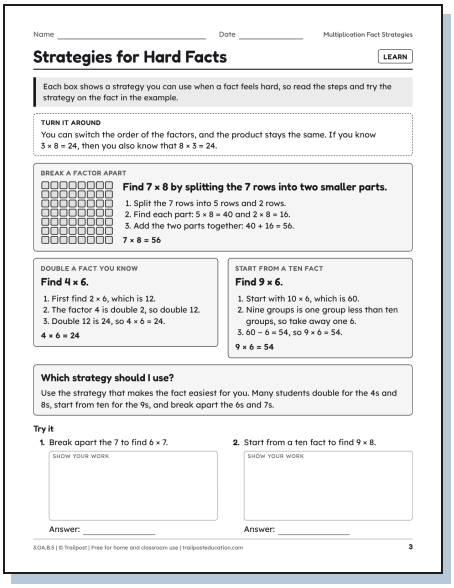
FREE TEACHER GUIDE AND INSTALL GUIDE

Multiplication Fact Strategies

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

Grades 3 to 4 | Math | 16 student pages | Full answer key



Name _____ Date _____ Multiplication Fact Strategies

Strategies for Hard Facts 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

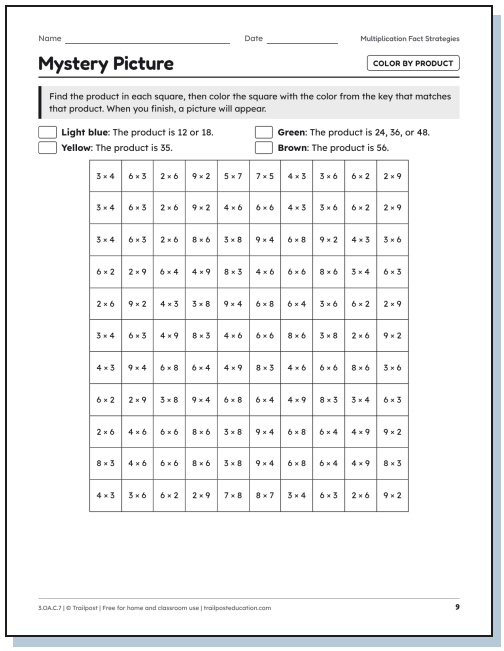
Which strategy should I use?

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 Answer: _____
2. Start from a ten fact to find 9 × 8. SHOW YOUR WORK Answer: _____

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Name _____ Date _____ Multiplication Fact Strategies

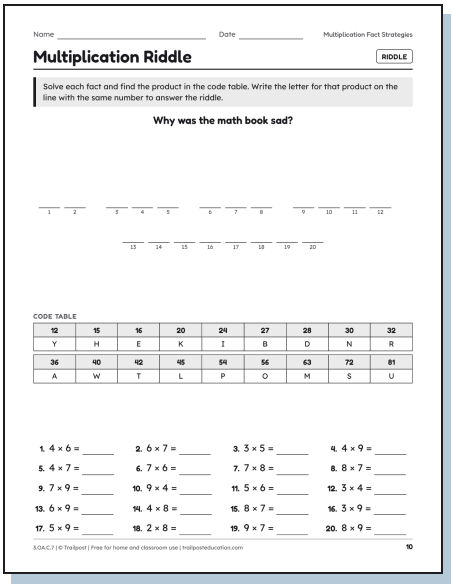
Mystery Picture COLOR BY PRODUCT

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

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Name _____ Date _____ Multiplication Fact Strategies

Multiplication Riddle 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?

_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
1 2 3 4 5 6 7 8 9 10 11 12
_____ _____ _____ _____ _____ _____ _____ _____
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 = _____
2. 6 × 7 = _____
3. 3 × 5 = _____
4. 4 × 9 = _____
5. 4 × 7 = _____
6. 7 × 6 = _____
7. 7 × 8 = _____
8. 8 × 7 = _____
9. 7 × 9 = _____
10. 9 × 4 = _____
11. 5 × 6 = _____
12. 3 × 4 = _____
13. 6 × 9 = _____
14. 4 × 8 = _____
15. 8 × 7 = _____
16. 3 × 9 = _____
17. 5 × 9 = _____
18. 2 × 8 = _____
19. 9 × 7 = _____
20. 8 × 9 = _____

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STUDENTS 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

A free resource from Trailpost

trailposteducation.com/free

Getting started

What is in your download

File	What it is
Student-Pages.pdf	The 16-page student packet, starting with a cover page that has a name line and a table of contents.
Answer-Key.pdf	The same pages with every answer filled in, so you can check work quickly or project a page to go over it together.
Teacher-Guide.pdf	This guide, which explains how to print the packet, how to pace it, and which standards it covers.

How to open the files

1. On a Chromebook, open the Files app, double-click the zip folder, and drag the three PDFs into Google Drive or onto the desktop.
2. On a Windows computer, right-click the zip folder and choose Extract All, then open the new folder that appears.
3. On a Mac, double-click the zip folder and a regular folder with the three PDFs will open next to it.
4. Open each PDF in your browser or in any PDF reader, and you are ready to print.

How to print

- Set the print scale to Actual Size or 100 percent so the boxes and lines stay the right size for student handwriting.
- Black and white printing works well, because every page uses black lines and light gray shading.
- Print pages 7 and 15 on one side only, because students cut those pages apart.
- The exit ticket page holds two copies of the same ticket, so one printed page covers two students.

One star and two stars

Pages marked with one star (5) give steady practice with friendly numbers and extra support. Pages marked with two stars (6, 12) ask for more steps and more explaining. Students who finish the one-star page with few mistakes can move straight to the two-star page, and students who need more time can do the one-star page twice with a partner.

Using the answer key

The answer key matches the student packet page for page, so page 6 of the key answers page 6 of the student packet. Written answers in the key are sample answers, and any answer that gives the same idea with good reasoning should earn credit.

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What is inside

Students learn what multiplication means with equal groups and arrays, then practice strategies that make hard facts easier. The packet moves from guided pages to two levels of practice, puzzles, word problems, error analysis, a writing page, a review, exit tickets, and a self-check.

Page	Title	What students do
1	**Cover**	Students write their name and see a list of every page in the packet.
2	**What Multiplication Means** Learn | 3.OA.A.1	Students see multiplication as equal groups and as an array, and they learn the words factor and product.
3	**Strategies for Hard Facts** Learn | 3.OA.B.5	Students learn four strategies: turn the factors around, break a factor apart, double a fact they know, and start from a ten fact.
4	**Groups and Arrays** Guided Practice | 3.OA.A.1	Students write the multiplication fact for six pictures of equal groups and arrays, then draw two models of their own.
5	**Facts for 2, 3, 4, 5, and 10** Practice ★ | 3.OA.C.7	Students practice thirty facts with the friendlier factors, including six facts with a missing factor.
6	**Facts for 6, 7, 8, and 9** Practice ★★ | 3.OA.C.7	Students practice the harder facts, find missing factors, and compare two products with the symbols for greater than, less than, and equal to.
7	**Sort the Products** Cut and Paste | 3.OA.C.7	Students find twelve products and glue each fact under the right range.
8	**Match the Story to the Fact** Match | 3.OA.A.1	Students match eight short stories to the multiplication facts they describe, then write their own story for a fact.
9	**Mystery Picture** Color by Product | 3.OA.C.7	Students find the product in each square and color it with the matching color to reveal a hidden picture.
10	**Multiplication Riddle** Riddle | 3.OA.C.7	Students solve twenty facts and use a code table to turn each product into a letter that answers a riddle.
11	**Multiplication Word Problems** Apply | 3.OA.A.3	Students solve four word problems, and the last two take two steps.
12	**Find the Mistake** Error Analysis ★★ | 3.OA.B.5	Students study two pieces of student work, explain each mistake, and solve a new fact with a strategy.
13	**Explain Your Strategy** Write About Math | 3.OA.B.5	Students pick a hard fact, explain a strategy for it in writing, draw a model, and compare two turnaround facts.
14	**Mixed Review** Review | 3.OA.A.3, 3.OA.A.4, 3.OA.C.7	Students review every skill in the packet: facts, missing factors, comparing products, and two word problems.
15	**Exit Tickets** Check | 3.OA.A.3, 3.OA.C.7	Two copies of a short exit ticket on each page so you can check understanding in about five minutes.
16	**How Did I Do?** Self-Check | 3.OA	Students rate their own progress on each skill and set one goal for practice.

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Pacing and standards

A suggested plan

Day	Pages	What to do
Day 1	2 to 4	Read the two Learn pages together and talk through each example, then have partners finish the guided page while you check in.
Day 2	5 to 6	Students start with the one-star page and move to the two-star page when they finish with few mistakes.
Day 3	7 to 10	Use the sort, the match, the mystery picture, and the riddle as centers or as a fun Friday set.
Day 4	11 to 13	Students solve the word problems, find the mistakes on the error page, and explain a strategy in writing.
Day 5	14 to 16	Give the review page as a quiz, use the exit ticket the next morning, and finish with the self-check.

Standards

Code	Standard
3.OA.A.1	Interpret products of whole numbers, such as 5 × 7 as the total number of objects in 5 groups of 7 objects each.
3.OA.A.3	Use multiplication within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.
3.OA.A.4	Determine the unknown whole number in a multiplication equation relating three whole numbers.
3.OA.B.5	Apply properties of operations as strategies to multiply, including the commutative and distributive properties.
3.OA.C.7	Fluently multiply within 100 using strategies such as the relationship between multiplication and division or properties of operations.

Teaching tips

- Post the strategy page from the Learn section where students can see it during practice, so they can use it when a fact feels hard.
- The mystery picture and the riddle check themselves, because a wrong product gives a color or a letter that looks wrong.
- Ask students to say each strategy out loud to a partner before they write, because talking first makes the writing page much easier.

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Thank you for downloading this packet

I made this packet for families and teachers who need solid practice pages that are ready to print tonight, and I hope it saves you some planning time this week.

Hear about the next free packet

I give away free resources from time to time, and people on the Trailpost email list hear about each one first.

To join the list, open trailposteducation.com/free and enter your email address at the bottom of the page.

Something look wrong?

If you find a mistake on a page or in the answer key, please email support@trailposteducation.com. I read every message, and I will fix the file and post the new version for everyone.

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More free Trailpost packets

These packets are also free on the Trailpost website, and each one comes with an answer key and a teacher guide like this one.

- **Addition and Subtraction Within 20** | Math, grades 1 to 2
- **Claim, Evidence, Reasoning with Data** | Science, grades 6 to 9
- **CVC Words and Short Vowels** | ELA, grades K to 1
- **Ecosystems and Food Webs** | Science, grades 4 to 6
- **One-Step and Two-Step Equations** | Math, grades 6 to 8
- **Figurative Language** | ELA, grades 4 to 6
- **Equivalent Fractions and Number Lines** | Math, grades 3 to 5
- **Main Idea and Key Details** | ELA, grades 3 to 5
- **Map Skills** | Social Studies, grades 3 to 5
- **Citing Text Evidence** | ELA, grades 5 to 8
- **Telling Time and Counting Money** | Math, grades 2 to 3

More from Trailpost

If your students liked this packet, these Trailpost resources practice related skills. Click any card to open its page in the Trailpost shop.



Dogger

GRADES 3 TO 6 | DIGITAL GAME

Students hop a dog across the road by landing on the right multiples and factors.

See it in the shop



MATHteroids

GRADES 2 TO 5 | DIGITAL GAME

Students fly a ship and blast only the asteroids that match the math rule.

See it in the shop



Math Maker

GRADES 2 TO 6 | CLASSROOM TOOL

Teachers print as many math practice pages as they need, and each page comes with its own answer key.

See it in the shop



Area and Perimeter Garden

GRADES 3 TO 6 | DIGITAL GAME

Students fill sod and fence orders in a pixel-art garden to practice area and perimeter.

See it in the shop



REWIND

GRADES 2 TO 5 | DIGITAL GAME

Students solve detective cases in the city of Tickwell by reading analog and digital clocks.

See it in the shop



Economy Tower

GRADES 3 TO 9 | CLASSROOM SIMULATION

Students hold jobs and pay rent in a shared apartment tower that runs your classroom economy.

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