MATH | GRADES 3 TO 4 | ANSWER KEY

Multiplication Fact Strategies

Equal groups, arrays, and smart strategies for the facts that feel hard

IN THIS PACKET YOU WILL LEARN TO

- ✓ Explain multiplication with equal groups and arrays
- ✓ Use four strategies to find facts that feel hard
- ✓ Find products and missing factors for every fact through 10 × 10
- ✓ Solve one-step and two-step word problems with multiplication

Name _____

Teacher _____

Class _____

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What Multiplication Means

ANSWER KEY LEARN

When groups are all the same size, you can multiply to find the total. Read this page with your teacher or a partner, and look at each picture before you read the steps next to it.

EQUAL GROUPS

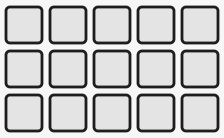


There are 3 bags, and each bag holds 4 marbles.

1. Count the groups, and you will find 3 bags.
2. Count how many are in each group, and you will find 4 marbles.
3. You can add 4 + 4 + 4, or you can multiply 3 × 4.

3 × 4 = 12 marbles

AN ARRAY



An array shows equal groups in rows and columns.

1. This array has 3 rows, and each row has 5 squares.
2. Each row is one group, so you have 3 groups of 5.
3. You can add 5 + 5 + 5, or you can multiply 3 × 5.

3 × 5 = 15 squares

WORDS TO KNOW

factor	A number you multiply. In 3 × 5 = 15, the factors are 3 and 5.
product	The answer when you multiply. In 3 × 5 = 15, the product is 15.
equal groups	Groups that all have the same number of things inside them.
array	Objects lined up in rows and columns, with the same number in every row.

Try it

1. Draw 4 groups with 2 stars in each group, then write the fact.

SHOW YOUR WORK

Answer: 4 × 2 = 8

2. Draw an array with 2 rows and 6 dots in each row, then write the fact.

SHOW YOUR WORK

Answer: 2 × 6 = 12

Strategies for Hard Facts

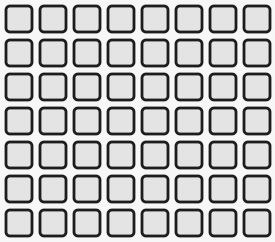
ANSWER KEY LEARN

Each box shows a strategy you can use when a fact feels hard, so read the steps and try the strategy on the fact in the example.

TURN IT AROUND

You can switch the order of the factors, and the product stays the same. If you know 3 × 8 = 24, then you also know that 8 × 3 = 24.

BREAK A FACTOR APART



Find 7 × 8 by splitting the 7 rows into two smaller parts.

1. Split the 7 rows into 5 rows and 2 rows.
2. Find each part: 5 × 8 = 40 and 2 × 8 = 16.
3. Add the two parts together: 40 + 16 = 56.

7 × 8 = 56

DOUBLE A FACT YOU KNOW

Find 4 × 6.

1. First find 2 × 6, which is 12.
2. The factor 4 is double 2, so double 12.
3. Double 12 is 24, so 4 × 6 = 24.

4 × 6 = 24

START FROM A TEN FACT

Find 9 × 6.

1. Start with 10 × 6, which is 60.
2. Nine groups is one group less than ten groups, so take away one 6.
3. 60 − 6 = 54, so 9 × 6 = 54.

9 × 6 = 54

Which strategy should I use?

Use the strategy that makes the fact easiest for you. Many students double for the 4s and 8s, start from ten for the 9s, and break apart the 6s and 7s.

Try it

1. Break apart the 7 to find 6 × 7.

SHOW YOUR WORK

6 × 5 = 30 and 6 × 2 = 12, so 30 + 12 = 42

Answer: 42

2. Start from a ten fact to find 9 × 8.

SHOW YOUR WORK

10 × 8 = 80, and 80 − 8 = 72

Answer: 72

Groups and Arrays

ANSWER KEY | GUIDED PRACTICE

Count the groups, then count how many are in each group or row. Write the multiplication fact and its product on the line under each picture.

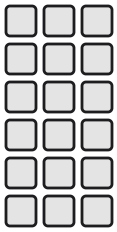
1. 
Fact: 2 × 5 = 10

2. 
Fact: 4 × 3 = 12

3. 
Fact: 4 × 6 = 24

4. 
Fact: 3 × 7 = 21

5. 
Fact: 5 × 2 = 10

6. 
Fact: 6 × 3 = 18

7. Draw an array with 2 rows and 7 squares in each row, then write the multiplication fact.

SHOW YOUR WORK

Answer: 2 × 7 = 14

8. Draw 3 groups with 5 circles in each group, then write the multiplication fact.

SHOW YOUR WORK

Answer: 3 × 5 = 15

9. Look at numbers 1 and 5. Both products are 10, so how are the two pictures different?

Number 1 has 2 groups of 5, and number 5 has 5 groups of 2. The groups are different, and the total is the same.

Facts for 2, 3, 4, 5, and 10

ANSWER KEY PRACTICE ★

Write each product on the line. In the last two rows, find the missing factor that makes the fact true.

1. 2 × 6 = 12
2. 5 × 3 = 15
3. 10 × 4 = 40
4. 3 × 3 = 9
5. 4 × 5 = 20
6. 2 × 9 = 18
7. 5 × 7 = 35
8. 3 × 6 = 18
9. 10 × 8 = 80
10. 4 × 4 = 16
11. 2 × 7 = 14
12. 5 × 5 = 25
13. 3 × 8 = 24
14. 4 × 7 = 28
15. 10 × 6 = 60
16. 5 × 9 = 45
17. 4 × 9 = 36
18. 3 × 9 = 27
19. 2 × 8 = 16
20. 5 × 6 = 30
21. 3 × 7 = 21
22. 4 × 8 = 32
23. 10 × 9 = 90
24. 5 × 8 = 40

Find the missing factor

25. 7 × 5 = 35
26. 3 × 9 = 27
27. 4 × 7 = 28
28. 7 × 10 = 70
29. 2 × 8 = 16
30. 9 × 4 = 36

Facts for 6, 7, 8, and 9

ANSWER KEY | PRACTICE ★★

Write each product on the line. Then find each missing factor, and write the symbol for greater than, less than, or equal to between each pair of facts.

1. 6 × 7 = 42
2. 8 × 9 = 72
3. 7 × 7 = 49
4. 9 × 6 = 54
5. 8 × 6 = 48
6. 7 × 9 = 63
7. 6 × 6 = 36
8. 8 × 8 = 64
9. 9 × 9 = 81
10. 7 × 8 = 56
11. 6 × 9 = 54
12. 8 × 7 = 56
13. 9 × 7 = 63
14. 6 × 8 = 48
15. 7 × 6 = 42
16. 9 × 8 = 72

Find the missing factor

17. 6 × 7 = 42
18. 8 × 8 = 64
19. 7 × 9 = 63
20. 6 × 9 = 54
21. 7 × 8 = 56
22. 9 × 8 = 72

Compare the products with <, >, or =

23. 6 × 7 > 5 × 8
24. 4 × 9 = 6 × 6
25. 7 × 8 > 9 × 6
26. 3 × 8 < 4 × 7

Sort the Products

ANSWER KEY | CUT AND PASTE

Cut out the twelve fact cards at the bottom of the page and find each product. Glue each card in the column where its product belongs.

Product less than 25	Product from 25 to 50	Product greater than 50
3 × 7	5 × 6	7 × 8
4 × 5	7 × 4	9 × 9
2 × 9	9 × 5	6 × 9
6 × 4	8 × 6	8 × 8

1. Look at the column for products greater than 50. What do you notice about the factors in those facts?

Both factors in each of those facts are 6 or greater, so large factors make large products.

✂

6 × 4	7 × 4	5 × 6	8 × 6
2 × 9	4 × 5	7 × 8	9 × 5
8 × 8	6 × 9	3 × 7	9 × 9

Match the Story to the Fact

ANSWER KEY MATCH

Read each story on the left and find the multiplication fact on the right that tells about it. Write the letter of the fact on the line.

STORY		MULTIPLICATION FACT
1. 5 bags with 3 apples in each bag	C	**A** 8 × 9 = 72
2. 3 bags with 5 apples in each bag	E	**B** 6 × 8 = 48
3. 4 rows of chairs with 7 chairs in each row	D	**C** 5 × 3 = 15
4. 6 spiders with 8 legs on each spider	B	**D** 4 × 7 = 28
5. 9 cars with 4 wheels on each car	H	**E** 3 × 5 = 15
6. 2 hands with 5 fingers on each hand	G	**F** 7 × 7 = 49
7. 7 weeks with 7 days in each week	F	**G** 2 × 5 = 10
8. 8 packs of markers with 9 markers in each pack	A	**H** 9 × 4 = 36

9. Write your own story about equal groups for the fact 3 × 6 = 18.

Sample answer: There are 3 plates, and each plate has 6 cookies, so there are 18 cookies in all.

Mystery Picture

ANSWER KEY

COLOR BY PRODUCT

Find the product in each square, then color the square with the color from the key that matches that product. When you finish, a picture will appear.

- **Light blue**: The product is 12 or 18.
- **Yellow**: The product is 35.
- **Green**: The product is 24, 36, or 48.
- **Brown**: The product is 56.

3 × 4	6 × 3	2 × 6	9 × 2	5 × 7	7 × 5	4 × 3	3 × 6	6 × 2	2 × 9
3 × 4	6 × 3	2 × 6	9 × 2	4 × 6	6 × 6	4 × 3	3 × 6	6 × 2	2 × 9
3 × 4	6 × 3	2 × 6	8 × 6	3 × 8	9 × 4	6 × 8	9 × 2	4 × 3	3 × 6
6 × 2	2 × 9	6 × 4	4 × 9	8 × 3	4 × 6	6 × 6	8 × 6	3 × 4	6 × 3
2 × 6	9 × 2	4 × 3	3 × 8	9 × 4	6 × 8	6 × 4	3 × 6	6 × 2	2 × 9
3 × 4	6 × 3	4 × 9	8 × 3	4 × 6	6 × 6	8 × 6	3 × 8	2 × 6	9 × 2
4 × 3	9 × 4	6 × 8	6 × 4	4 × 9	8 × 3	4 × 6	6 × 6	8 × 6	3 × 6
6 × 2	2 × 9	3 × 8	9 × 4	6 × 8	6 × 4	4 × 9	8 × 3	3 × 4	6 × 3
2 × 6	4 × 6	6 × 6	8 × 6	3 × 8	9 × 4	6 × 8	6 × 4	4 × 9	9 × 2
8 × 3	4 × 6	6 × 6	8 × 6	3 × 8	9 × 4	6 × 8	6 × 4	4 × 9	8 × 3
4 × 3	3 × 6	6 × 2	2 × 9	7 × 8	8 × 7	3 × 4	6 × 3	2 × 6	9 × 2

Multiplication Riddle

ANSWER KEY | RIDDLE

Solve each fact and find the product in the code table. Write the letter for that product on the line with the same number to answer the riddle.

Why was the math book sad?

I	T		H	A	D		T	O	O		M	A	N	Y
1	2		3	4	5		6	7	8		9	10	11	12

P	R	O	B	L	E	M	S
13	14	15	16	17	18	19	20

CODE TABLE

12	15	16	20	24	27	28	30	32
Y	H	E	K	I	B	D	N	R

36	40	42	45	54	56	63	72	81
A	W	T	L	P	O	M	S	U

1. 4 × 6 = 24
2. 6 × 7 = 42
3. 3 × 5 = 15
4. 4 × 9 = 36
5. 4 × 7 = 28
6. 7 × 6 = 42
7. 7 × 8 = 56
8. 8 × 7 = 56
9. 7 × 9 = 63
10. 9 × 4 = 36
11. 5 × 6 = 30
12. 3 × 4 = 12
13. 6 × 9 = 54
14. 4 × 8 = 32
15. 8 × 7 = 56
16. 3 × 9 = 27
17. 5 × 9 = 45
18. 2 × 8 = 16
19. 9 × 7 = 63
20. 8 × 9 = 72

Multiplication Word Problems

ANSWER KEY APPLY

Read each problem twice and draw a picture or write a number sentence in the work box. Write your answer with the label on the line.

1. Ms. Ortiz sets up 6 tables for an art project, and she puts 4 jars of paint on each table. How many jars of paint are on the tables?

SHOW YOUR WORK

6 × 4 = 24

Answer: 24 jars

2. The school garden has 7 rows of carrots, and each row has 8 carrots. How many carrots are in the garden?

SHOW YOUR WORK

7 × 8 = 56

Answer: 56 carrots

3. Theo buys 3 packs of trading cards, and each pack holds 9 cards. He gives 5 cards to his sister. How many cards does Theo have left?

SHOW YOUR WORK

3 × 9 = 27, and 27 − 5 = 22

Answer: 22 cards

4. A bus has 10 rows of seats, and 4 students can sit in each row. If 32 students get on the bus, how many more students can fit?

SHOW YOUR WORK

10 × 4 = 40, and 40 − 32 = 8

Answer: 8 students

Find the Mistake

ANSWER KEY | ERROR ANALYSIS ★★

Each box shows work from a student who made a mistake. Read the work carefully, explain what went wrong, and then answer the question below it.

Jayden's work

I know that 7 × 7 = 49.

To get 7 × 8, I added 5 more.

So I think 7 × 8 = 54.

1. What mistake did Jayden make? Explain it in a complete sentence.

   Jayden added 5 when he needed to add 7. Going from 7 × 7 to 7 × 8 adds one more group of 7, so 7 × 8 = 49 + 7 = 56.

2. Use the strategy Jayden tried to find 6 × 8. Start with 6 × 7 = 42 and show each step.

   YOUR WORK

   6 × 8 = 6 × 7 + 6 = 42 + 6 = 48

Maya's work

Here is my fact family for 3, 7, and 21.

3 × 7 = 21 and 7 × 3 = 21

21 ÷ 3 = 7 and 21 ÷ 7 = 4

3. Which fact in Maya's family is wrong, and how do you know?

   The fact 21 ÷ 7 = 4 is wrong, because 7 × 4 = 28. The correct fact is 21 ÷ 7 = 3.

4. Write the fact family for 4, 9, and 36.

   YOUR WORK

   4 × 9 = 36, 9 × 4 = 36, 36 ÷ 4 = 9, 36 ÷ 9 = 4

Explain Your Strategy

ANSWER KEY WRITE ABOUT MATH

Answer each question in complete sentences. Use the sentence starters if they help, and use the words factor and product in your writing.

1. Choose a fact that feels hard to you, such as 6 × 7 or 8 × 9. Which strategy helps you find the product, and how does it work?

   The fact I chose is _____. A strategy that helps me is _____, because _____.

   Sample answer: The fact I chose is 6 × 7. I break apart the 7 into 5 and 2, so 6 × 5 = 30 and 6 × 2 = 12. Then I add 30 + 12 to get a product of 42.

DRAW AN ARRAY OR EQUAL GROUPS THAT SHOWS YOUR STRATEGY

2. How are 4 × 6 and 6 × 4 alike, and how are they different?

   Sample answer: Both facts have the factors 4 and 6, and both have a product of 24. They are different because 4 × 6 is 4 groups of 6 and 6 × 4 is 6 groups of 4.

Mixed Review

ANSWER KEY REVIEW

Solve each problem and check your work when you finish. Use any strategy from this packet that helps you.

1. $8 \times 4 =$ **32**
2. $6 \times 9 =$ **54**
3. $7 \times 3 =$ **21**
4. $9 \times 9 =$ **81**
5. $5 \times 8 =$ **40**
6. $7 \times 7 =$ **49**
7. $4 \times 6 =$ **24**
8. $8 \times 8 =$ **64**

Find the missing factor

9. **8** $\times 6 = 48$
10. $7 \times$ **9** $= 63$
11. **8** $\times 3 = 24$

Compare the products with <, >, or =

12. 9×4 **=** 6×6
13. 7×5 **>** 4×8

14. A baker puts 6 muffins in each box. How many muffins does she need to fill 8 boxes?

SHOW YOUR WORK

8 × 6 = 48

Answer: **48** muffins

15. Ana reads 9 pages every night for 7 nights. Her book has 70 pages, so how many pages does she have left?

SHOW YOUR WORK

9 × 7 = 63, and 70 – 63 = 7

Answer: **7** pages

Exit Tickets

ANSWER KEY CHECK

Your teacher will cut this page on the dotted line so each student gets one ticket. Solve all four problems on your own and show your work.

Multiplication Exit Ticket

Name _____

1. 7 × 6 = 42
2. 4 × 9 = 36
3. 8 × 4 = 32

4. Lena has 5 boxes, and there are 6 markers in each box. How many markers does Lena have?

SHOW YOUR WORK

5 × 6 = 30

Answer: 30 markers

Multiplication Exit Ticket

Name _____

1. 7 × 6 = 42
2. 4 × 9 = 36
3. 8 × 4 = 32

4. Lena has 5 boxes, and there are 6 markers in each box. How many markers does Lena have?

SHOW YOUR WORK

5 × 6 = 30

Answer: 30 markers

How Did I Do?

ANSWER KEY SELF-CHECK

Read each skill and put a check in the box that fits you best. Then answer the two questions at the bottom of the page.

Skill	I can do this on my own.	I can do this with a little help.	I am still learning this.
I can explain multiplication with equal groups and arrays.	☐	☐	☐
I can find products for the 2s, 3s, 4s, 5s, and 10s.	☐	☐	☐
I can find products for the 6s, 7s, 8s, and 9s.	☐	☐	☐
I can find a missing factor in a multiplication fact.	☐	☐	☐
I can use a strategy to find a fact that feels hard.	☐	☐	☐
I can solve word problems that use multiplication.	☐	☐	☐

1. Which fact or skill do you want to practice more, and why?

Answers will vary. Look for a specific fact or skill and a reason.

2. Which strategy from this packet helps you the most? Show how it works with one fact.

Answers will vary. Look for a named strategy such as breaking apart, doubling, or starting from ten.