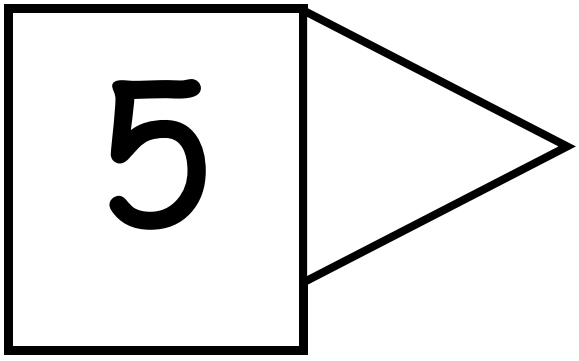
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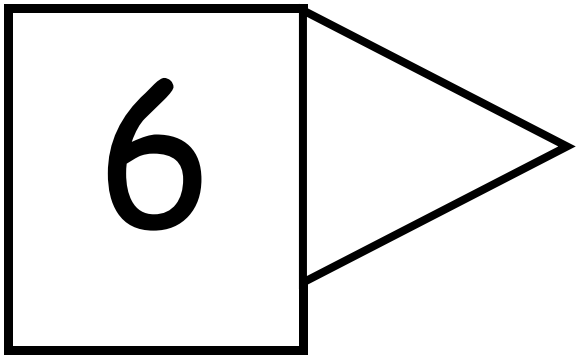
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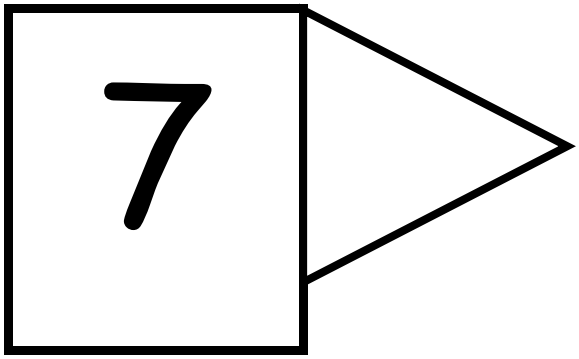

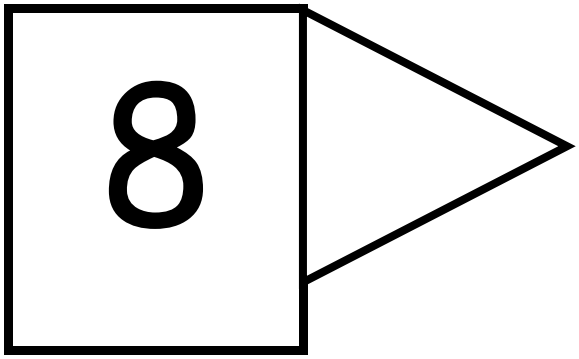

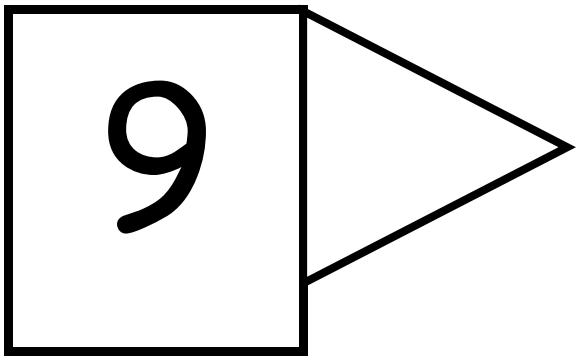

Coch/Red