

Display Master: Key Idea: 4s, 8s, and 10s

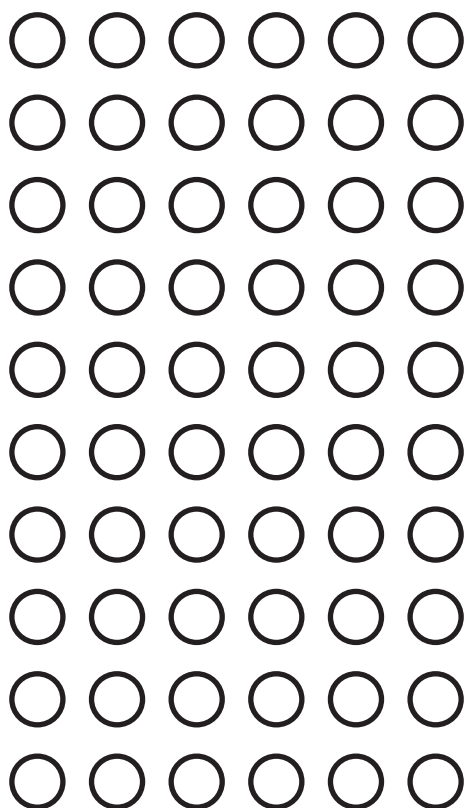
- Unknown facts can be derived from known facts using the doubling strategy.

Display Master: Partially Completed Multiplication Table

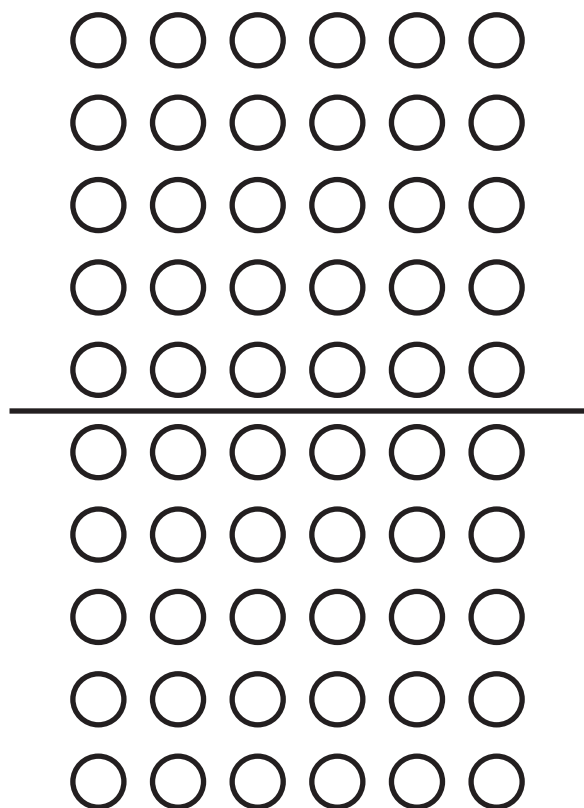
	x	1	2	3	4	5	6	7	8	9	10	11	12
	1	1	2	3	4	5	6	7	8	9	10	11	12
	2	2	4	6	8	10	12	14	16	18	20	22	24
	3	3	6	9	12	15	18	21	24	27	30	33	36
	4	4	8	12	16	20		28			40	44	
	5	5	10	15	20	25	30	35	40	45	50	55	60
	6	6	12	18		30		42			60	66	
	7	7	14	21	28	35	42	49	56	63	70	77	84
	8	8	16	24		40		56			80	88	
	9	9	18	27		45		63			90	99	
	10	10	20	30	40	50	60	70	80	90	100	110	120
	11	11	22	33	44	55	66	77	88	99	110	121	132
	12	12	24	36		60		84			120	132	



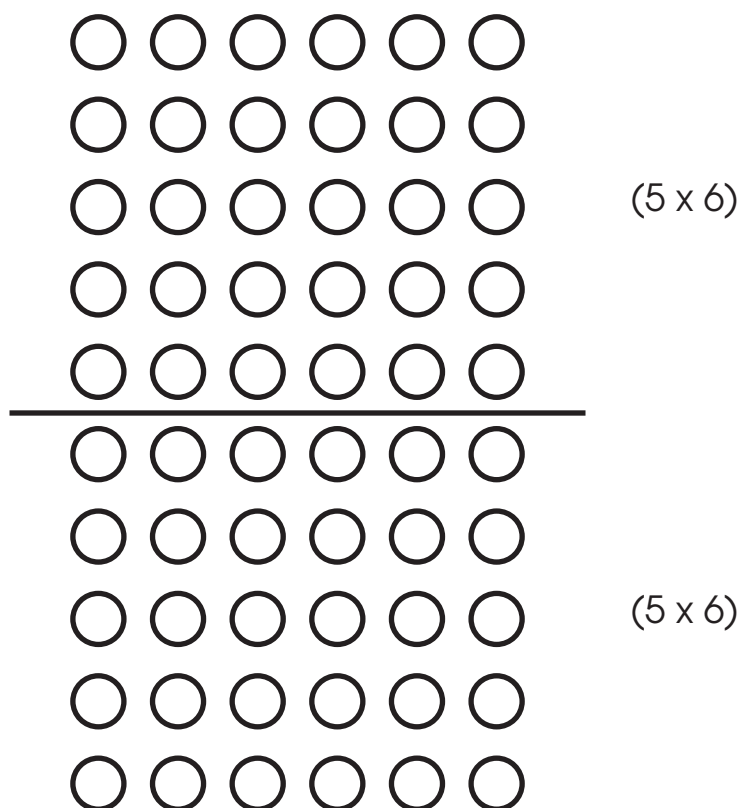
Display Master: 10 x 6 Array A



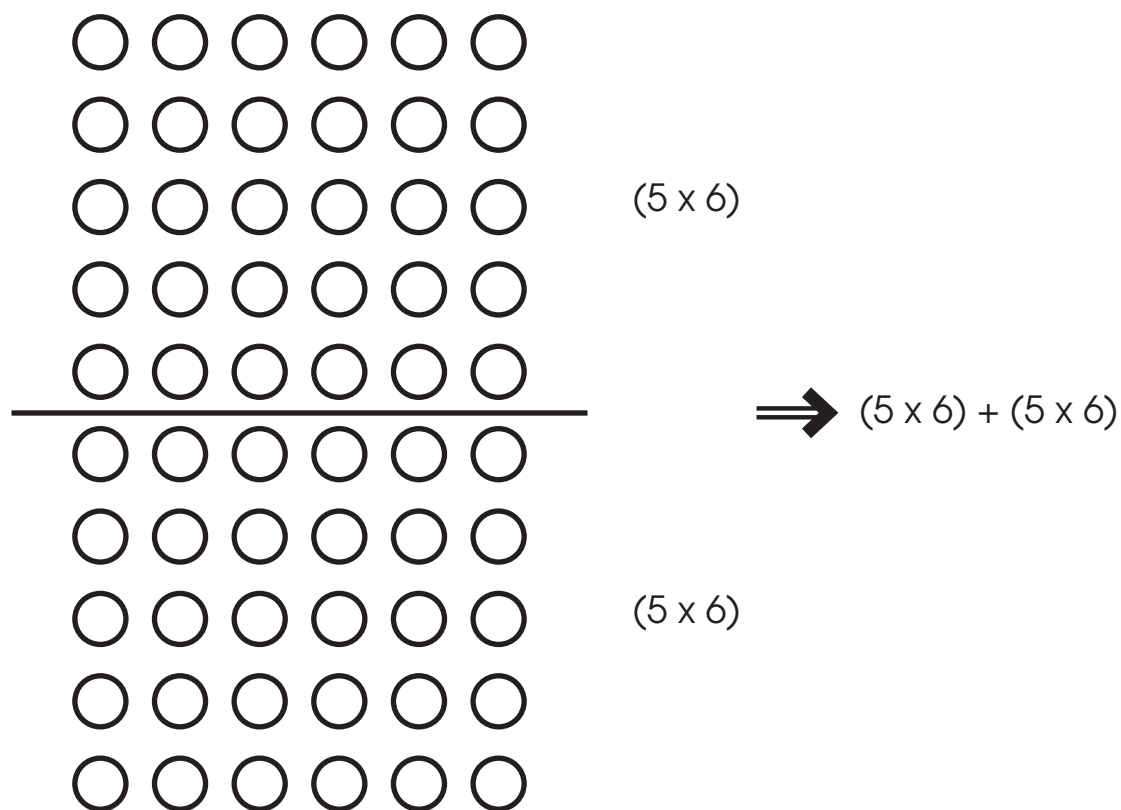
Display Master: 10 x 6 Array B



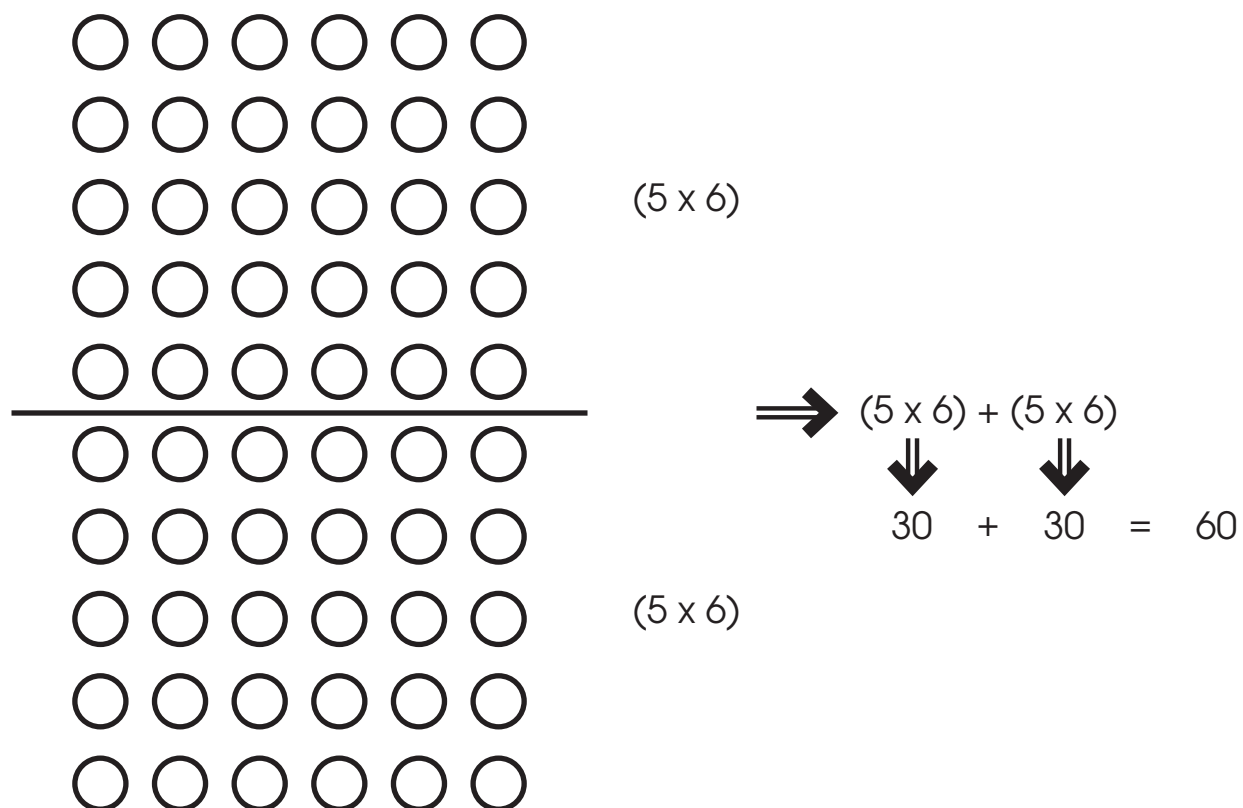
Display Master: 10 x 6 Array C



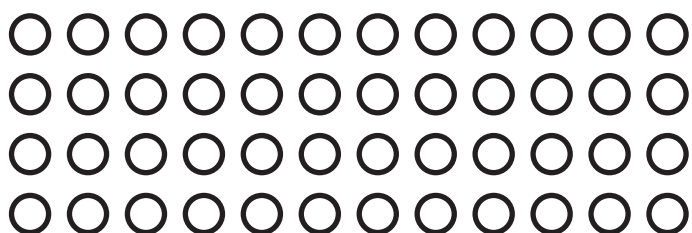
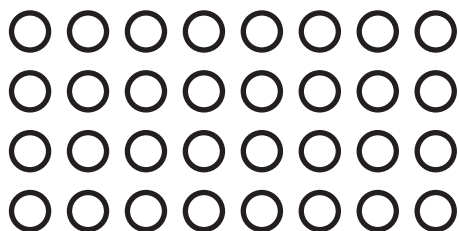
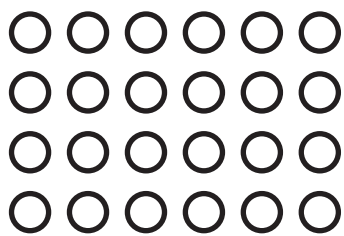
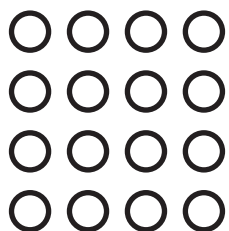
Display Master: 10 x 6 Array D



Display Master: 10 x 6 Array E



Display Master: 4s Facts A



Display Master: 4s Facts B

4×4

$$\begin{array}{cccc}
 \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \hline
 \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc
 \end{array}
 \begin{array}{l}
 (2 \times 4) \\
 (2 \times 4)
 \end{array}
 \Rightarrow
 \begin{array}{c}
 (2 \times 4) + (2 \times 4) \\
 \Downarrow \quad \Downarrow \\
 8 + 8 = 16
 \end{array}$$

4×6

$$\begin{array}{cccccc}
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \hline
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc
 \end{array}
 \begin{array}{l}
 (2 \times 6) \\
 (2 \times 6)
 \end{array}
 \Rightarrow
 \begin{array}{c}
 (2 \times 6) + (2 \times 6) \\
 \Downarrow \quad \Downarrow \\
 12 + 12 = 24
 \end{array}$$

4×8

$$\begin{array}{cccccc}
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \hline
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc
 \end{array}
 \begin{array}{l}
 (2 \times 8) \\
 (2 \times 8)
 \end{array}
 \Rightarrow
 \begin{array}{c}
 (2 \times 8) + (2 \times 8) \\
 \Downarrow \quad \Downarrow \\
 16 + 16 = 32
 \end{array}$$

4×12

$$\begin{array}{cccccc}
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \hline
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc \\
 \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc & \bigcirc
 \end{array}
 \begin{array}{l}
 (5 \times 6) \\
 (5 \times 6)
 \end{array}
 \Rightarrow
 \begin{array}{c}
 (5 \times 6) + (5 \times 6) \\
 \Downarrow \quad \Downarrow \\
 30 + 30 = 60
 \end{array}$$

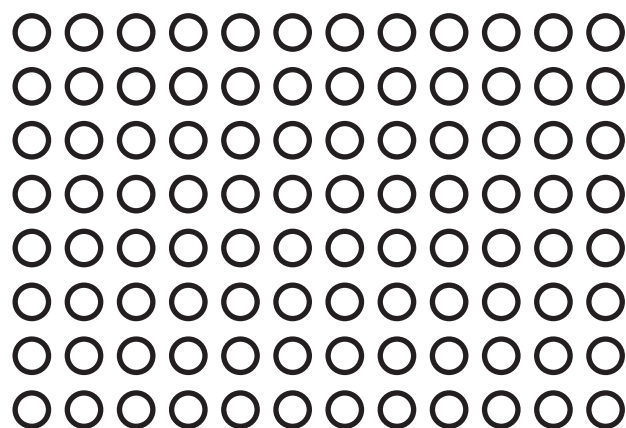
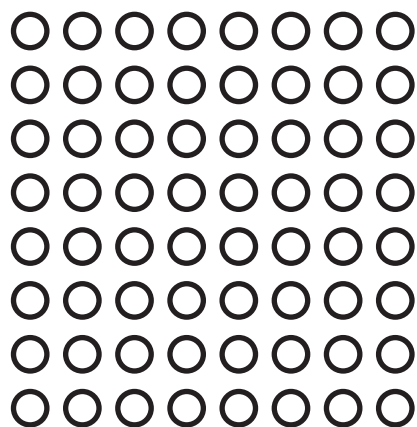
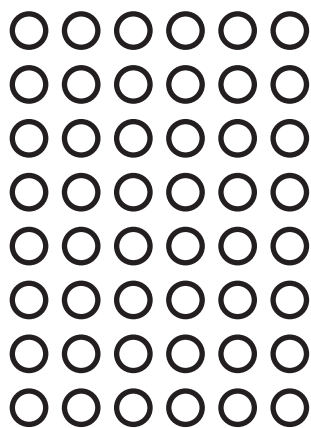
Display Master: The 2s Doubled Are the 4s A

X	2	2 Doubled	4
1	2		
2	4		
3	6		
4	8		
5	10		
6	12		
7	14		
8	16		
9	18		
10	20		
11	22		
12	24		

Display Master: The 2s Doubled Are the 4s B

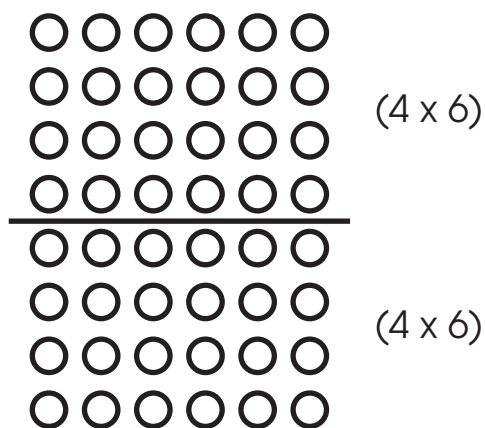
X	2	2 Doubled	4
1	2	$2 + 2$	4
2	4	$4 + 4$	8
3	6	$6 + 6$	12
4	8	$8 + 8$	16
5	10	$10 + 10$	20
6	12	$12 + 12$	24
7	14	$14 + 14$	28
8	16	$16 + 16$	32
9	18	$18 + 18$	36
10	20	$20 + 20$	40
11	22	$22 + 22$	44
12	24	$24 + 24$	48

Display Master: 8s Facts A



Display Master: 8s Facts B

$$8 \times 6$$

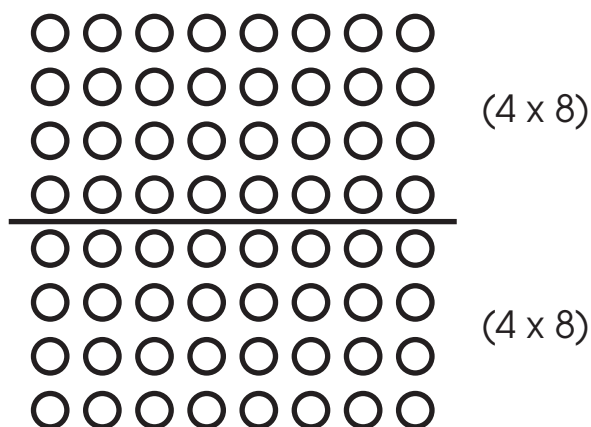


$$\Rightarrow (4 \times 6) + (4 \times 6)$$

$$\Downarrow \quad \Downarrow$$

$$24 + 24 = 48$$

$$8 \times 8$$

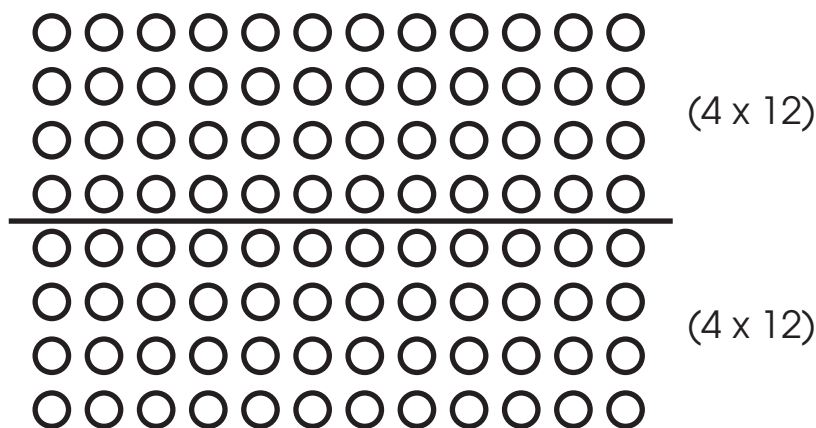


$$\Rightarrow (4 \times 8) + (4 \times 8)$$

$$\Downarrow \quad \Downarrow$$

$$32 + 32 = 64$$

$$8 \times 12$$



$$\Rightarrow (4 \times 12) + (4 \times 12)$$

$$\Downarrow \quad \Downarrow$$

$$48 + 48 = 96$$

Display Master: The 4s Doubled Are the 8s A

X	4	4 Doubled	8
1	4		
2	8		
3	12		
4	16		
5	20		
6	24		
7	28		
8	32		
9	36		
10	40		
11	44		
12	48		

Display Master: The 4s Doubled Are the 8s B

X	4	4 Doubled	8
1	4	$4 + 4$	8
2	8	$8 + 8$	16
3	12	$12 + 12$	24
4	16	$16 + 16$	32
5	20	$20 + 20$	40
6	24	$24 + 24$	48
7	28	$28 + 28$	56
8	32	$32 + 32$	64
9	36	$36 + 36$	72
10	40	$40 + 40$	80
11	44	$44 + 44$	88
12	48	$48 + 48$	96

Display Master: The Doubling Strategy

					2 + 2				4 + 4		5 + 5		
	x	1	2	3	4	5	6	7	8	9	10	11	12
	1	1	2	3	4	5	6	7	8	9	10	11	12
	2	2	4	6	8	10	12	14	16	18	20	22	24
	3	3	6	9	12	15	18	21	24	27	30	33	36
2 + 2	4	4	8	12	16	20	24	28	32	36	40	44	48
	5	5	10	15	20	25	30	35	40	45	50	55	60
	6	6	12	18	24	30		42	48		60	66	
	7	7	14	21	28	35	42	49	56	63	70	77	84
4 + 4	8	8	16	24	32	40	48	56	64	72	80	88	96
	9	9	18	27	36	45		63	72		90	99	
5 + 5	10	10	20	30	40	50	60	70	80	90	100	110	120
	11	11	22	33	44	55	66	77	88	99	110	121	132
	12	12	24	36	48	60		84	96		120	132	