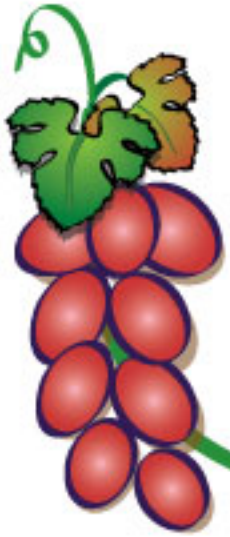
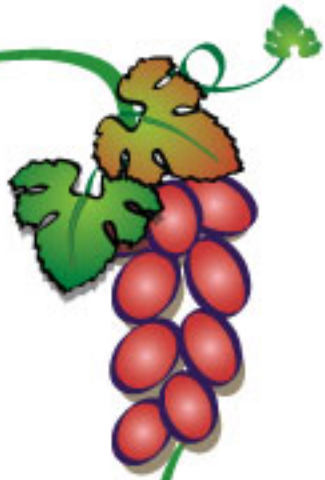
Greg Tang's Great x Times

MULTIPLICATION WORKSHEETS

GREG TANG'S

MASTERING THE BASIC TIMES TABLES





VOLUME 2

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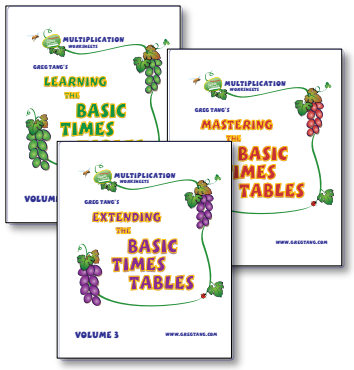
Great Times™ Multiplication Worksheets

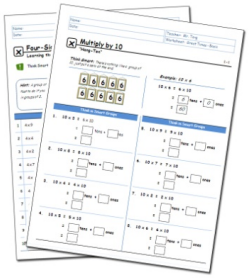
Series Overview



Wouldn't it be great if there were a better way for kids to learn their multiplication facts instead of brute force memorization? If there were a systematic approach that develops true understanding, improves number sense and develops the abstract, algebraic thinking skills needed for higher math? Well there is!

Greg Tang's three-part multiplication series builds on the revolutionary strategies he first introduced in his best-selling picture book The *Best of Times* and made even more popular with his *Great Times* ™ multiplication flash cards. Now, Greg offers a series of worksheets that provides the instruction, practice and rigor kids need to truly master multiplication.

In part 1 of the series, **Learning the Basic Times Tables**, students take the first step in learning multiplication by thinking and adding in smart groups. Greg's common sense approach teaches basic multiplication facts while laying the groundwork for larger numbers. In part 2, **Mastering the Basic Times Tables**, students take the important next step by moving away from addition and learning to think more efficiently using partial products to multiply. Just as addition evolves from counting, multiplication evolves from addition.



In part 3 of the series, **Beyond the Basic Times Tables**, students learn to extend and apply partial products to double-digit numbers. Being good at multiplication means being able to multiply all numbers, not just small numbers. By applying smart grouping strategies more generally, students also learn to think algebraically – the key to being good in math.

Table of Contents

Mastering the Basic Times Tables

Overview

As a first step in learning to multiply numbers, we'll use addition in smartMathematically speaking, multiplication is the process of scaling a number by a factor or multiple. To learn the basic times tables, students must learn to multiply or scale numbers by factors ranging in size from 0 to 10. While traditional approaches rely on rote memorization, the goal here is to encourage students to derive answers by building on their understanding of addition. Each carefully designed worksheet teaches them to create a single group or product from smaller groups, and to break down larger groups into smaller groups or parts.

Sequence. The worksheets are ordered to provide a logical sequence for learning. Basic, foundational strategies (0x, 1x, 2x, 10x) are introduced first, followed by moderate (3x, 4x, 5x, 9x) and finally advanced strategies (6x, 7x, 8x). Learning is sequential as students scaffold from easy skills to more advanced skills over time.

Format. Every worksheet teaches and reinforces a specific multiplication strategy that is communicated verbally through rhymes, visually through pictures, and abstractly through equations. We challenge kids to see and work with smart groupings of numbers rather than discrete, single values.

Horizontally formatted worksheets provide a quick, compact approach for deriving multiplication facts. Instead of relying on addition, students will now use previously learned facts to master more difficult ones. They'll use their 2s table to master 3 and 4, their 10s to master 5 and 9, and 2 through 5 to master 6, 7 and 8. This approach – called partial products – will be the key to multiplying larger numbers later. In Part 3 of the series, students extend their knowledge of the basic times tables and apply partial products to double-digit numbers.

Horizontal Format

	Think Quick	Think Multiplication
5 x 9	1/2 of (10x9) = 1/2 of 90	**5 x 9** = **45**

Assessment. Each section ends with worksheets that give students valuable practice and also give teachers and parents an opportunity to assess their progress. Proficiency in multiplication requires both fact fluency and a strong conceptual understanding.

Directions

Basic Numbers 0, 1, 2, 10

The basic numbers are the starting point and are foundational to the rest of the times tables. 0 and 1 are easy - 0 of any number is 0 and 1 of any number is itself.

To multiply by 2, the best strategy is to double because doubling works with any number. Many kids are taught to skip count by 2, but this strategy only works for small numbers and is completely ineffective with larger numbers. As with all of the times tables, kids need to be proficient with addition first, and this does not mean using counting strategies to add. Counting is counting – not adding!

To multiply by 10, kids learn to add a zero to the end of the number. So 10x4 is 4 with a 0 or 40. Most kids learn this trick but never understand why it works. Since multiplication is commutative, 10x4 equals 4x10. Thinking place value, a group of 4 tens means the 4 must be in the ten's place, so just add a 0 in the one's place.

Looking ahead. Mastering 2 is the key to multiplying by 3 and 4, and mastering 10 is the key to multiplying by both 5 and 9.

0x

Page 5. 0 times any number is always 0. For example, 0 x 3 means a group of 0 threes which is 0.

0 x 3 = a group of **0** threes
= [0]

1x

Page 6. 1 times any number is just that number. For example, 1 x 5 means a group of 1 five which is 5.

1 x 5 = a group of **1** five
= [5]

2x

Page 7. 2 times any number is just double that number. In this example, 2 x 7 is a group of 2 sevens and 7+7 is the same as 7 doubled or 14.

2 x 7 = 7 + 7
= double 7
= [14]

10x

Page 8. 10 times a number is simply that number with a 0 on the end. Multiplication is commutative, so 10 x 7 or a group of 10 sevens is the same as 7 x 10 or a group of 7 tens. In terms of place value, 7 tens and 0 ones is 70, which is just 7 with a 0 on the end.

10 x 7 = 7 x 10
= [7] tens + [0] ones
= [7][0]
tens ones

Page 9. Practice and show mastery of the grouping strategies for 0, 1, 2 and 10.

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 0

"A group of 0's fast and fun – no matter what the answer's none!"

0 times any number is zero. This is also known as the **zero** property of multiplication!

0x6 = a group of [0] sixes

= [0]

	Think Smart				Think Quick	
1.	0 x 5	a group of		fives	0 x 5 =	
2.	0 x 4	a group of		fours	0 x 4 =	
3.	0 x 1	a group of		ones	0 x 1 =	
4.	0 x 3	a group of		threes	0 x 3 =	
5.	0 x 2	a group of		twos	0 x 2 =	
6.	0 x 8	a group of		eights	0 x 8 =	
7.	0 x 6	a group of		sixes	0 x 6 =	
8.	0 x 9	a group of		nines	0 x 9 =	
9.	0 x 7	a group of		sevens	0 x 7 =	
10.	0 x 10	a group of		tens	0 x 10 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 1

"A group of 1 you won't forget – what you see is what you get!"

1 times any number is just that number, and 1 is called the **multiplicative identity**!

1x5 = a group of [1] five

= [5]

	Think Smart				Think Quick	
1.	1 x 7	a group of		seven	1 x 7 =	
2.	1 x 4	a group of		four	1 x 4 =	
3.	1 x 1	a group of		one	1 x 1 =	
4.	1 x 3	a group of		three	1 x 3 =	
5.	1 x 2	a group of		two	1 x 2 =	
6.	1 x 8	a group of		eight	1 x 8 =	
7.	1 x 6	a group of		six	1 x 6 =	
8.	1 x 9	a group of		nine	1 x 9 =	
9.	1 x 5	a group of		five	1 x 5 =	
10.	1 x 10	a group of		ten	1 x 10 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 2

"A group of 2? It's no trouble – just make sure you always double!"

A group with just 2 numbers is easy to add – simply double the number!		2x9 = double [9] = [18]

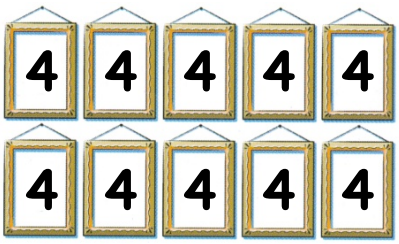
		Think Smart		Think Quick	
1.	2 x 5	double		2 x 5 =	
2.	2 x 4	double		2 x 4 =	
3.	2 x 1	double		2 x 1 =	
4.	2 x 3	double		2 x 3 =	
5.	2 x 2	double		2 x 2 =	
6.	2 x 8	double		2 x 8 =	
7.	2 x 6	double		2 x 6 =	
8.	2 x 9	double		2 x 9 =	
9.	2 x 7	double		2 x 7 =	
10.	2 x 10	double		2 x 10 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 10

"There's nothing like a group of 10 – just put a zero at the end!"

10 of any number is that number of 10s. To move a number to the ten's place. add a zero at the end!



$10 \times 4 = 4 \times 10$

$= \boxed{4}$ tens

$= \boxed{40}$

		Think Smart			Think Quick	
1.	10 x 5	10 x 5 = 5 x 10 or		tens	10 x 5 =	
2.	10 x 4	10 x 4 = 4 x 10 or		tens	10 x 4 =	
3.	10 x 1	10 x 1 = 1 x 10 or		ten	10 x 1 =	
4.	10 x 3	10 x 3 = 3 x 10 or		tens	10 x 3 =	
5.	10 x 2	10 x 2 = 2 x 10 or		tens	10 x 2 =	
6.	10 x 8	10 x 8 = 8 x 10 or		tens	10 x 8 =	
7.	10 x 6	10 x 6 = 6 x 10 or		tens	10 x 6 =	
8.	10 x 9	10 x 9 = 9 x 10 or		tens	10 x 9 =	
9.	10 x 7	10 x 7 = 7 x 10 or		tens	10 x 7 =	
10.	10 x 10	10x10 = 10x10 or		tens	10 x 10 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Master 0, 1, 2, 10

"Try these problems on for size, your brain will like the exercise!"

	Think Smart				Think Quick		
1.	0 x 9	a group of		nines	0 x 9 =		
2.	1 x 8	a group of		eight	1 x 8 =		
3.	2 x 6	double			2 x 6 =		
4.	10 x 4	4 x 10 =		tens	10 x 4 =		
5.	0 x 5	a group of		fives	0 x 5 =		
6.	1 x 9	a group of		nine	1 x 9 =		
7.	2 x 7	double			2 x 7 =		
8.	10 x 8	8 x 10 =		tens	10 x 8 =		
9.	0 x 6	a group of		sixes	0 x 6 =		
10.	1 x 5	a group of		five	1 x 5 =		
11.	2 x 8	double			2 x 8 =		
12.	10 x 9	9 x 10 =		tens	10 x 9 =		

Directions

Moderate Numbers 3, 4, 5, 9

The moderate numbers build on the basic numbers and leverage the important concept of breaking big groups into more manageable, smaller groups.

To multiply by 3, think of a group of 3 as a group of 2 plus 1 more. Since you can't add 3 numbers simultaneously, first add 2 and then add the third. To multiply by 4, think of a group of 4 as two groups of 2. Multiplying by 3 and 4 requires students to master 2 or doubling first.

To multiply a number by 5, first multiply by 10 and then take half since a group of 5 is half of a group of 10. To multiply by 9, again start by multiplying by 10 but this time subtract the extra one since a group of 9 is one less than a group of 10. Multiplying by 5 and 9 requires students to master 10 first.

Looking ahead. Mastering 3 is the key to multiplying by 6, 4 is the key to 8, and 2 and 5 are the key to 7.

3x **Page 11.** For 3 times a number, think in terms of smaller, easier groups. 3 x 5 or a group of 3 fives is a group of 2 fives plus a group of 1 five or 10+5 = 15. To multiply by 3, first master multiplying by 2.

3 x 5 = (2x5) + (1x5)
= [10] + [5]
= [15]

4x **Page 12.** For 4 times a number, think in terms of smaller, easier groups. 4 x 9 or a group of 4 nines is a group of 2 nines plus a group of 2 nines or 18+18 = 36. To multiply by 4, first master multiplying by 2.

4 x 9 = (2x9) + (2x9)
= [18] + [18]
= [36]

5x **Page 13.** For 5 times a number, start with 10 times the number then take half since ½ of 10 is 5. A group of 5 eights is half of 10 eights. Since 10 x 8 = 80, 5 x 8 = 40. To multiply by 5, first master multiplying by 10.

5 x 8 = ½ of (10 x 8)
= ½ of ([80])
= [40]

9x **Page 14.** For 9 times a number, start with 10 times the number since it's so much easier. A group of 9 sevens is a group of 10 sevens minus 1 seven. Since 10x7 = 70, 9x7 = 63. To multiply by 9, first master multiplying by 10.

9 x 7 = (10 x 7) - (1x7)
= [70] - [7]
= [63]

Page 15. Practice and show mastery of the grouping strategies for 3, 4, 5 and 9.

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 3

"A group of 3 is quickly done – start with 2 and then add 1!"

A group of 3 numbers isn't easy to add all at once so first add 2 numbers, then add the third!

$3x7 = (2 \times 7) + (1 \times 7)$

$= 14 + 7$

$= 21$

		Think Smart		Think Quick
1.	3 x 5	(2x5) + (1x5) =	+	3 x 5 =
2.	3 x 4	(2x4) + (1x4) =	+	3 x 4 =
3.	3 x 1	(2x1) + (1x1) =	+	3 x 1 =
4.	3 x 3	(2x3) + (1x3) =	+	3 x 3 =
5.	3 x 2	(2x2) + (1x2) =	+	3 x 2 =
6.	3 x 8	(2x8) + (1x8) =	+	3 x 8 =
7.	3 x 6	(2x6) + (1x6) =	+	3 x 6 =
8.	3 x 9	(2x9) + (1x9) =	+	3 x 9 =
9.	3 x 7	(2x7) + (1x7) =	+	3 x 7 =
10.	3 x 10	(2x10) + (1x10) =	+	3 x 10 =

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 4

"A group of 4 is fast to do – if you think in groups of 2!"

A group of 4 is easier as two groups of 2. 2 times a number plus 2 times a number is 4 times the number!

4x7 = (2 x 7) + (2 x 7)
= 14 + 14
= 28

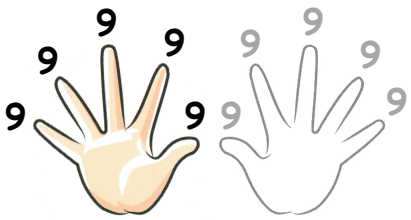
		Think Smart		Think Quick
1.	4 x 5	(2x5) + (2x5) = ☐ + ☐		4 x 5 = ☐
2.	4 x 4	(2x4) + (2x4) = ☐ + ☐		4 x 4 = ☐
3.	4 x 1	(2x1) + (2x1) = ☐ + ☐		4 x 1 = ☐
4.	4 x 3	(2x3) + (2x3) = ☐ + ☐		4 x 3 = ☐
5.	4 x 2	(2x2) + (2x2) = ☐ + ☐		4 x 2 = ☐
6.	4 x 8	(2x8) + (2x8) = ☐ + ☐		4 x 8 = ☐
7.	4 x 6	(2x6) + (2x6) = ☐ + ☐		4 x 6 = ☐
8.	4 x 9	(2x9) + (2x9) = ☐ + ☐		4 x 9 = ☐
9.	4 x 7	(2x7) + (2x7) = ☐ + ☐		4 x 7 = ☐
10.	4 x 10	(2x10) + (2x10) = ☐ + ☐		4 x 10 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 5

"A group of 5 you'll find with ease – half of 10 is just a breeze!"

A group of 5 isn't easy to calculate but a group of 10 is. So start with a group of 10 and cut it in half to get 5!



5x9 = 1/2 of (10 x 9)

= 1/2 of 90

= 45

		Think Smart				Think Quick	
1.	5 x 2	1/2 of (10 x 2)	=	1/2 of		5 x 2 =	
2.	5 x 4	1/2 of (10 x 4)	=	1/2 of		5 x 4 =	
3.	5 x 1	1/2 of (10 x 1)	=	1/2 of		5 x 1 =	
4.	5 x 3	1/2 of (10 x 3)	=	1/2 of		5 x 3 =	
5.	5 x 5	1/2 of (10 x 5)	=	1/2 of		5 x 5 =	
6.	5 x 8	1/2 of (10 x 8)	=	1/2 of		5 x 8 =	
7.	5 x 6	1/2 of (10 x 6)	=	1/2 of		5 x 6 =	
8.	5 x 9	1/2 of (10 x 9)	=	1/2 of		5 x 9 =	
9.	5 x 7	1/2 of (10 x 7)	=	1/2 of		5 x 7 =	
10.	5 x 10	1/2 of (10 x 10)	=	1/2 of		5 x 10 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 9

"A group of 9 requires tact - start with 10 and then subtract!"

A group of 9 isn't easy to calculate but a group of 10 is. So start with 10 and take away the extra 1!

9x8 = (10 x 8) - (1 x 8)

= 80 - 8

= 72

		Think Smart		Think Quick
1.	9 x 5	(10x5) - (1x5) =	-	9 x 5 =
2.	9 x 4	(10x4) - (1x4) =	-	9 x 4 =
3.	9 x 1	(10x1) - (1x1) =	-	9 x 1 =
4.	9 x 3	(10x3) - (1x3) =	-	9 x 3 =
5.	9 x 2	(10x2) - (1x2) =	-	9 x 2 =
6.	9 x 8	(10x8) - (1x8) =	-	9 x 8 =
7.	9 x 6	(10x6) - (1x6) =	-	9 x 6 =
8.	9 x 9	(10x9) - (1x9) =	-	9 x 9 =
9.	9 x 7	(10x7) - (1x7) =	-	9 x 7 =
10.	9 x 10	(10x10) - (1x10) =	-	9 x 10 =

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Master 3, 4, 5, 9

"Try these problems on for size, your brain will like the exercise!"

		Think Smart		Think Quick
1.	3 x 9	(2x9) + (1x9) =	+	3 x 9 =
2.	4 x 8	(2x8) + (2x8) =	+	4 x 8 =
3.	5 x 4	1/2 of (10x4) =	1/2 of	5 x 4 =
4.	9 x 9	(10x9) - (1x9) =	-	9 x 9 =
5.	3 x 5	(2x5) + (1x5) =	+	3 x 5 =
6.	4 x 9	(2x9) + (2x9) =	+	4 x 9 =
7.	5 x 8	1/2 of (10x8) =	1/2 of	5 x 8 =
8.	9 x 7	(10x7) - (1x7) =	-	9 x 7 =
9.	3 x 6	(2x6) + (1x6) =	+	3 x 6 =
10.	4 x 5	(2x5) + (2x5) =	+	4 x 5 =
11.	5 x 9	1/2 of (10x9) =	1/2 of	5 x 9 =
12.	9 x 8	(10x8) - (1x8) =	-	9 x 8 =

Directions

Advanced Numbers 6, 7, 8

The advanced numbers leverage the skills and facts learned from the basic and moderate numbers. They challenge students to process larger groups and develop their abstract thinking skills.

To multiply a number by 6, think of a group of 6 as two groups of 3. 3 of a number plus 3 of a number is 6 of that number. To multiply by 7, think of a group of 7 as a group of 5 plus a group of 2. 5 of a number plus 2 of a number is 7 of that number. Finally, to multiply by 8, think of a group of 8 as two groups of 4. 4 of a number plus 4 of a number is 8 of that number. To multiply by 6, students need to master 3 first. For 7 they need to master 5 and 2, and for 8 they need to master 4.

Looking ahead. Once students master their multiplication facts by adding in smart groups (volume 1 of this series), the next step is to switch to partial products and instead multiply in smart groups (volume 2). Both approaches lay the foundation for multiplying larger numbers (volume 3).

6x

Page 17. For 6 times a number, think in terms of smaller, easier groups. 6 x 9 or a group of 6 nines is a group of 3 nines plus a group of 3 nines or 27+27 = 54. To multiply by 6, first master multiplying by 3.

6 x 9	=	(3x9)	+	(3x9)
	=	27	+	27
	=	54		

7x

Page 18. For 7 times a number, think in terms of smaller, easier groups. 7 x 8 or a group of 7 eights is a group of 5 eights plus a group of 2 eights or 40+16 = 56. To multiply by 7, first master multiplying by 2 and 5.

7 x 8	=	(5x8)	+	(2x8)
	=	40	+	16
	=	56		

8x

Page 19. For 8 times a number, think in terms of smaller, easier groups. 8 x 6 or a group of 8 sixes is a group of 4 sixes plus a group of 4 sixes or 24+24 = 48. To multiply by 8, first master multiplying by 4.

8 x 6	=	(4x6)	+	(4x6)
	=	24	+	24
	=	48		

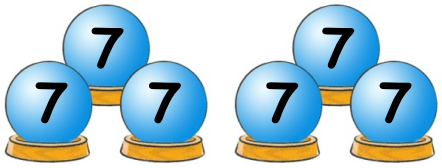
Page 20. Practice and show mastery of the grouping strategies for 6, 7, and 8.

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 6

"A group of 6 is clear to see – when you look for groups of 3!"

A group of 6 is easier as two groups of 3.
3 times a number plus 3 times a number is 6 times the number!



6x7 = 7+7+7 + 7+7+7
= 21 + 21
= 42

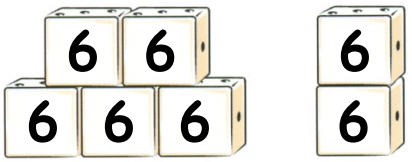
		Think Smart		Think Quick
1.	6 x 5	(3x5) + (3x5) =	+	6 x 5 =
2.	6 x 4	(3x4) + (3x4) =	+	6 x 4 =
3.	6 x 1	(3x1) + (3x1) =	+	6 x 1 =
4.	6 x 3	(3x3) + (3x3) =	+	6 x 3 =
5.	6 x 2	(3x2) + (3x2) =	+	6 x 2 =
6.	6 x 8	(3x8) + (3x8) =	+	6 x 8 =
7.	6 x 6	(3x6) + (3x6) =	+	6 x 6 =
8.	6 x 9	(3x9) + (3x9) =	+	6 x 9 =
9.	6 x 7	(3x7) + (3x7) =	+	6 x 7 =
10.	6 x 10	(3x10) + (3x10) =	+	6 x 10 =

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 7

"A group of 7 can be quick – 5 and 2 will do the trick!"

A group of 7 is easier as groups of 5 and 2. 5 times a number plus 2 times a number is 7 times the number!



7x6 = 6+6+6+6+6 + 6+6

= 30 + 12

= 42

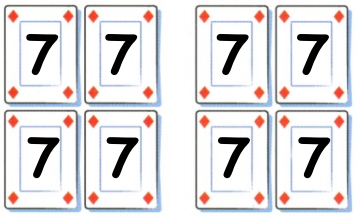
		Think Smart		Think Quick
1.	7 x 5	(5x5) + (2x5) =	+	7 x 5 =
2.	7 x 4	(5x4) + (2x4) =	+	7 x 4 =
3.	7 x 1	(5x1) + (2x1) =	+	7 x 1 =
4.	7 x 3	(5x3) + (2x3) =	+	7 x 3 =
5.	7 x 2	(5x2) + (2x2) =	+	7 x 2 =
6.	7 x 8	(5x8) + (2x8) =	+	7 x 8 =
7.	7 x 6	(5x6) + (2x6) =	+	7 x 6 =
8.	7 x 9	(5x9) + (2x9) =	+	7 x 9 =
9.	7 x 7	(5x7) + (2x7) =	+	7 x 7 =
10.	7 x 10	(5x10) + (2x10) =	+	7 x 10 =

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Multiply by 8

"A group of 8 is nothing more – than equal groups of 4 and 4!"

A group of 8 is easier as two groups of 4. 4 times a number plus 4 times a number is 8 times the number!



8x7 = 7+7+7+7 + 7+7+7+7

= 28 + 28

= 56

		Think Smart		Think Quick
1.	8 x 5	(4x5) + (4x5) =	+	8 x 5 =
2.	8 x 4	(4x4) + (4x4) =	+	8 x 4 =
3.	8 x 1	(4x1) + (4x1) =	+	8 x 1 =
4.	8 x 3	(4x3) + (4x3) =	+	8 x 3 =
5.	8 x 2	(4x2) + (4x2) =	+	8 x 2 =
6.	8 x 8	(4x8) + (4x8) =	+	8 x 8 =
7.	8 x 6	(4x6) + (4x6) =	+	8 x 6 =
8.	8 x 9	(4x9) + (4x9) =	+	8 x 9 =
9.	8 x 7	(4x7) + (4x7) =	+	8 x 7 =
10.	8 x 10	(4x10) + (4x10) =	+	8 x 10 =

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Master 6, 7, 8

"Try these problems on for size, your brain will like the exercise!"

		Think Smart		Think Quick
1.	6 x 3	(3x3) + (3x3) =	+	6 x 3 =
2.	7 x 8	(5x8) + (2x8) =	+	7 x 8 =
3.	8 x 6	(4x6) + (4x6) =	+	8 x 6 =
4.	6 x 9	(3x9) + (3x9) =	+	6 x 9 =
5.	7 x 2	(5x2) + (2x2) =	+	7 x 2 =
6.	8 x 8	(4x8) + (4x8) =	+	8 x 8 =
7.	6 x 4	(3x4) + (3x4) =	+	6 x 4 =
8.	7 x 9	(5x9) + (2x9) =	+	7 x 9 =
9.	8 x 7	(4x7) + (4x7) =	+	8 x 7 =
10.	6 x 8	(3x8) + (3x8) =	+	6 x 8 =
11.	7 x 3	(5x3) + (2x3) =	+	7 x 3 =
12.	8 x 9	(4x9) + (4x9) =	+	8 x 9 =

Directions

Practice & Assessment

When assessing multiplication skills, it's important to evaluate both strategies and answers. Students need command of their basic math facts, but they also need the ability to think abstractly in groups both large and small. The following worksheets allow teachers to assess a student's grouping ability, mental math skills, and fluency with basic facts.

To begin, students must apply every multiplication strategy to the same number, then generalize by applying different strategies to different numbers. Finally, they can demonstrate mastery through timed tests written in the traditional problem-answer format with no verbal or visual clues.

Pages 22-32. Practice all the strategies by applying them to a single number at a time. For example, practice grouping 7s by applying every strategy to the number 7 (1x7, 2x7, 3x7, etc). This contrasts with previous worksheets where a single strategy (e.g. multiply by 7) was applied to different numbers (7x1, 7x2, 7x3).

1 x 7	a group of	1	seven			1 x 7 =	7	
2 x 7	double	7				2 x 7 =	14	
3 x 7	(2x7) + (1x7) =	14	+	7		3 x 7 =	21	

Pages 33-43. Now think more generally by applying different strategies to different numbers. This will provide an opportunity to assess a student's comprehensive understanding of basic multiplication. Every strategy is applied to every number in random order to eliminate visual or sequencing clues.

5 x 8	1/2 of (	10	x	8	)	5 x 8 =	40	
4 x 6	(2x6) + (2x6) =	12	+	12		4 x 6 =	24	
9 x 3	(10x3) - (1x3) =	30	-	3		9 x 3 =	27	

Pages 44-47. The final worksheets test quick-recall of basic multiplication facts by using a traditional problem-answer format. No grouping strategies or visual cues are provided. The ultimate goal is fact fluency resulting from strategic thinking and strong mental math skills rather than mindless, brute force memorization.

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Practice Grouping Zeroes

Practice grouping 0s in groups ranging in size from 0 to 10. This contrasts with finding 0 times a number, which means putting numbers into groups of 0.

Example. 3x0 means "a group of 3 zeroes" or 0+0+0
0x3 means "a group of 0 threes" or zero!

		Think Smart		Think Quick
1.	0 x 0	a group of ☐ zeroes		0 x 0 = ☐
2.	1 x 0	a group of ☐ zero		1 x 0 = ☐
3.	2 x 0	double ☐		2 x 0 = ☐
4.	3 x 0	(2x0) + (1x0) = ☐	+ ☐	3 x 0 = ☐
5.	4 x 0	(2x0) + (2x0) = ☐	+ ☐	4 x 0 = ☐
6.	5 x 0	1/2 of (10x0) =	1/2 of (☐)	5 x 0 = ☐
7.	6 x 0	(3x0) + (3x0) = ☐	+ ☐	6 x 0 = ☐
8.	7 x 0	(5x0) + (2x0) = ☐	+ ☐	7 x 0 = ☐
9.	8 x 0	(4x0) + (4x0) = ☐	+ ☐	8 x 0 = ☐
10.	9 x 0	(10x0) - (1x0) = ☐	- ☐	9 x 0 = ☐
11.	10 x 0	0 x 10 = ☐ tens		10 x 0 = ☐

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Practice Grouping Ones

Practice grouping 1s in groups ranging in size from 0 to 10. This contrasts with finding 1 times a number, which means putting numbers into groups of 1.

Example. 4x1 means "a group of 4 ones" or 1+1+1+1
1x4 means "a group of 1 four" or 4

		Think Smart		Think Quick
1.	0 x 1	a group of ☐ ones		0 x 1 = ☐
2.	1 x 1	a group of ☐ one		1 x 1 = ☐
3.	2 x 1	double ☐		2 x 1 = ☐
4.	3 x 1	(2x1) + (1x1) = ☐	+ ☐	3 x 1 = ☐
5.	4 x 1	(2x1) + (2x1) = ☐	+ ☐	4 x 1 = ☐
6.	5 x 1	1/2 of (10x1) =	1/2 of (☐)	5 x 1 = ☐
7.	6 x 1	(3x1) + (3x1) = ☐	+ ☐	6 x 1 = ☐
8.	7 x 1	(5x1) + (2x1) = ☐	+ ☐	7 x 1 = ☐
9.	8 x 1	(4x1) + (4x1) = ☐	+ ☐	8 x 1 = ☐
10.	9 x 1	(10x1) - (1x1) = ☐	- ☐	9 x 1 = ☐
11.	10 x 1	1 x 10 = ☐ ten		10 x 1 = ☐

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Practice Grouping Twos

Practice grouping 2s in groups ranging in size from 0 to 10. This contrasts with finding 2 times a number, which means putting numbers into groups of 2.

Example. 5x2 means "a group of 5 twos" or 2+2+2+2+2
2x5 means "a group of 2 fives" or 5+5

		Think Smart		Think Quick
1.	0 x 2	a group of ☐ twos		0 x 2 = ☐
2.	1 x 2	a group of ☐ two		1 x 2 = ☐
3.	2 x 2	double ☐		2 x 2 = ☐
4.	3 x 2	(2x2) + (1x2) = ☐	+ ☐	3 x 2 = ☐
5.	4 x 2	(2x2) + (2x2) = ☐	+ ☐	4 x 2 = ☐
6.	5 x 2	1/2 of (10x2) =	1/2 of (☐)	5 x 2 = ☐
7.	6 x 2	(3x2) + (3x2) = ☐	+ ☐	6 x 2 = ☐
8.	7 x 2	(5x2) + (2x2) = ☐	+ ☐	7 x 2 = ☐
9.	8 x 2	(4x2) + (4x2) = ☐	+ ☐	8 x 2 = ☐
10.	9 x 2	(10x2) - (1x2) = ☐	- ☐	9 x 2 = ☐
11.	10 x 2	2 x 10 = ☐	tens	10 x 2 = ☐

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Practice Grouping Threes

Practice grouping 3s in groups ranging in size from 0 to 10. This contrasts with finding 3 times a number, which means putting numbers into groups of 3.

Example. 6x3 means "a group of 6 threes" or 3+3+3 + 3+3+3
3x6 means "a group of 3 sixes" or 6+6+6

		Think Smart		Think Quick
1.	0 x 3	a group of ☐ threes		0 x 3 = ☐
2.	1 x 3	a group of ☐ three		1 x 3 = ☐
3.	2 x 3	double ☐		2 x 3 = ☐
4.	3 x 3	(2x3) + (1x3) = ☐	+ ☐	3 x 3 = ☐
5.	4 x 3	(2x3) + (2x3) = ☐	+ ☐	4 x 3 = ☐
6.	5 x 3	1/2 of (10x3) =	1/2 of (☐)	5 x 3 = ☐
7.	6 x 3	(3x3) + (3x3) = ☐	+ ☐	6 x 3 = ☐
8.	7 x 3	(5x3) + (2x3) = ☐	+ ☐	7 x 3 = ☐
9.	8 x 3	(4x3) + (4x3) = ☐	+ ☐	8 x 3 = ☐
10.	9 x 3	(10x3) - (1x3) = ☐	- ☐	9 x 3 = ☐
11.	10 x 3	3 x 10 = ☐ tens		10 x 3 = ☐

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Practice Grouping Fours

Practice grouping 4s in groups ranging in size from 0 to 10. This contrasts with finding 4 times a number, which means putting numbers into groups of 4.

Example. 8x4 means "a group of 8 fours" or 4+4+4+4 + 4+4+4+4
4x8 means "a group of 4 eights" or 8+8+8+8

		Think Smart		Think Multiplication
1.	0 x 4	a group of ☐ fours		0 x 4 = ☐
2.	1 x 4	a group of ☐ four		1 x 4 = ☐
3.	2 x 4	double ☐		2 x 4 = ☐
4.	3 x 4	(2x4) + (1x4) = ☐	+ ☐	3 x 4 = ☐
5.	4 x 4	(2x4) + (2x4) = ☐	+ ☐	4 x 4 = ☐
6.	5 x 4	1/2 of (10x4) =	1/2 of (☐)	5 x 4 = ☐
7.	6 x 4	(3x4) + (3x4) = ☐	+ ☐	6 x 4 = ☐
8.	7 x 4	(5x4) + (2x4) = ☐	+ ☐	7 x 4 = ☐
9.	8 x 4	(4x4) + (4x4) = ☐	+ ☐	8 x 4 = ☐
10.	9 x 4	(10x4) - (1x4) = ☐	- ☐	9 x 4 = ☐
11.	10 x 4	4 x 10 = ☐	tens	10 x 4 = ☐

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Practice Grouping Fives

Practice grouping 5s in groups ranging in size from 0 to 10. This contrasts with finding 5 times a number, which means putting numbers into groups of 5.

Example. 2x5 means "a group of 2 fives" or 5+5
5x2 means "a group of 5 twos" or 2+2+2+2+2

		Think Smart		Think Quick
1.	0 x 5	a group of ☐ fives		0 x 5 = ☐
2.	1 x 5	a group of ☐ five		1 x 5 = ☐
3.	2 x 5	double ☐		2 x 5 = ☐
4.	3 x 5	(2x5) + (1x5) = ☐	+ ☐	3 x 5 = ☐
5.	4 x 5	(2x5) + (2x5) = ☐	+ ☐	4 x 5 = ☐
6.	5 x 5	1/2 of (10x5) =	1/2 of (☐)	5 x 5 = ☐
7.	6 x 5	(3x5) + (3x5) = ☐	+ ☐	6 x 5 = ☐
8.	7 x 5	(5x5) + (2x5) = ☐	+ ☐	7 x 5 = ☐
9.	8 x 5	(4x5) + (4x5) = ☐	+ ☐	8 x 5 = ☐
10.	9 x 5	(10x5) - (1x5) = ☐	- ☐	9 x 5 = ☐
11.	10 x 5	5 x 10 = ☐	tens	10 x 5 = ☐

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Practice Grouping Sixes

Practice grouping 6s in groups ranging in size from 0 to 10. This contrasts with finding 6 times a number, which means putting numbers into groups of 6.

Example. 3x6 means "a group of 3 sixes" or 6+6+6
6x3 means "a group of 6 threes" or 3+3+3 + 3+3+3

		Think Smart	Think Quick
1.	0 x 6	a group of ☐ sixes	0 x 6 = ☐
2.	1 x 6	a group of ☐ six	1 x 6 = ☐
3.	2 x 6	double ☐	2 x 6 = ☐
4.	3 x 6	(2x6) + (1x6) = ☐ + ☐	3 x 6 = ☐
5.	4 x 6	(2x6) + (2x6) = ☐ + ☐	4 x 6 = ☐
6.	5 x 6	1/2 of (10x6) = 1/2 of (☐)	5 x 6 = ☐
7.	6 x 6	(3x6) + (3x6) = ☐ + ☐	6 x 6 = ☐
8.	7 x 6	(5x6) + (2x6) = ☐ + ☐	7 x 6 = ☐
9.	8 x 6	(4x6) + (4x6) = ☐ + ☐	8 x 6 = ☐
10.	9 x 6	(10x6) - (1x6) = ☐ - ☐	9 x 6 = ☐
11.	10 x 6	6 x 10 = ☐ tens	10 x 6 = ☐

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Practice Grouping Sevens

Practice grouping 7s in groups ranging in size from 0 to 10. This contrasts with finding 7 times a number, which means putting numbers into groups of 7.

Example. 4x7 means "a group of 4 sevens" or 7+7+7+7
7x4 means "a group of 7 fours" or 4+4+4+4+4 + 4+4

		Think Smart		Think Quick
1.	0 x 7	a group of ☐ sevens		0 x 7 = ☐
2.	1 x 7	a group of ☐ seven		1 x 7 = ☐
3.	2 x 7	double ☐		2 x 7 = ☐
4.	3 x 7	(2x7) + (1x7) = ☐	+ ☐	3 x 7 = ☐
5.	4 x 7	(2x7) + (2x7) = ☐	+ ☐	4 x 7 = ☐
6.	5 x 7	1/2 of (10x7) =	1/2 of (☐)	5 x 7 = ☐
7.	6 x 7	(3x7) + (3x7) = ☐	+ ☐	6 x 7 = ☐
8.	7 x 7	(5x7) + (2x7) = ☐	+ ☐	7 x 7 = ☐
9.	8 x 7	(4x7) + (4x7) = ☐	+ ☐	8 x 7 = ☐
10.	9 x 7	(10x7) - (1x7) = ☐	- ☐	9 x 7 = ☐
11.	10 x 7	7 x 10 = ☐	tens	10 x 7 = ☐

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Practice Grouping Eights

Practice grouping 8s in groups ranging in size from 0 to 10. This contrasts with finding 8 times a number, which means putting numbers into groups of 8.

Example. 2x8 means "a group of 2 eights" or 8+8
8x2 means "a group of 8 twos" or 2+2+2+2 + 2+2+2+2

		Think Smart	Think Quick
1.	0 x 8	a group of ☐ eights	0 x 8 = ☐
2.	1 x 8	a group of ☐ eight	1 x 8 = ☐
3.	2 x 8	double ☐	2 x 8 = ☐
4.	3 x 8	(2x8) + (1x8) = ☐ + ☐	3 x 8 = ☐
5.	4 x 8	(2x8) + (2x8) = ☐ + ☐	4 x 8 = ☐
6.	5 x 8	1/2 of (10x8) = 1/2 of (☐)	5 x 8 = ☐
7.	6 x 8	(3x8) + (3x8) = ☐ + ☐	6 x 8 = ☐
8.	7 x 8	(5x8) + (2x8) = ☐ + ☐	7 x 8 = ☐
9.	8 x 8	(4x8) + (4x8) = ☐ + ☐	8 x 8 = ☐
10.	9 x 8	(10x8) - (1x8) = ☐ - ☐	9 x 8 = ☐
11.	10 x 8	8 x 10 = ☐ tens	10 x 8 = ☐

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Practice Grouping Nines

Practice grouping 9s in groups ranging in size from 0 to 10. This contrasts with finding 9 times a number, which means putting numbers into groups of 9.

Example. 3x9 means "a group of 3 nines" or 9+9+9
9x3 means "a group of 9 threes" or 3+3+3 + 3+3+3 + 3+3+3

		Think Smart		Think Quick
1.	0 x 9	a group of ☐ nines		0 x 9 = ☐
2.	1 x 9	a group of ☐ nine		1 x 9 = ☐
3.	2 x 9	double ☐		2 x 9 = ☐
4.	3 x 9	(2x9) + (1x9) = ☐	+ ☐	3 x 9 = ☐
5.	4 x 9	(2x9) + (2x9) = ☐	+ ☐	4 x 9 = ☐
6.	5 x 9	1/2 of (10x9) =	1/2 of (☐)	5 x 9 = ☐
7.	6 x 9	(3x9) + (3x9) = ☐	+ ☐	6 x 9 = ☐
8.	7 x 9	(5x9) + (2x9) = ☐	+ ☐	7 x 9 = ☐
9.	8 x 9	(4x9) + (4x9) = ☐	+ ☐	8 x 9 = ☐
10.	9 x 9	(10x9) - (1x9) = ☐	- ☐	9 x 9 = ☐
11.	10 x 9	9 x 10 = ☐	tens	10 x 9 = ☐

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Practice Grouping Tens

Practice grouping 10s in groups ranging in size from 0 to 10. This contrasts with finding 10 times a number, which means putting numbers into groups of 10.

Example. 4x10 means "a group of 4 tens" or 10+10+10+10
10x4 means "a group of 10 fours" or 4+4+4+4+4 + 4+4+4+4+4

		Think Smart		Think Quick
1.	0 x 10	a group of ☐ tens		0 x 10 = ☐
2.	1 x 10	a group of ☐ ten		1 x 10 = ☐
3.	2 x 10	double ☐		2 x 10 = ☐
4.	3 x 10	(2x10) + (1x10) = ☐	+ ☐	3 x 10 = ☐
5.	4 x 10	(2x10) + (2x10) = ☐	+ ☐	4 x 10 = ☐
6.	5 x 10	1/2 of (10x10) =	1/2 of (☐)	5 x 10 = ☐
7.	6 x 10	(3x10) + (3x10) = ☐	+ ☐	6 x 10 = ☐
8.	7 x 10	(5x10) + (2x10) = ☐	+ ☐	7 x 10 = ☐
9.	8 x 10	(4x10) + (4x10) = ☐	+ ☐	8 x 10 = ☐
10.	9 x 10	(10x10) - (1x10) = ☐	- ☐	9 x 10 = ☐
11.	10 x 10	10 x 10 = ☐	hundred	10 x 10 = ☐

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Assessment 1

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 8	(3x8) + (3x8) = ☐ + ☐	6 x 8 = ☐
2.	9 x 9	(10x9) - (1x9) = ☐ - ☐	9 x 9 = ☐
3.	5 x 10	1/2 of (10x10) = 1/2 of (☐)	5 x 10 = ☐
4.	1 x 6	a group of ☐ six	1 x 6 = ☐
5.	4 x 2	(2x2) + (2x2) = ☐ + ☐	4 x 2 = ☐
6.	7 x 0	(5x0) + (2x0) = ☐ + ☐	7 x 0 = ☐
7.	0 x 4	a group of ☐ fours	0 x 4 = ☐
8.	3 x 7	(2x7) + (1x7) = ☐ + ☐	3 x 7 = ☐
9.	8 x 5	(4x5) + (4x5) = ☐ + ☐	8 x 5 = ☐
10.	2 x 1	double ☐	2 x 1 = ☐
11.	10 x 3	3 x 10 = ☐ tens	10 x 3 = ☐

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Assessment 2

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 9	(3x9) + (3x9) = ☐ + ☐	6 x 9 = ☐
2.	9 x 10	(10x10) - (1x10) = ☐ - ☐	9 x 10 = ☐
3.	5 x 0	1/2 of (10x0) = 1/2 of (☐)	5 x 0 = ☐
4.	1 x 7	a group of ☐ seven	1 x 7 = ☐
5.	4 x 3	(2x3) + (2x3) = ☐ + ☐	4 x 3 = ☐
6.	7 x 1	(5x1) + (2x1) = ☐ + ☐	7 x 1 = ☐
7.	0 x 5	a group of ☐ fives	0 x 5 = ☐
8.	3 x 8	(2x8) + (1x8) = ☐ + ☐	3 x 8 = ☐
9.	8 x 6	(4x6) + (4x6) = ☐ + ☐	8 x 6 = ☐
10.	2 x 2	double ☐	2 x 2 = ☐
11.	10 x 4	4 x 10 = ☐ tens	10 x 4 = ☐

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Assessment 3

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 10	(3x10) + (3x10) = ☐ + ☐	6 x 10 = ☐
2.	9 x 0	(10x0) - (1x0) = ☐ - ☐	9 x 0 = ☐
3.	5 x 1	1/2 of (10x1) = 1/2 of (☐)	5 x 1 = ☐
4.	1 x 8	a group of ☐ eight	1 x 8 = ☐
5.	4 x 4	(2x4) + (2x4) = ☐ + ☐	4 x 4 = ☐
6.	7 x 2	(5x2) + (2x2) = ☐ + ☐	7 x 2 = ☐
7.	0 x 6	a group of ☐ sixes	0 x 6 = ☐
8.	3 x 9	(2x9) + (1x9) = ☐ + ☐	3 x 9 = ☐
9.	8 x 7	(4x7) + (4x7) = ☐ + ☐	8 x 7 = ☐
10.	2 x 3	double ☐	2 x 3 = ☐
11.	10 x 5	5 x 10 = ☐ tens	10 x 5 = ☐

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Assessment 4

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 0	(3x0) + (3x0) = ☐ + ☐	6 x 0 = ☐
2.	9 x 1	(10x1) - (1x1) = ☐ - ☐	9 x 1 = ☐
3.	5 x 2	1/2 of (10x2) = 1/2 of (☐)	5 x 2 = ☐
4.	1 x 9	a group of ☐ nine	1 x 9 = ☐
5.	4 x 5	(2x5) + (2x5) = ☐ + ☐	4 x 5 = ☐
6.	7 x 3	(5x3) + (2x3) = ☐ + ☐	7 x 3 = ☐
7.	0 x 7	a group of ☐ sevens	0 x 7 = ☐
8.	3 x 10	(2x10) + (1x10) = ☐ + ☐	3 x 10 = ☐
9.	8 x 8	(4x8) + (4x8) = ☐ + ☐	8 x 8 = ☐
10.	2 x 4	double ☐	2 x 4 = ☐
11.	10 x 6	6 x 10 = ☐ tens	10 x 6 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Assessment 5

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 1	(3x1) + (3x1) = ☐ + ☐	6 x 1 = ☐
2.	9 x 2	(10x2) - (1x2) = ☐ - ☐	9 x 2 = ☐
3.	5 x 3	1/2 of (10x3) = 1/2 of (☐)	5 x 3 = ☐
4.	1 x 10	a group of ☐ ten	1 x 10 = ☐
5.	4 x 6	(2x6) + (2x6) = ☐ + ☐	4 x 6 = ☐
6.	7 x 4	(5x4) + (2x4) = ☐ + ☐	7 x 4 = ☐
7.	0 x 8	a group of ☐ eights	0 x 8 = ☐
8.	3 x 0	(2x0) + (1x0) = ☐ + ☐	3 x 0 = ☐
9.	8 x 9	(4x9) + (4x9) = ☐ + ☐	8 x 9 = ☐
10.	2 x 5	double ☐	2 x 5 = ☐
11.	10 x 7	7 x 10 = ☐ tens	10 x 7 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Assessment 6

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 2	(3x2) + (3x2) = ☐ + ☐	6 x 2 = ☐
2.	9 x 3	(10x3) - (1x3) = ☐ - ☐	9 x 3 = ☐
3.	5 x 4	1/2 of (10x4) = 1/2 of (☐)	5 x 4 = ☐
4.	1 x 0	a group of ☐ zero	1 x 0 = ☐
5.	4 x 7	(2x7) + (2x7) = ☐ + ☐	4 x 7 = ☐
6.	7 x 5	(5x5) + (2x5) = ☐ + ☐	7 x 5 = ☐
7.	0 x 9	a group of ☐ nines	0 x 9 = ☐
8.	3 x 1	(2x1) + (1x1) = ☐ + ☐	3 x 1 = ☐
9.	8 x 10	(4x10) + (4x10) = ☐ + ☐	8 x 10 = ☐
10.	2 x 6	double ☐	2 x 6 = ☐
11.	10 x 8	8 x 10 = ☐ tens	10 x 8 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Assessment 7

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 3	(3x3) + (3x3) = ☐ + ☐	6 x 3 = ☐
2.	9 x 4	(10x4) - (1x4) = ☐ - ☐	9 x 4 = ☐
3.	5 x 5	1/2 of (10x5) = 1/2 of (☐)	5 x 5 = ☐
4.	1 x 1	a group of ☐ one	1 x 1 = ☐
5.	4 x 8	(2x8) + (2x8) = ☐ + ☐	4 x 8 = ☐
6.	7 x 6	(5x6) + (2x6) = ☐ + ☐	7 x 6 = ☐
7.	0 x 10	a group of ☐ tens	0 x 10 = ☐
8.	3 x 2	(2x2) + (1x2) = ☐ + ☐	3 x 2 = ☐
9.	8 x 0	(4x0) + (4x0) = ☐ + ☐	8 x 0 = ☐
10.	2 x 7	double ☐	2 x 7 = ☐
11.	10 x 9	9 x 10 = ☐ tens	10 x 9 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Assessment 8

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 4	(3x4) + (3x4) = ☐ + ☐	6 x 4 = ☐
2.	9 x 5	(10x5) - (1x5) = ☐ - ☐	9 x 5 = ☐
3.	5 x 6	1/2 of (10x6) = 1/2 of (☐)	5 x 6 = ☐
4.	1 x 2	a group of ☐ two	1 x 2 = ☐
5.	4 x 9	(2x9) + (2x9) = ☐ + ☐	4 x 9 = ☐
6.	7 x 7	(5x7) + (2x7) = ☐ + ☐	7 x 7 = ☐
7.	0 x 0	a group of ☐ zeroes	0 x 0 = ☐
8.	3 x 3	(2x3) + (1x3) = ☐ + ☐	3 x 3 = ☐
9.	8 x 1	(4x1) + (4x1) = ☐ + ☐	8 x 1 = ☐
10.	2 x 8	double ☐	2 x 8 = ☐
11.	10 x 10	10 x 10 = ☐ hundred	10 x 10 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Assessment 9

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 5	(3x5) + (3x5) = ☐ + ☐	6 x 5 = ☐
2.	9 x 6	(10x6) - (1x6) = ☐ - ☐	9 x 6 = ☐
3.	5 x 7	1/2 of (10x7) = 1/2 of (☐)	5 x 7 = ☐
4.	1 x 3	a group of ☐ three	1 x 3 = ☐
5.	4 x 10	(2x10) + (2x10) = ☐ + ☐	4 x 10 = ☐
6.	7 x 8	(5x8) + (2x8) = ☐ + ☐	7 x 8 = ☐
7.	0 x 1	a group of ☐ ones	0 x 1 = ☐
8.	3 x 4	(2x4) + (1x4) = ☐ + ☐	3 x 4 = ☐
9.	8 x 2	(4x2) + (4x2) = ☐ + ☐	8 x 2 = ☐
10.	2 x 9	double ☐	2 x 9 = ☐
11.	10 x 0	0 x 10 = ☐ tens	10 x 0 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Assessment 10

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 6	(3x6) + (3x6) = ☐ + ☐	6 x 6 = ☐
2.	9 x 7	(10x7) - (1x7) = ☐ - ☐	9 x 7 = ☐
3.	5 x 8	1/2 of (10x8) = 1/2 of (☐)	5 x 8 = ☐
4.	1 x 4	a group of ☐ four	1 x 4 = ☐
5.	4 x 0	(2x0) + (2x0) = ☐ + ☐	4 x 0 = ☐
6.	7 x 9	(5x9) + (2x9) = ☐ + ☐	7 x 9 = ☐
7.	0 x 2	a group of ☐ twos	0 x 2 = ☐
8.	3 x 5	(2x5) + (1x5) = ☐ + ☐	3 x 5 = ☐
9.	8 x 3	(4x3) + (4x3) = ☐ + ☐	8 x 3 = ☐
10.	2 x 10	double ☐	2 x 10 = ☐
11.	10 x 1	1 x 10 = ☐ ten	10 x 1 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

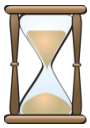
Assessment 11

Mastery of basic multiplication facts means being able to both quickly recall *and* quickly derive every answer. This requires a lot of practice and hard work, so practice these worksheets until you can do them *fast!*

		Think Smart	Think Quick
1.	6 x 7	(3x7) + (3x7) = ☐ + ☐	6 x 7 = ☐
2.	9 x 8	(10x8) - (1x8) = ☐ - ☐	9 x 8 = ☐
3.	5 x 9	1/2 of (10x9) = 1/2 of (☐)	5 x 9 = ☐
4.	1 x 5	a group of ☐ five	1 x 5 = ☐
5.	4 x 1	(2x1) + (2x1) = ☐ + ☐	4 x 1 = ☐
6.	7 x 10	(5x10) + (2x10) = ☐ + ☐	7 x 10 = ☐
7.	0 x 3	a group of ☐ threes	0 x 3 = ☐
8.	3 x 6	(2x6) + (1x6) = ☐ + ☐	3 x 6 = ☐
9.	8 x 4	(4x4) + (4x4) = ☐ + ☐	8 x 4 = ☐
10.	2 x 0	double ☐	2 x 0 = ☐
11.	10 x 2	2 x 10 = ☐ tens	10 x 2 = ☐

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Timed Test 1

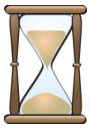


By this point, applying the various grouping strategies should be easy. Now the goal is "fluency" or seeing each problem abstractly as a single group or whole and knowing instantly how many are in that group. Try answering all the problems in *a minute or less!*

1.	6 x 8 =		12.	7 x 1 =		23.	8 x 7 =	
2.	9 x 9 =		13.	0 x 5 =		24.	2 x 3 =	
3.	5 x 10 =		14.	3 x 8 =		25.	10 x 5 =	
4.	1 x 6 =		15.	8 x 6 =		26.	6 x 10 =	
5.	4 x 2 =		16.	2 x 2 =		27.	9 x 0 =	
6.	7 x 0 =		17.	10 x 4 =		28.	5 x 1 =	
7.	0 x 4 =		18.	6 x 9 =		29.	1 x 8 =	
8.	3 x 7 =		19.	9 x 10 =		30.	4 x 4 =	
9.	8 x 5 =		20.	5 x 0 =		31.	7 x 2 =	
10.	2 x 1 =		21.	1 x 7 =		32.	0 x 6 =	
11.	10 x 3 =		22.	4 x 3 =		33.	3 x 9 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Timed Test 2

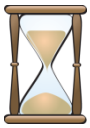


By this point, applying the various grouping strategies should be easy. Now the goal is "fluency" or seeing each problem abstractly as a single group or whole and knowing instantly how many are in that group. Try answering all the problems in *a minute or less!*

1.	6 x 0 =		12.	7 x 4 =		23.	8 x 10 =	
2.	9 x 1 =		13.	0 x 8 =		24.	2 x 6 =	
3.	5 x 2 =		14.	3 x 0 =		25.	10 x 8 =	
4.	1 x 9 =		15.	8 x 9 =		26.	6 x 2 =	
5.	4 x 5 =		16.	2 x 5 =		27.	9 x 3 =	
6.	7 x 3 =		17.	10 x 7 =		28.	5 x 4 =	
7.	0 x 7 =		18.	6 x 1 =		29.	1 x 0 =	
8.	3 x 10 =		19.	9 x 2 =		30.	4 x 7 =	
9.	8 x 8 =		20.	5 x 3 =		31.	7 x 5 =	
10.	2 x 4 =		21.	1 x 10 =		32.	0 x 9 =	
11.	10 x 6 =		22.	4 x 6 =		33.	3 x 1 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Timed Test 3

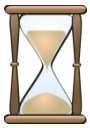


By this point, applying the various grouping strategies should be easy. Now the goal is "fluency" or seeing each problem abstractly as a single group or whole and knowing instantly how many are in that group. Try answering all the problems in *a minute or less!*

1.	6 x 3 =		12.	7 x 7 =		23.	8 x 2 =	
2.	9 x 4 =		13.	0 x 0 =		24.	2 x 9 =	
3.	5 x 5 =		14.	3 x 3 =		25.	10 x 0 =	
4.	1 x 1 =		15.	8 x 1 =		26.	6 x 5 =	
5.	4 x 8 =		16.	2 x 8 =		27.	9 x 6 =	
6.	7 x 6 =		17.	10 x 10 =		28.	5 x 7 =	
7.	0 x 10 =		18.	6 x 4 =		29.	1 x 3 =	
8.	3 x 2 =		19.	9 x 5 =		30.	4 x 10 =	
9.	8 x 0 =		20.	5 x 6 =		31.	7 x 8 =	
10.	2 x 7 =		21.	1 x 2 =		32.	0 x 1 =	
11.	10 x 9 =		22.	4 x 9 =		33.	3 x 4 =	

Name:	Date:
Teacher:	Part 2: Mastering the Basic Times Tables

Timed Test 4



By this point, applying the various grouping strategies should be easy. Now the goal is "fluency" or seeing each problem abstractly as a single group or whole and knowing instantly how many are in that group. Try answering all the problems in *a minute or less!*

1.	6 x 6 =		12.	7 x 10 =		23.	8 x 10 =	
2.	9 x 7 =		13.	0 x 3 =		24.	2 x 6 =	
3.	5 x 8 =		14.	3 x 6 =		25.	10 x 8 =	
4.	1 x 4 =		15.	8 x 4 =		26.	6 x 2 =	
5.	4 x 0 =		16.	2 x 0 =		27.	9 x 3 =	
6.	7 x 9 =		17.	10 x 2 =		28.	5 x 4 =	
7.	0 x 2 =		18.	6 x 7 =		29.	1 x 0 =	
8.	3 x 5 =		19.	9 x 8 =		30.	4 x 7 =	
9.	8 x 3 =		20.	5 x 9 =		31.	7 x 5 =	
10.	2 x 10 =		21.	1 x 5 =		32.	0 x 9 =	
11.	10 x 1 =		22.	4 x 1 =		33.	3 x 1 =	

Answer Key

Page 5

1. 0 x 2 = **0** twos = **0**
2. 0 x 3 = **0** threes = **0**
3. 0 x 4 = **0** fours = **0**
4. 0 x 5 = **0** fives = **0**
5. 0 x 6 = **0** sixes = **0**
6. 0 x 7 = **0** sevens = **0**
7. 0 x 8 = **0** eights = **0**
8. 0 x 9 = **0** nines = **0**

Page 6

1. 1 x 2 = **1** twos = **2**
2. 1 x 3 = **1** threes = **3**
3. 1 x 4 = **1** fours = **4**
4. 1 x 5 = **1** fives = **5**
5. 1 x 6 = **1** sixes = **6**
6. 1 x 7 = **1** sevens = **7**
7. 1 x 8 = **1** eights = **8**
8. 1 x 9 = **1** nines = **9**

Page 7

1. 2 x 2 = **2** twos = **4**
2. 2 x 3 = **2** threes = **6**
3. 2 x 4 = **2** fours = **8**
4. 2 x 5 = **2** fives = **10**
5. 2 x 6 = **2** sixes = **12**
6. 2 x 7 = **2** sevens = **14**
7. 2 x 8 = **2** eights = **16**
8. 2 x 9 = **2** nines = **18**

Page 8

1. **2** tens + **0** ones = **20**
2. **3** tens + **0** ones = **30**
3. **4** tens + **0** ones = **40**
4. **5** tens + **0** ones = **50**
5. **5** tens + **0** ones = **50**
6. **6** tens + **0** ones = **60**
7. **7** tens + **0** ones = **70**
8. **8** tens + **0** ones = **80**

Page 9

1. **0** sevens = **0**
2. **1** six = **6**
3. double **4** = **8**
4. **5** tens + **0** ones = **50**
5. **0** eights = **0**
6. **1** three = **3**
7. double **9** = **18**
8. **7** tens + **0** ones = **70**
9. double **8** = **16**
10. **6** tens + **0** ones = **60**

Page 11

1. 3 x 2 = **4 + 2** = **6**
2. 3 x 3 = **6 + 3** = **9**
3. 3 x 4 = **8 + 4** = **12**
4. 3 x 5 = **10 + 5** = **15**
5. 3 x 6 = **12 + 6** = **18**
6. 3 x 7 = **14 + 7** = **21**
7. 3 x 8 = **16 + 8** = **24**
8. 3 x 9 = **18 + 9** = **27**

page 12

1. 4 x 2 = **4 + 4** = **8**
2. 4 x 3 = **6 + 6** = **12**
3. 4 x 4 = **8 + 8** = **16**
4. 4 x 5 = **10 + 10** = **20**
5. 4 x 6 = **12 + 12** = **24**
6. 4 x 7 = **14 + 14** = **28**
7. 4 x 8 = **16 + 16** = **32**
8. 4 x 9 = **18 + 18** = **36**

Page 13

1. 5 x 2 = ½ of **20** = **10**
2. 5 x 3 = ½ of **30** = **15**
3. 5 x 4 = ½ of **40** = **20**
4. 5 x 5 = ½ of **50** = **25**
5. 5 x 6 = ½ of **60** = **30**
6. 5 x 7 = ½ of **70** = **35**
7. 5 x 8 = ½ of **80** = **40**
8. 5 x 9 = ½ of **90** = **4**

Page 14

1. 9 x 2 = **20 – 2** = **18**
2. 9 x 3 = **30 – 3** = **27**
3. 9 x 4 = **40 – 4** = **36**
4. 9 x 5 = **50 – 5** = **45**
5. 9 x 6 = **60 – 6** = **54**
6. 9 x 7 = **70 – 7** = **63**
7. 9 x 8 = **80 – 8** = **72**
8. 9 x 9 = **90 – 9** = **81**

Page 15

1. 3 x 7 = **14 + 7** = **21**
2. 4 x 6 = **12 + 12** = **24**
3. 5 x 5 = ½ of **50** = **25**
4. 9 x 4 = **40 – 4** = **36**
5. 3 x 8 = **16 + 8** = **24**
6. 4 x 7 = **14 + 14** = **28**
7. 5 x 6 = ½ of **60** = **30**
8. 9 x 5 = **50 – 5** = **45**
9. 5 x 7 = ½ of **70** = **35**
10. 9 x 6 = **60 – 6** = **54**

Page 17

1. 6 x 2 = **6 + 6** = **12**
2. 6 x 3 = **9 + 9** = **18**
3. 6 x 4 = **12 + 12** = **24**
4. 6 x 5 = **15 + 15** = **30**
5. 6 x 6 = **18 + 18** = **36**
6. 6 x 7 = **21 + 21** = **42**
7. 6 x 8 = **24 + 24** = **48**
8. 6 x 9 = **27 + 27** = **54**

Page 18

1. 7 x 2 = **10 + 4** = **14**
2. 7 x 3 = **15 + 6** = **21**
3. 7 x 4 = **20 + 8** = **28**
4. 7 x 5 = **25 + 10** = **35**
5. 7 x 6 = **30 + 12** = **42**
6. 7 x 7 = **35 + 14** = **49**
7. 7 x 8 = **40 + 16** = **56**
8. 7 x 9 = **45 + 18** = **63**

Page 19

1. 8 x 2 = **10 + 4** = **14**
2. 8 x 3 = **15 + 6** = **21**
3. 8 x 4 = **20 + 8** = **28**
4. 8 x 5 = **25 + 10** = **35**
5. 8 x 6 = **30 + 12** = **42**
6. 8 x 7 = **35 + 14** = **49**
7. 8 x 8 = **40 + 16** = **56**
8. 8 x 9 = **45 + 18** = **63**

Page 20

1. 6 x 5 = **15 + 15** = **30**
2. 7 x 4 = **20 + 8** = **28**
3. 8 x 3 = **12 + 12** = **24**
4. 6 x 6 = **18 + 18** = **36**
5. 7 x 5 = **25 + 10** = **35**
6. 8 x 4 = **16 + 16** = **32**
7. 6 x 7 = **21 + 21** = **42**
8. 7 x 6 = **30 + 12** = **42**
9. 8 x 5 = **20 + 20** = **40**
10. 7 x 7 = **35 + 14** = **49**

Answer Key

page 22, grouping 0s

1.	0 x 0	=	**0** zeroes	=	**0**
2.	1 x 0	=	**1** zero	=	**0**
3.	2 x 0	=	double **0**	=	**0**
4.	3 x 0	=	**0** + **0**	=	**0**
5.	4 x 0	=	**0** + **0**	=	**0**
6.	5 x 0	=	½ of **0**	=	**0**
7.	6 x 0	=	**0** + **0**	=	**0**
8.	7 x 0	=	**0** + **0**	=	**0**
9.	8 x 0	=	**0** + **0**	=	**0**
10.	9 x 0	=	**0** – **0**	=	**0**
11.	10 x 0	=	**0** tens	=	**0**

page 23, grouping 1s

1.	0 x 1	=	**0** ones	=	**0**
2.	1 x 1	=	**1** one	=	**1**
3.	2 x 1	=	double **1**	=	**2**
4.	3 x 1	=	**2** + **1**	=	**3**
5.	4 x 1	=	**2** + **2**	=	**4**
6.	5 x 1	=	½ of **10**	=	**5**
7.	6 x 1	=	**3** + **3**	=	**6**
8.	7 x 1	=	**5** + **2**	=	**7**
9.	8 x 1	=	**4** + **4**	=	**8**
10.	9 x 1	=	**10** – **1**	=	**9**
11.	10 x 1	=	**1** ten	=	**10**

page 24, grouping 2s

1.	0 x 2	=	**0** twos	=	**0**
2.	1 x 2	=	**1** two	=	**2**
3.	2 x 2	=	double **2**	=	**4**
4.	3 x 2	=	**4** + **2**	=	**6**
5.	4 x 2	=	**4** + **4**	=	**8**
6.	5 x 2	=	½ of **20**	=	**10**
7.	6 x 2	=	**6** + **6**	=	**12**
8.	7 x 2	=	**10** + **4**	=	**14**
9.	8 x 2	=	**8** + **8**	=	**16**
10.	9 x 2	=	**20** – **2**	=	**18**
11.	10 x 2	=	**2** tens	=	**20**

page 25, grouping 3s

1.	0 x 3	=	**0** threes	=	**0**
2.	1 x 3	=	**1** three	=	**3**
3.	2 x 3	=	double **3**	=	**6**
4.	3 x 3	=	**6** + **3**	=	**9**
5.	4 x 3	=	**6** + **6**	=	**12**
6.	5 x 3	=	½ of **30**	=	**15**
7.	6 x 3	=	**9** + **9**	=	**18**
8.	7 x 3	=	**15** + **6**	=	**21**
9.	8 x 3	=	**12** + **12**	=	**24**
10.	9 x 3	=	**30** – **3**	=	**27**
11.	10 x 3	=	**3** tens	=	**30**

page 26, grouping 4s

1.	0 x 4	=	**0** fours	=	**0**
2.	1 x 4	=	**1** four	=	**4**
3.	2 x 4	=	double **4**	=	**8**
4.	3 x 4	=	**8** + **4**	=	**12**
5.	4 x 4	=	**8** + **8**	=	**16**
6.	5 x 4	=	½ of **40**	=	**20**
7.	6 x 4	=	**12** + **12**	=	**24**
8.	7 x 4	=	**20** + **8**	=	**28**
9.	8 x 4	=	**16** + **16**	=	**32**
10.	9 x 4	=	**40** – **4**	=	**36**
11.	10 x 4	=	**4** tens	=	**40**

page 27, grouping 5s

1.	0 x 5	=	**0** fives	=	**0**
2.	1 x 5	=	**1** five	=	**5**
3.	2 x 5	=	double **5**	=	**10**
4.	3 x 5	=	**10** + **5**	=	**15**
5.	4 x 5	=	**10** + **10**	=	**20**
6.	5 x 5	=	½ of **50**	=	**25**
7.	6 x 5	=	**15** + **15**	=	**30**
8.	7 x 5	=	**25** + **10**	=	**35**
9.	8 x 5	=	**20** + **20**	=	**40**
10.	9 x 5	=	**50** – **5**	=	**45**
11.	10 x 5	=	**5** tens	=	**50**

page 28, grouping 6s

1.	0 x 6	=	**0** sixes	=	**0**
2.	1 x 6	=	**1** six	=	**1**
3.	2 x 6	=	double **6**	=	**12**
4.	3 x 6	=	**12** + **6**	=	**18**
5.	4 x 6	=	**12** + **12**	=	**24**
6.	5 x 6	=	½ of **60**	=	**30**
7.	6 x 6	=	**18** + **18**	=	**36**
8.	7 x 6	=	**30** + **12**	=	**42**
9.	8 x 6	=	**24** + **24**	=	**48**
10.	9 x 6	=	**60** – **6**	=	**54**
11.	10 x 6	=	**6** tens	=	**60**

page 29, grouping 7s

1.	0 x 7	=	**0** sevens	=	**0**
2.	1 x 7	=	**1** seven	=	**7**
3.	2 x 7	=	double **7**	=	**14**
4.	3 x 7	=	**14** + **7**	=	**21**
5.	4 x 7	=	**14** + **14**	=	**28**
6.	5 x 7	=	½ of **70**	=	**35**
7.	6 x 7	=	**21** + **21**	=	**42**
8.	7 x 7	=	**35** + **14**	=	**49**
9.	8 x 7	=	**28** + **28**	=	**56**
10.	9 x 7	=	**70** – **7**	=	**63**
11.	10 x 7	=	**7** tens	=	**70**

page 30, grouping 8s

1.	0 x 8	=	**0** eights	=	**0**
2.	1 x 8	=	**1** eight	=	**8**
3.	2 x 8	=	double **8**	=	**16**
4.	3 x 8	=	**16** + **8**	=	**24**
5.	4 x 8	=	**16** + **16**	=	**32**
6.	5 x 8	=	½ of **80**	=	**40**
7.	6 x 8	=	**24** + **24**	=	**48**
8.	7 x 8	=	**40** + **16**	=	**56**
9.	8 x 8	=	**32** + **32**	=	**64**
10.	9 x 8	=	**80** – **8**	=	**72**
11.	10 x 8	=	**8** tens	=	**80**

page 31, grouping 9s

1.	0 x 9	=	**0** nines	=	**0**
2.	1 x 9	=	**1** nine	=	**9**
3.	2 x 9	=	double **9**	=	**18**
4.	3 x 9	=	**18** + **9**	=	**27**
5.	4 x 9	=	**18** + **18**	=	**36**
6.	5 x 9	=	½ of **90**	=	**45**
7.	6 x 9	=	**27** + **27**	=	**54**
8.	7 x 9	=	**45** + **18**	=	**63**
9.	8 x 9	=	**36** + **36**	=	**72**
10.	9 x 9	=	**90** – **9**	=	**81**
11.	10 x 9	=	**9** tens	=	**90**

page 32, grouping 10s

1.	0 x 10	=	**0** tens	=	**0**
2.	1 x 10	=	**1** ten	=	**10**
3.	2 x 10	=	double **10**	=	**20**
4.	3 x 10	=	**20** + **10**	=	**30**
5.	4 x 10	=	**20** + **20**	=	**40**
6.	5 x 10	=	½ of **100**	=	**50**
7.	6 x 10	=	**30** + **30**	=	**60**
8.	7 x 10	=	**50** + **20**	=	**70**
9.	8 x 10	=	**40** + **40**	=	**80**
10.	9 x 10	=	**100** – **10**	=	**90**
11.	10 x 10	=	**10** tens	=	**100**

Answer Key

page 33, assessment 1

1.	6 x 8	=	**24** + **24**	=	**48**
2.	9 x 9	=	(**10** x **9**) – 9	=	**81**
3.	5 x 10	=	½ of (**10** x **10**)	=	**50**
4.	1 x 6	=	**1** six	=	**6**
5.	4 x 2	=	**4** + **4**	=	**8**
6.	7 x 0	=	**0** + **0**	=	**0**
7.	0 x 4	=	**0** fours	=	**0**
8.	3 x 7	=	**14** + **7**	=	**21**
9.	8 x 5	=	**20** + **20**	=	**40**
10.	2 x 1	=	double **1**	=	**2**
11.	10 x 3	=	**3** tens	=	**30**

page 34, assessment 2

1.	6 x 9	=	**27** + **27**	=	**54**
2.	9 x 10	=	(**10** x **10**) – 10	=	**90**
3.	5 x 0	=	½ of (**10** x **0**)	=	**0**
4.	1 x 7	=	**1** seven	=	**7**
5.	4 x 3	=	**6** + **6**	=	**12**
6.	7 x 1	=	**5** + **2**	=	**7**
7.	0 x 5	=	**0** fives	=	**0**
8.	3 x 8	=	**16** + **8**	=	**24**
9.	8 x 6	=	**24** + **24**	=	**48**
10.	2 x 2	=	double **2**	=	**4**
11.	10 x 4	=	**4** tens	=	**40**

page 35, assessment 3

1.	6 x 10	=	**30** + **30**	=	**60**
2.	9 x 0	=	(**10** x **0**) – 0	=	**0**
3.	5 x 1	=	½ of (**10** x **1**)	=	**5**
4.	1 x 8	=	**1** eight	=	**8**
5.	4 x 4	=	**8** + **8**	=	**16**
6.	7 x 2	=	**10** + **4**	=	**14**
7.	0 x 6	=	**0** sixes	=	**0**
8.	3 x 9	=	**18** + **9**	=	**27**
9.	8 x 7	=	**28** + **28**	=	**56**
10.	2 x 3	=	double **3**	=	**6**
11.	10 x 5	=	**5** tens	=	**50**

page 36, assessment 4

1.	6 x 0	=	**0** + **0**	=	**0**
2.	9 x 1	=	(**10** x **1**) – 1	=	**9**
3.	5 x 2	=	½ of (**10** x **2**)	=	**10**
4.	1 x 9	=	**1** nine	=	**9**
5.	4 x 5	=	**10** + **10**	=	**20**
6.	7 x 3	=	**15** + **6**	=	**21**
7.	0 x 7	=	**0** sevens	=	**0**
8.	3 x 10	=	**20** + **10**	=	**30**
9.	8 x 8	=	**32** + **32**	=	**64**
10.	2 x 4	=	double **4**	=	**8**
11.	10 x 6	=	**6** tens	=	**60**

page 37, assessment 5

1.	6 x 1	=	**3** + **3**	=	**6**
2.	9 x 2	=	(**10** x **2**) – 2	=	**18**
3.	5 x 3	=	½ of (**10** x **3**)	=	**15**
4.	1 x 10	=	**1** ten	=	**10**
5.	4 x 6	=	**12** + **12**	=	**24**
6.	7 x 4	=	**20** + **8**	=	**28**
7.	0 x 8	=	**0** eights	=	**0**
8.	3 x 0	=	**0** + **0**	=	**0**
9.	8 x 9	=	**36** + **36**	=	**72**
10.	2 x 5	=	double **5**	=	**10**
11.	10 x 7	=	**7** tens	=	**70**

page 38, assessment 6

1.	6 x 2	=	**6** + **6**	=	**12**
2.	9 x 3	=	(**10** x **3**) – 3	=	**27**
3.	5 x 4	=	½ of (**10** x **4**)	=	**20**
4.	1 x 0	=	**1** zero	=	**0**
5.	4 x 7	=	**14** + **14**	=	**28**
6.	7 x 5	=	**25** + **10**	=	**35**
7.	0 x 9	=	**0** nines	=	**0**
8.	3 x 1	=	**2** + **1**	=	**3**
9.	8 x 10	=	**40** + **40**	=	**80**
10.	2 x 6	=	double **6**	=	**12**
11.	10 x 8	=	**8** tens	=	**80**

page 39, assessment 7

1.	6 x 3	=	**9** + **9**	=	**18**
2.	9 x 4	=	(**10** x **4**) – 4	=	**36**
3.	5 x 5	=	½ of (**10** x **5**)	=	**25**
4.	1 x 1	=	**1** one	=	**1**
5.	4 x 8	=	**16** + **16**	=	**32**
6.	7 x 6	=	**30** + **12**	=	**42**
7.	0 x 10	=	**0** tens	=	**0**
8.	3 x 2	=	**4** + **2**	=	**6**
9.	8 x 0	=	**0** + **0**	=	**0**
10.	2 x 7	=	double **7**	=	**14**
11.	10 x 9	=	**9** tens	=	**90**

page 40, assessment 8

1.	6 x 4	=	**12** + **12**	=	**24**
2.	9 x 5	=	(**10** x **5**) – 5	=	**45**
3.	5 x 6	=	½ of (**10** x **6**)	=	**30**
4.	1 x 2	=	**1** two	=	**2**
5.	4 x 9	=	**18** + **18**	=	**36**
6.	7 x 7	=	**35** + **14**	=	**49**
7.	0 x 0	=	**0** zeroes	=	**0**
8.	3 x 3	=	**6** + **3**	=	**9**
9.	8 x 1	=	**4** + **4**	=	**8**
10.	2 x 8	=	double **8**	=	**16**
11.	10 x 10	=	**10** tens	=	**100**

page 41, assessment 9

1.	6 x 5	=	**15** + **15**	=	**30**
2.	9 x 6	=	(**10** x **6**) – 6	=	**54**
3.	5 x 7	=	½ of (**10** x **7**)	=	**35**
4.	1 x 3	=	**1** three	=	**3**
5.	4 x 10	=	**20** + **20**	=	**40**
6.	7 x 8	=	**40** + **16**	=	**56**
7.	0 x 1	=	**0** ones	=	**0**
8.	3 x 4	=	**8** + **4**	=	**12**
9.	8 x 2	=	**8** + **8**	=	**16**
10.	2 x 9	=	double **9**	=	**18**
11.	10 x 0	=	**0** tens	=	**0**

page 42, assessment 10

1.	6 x 6	=	**18** + **18**	=	**36**
2.	9 x 7	=	(**10** x **7**) – 7	=	**63**
3.	5 x 8	=	½ of (**10** x **8**)	=	**40**
4.	1 x 4	=	**1** four	=	**4**
5.	4 x 0	=	**0** + **0**	=	**0**
6.	7 x 2	=	**10** + **4**	=	**14**
7.	0 x 2	=	**0** twos	=	**0**
8.	3 x 5	=	**10** + **5**	=	**15**
9.	8 x 3	=	**12** + **12**	=	**24**
10.	2 x 10	=	double **10**	=	**20**
11.	10 x 1	=	**1** ten	=	**10**

page 43, assessment 11

1.	6 x 7	=	**21** + **21**	=	**42**
2.	9 x 8	=	(**10** x **8**) – 8	=	**72**
3.	5 x 9	=	½ of (**10** x **9**)	=	**45**
4.	1 x 5	=	**1** five	=	**5**
5.	4 x 1	=	**2** + **2**	=	**4**
6.	7 x 10	=	**50** + **20**	=	**70**
7.	0 x 3	=	**0** threes	=	**0**
8.	3 x 6	=	**12** + **6**	=	**18**
9.	8 x 4	=	**16** + **16**	=	**32**
10.	2 x 0	=	double **0**	=	**0**
11.	10 x 2	=	**2** tens	=	**20**

Answer Key

Timed Tests 1-4

page 44, timed test 1

1.	6 x 8	=	**48**	12.	7 x 1	=	**7**	23.	8 x 7	=	**56**
2.	9 x 9	=	**81**	13.	0 x 5	=	**0**	24.	2 x 3	=	**6**
3.	5 x 10	=	**50**	14.	3 x 8	=	**24**	25.	10 x 5	=	**50**
4.	1 x 6	=	**6**	15.	8 x 6	=	**48**	26.	6 x 10	=	**60**
5.	4 x 2	=	**8**	16.	2 x 2	=	**4**	27.	9 x 0	=	**0**
6.	7 x 0	=	**0**	17.	10 x 4	=	**40**	28.	5 x 1	=	**5**
7.	0 x 4	=	**0**	18.	6 x 9	=	**54**	29.	1 x 8	=	**8**
8.	3 x 7	=	**21**	19.	9 x 10	=	**90**	30.	4 x 4	=	**16**
9.	8 x 5	=	**40**	20.	5 x 0	=	**0**	31.	7 x 2	=	**14**
10.	2 x 1	=	**2**	21.	1 x 7	=	**7**	32.	0 x 6	=	**0**
11.	10 x 3	=	**30**	22.	4 x 3	=	**12**	33.	3 x 9	=	**27**

page 45, timed test 2

1.	6 x 0	=	**0**	12.	7 x 4	=	**28**	23.	8 x 10	=	**80**
2.	9 x 1	=	**9**	13.	0 x 8	=	**0**	24.	2 x 6	=	**12**
3.	5 x 2	=	**10**	14.	3 x 0	=	**0**	25.	10 x 8	=	**80**
4.	1 x 9	=	**9**	15.	8 x 9	=	**72**	26.	6 x 2	=	**12**
5.	4 x 5	=	**20**	16.	2 x 5	=	**10**	27.	9 x 3	=	**27**
6.	7 x 3	=	**21**	17.	10 x 7	=	**70**	28.	5 x 4	=	**20**
7.	0 x 7	=	**0**	18.	6 x 1	=	**6**	29.	1 x 0	=	**0**
8.	3 x 10	=	**30**	19.	9 x 2	=	**18**	30.	4 x 7	=	**28**
9.	8 x 8	=	**64**	20.	5 x 3	=	**15**	31.	7 x 5	=	**35**
10.	2 x 4	=	**8**	21.	1 x 10	=	**10**	32.	0 x 9	=	**0**
11.	10 x 6	=	**60**	22.	4 x 6	=	**24**	33.	3 x 1	=	**3**

page 46, timed test 3

1.	6 x 3	=	**18**	12.	7 x 7	=	**49**	23.	8 x 2	=	**16**
2.	9 x 4	=	**36**	13.	0 x 0	=	**0**	24.	2 x 9	=	**18**
3.	5 x 5	=	**25**	14.	3 x 3	=	**9**	25.	10 x 0	=	**0**
4.	1 x 1	=	**1**	15.	8 x 1	=	**8**	26.	6 x 5	=	**30**
5.	4 x 8	=	**32**	16.	2 x 8	=	**16**	27.	9 x 6	=	**54**
6.	7 x 6	=	**42**	17.	10 x 10	=	**100**	28.	5 x 7	=	**35**
7.	0 x 10	=	**0**	18.	6 x 4	=	**24**	29.	1 x 3	=	**3**
8.	3 x 2	=	**6**	19.	9 x 5	=	**45**	30.	4 x 10	=	**40**
9.	8 x 0	=	**0**	20.	5 x 6	=	**30**	31.	7 x 8	=	**56**
10.	2 x 7	=	**14**	21.	1 x 2	=	**2**	32.	0 x 1	=	**0**
11.	10 x 9	=	**90**	22.	4 x 9	=	**36**	33.	3 x 4	=	**12**

Page 47, timed test 4

1.	6 x 6	=	**36**	12.	7 x 10	=	**70**	23.	8 x 10	=	**80**
2.	9 x 7	=	**63**	13.	0 x 3	=	**0**	24.	2 x 6	=	**12**
3.	5 x 8	=	**40**	14.	3 x 6	=	**18**	25.	10 x 8	=	**80**
4.	1 x 4	=	**4**	15.	8 x 4	=	**32**	26.	6 x 2	=	**12**
5.	4 x 0	=	**0**	16.	2 x 0	=	**0**	27.	9 x 3	=	**27**
6.	7 x 9	=	**63**	17.	10 x 2	=	**20**	28.	5 x 4	=	**20**
7.	0 x 2	=	**0**	18.	6 x 7	=	**42**	29.	1 x 0	=	**0**
8.	3 x 5	=	**15**	19.	9 x 8	=	**72**	30.	4 x 7	=	**28**
9.	8 x 3	=	**24**	20.	5 x 9	=	**45**	31.	7 x 5	=	**35**
10.	2 x 10	=	**20**	21.	1 x 5	=	**5**	32.	0 x 9	=	**0**
11.	10 x 1	=	**10**	22.	4 x 1	=	**4**	33.	3 x 1	=	**3**