Merit Tutoring

Year 4 Mathematics

Multiplication Methods Workshop

Worksheet 13: Visual Models & Split Strategies

Name: _____ **Date:** _____

Section 1: Fluency - The Area Model (Grid Method)

Use the area model to break numbers into place value parts for multiplication.

1. Use the area model to calculate

$$36 \times 4$$

. Fill in the grid below:

	30	6
4		

Total: _____

2. Use the area model for

$$52 \times 3$$

:

	50	2
3		

Answer: _____

3. Calculate

$$47 \times 2$$

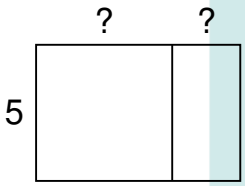
using the area model. Draw and label your grid.

Answer: _____

4. Use the grid method for

$$68 \times 5$$

:



Answer: _____

5. Complete the area model:

$$83 \times 4$$

Answer: _____

6. Use the area model to solve

$$29 \times 6$$

Answer: _____

7. Calculate

$$74 \times 3$$

using place value parts:

$$(70 \times 3) + (4 \times 3)$$

Answer: _____

8. Use the grid method for

$$95 \times 2$$

Answer: _____

Grid Master!

Why did the grid love multiplication?
Because it knew how to break things into perfect pieces!

Section 2: Reasoning - The Split Strategy

Split numbers into tens and ones, multiply each part, then add.

9. Solve

$$42 \times 5$$

by splitting 42 into 40 and 2. Show your two steps:

Step 1:

$$40 \times 5 =$$

_____

Step 2:

$$2 \times 5 =$$

_____

Total: _____

10. Use the split strategy for

$$56 \times 3$$

:

Split 56 into: _____ and _____

Answer: _____

11. Calculate

$$73 \times 4$$

by splitting:

Answer: _____

12. Solve

$$85 \times 2$$

using the split method:

Answer: _____

13. Use splitting to find

$$67 \times 6$$

:

Answer: _____

14. Calculate

$$91 \times 5$$

by breaking it into 90 and 1:

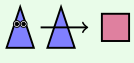
Answer: _____

15. Solve

$$48 \times 7$$

using the split strategy:

Answer: _____



Split Strategy Star!

Why did the number love being split?

Because it made multiplication twice as easy!

Section 3: Fluency - Mental Doubling Strategies

Use doubling strategies to multiply by 2, 4, or 8.

16. Use the ”double and double again” strategy to solve

$$15 \times 4$$

:

Step 1 (double):

$$15 \times 2 =$$

_____

Step 2 (double again): _____

$$\times 2 =$$

_____

Answer: _____

17. Calculate

$$23 \times 4$$

by doubling twice:

Answer: _____

18. Use doubling to solve

$$12 \times 8$$

. Double three times!

Answer: _____

19. Calculate

$$35 \times 2$$

mentally:

Answer: _____

20. Solve

$$18 \times 4$$

using the double-double method:

Answer: _____

21. Use mental strategies to find

$$25 \times 4$$

:

Answer: _____

22. Calculate

$$16 \times 8$$

by doubling three times:

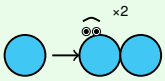
Answer: _____

23. Solve

$$45 \times 2$$

mentally:

Answer: _____



Doubling Dynamo!

Why was the number 2 so popular?

Because everyone wanted to double with it!

Brilliant work! You've mastered visual methods!

Answer Key

Worksheet 13: Visual Models & Split Strategies

Section 1: Fluency - The Area Model (Grid Method)

1. Answer: **144**

Grid:

$$(30 \times 4) = 120$$

and

$$(6 \times 4) = 24$$

, Total:

$$120 + 24 = 144$$

2. Answer: **156**

Grid:

$$(50 \times 3) = 150$$

and

$$(2 \times 3) = 6$$

, Total:

$$150 + 6 = 156$$

3. Answer: **94**

Grid:

$$(40 \times 2) = 80$$

and

$$(7 \times 2) = 14$$

, Total:

$$80 + 14 = 94$$

4. Answer: **340**

Grid:

$$(60 \times 5) = 300$$

and

$$(8 \times 5) = 40$$

, Total:

$$300 + 40 = 340$$

5. Answer: **332**

Grid:

$$(80 \times 4) = 320$$

and

$$(3 \times 4) = 12$$

, Total:

$$320 + 12 = 332$$

6. Answer: **174**

Grid:

$$(20 \times 6) = 120$$

and

$$(9 \times 6) = 54$$

, Total:

$$120 + 54 = 174$$

7. Answer: **222**

Working:

$$(70 \times 3) = 210$$

and

$$(4 \times 3) = 12$$

, Total:

$$210 + 12 = 222$$

8. Answer: **190**

Grid:

$$(90 \times 2) = 180$$

and

$$(5 \times 2) = 10$$

, Total:

$$180 + 10 = 190$$

Section 2: Reasoning - The Split Strategy

9. Answer: **210**

Step 1:

$$40 \times 5 = 200$$

, Step 2:

$$2 \times 5 = 10$$

, Total:

$$200 + 10 = 210$$

10. Answer: **168**

Split: 50 and 6.

$$(50 \times 3) = 150$$

,

$$(6 \times 3) = 18$$

, Total:

$$150 + 18 = 168$$

11. Answer: **292**

Split:

$$(70 \times 4) = 280$$

,

$$(3 \times 4) = 12$$

, Total:

$$280 + 12 = 292$$

12. Answer: **170**

Split:

$$(80 \times 2) = 160$$

,

$$(5 \times 2) = 10$$

, Total:

$$160 + 10 = 170$$

13. Answer: **402**

Split:

$$(60 \times 6) = 360$$

,

$$(7 \times 6) = 42$$

, Total:

$$360 + 42 = 402$$

14. Answer: **455**

Split:

$$(90 \times 5) = 450$$

,

$$(1 \times 5) = 5$$

, Total:

$$450 + 5 = 455$$

15. Answer: **336**

Split:

$$(40 \times 7) = 280$$

,

$$(8 \times 7) = 56$$

, Total:

$$280 + 56 = 336$$

Section 3: Fluency - Mental Doubling Strategies

16. Answer: **60**

Step 1:

$$15 \times 2 = 30$$

, Step 2:

$$30 \times 2 = 60$$

17. Answer: **92**

$$23 \times 2 = 46$$

, then

$$46 \times 2 = 92$$

18. Answer: **96**

$$12 \times 2 = 24$$

,

$$24 \times 2 = 48$$

,

$$48 \times 2 = 96$$

19. Answer: **70**

20. Answer: **72**

$$18 \times 2 = 36$$

, then

$$36 \times 2 = 72$$

21. Answer: **100**

$$25 \times 2 = 50$$

, then

$$50 \times 2 = 100$$

22. Answer: **128**

$$16 \times 2 = 32$$

,

$$32 \times 2 = 64$$

,

$$64 \times 2 = 128$$

23. Answer: **90**

Merit Tutoring

Year 4 Mathematics

Multiplication Methods Workshop

Worksheet 14: Formal Algorithms & Modelling

Name: _____ **Date:** _____

Section 1: Fluency - Vertical Short Multiplication

Use the formal algorithm with regrouping (carrying).

1. Calculate

$$24 \times 3$$

using the vertical method:

Section 2: Problem Solving - Mathematical Modelling

Use number sentences and models to solve practical problems.

9. A farmer plants 6 rows of trees. Each row has 15 trees. Draw a quick sketch or use a number sentence to find the total.

Number sentence: _____

Answer: _____

10. A bakery makes 8 trays of cupcakes. Each tray holds 12 cupcakes. How many cupcakes in total?

Answer: _____

11. A classroom has 7 tables. Each table has 4 students. How many students are in the class?

Answer: _____

12. A shop sells pencils in packs of 5. If they sell 23 packs, how many pencils is that?

Answer: _____

13. A parking lot has 9 rows. Each row fits 18 cars. What is the total capacity?

Answer: _____

14. A library has 4 shelves. Each shelf holds 35 books. How many books in total?

Answer: _____

15. A soccer team practices 3 times per week. Each practice is 45 minutes. How many minutes per week?

Answer: _____

16. An orchard has 6 rows of apple trees with 24 trees in each row. How many apple trees?

Answer: _____

Modelling Master!

Why did the farmer love multiplication?

Because it helped count all the rows and rows of plants!

Section 3: Challenge - Multi-step Multiplication

Solve problems that involve money and multiple operations.

17. A box of crayons costs $12. If a teacher buys 8 boxes for her class, how much will it cost in total?

Answer: _____

18. A ticket to the movies costs $15. How much for 6 tickets?

Answer: _____

19. A school buys 7 boxes of markers. Each box contains 24 markers. How many markers in total?

Answer: _____

20. A toy costs $23. If you buy 4 of them, what is the total cost?

Answer: _____

21. A pack of 5 notebooks costs $8. How much would 9 packs cost?

Answer: _____

22. A recipe needs 3 cups of flour. If you make the recipe 6 times, how many cups of flour do you need?

Answer: _____

23. A game costs $34. A student saves enough to buy 5 games. How much money did they save?

Answer: _____

24. Each student needs 8 pencils. There are 32 students. How many pencils are needed?

Answer: _____

Multiplication Champion!

Why was the product so successful?
Because it was the result of great multiplication!

Excellent! You're a multiplication superstar!

Answer Key

Worksheet 14: Formal Algorithms & Modelling

Section 1: Fluency - Vertical Short Multiplication

1. Answer: **72**
Working:

$$4 \times 3 = 12$$

(write 2, carry 1),

$$2 \times 3 = 6$$

, plus carry 1 = 7
2. Answer: **228**
Working:

$$7 \times 4 = 28$$

(write 8, carry 2),

$$5 \times 4 = 20$$

, plus carry 2 = 22
3. Answer: **228**
Working:

$$8 \times 6 = 48$$

(write 8, carry 4),

$$3 \times 6 = 18$$

, plus carry 4 = 22
4. Answer: **378**
Working:

$$6 \times 3 = 18$$

(carry 1),

$$2 \times 3 = 6$$

+ 1 = 7,

$$1 \times 3 = 3$$

5. Answer: **486**

6. Answer: **756**

7. Answer: **536**

8. Answer: **1,570**

Section 2: Problem Solving - Mathematical Modelling

9. Answer: **90 trees**

Number sentence:

$$6 \times 15 = 90$$

10. Answer: **96 cupcakes**

Working:

$$8 \times 12 = 96$$

11. Answer: **28 students**

Working:

$$7 \times 4 = 28$$

12. Answer: **115 pencils**

Working:

$$23 \times 5 = 115$$

13. Answer: **162 cars**

Working:

$$9 \times 18 = 162$$

14. Answer: **140 books**

Working:

$$4 \times 35 = 140$$

15. Answer: **135 minutes**

Working:

$$3 \times 45 = 135$$

16. Answer: **144 apple trees**

Working:

$$6 \times 24 = 144$$

Section 3: Challenge - Multi-step Multiplication

17. Answer: **$96**

Working:

$$\$12 \times 8 = \$96$$

18. Answer: **$90**

Working:

$$\$15 \times 6 = \$90$$

19. Answer: **168 markers**

Working:

$$7 \times 24 = 168$$

20. Answer: **$92**

Working:

$$\$23 \times 4 = \$92$$

21. Answer: **$72**

Working:

$$\$8 \times 9 = \$72$$

22. Answer: **18 cups**

Working:

$$3 \times 6 = 18$$

23. Answer: **$170**

Working:

$$\$34 \times 5 = \$170$$

24. Answer: **256 pencils**

Working:

$$8 \times 32 = 256$$

Congratulations!

You are now a Multiplication Methods Expert!

Keep practicing these efficient strategies!