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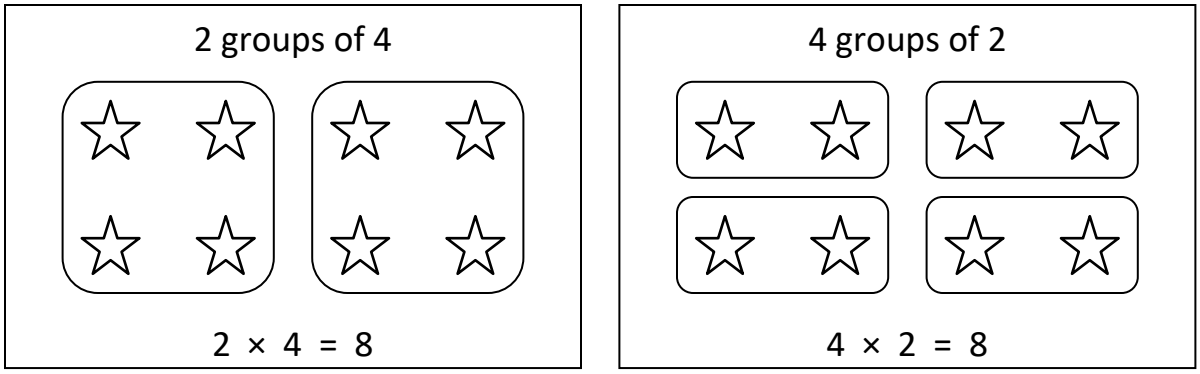
INTRODUCTION: What is multiplication?

Multiplication is combining groups that contain the same number.



Children need to progress through two steps when learning multiplication.

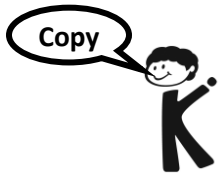
STEP ONE: Understand the <u>concept</u> of multiplication.

STEP TWO: <u>Memorize</u> the multiplication facts.

Multiplication Made Easy and Fun! is designed for STEP TWO.

It specifically builds competence and confidence in memorizing the multiplication facts up to 12 × 12.

- Children learn to see patterns in the multiplication facts.
- They use these patterns (*tricks*) to embed the facts in their memory.
- With practice, children convert the *tricks* to immediate recall.



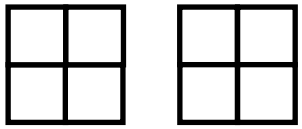
When you see me on a page, make copies of the page. Teachers may make multiple copies of these pages for classroom practice.

STEP ONE: Understand the concept of multiplication.

1. See multiplication with the 4-group Number Patterns:

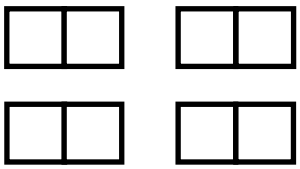
Two groups of four

2 × 4



Four groups of two

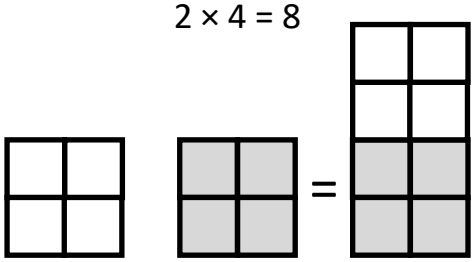
4 × 2



2. Solve multiplication with the 4-group Number Patterns:

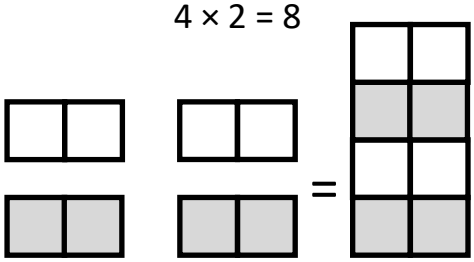
Two groups of four equals eight

2 × 4 = 8



Four groups of two equals eight

4 × 2 = 8



3. See multiplication with numbers:

Two groups of four

2 × 4

4 4

Four groups of two

4 × 2

2 2

2 2

4. Solve multiplication with numbers:

Add the numbers together in any way to find the product.

Two groups of four equals eight

2 × 4 = 8

4 + 4 = 8

Four groups of two equals eight

4 × 2 = 8

2 + 2 = 4

2 + 2 = 4

+ 8

STEP TWO: <u>Memorize</u> the multiplication facts.

Discover the *Trick* – 10

10	x	3	=	30
10	x	9	=	90
10	x	4	=	40
10	x	6	=	60
10	x	11	=	110
10	x	2	=	20
10	x	7	=	70
10	x	12	=	120
10	x	8	=	80
10	x	10	=	100
10	x	5	=	50

- For each problem, look at the number in the gray box. Compare that number with the answer.
- What trick do you see?
- Look back at this page when you need to review the trick.

The child should write the trick in their own words. For example:
"You just put a 0 after the number."

- Write your 10's trick here:

The *Trick* Explained – 10

There is one zero in 10, so put one zero after the number you are multiplying by 10.

EXAMPLE: 10 × 6 = 60
Put a 0 after the 6.
Read your answer: "sixty."

Going Further. . .
The 10's Trick works with all numbers. Children love to work with big numbers!

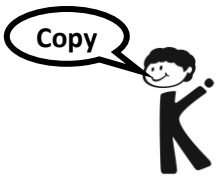
10 x 16 = 160
10 x 25 = 250
10 x 362 = 3620

Children may observe that since 100 has two zeros, you put two zeros after the number if you are multiplying by 100.

100 x 6 = 600
100 x 25 = 2500
100 x 362 = 36200

This pattern continues:
Put three zeros after the number if you are multiplying by 1,000.
Put four zeros after the number if you are multiplying by 10,000.
And so on. . .

- Make copies of **Practice the *Trick* Vertical – 10.**
- Make copies of **Practice the *Trick* Horizontal -10**.
- These practice sheets include only those problems that use the 10's trick.
- Practice until the trick becomes automatic.

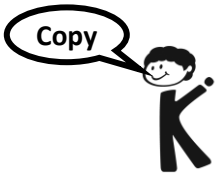


Practice the *Trick* Vertical – 10

10 x 4 =	10 x 7 =	10 x 2 =	10 x 9 =	10 x 5 =	10 x 3 =	10 x 6 =
10 x 11 =	10 x 8 =	10 x 12 =	10 x 10 =	10 x 6 =	10 x 8 =	10 x 2 =
10 x 3 =	10 x 5 =	10 x 7 =	10 x 9 =	10 x 4 =	10 x 11 =	10 x 3 =
10 x 8 =	10 x 12 =	10 x 10 =	10 x 4 =	10 x 11 =	10 x 6 =	10 x 4 =
10 x 9 =	10 x 5 =	10 x 11 =	10 x 3 =	10 x 12 =	10 x 2 =	10 x 7 =
10 x 5 =	10 x 8 =	10 x 6 =	10 x 10 =	10 x 7 =	10 x 9 =	10 x 12 =

Practice the *Trick* Vertical KEY – 10

10 x 4 = **40**	10 x 7 = **70**	10 x 2 = **20**	10 x 9 = **90**	10 x 5 = **50**	10 x 3 = **30**	10 x 6 = **60**
10 x 11 = **110**	10 x 8 = **80**	10 x 12 = **120**	10 x 10 = **100**	10 x 6 = **60**	10 x 8 = **80**	10 x 2 = **20**
10 x 3 = **30**	10 x 5 = **50**	10 x 7 = **70**	10 x 9 = **90**	10 x 4 = **40**	10 x 11 = **110**	10 x 3 = **30**
10 x 8 = **80**	10 x 12 = **120**	10 x 10 = **100**	10 x 4 = **40**	10 x 11 = **110**	10 x 6 = **60**	10 x 4 = **40**
10 x 9 = **90**	10 x 5 = **50**	10 x 11 = **110**	10 x 3 = **30**	10 x 12 = **120**	10 x 2 = **20**	10 x 7 = **70**
10 x 5 = **50**	10 x 8 = **80**	10 x 6 = **60**	10 x 10 = **100**	10 x 7 = **70**	10 x 9 = **90**	10 x 12 = **120**



Practice the *Trick* Horizontal – 10

10 x 6 =	10 x 7 =	10 x 5 =
10 x 3 =	10 x 12 =	10 x 9 =
10 x 5 =	10 x 3 =	10 x 11 =
10 x 9 =	10 x 10 =	10 x 7 =
10 x 2 =	10 x 4 =	10 x 10 =
10 x 7 =	10 x 9 =	10 x 8 =
10 x 4 =	10 x 12 =	10 x 12 =
10 x 2 =	10 x 5 =	10 x 2 =
10 x 8 =	10 x 3 =	10 x 4 =
10 x 6 =	10 x 11 =	10 x 11 =
10 x 10 =	10 x 6 =	10 x 8 =

Practice the *Trick* Horizontal – 10 – KEY

10 x 6 = **60**	10 x 7 = **70**	10 x 5 = **50**
10 x 3 = **30**	10 x 12 = **120**	10 x 9 = **90**
10 x 5 = **50**	10 x 3 = **30**	10 x 11 = **110**
10 x 9 = **90**	10 x 10 = **100**	10 x 7 = **70**
10 x 2 = **20**	10 x 4 = **40**	10 x 10 = **100**
10 x 7 = **70**	10 x 9 = **90**	10 x 8 = **80**
10 x 4 = **40**	10 x 12 = **120**	10 x 12 = **120**
10 x 2 = **20**	10 x 5 = **50**	10 x 2 = **20**
10 x 8 = **80**	10 x 3 = **30**	10 x 4 = **40**
10 x 6 = **60**	10 x 11 = **110**	10 x 11 = **110**
10 x 10 = **100**	10 x 6 = **60**	10 x 8 = **80**

Discover the *Tricks* – 11

There are two tricks for 11: One for 11 times the single-digit numbers.
One for 11 times the two-digit numbers.

11 x 3 = 33

11 x 9 = 99

11 x 4 = 44

11 x 6 = 66

11 x 5 = 55

11 x 2 = 22

11 x 7 = 77

11 x 8 = 88

- For each problem, look at the number in the gray box. Compare that number with the answer.
- What tricks do you see?
- Look back at this page when you need to review the tricks.

- Write your single digit 11's trick here:

11 x 12 = 132

11 x 11 = 121

- Write your two digit 11's trick here:

11 x 10 = 110

You know this. Use the 10's trick.

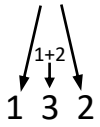
The *Tricks* Explained – 11

For the single-digit numbers, write the number down twice.

EXAMPLE: 11 × 6 = 66
Write 6 twice - 66.
Read your answer: "sixty-six."

For the two-digit numbers, split the two digits apart, add the two digits together and write this sum in the middle.

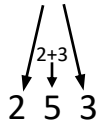
ILLUSTRATION: 11 × 12 = 1 3 2



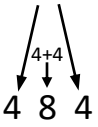
Read your answer: "one hundred thirty-two."

Going Further. . .
The 11's Trick works with all two-digit numbers.

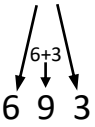
11 × **23** = 2 5 3



11 × **44** = 4 8 4

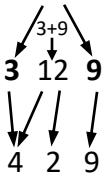


11 × **63** = 6 9 3

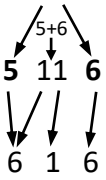


If the two digits add to more than ten, there will be a 1 to carry into the 100's place.

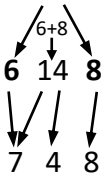
11 × **39** = 4 2 9



11 × **56** = 6 1 6



11 × **68** = 7 4 8



- Make copies of **Practice the *Tricks* Vertical – 11.**
- Make copies of **Practice the *Tricks* Horizontal – 11**.
- These practice sheets include only those problems that use the 11's tricks and the 10's trick that you already know.
- Practice until the tricks become automatic.

These pages not shown

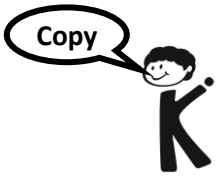
Practice Test #1 (9, 10, 11)
Directions

It's time for Practice Test #1

- Make copies of Practice Test #1.
- This first test covers the numbers 9, 10, and 11.
- The answer is given for 9 × 12.
- Practice tests are not timed.
- The number of problems is indicated next to the score.
- Children should practice until they feel confident enough to take the real test.

Practice Test #1 (9, 10, 11) - KEY

X	7	4	2	10	3	9	5	12	6	8	11	X
11	77	44	22	110	33	99	55	132	66	88	121	11
9	63	36	18	90	27	81	45	108	54	72	99	9
10	70	40	20	100	30	90	50	120	60	80	110	10
X	7	4	2	10	3	9	5	12	6	8	11	X



Practice Test #1 (9, 10, 11)

Name:_____ Score:_____ / 33

Date:_____

X	7	4	2	10	3	9	5	12	6	8	11	X
11												11
9								108				9
10												10
X	7	4	2	10	3	9	5	12	6	8	11	X

Make Your Own Practice Test #1 (9, 10, 11)

- Mixing up the order, write the numbers 2-12 in the boxes across the top.
- Not in order, write the numbers 9, 10, and 11 in the boxes down the sides.
- Fill in the answer for 9 × 12 = 108.

Name:_____ Score:_____ / 33

Date:_____

X												X
X												X

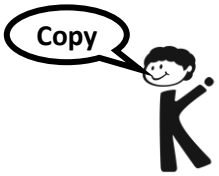
Test #1 (9, 10, 11)
Directions

Now it's time for the real Test #1

- Make copies of Test #1.
- Time the child taking the test.
- Record their time when they finish.
- The time goal for the test is next to the space for recording the time.
- The number of problems is indicated next to the score.
- In order to pass the test, a child may only miss one and must finish the test in the allotted time. This ensures that the child has good recall of the answers.
- Children who do not pass the test should revisit the practice pages until they are ready to try again.
- Children who pass the test should record the answers for the 9's, 10's and 11's on the *I Know! I Know!* Recording Chart on page 79.

Test #1 (9, 10, 11) – <u>KEY</u>

X	8	5	2	12	6	3	9	4	11	7	10	X
10	80	50	20	120	60	30	90	40	110	70	100	10
9	72	45	18	108	54	27	81	36	99	63	90	9
11	88	55	22	132	66	33	99	44	121	77	110	11
X	8	5	2	12	6	3	9	4	11	7	10	X

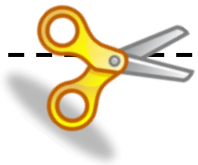


Test #1 (9, 10, 11)

Name:_____ Score:_____ / 33

Date:_____ Time:_____ / 3:30

X	8	5	2	12	6	3	9	4	11	7	10	X
10												10
9				108								9
11												11
X	8	5	2	12	6	3	9	4	11	7	10	X



Test #1 (9, 10, 11)

Name:_____ Score:_____ / 33

Date:_____ Time:_____ / 3:30

X	8	5	2	12	6	3	9	4	11	7	10	X
10												10
9				108								9
11												11
X	8	5	2	12	6	3	9	4	11	7	10	X

Test #1 Flashcards (9, 10, 11)

Now that you have passed Test #1, you know all the facts on the orange flashcards.

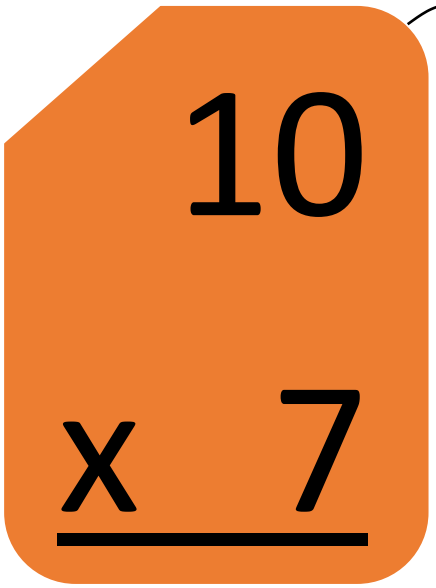
- It is important that you continue to practice these facts while you learn new ones.
- Keep the flashcards accessible in the car or on the kitchen counter.
- Go through the stack of cards once, shuffle, and go through them again.
- Do this at least once a day.
- The flashcards are meant to be used AFTER a child has passed the test because not just ‘practice makes perfect’, but

Perfect Practice Makes Perfect

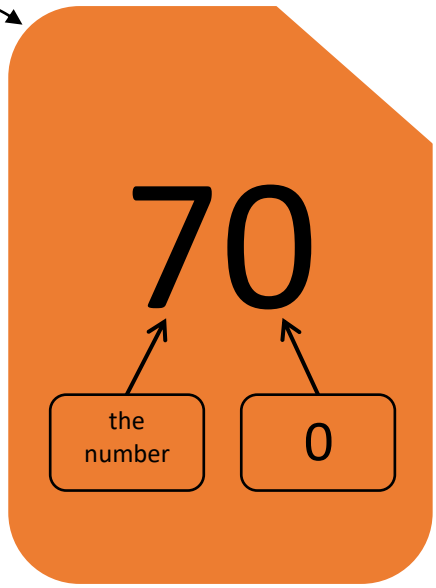
EXAMPLES OF FLASHCARDS

for after passing Test #1

FRONT

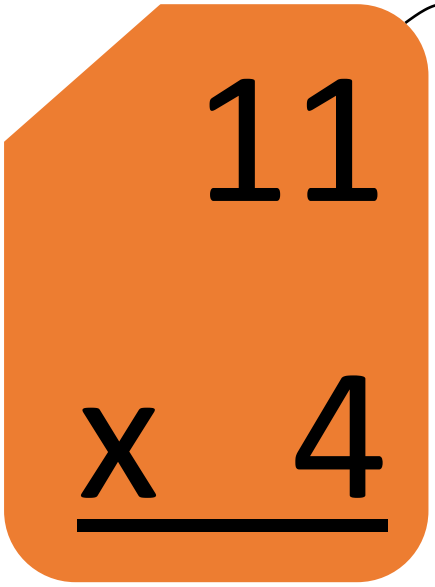


BACK

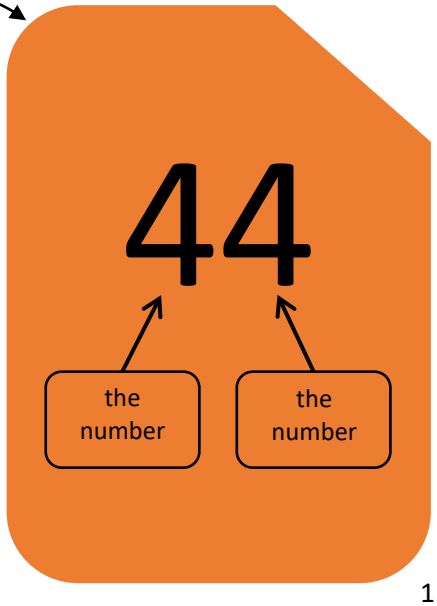


11 times a single-digit number

FRONT

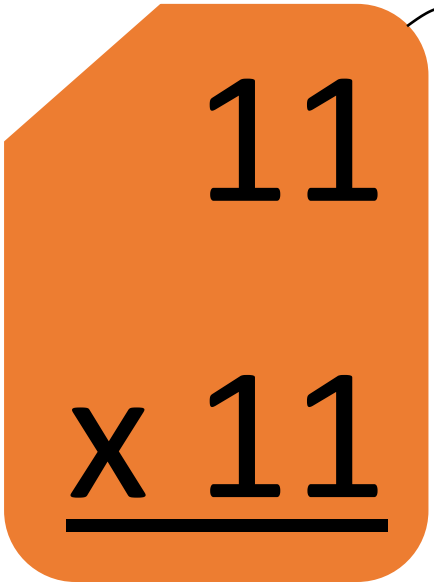


BACK



11 times a two-digit number

FRONT



BACK