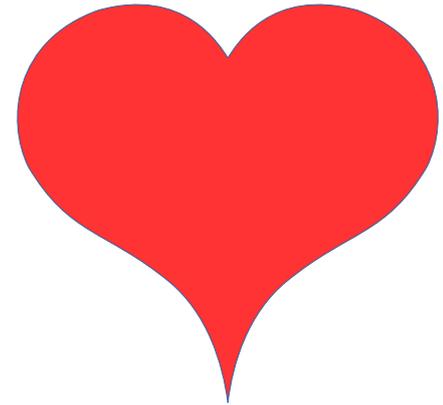


# Apprendre ses livrets par cœur



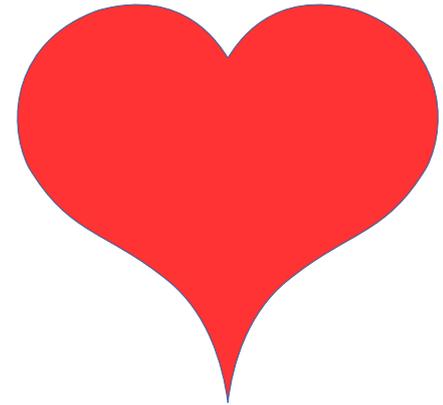
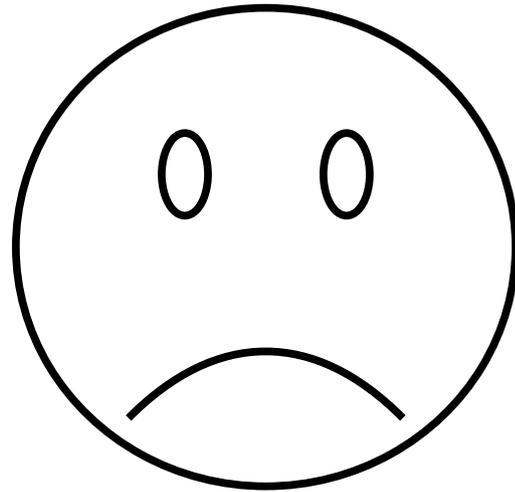
Diaporama réalisé en 2015 par Martin Olivier  
Enseignant 5P / 6P à Lausanne en Suisse

Lorsque je reviens à l'écran,  
vous faites la marmotte.



# Apprendre ses livrets par cœur

Quelle galère ?



# Apprendre ses livrets par cœur

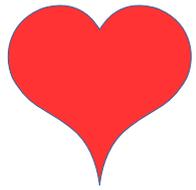


Je dois apprendre tous ces calculs, ma mémoire va se fatiguer avec plus une centaine de calculs !

## TABLES DE MULTIPLICATIONS

0 X 1 = 0	0 X 2 = 0	0 X 3 = 0	0 X 4 = 0	0 X 5 = 0	0 X 6 = 0
1 X 1 = 1	1 X 2 = 2	1 X 3 = 3	1 X 4 = 4	1 X 5 = 5	1 X 6 = 6
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9 X 1 = 9	9 X 2 = 18	9 X 3 = 27	9 X 4 = 36	9 X 5 = 45	9 X 6 = 54
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11 X 1 = 11	11 X 2 = 22	11 X 3 = 33	11 X 4 = 44	11 X 5 = 55	11 X 6 = 66
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9 X 7 = 63	9 X 8 = 72	9 X 9 = 81	9 X 10 = 90	9 X 11 = 99	9 X 12 = 108
10 X 7 = 70	10 X 8 = 80	10 X 9 = 90	10 X 10 = 100	10 X 11 = 110	10 X 12 = 120
11 X 7 = 77	11 X 8 = 88	11 X 9 = 99	11 X 10 = 110	11 X 11 = 121	11 X 12 = 132
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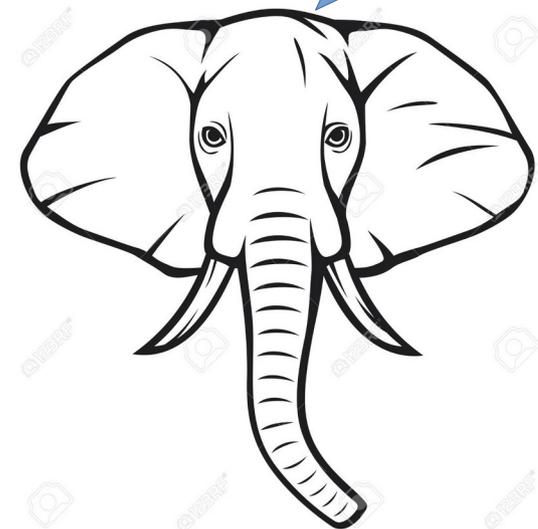
# Apprendre ses livrets par cœur



## TABLES DE MULTIPLICATIONS

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7 X 7 = 49	7 X 8 = 56	7 X 9 = 63	7 X 10 = 70	7 X 11 = 77	7 X 12 = 84
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9 X 7 = 63	9 X 8 = 72	9 X 9 = 81	9 X 10 = 90	9 X 11 = 99	9 X 12 = 108
10 X 7 = 70	10 X 8 = 80	10 X 9 = 90	10 X 10 = 100	10 X 11 = 110	10 X 12 = 120
11 X 7 = 77	11 X 8 = 88	11 X 9 = 99	11 X 10 = 110	11 X 11 = 121	11 X 12 = 132
12 X 7 = 84	12 X 8 = 96	12 X 9 = 108	12 X 10 = 120	12 X 11 = 132	12 X 12 = 144

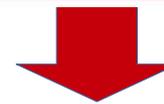
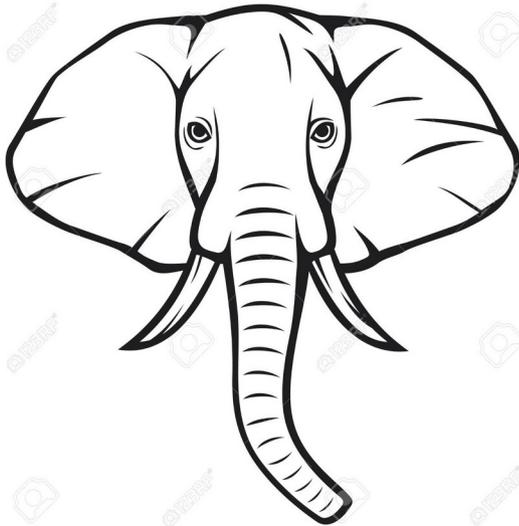
Écoute bien, ouvre grand tes oreilles, je vais te montrer comment nous on apprend nos livrets sans se tromper !!



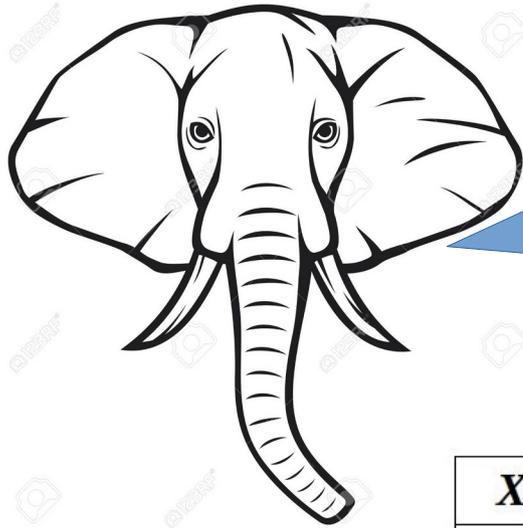
# TABLES DE MULTIPLICATIONS

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12 X 7 = 84	12 X 8 = 96	12 X 9 = 108	12 X 10 = 120	12 X 11 = 132	12 X 12 = 144

Toutes les tables de multiplications, je les mets dans un seul tableau que voici.

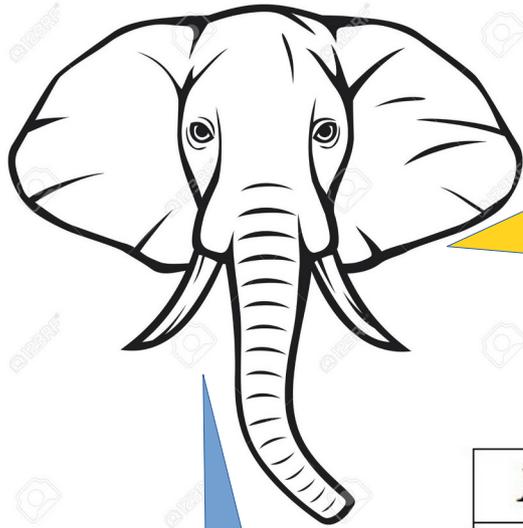


X	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100



Agrandissons ce tableau pour l'analyser et voir ce qu'il faut retenir !

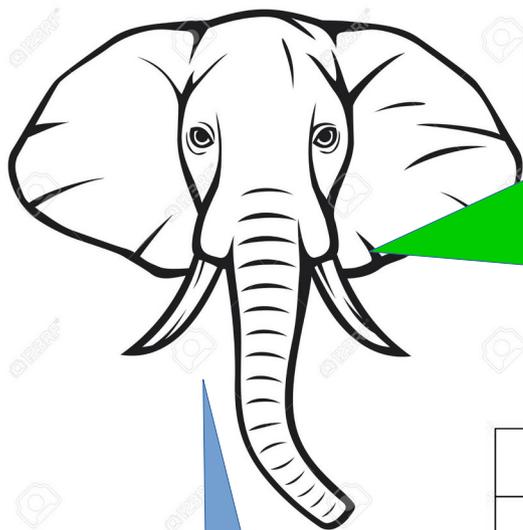
<b>X</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>0</b>	0	0	0	0	0	0	0	0	0	0	0
<b>1</b>	0	1	2	3	4	5	6	7	8	9	10
<b>2</b>	0	2	4	6	8	10	12	14	16	18	20
<b>3</b>	0	3	6	9	12	15	18	21	24	27	30
<b>4</b>	0	4	8	12	16	20	24	28	32	36	40
<b>5</b>	0	5	10	15	20	25	30	35	40	45	50
<b>6</b>	0	6	12	18	24	30	36	42	48	54	60
<b>7</b>	0	7	14	21	28	35	42	49	56	63	70
<b>8</b>	0	8	16	24	32	40	48	56	64	72	80
<b>9</b>	0	9	18	27	36	45	54	63	72	81	90
<b>10</b>	0	10	20	30	40	50	60	70	80	90	100



En jaune, les multiplications avec un zéro dont la réponse est toujours 0.

Facile !

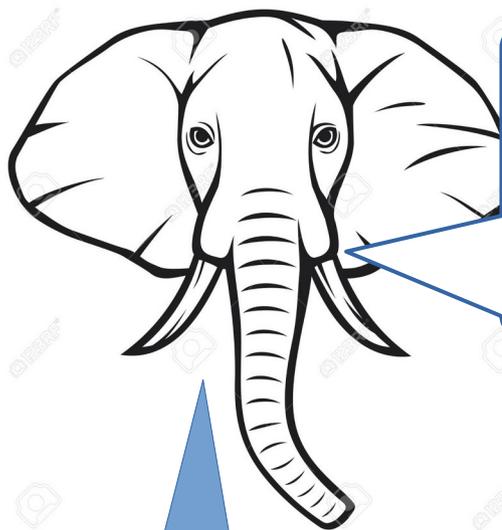
<i>X</i>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>0</b>	0	0	0	0	0	0	0	0	0	0	0
<b>1</b>	0	1	2	3	4	5	6	7	8	9	10
<b>2</b>	0	2	4	6	8	10	12	14	16	18	20
<b>3</b>	0	3	6	9	12	15	18	21	24	27	30
<b>4</b>	0	4	8	12	16	20	24	28	32	36	40
<b>5</b>	0	5	10	15	20	25	30	35	40	45	50
<b>6</b>	0	6	12	18	24	30	36	42	48	54	60
<b>7</b>	0	7	14	21	28	35	42	49	56	63	70
<b>8</b>	0	8	16	24	32	40	48	56	64	72	80
<b>9</b>	0	9	18	27	36	45	54	63	72	81	90
<b>10</b>	0	10	20	30	40	50	60	70	80	90	100



En vert, les multiplications avec 1 ou 10 comme multiplicateur.....

Facile !

X	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

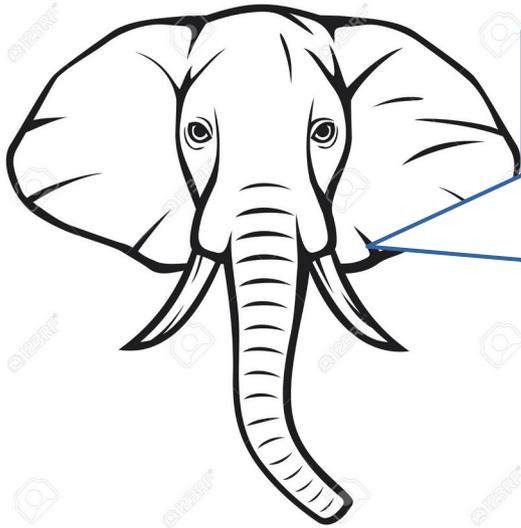


En **rouge**, il faut savoir ces calculs par cœur 

$2 \times 2$ ,  $3 \times 3$ ,  $4 \times 4$ ,  $5 \times 5$ ,  $6 \times 6$ ,  $7 \times 7$ ,  $8 \times 8$ ,  $9 \times 9$

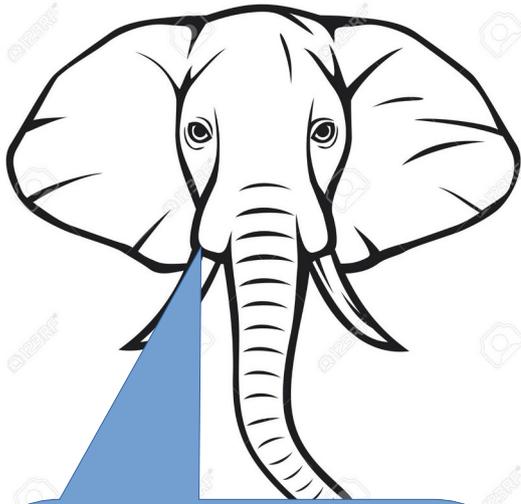
8 calculs seulement et certains vous les savez déjà, comme  $2 \times 2$  et  $3 \times 3$  !  
N'est ce pas ?

X	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100



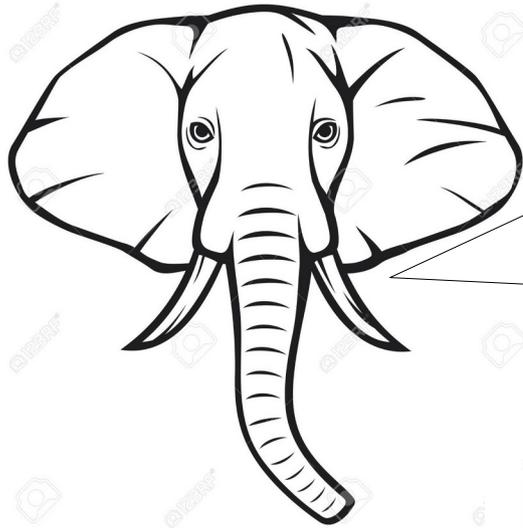
Et la suite, il reste encore beaucoup de calculs.....

<b>X</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>0</b>	0	0	0	0	0	0	0	0	0	0	0
<b>1</b>	0	1	2	3	4	5	6	7	8	9	10
<b>2</b>	0	2	4	6	8	10	12	14	16	18	20
<b>3</b>	0	3	6	9	12	15	18	21	24	27	30
<b>4</b>	0	4	8	12	16	20	24	28	32	36	40
<b>5</b>	0	5	10	15	20	25	30	35	40	45	50
<b>6</b>	0	6	12	18	24	30	36	42	48	54	60
<b>7</b>	0	7	14	21	28	35	42	49	56	63	70
<b>8</b>	0	8	16	24	32	40	48	56	64	72	80
<b>9</b>	0	9	18	27	36	45	54	63	72	81	90
<b>10</b>	0	10	20	30	40	50	60	70	80	90	100

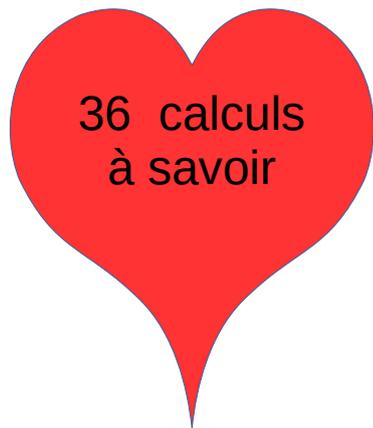


Nous allons utiliser  
la commutativité de  
la multiplication.  
Par exemple  
 $8 \times 7 = 7 \times 8 = 56$

<i>X</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
<i>0</i>	0	0	0	0	0	0	0	0	0	0	0
<i>1</i>	0	1	2	3	4	5	6	7	8	9	10
<i>2</i>	0	2	4	6	8	10	12	14	16	18	20
<i>3</i>	0	3	6	9	12	15	18	21	24	27	30
<i>4</i>	0	4	8	12	16	20	24	28	32	36	40
<i>5</i>	0	5	10	15	20	25	30	35	40	45	50
<i>6</i>	0	6	12	18	24	30	36	42	48	54	60
<i>7</i>	0	7	14	21	28	35	42	49	56	63	70
<i>8</i>	0	8	16	24	32	40	48	56	64	72	80
<i>9</i>	0	9	18	27	36	45	54	63	72	81	90
<i>10</i>	0	10	20	30	40	50	60	70	80	90	100



Enfin, en enlevant les calculs faciles en jaune et en vert et en utilisant la commutativité, ce ne sont plus que 36 calculs que tu dois apprendre par cœur. Donc toutes les multiplications dont la réponse (ou produit) se trouve dans le triangle rouge.



X	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

# Coucou me revoilà

- Je sens que vous allez tous faire 6 au T.A

