



# A Better Balance: A Proven Approach to Success in Computation

PROFESSIONAL DEVELOPMENT

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EDUCATION



# Computational Fluency

develops from:

- Number sense activities
- Connections built through algebraic experiences
- Visual aids and models
- Appropriate games

What strategies are likely to be extended beyond the number fact range?

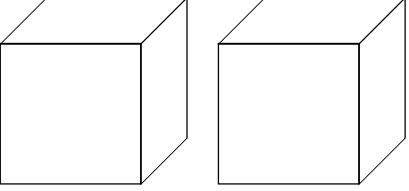
## Addition

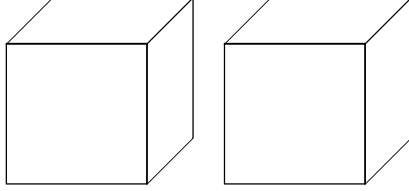
- Count-on 1, 2 and 0
- Doubles and near doubles
- Bridge to ten

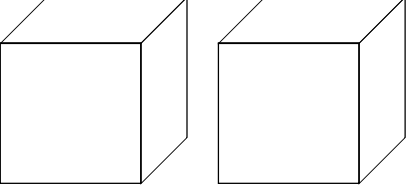
## Multiplication

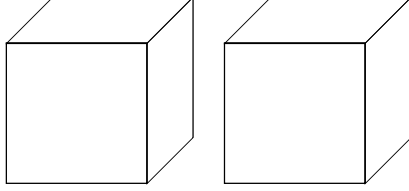
- Use tens (5s)
- Make generalizations (1s and 0s)
- Use Doubles (2s, 4s and 8s)
- Build up/down (9s and 6s)

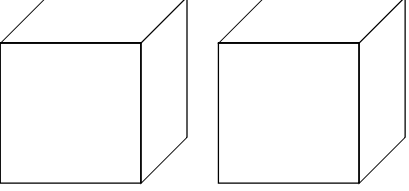
- Roll your number cubes and count on 1 or 2.
- Find your answer below.
- Write your numbers on the number cubes. Write the number fact.

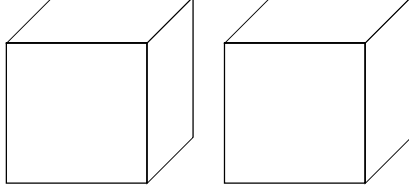


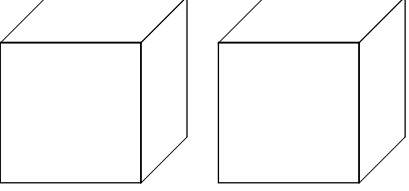
$$\underline{\quad} + \underline{\quad} = 11$$


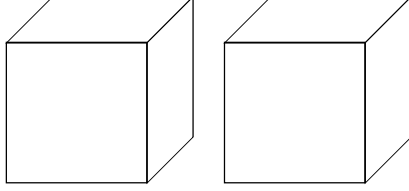
$$\underline{\quad} + \underline{\quad} = 6$$


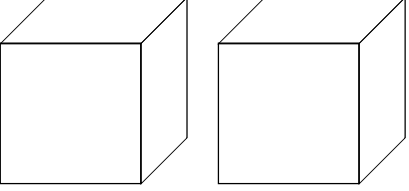
$$\underline{\quad} + \underline{\quad} = 5$$


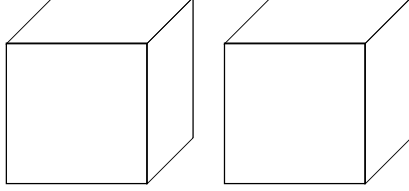
$$\underline{\quad} + \underline{\quad} = 8$$


$$\underline{\quad} + \underline{\quad} = 9$$








$$\underline{\quad} + \underline{\quad} = 7$$


$$\underline{\quad} + \underline{\quad} = 8$$


$$\underline{\quad} + \underline{\quad} = 6$$


$$\underline{\quad} + \underline{\quad} = 7$$


$$\underline{\quad} + \underline{\quad} = 10$$

**Cube A:** 4, 5, 6, 7, 8, 9  
**Cube B:** , , , , , 

# Addition Chart

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

<b>11</b>	<b>19</b>	<b>13</b>	<b>15</b>
<b>13</b>	<b>9</b>	<b>17</b>	<b>19</b>
<b>17</b>	<b>11</b>	<b>15</b>	<b>9</b>

**Cube:** 4, 5, 6, 7, 8, 9





- Roll your number cubes and write the fact below the example in the grid that will help you figure out the answer.
- Write the answer to both facts.

$10 + 6 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 6 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 5 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 5 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 5 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 5 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 4 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 4 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 4 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 4 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 3 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 3 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 3 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 3 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 2 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 2 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$
$10 + 1 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	$10 + 1 = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$

**Cube A:** 8, 8, 8, 9, 9, 9

**Cube B:** 3, 4, 5, 5, 6, 7

# Cat and Mice

5		1		5		1
4	3	2	3	4	3	2
2	1	3	1	2	1	3
1	4	2	5	3	4	1
2	1	3	1	2	1	3
4	1	2	3	4	1	4
2	3	1		5	3	2
1	4	2	3	2	4	1
HOME	HOME	HOME	HOME	HOME	HOME	HOME

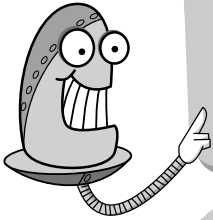
**Materials:** 2 standard dice

# Using Tens to Multiply by 5

Write the answer to the tens number fact.

Color half the picture and then write a number fact to match what you colored.

The first one has been colored for you!



a.

$3 \times 10 = \square$

$3 \times 5 = \square$

b.

$2 \times 10 = \square$

$2 \times 5 = \square$

c.

$7 \times 10 = \square$

$\square \times \square = \square$

d.

$6 \times 10 = \square$

$\square \times \square = \square$

e.

$9 \times 10 = \square$

$\square \times \square = \square$

f.

$8 \times 10 = \square$

$\square \times \square = \square$



Write a tens fact you could use to work out each of these:

a.  $4 \times 5 = \square$     b.  $12 \times 5 = \square$     c.  $16 \times 5 = \square$

# Nice and Easy

$30 \times 3$	$50 \times 3$	$70 \times 3$	$90 \times 3$
$30 \times 4$	$50 \times 4$	$70 \times 4$	$90 \times 4$
$30 \times 6$	$50 \times 6$	$70 \times 6$	$90 \times 6$
$30 \times 7$	$50 \times 7$	$70 \times 7$	$90 \times 7$
$30 \times 8$	$50 \times 8$	$70 \times 8$	$90 \times 8$
$30 \times 9$	$50 \times 9$	$70 \times 9$	$90 \times 9$

**Cube A:** 15, 15, 25, 35, 45, 45

**Cube B:** 6, 8, 12, 14, 16, 18

# Nice and Easy Too!

90	150	210	270
120	200	280	360
180	300	420	540
210	350	490	630
240	400	560	720
270	450	630	810

# Multiplication Chart

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