



*Creating a whole generation of
kids that are confident in maths*

**MASTERING MULTIPLICATION
AND DIVISION**
PART 1 OF 2

SAMPLE - LESSON 1
TIER 1, 2 & 3

PINK
LEVEL THREE



**MATHS
AUSTRALIA**

Lesson 1 : Rectangles, Factors And Products

Note for the educator: This lesson introduces the foundational concept of multiplication as the building of rectangles. Students will move beyond additive thinking (like skip counting) to multiplicative thinking. The core idea is that two numbers (factors) can be multiplied to form a rectangle, and the total number of square units inside that rectangle is the area, or the product. This lesson establishes the key vocabulary: factors, dimensions, area, and product, using concrete blocks to make these abstract concepts tangible.

Learning Intention: We are learning to understand multiplication by building rectangles and finding their area.

Success Criteria (I know I can...)

- I can explain that the numbers we multiply are called factors.
- I can use two factors as the dimensions to build a rectangle with blocks.
- I can find the total number of square units inside the rectangle (the area).
- I can explain that the answer to a multiplication problem is called the product.
- I can write a multiplication number sentence for a rectangle I have built (e.g., $3 \times 4 = 12$).

Curriculum Alignment

Australian Curriculum (Year 2): Aligns with **AC9M2N05** "multiply and divide by one-digit numbers using repeated addition, equal grouping, arrays, and partitioning to support a variety of calculation strategies". This lesson introduces multiplication as building arrays.

NSW Curriculum (Stage 1): Aligned with **MA1-FG-01** "uses the structure of equal groups to solve multiplication problems". The lesson's core is teaching multiplication as creating equal groups in an array.

New Zealand Curriculum (Phase 1): Supports the Year 2 content that states students "know that multiplication... involve recognising and working with equal groups".

Victorian Curriculum (Level 2): Connects to **VCMNA108** "Recognise and represent multiplication as repeated addition, groups and arrays". This lesson is explicitly about building arrays to represent multiplication.

Western Australia (Year 2): Aligns with the objective to "Recognise and represent multiplication as repeated addition, groups and arrays".

Materials & Resources

- Integer Block Kit (various blocks)
- Whiteboard or large paper & markers
- Individual whiteboards/paper & pencils/crayons
- Grid paper (optional)
- Pink Level Three Student Workbook (Worksheets 1)

Multi-Tiered System of Supports (MTSS)

Tier 1 (All Students): I-CRAVE lesson structure, explicit instruction, multisensory tools. Focus on counting principles (stable order, one-to-one correspondence).

Tier 2 (Targeted Support): Small group instruction with direct modeling and C-R-A stages practice. Increased repetition of counting sequences and numeral matching. Use error correction procedures (model, prompt, check).

Extension: Challenge students to quickly build quantities up to 9 without counting one-by-one (subitising smaller parts within).

Universal Design for Learning (UDL) Checkpoints

Engagement: Building tangible shapes (rectangles), discovering the "answer" by filling in the area.

Representation: Concrete blocks, drawings on grid paper, abstract number sentences, explicit vocabulary.

Action & Expression: Students can build, draw, write the number sentence, and explain the process using the correct vocabulary.

Phase	Teacher Actions (Explicit Instruction)	Student Actions, Verbalisation	Assessment For Learning	UDL/MTSS Notes
Identify	Review skip counting by twos. Say: "We know how to 'fast add' by skip counting. Today, we are going to learn an even faster way called multiplication! We are going to build rectangles to see how it works."	Participate in skip counting review. Listen to the introduction of multiplication.	Observe student's fluency with skip counting. Gauge interest in the concept of multiplication.	Tier 1: Activate prior knowledge. Tier 2: Quickly build a 2x3 array and skip count it (2, 4, 6) to bridge from the known to the new concept. Extension: Ask, "If skip counting is fast adding, what do you think multiplication could be?"
Concrete	Introduce vocabulary. Say: "The numbers we multiply are called factors. Let's multiply three and four." Guide the student to build an L-shape frame using a 3-block and a 4-block (the dimensions). Say: "Now, fill in the rectangle to find the area." Guide them to fill the frame. Say: "The answer, twelve, is called the product."	Build a frame for a rectangle. Fill the inside of the frame with blocks. Count the total square units. Verbalise: "Three times four is twelve."	Observe if the student can correctly build the rectangular frame and fill the area. Check they can accurately count the total squares.	Tier 1: Use concrete blocks on a place mat or grid paper. Tier 2: Start with smaller factors, like 2 x 3. Use only unit blocks to fill in the area. Extension: The student is given a product (e.g., 18) and asked to find the factors by building a rectangle.
Representational	Say: "Let's draw what we just built." Model drawing a 3x4 rectangle on grid paper. "I draw a side of three and a side of four. I fill it in and see twelve square units inside." Say: "Now, build a 2 x 5 rectangle. Then, draw it."	Watch the teacher's model. Draw rectangles on grid paper or a whiteboard to represent the problems they have built. Shade or count the squares inside to find the area.	Check that the student's drawings have the correct dimensions. Observe if they correctly identify the total area from their drawing.	Tier 1: Connect the drawing directly to the concrete model. Tier 2: Provide pre-drawn outlines of rectangles for the student to fill in. Extension: The student draws a rectangle and has a partner write the two factors that match it.
Abstract	Introduce the x symbol. Say: "This sign means 'multiply'." Model writing $3 \times 4 = 12$. Say: "The factors are three and four. The product is twelve." Guide students through workbook pages.	Listen to the explanation. Write the multiplication number sentence that matches a model. Identify the factors and the product in a written number sentence.	Observe accuracy in writing the multiplication number sentence. Check that the student can correctly identify factors and product.	Tier 1: Use flashcards to practice vocabulary. The abstract number sentence should always be linked back to the concrete model initially.
Verbal & Combined Practice	Give a problem: "Find the product of the factors two and six." Say: "Show me this problem in all our maths ways. Build it, draw it, write the sentence, and explain what you did using our new words."	Build a 2x6 rectangle. Draw the 2x6 rectangle. Write $2 \times 6 = 12$. Verbalise: "The factors are 2 and 6. I built a rectangle. The area, or product, is 12."	Assess if the student can fluently move between C-R-A-V modes. Listen for the correct and confident use of the vocabulary.	Tier 1: Check for fluent use of all modes. Tier 2: The teacher builds the rectangle; the student draws, writes, and explains. Extension: The student explains how skip counting is related to the 2x6 rectangle.
Explicit Instruction & Review	Say: "Great work! We learned that multiplication is about building rectangles. The sides are the factors, and the total squares inside is the area, or the product." Show a 5x3 rectangle. Ask: "Quick! What are the factors? What is the product?"	Recall the key vocabulary. Answer: "The factors are five and three! The product is fifteen!"	Pink Level Three Student Workbook (Worksheets for Lesson 1). Observe speed and accuracy of final vocabulary check.	Tier 1: The final review reinforces all the key vocabulary from the lesson in a quick, interactive way.

PINK LEVEL THREE
STUDENT WORKBOOK

Metric Edition

Student's Name

By Esther White

Scope & Sequence

PINK LEVEL THREE

- 1.....Rectangles, Factors And Products
- 2.....Multiply By Zero And One
- 3.....Skip Count By Two, Five, Ten
- 4.....Multiply By Two
- 5.....Multiply By Ten
- 6.....Multiply By Five
- 7.....Area Of A Rectangle And Square
- 8.....Solve For An Unknown
- 9.....Skip Count By Nine
- 10.....Multiply By Nine
- 11.....Skip Count By Three
- 12.....Multiply By Three
- 13.....Skip Count By Six
- 14.....Multiply By Six
- 15.....Skip Count By Four
- 16.....Multiply By Four
- 17.....Skip Count By Eight
- 18.....Multiply By Eight
- 19.....Skip Count By Seven
- 20.....Multiply By Seven
- 21.....Factoring, Coins in a Dollar
- 22.....Prime And Composite Numbers
- 23.....Place Value Through Millions (g in kg)
- 24.....Kilometre, Kilogram, And Tonne
- 25.....Rounding To Ten, Hundreds, Thousands
- 26.....Multi-Digit Multiplication

27.....Multi-Digit Multiplication (2 digits x 2 digits)

28.....Double Digit with Regrouping

29.....Multi-Digit Multiplication, Regrouping

30.....More Multiple Digit Multiplication

Additional Resources

0 - 100 Number Chart

Multiplication Fact Sheet

Completion Checklist

Check off each lesson as you complete it.

PINK LEVEL THREE

- 1 - Rectangles, Factors And Products
- 2 - Multiply By Zero And One
- 3 - Skip Count By Two, Five, Ten
- 4 - Multiply By Two
- 5 - Multiply By Ten
- 6 - Multiply By Five
- 7 - Area Of A Rectangle And Square
- 8 - Solve For An Unknown
- 9 - Skip Count By Nine
- 10 - Multiply By Nine
- 11 - Skip Count By Three
- 12 - Multiply By Three
- 13 - Skip Count By Six
- 14 - Multiply By Six
- 15 - Skip Count By Four
- 16 - Multiply By Four
- 17 - Skip Count By Eight
- 18 - Multiply By Eight
- 19 - Skip Count By Seven
- 20 - Multiply By Seven
- 21 - Factoring, Coins in a Dollar
- 22 - Prime And Composite Numbers (X 12)
- 23 - Place Value Through Millions (g in kg)
- 24 - Kilometre, Kilogram, And Tonne
- 25 - Rounding To Ten, Hundreds, Thousands
- 26 - Multi-Digit Multiplication

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27 - Multi-Digit Multiplication (2 digits x 2 digits)

28 - Double Digit with Regrouping

29 - Multi-Digit Multiplication, Regrouping

30 - More Multiple Digit Multiplication

1 2 3 4 5 6

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Additional Resources

0 - 100 Number Chart

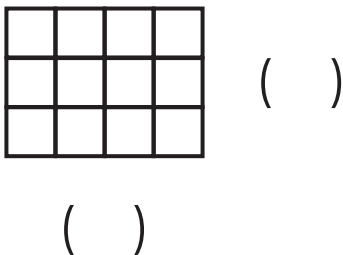
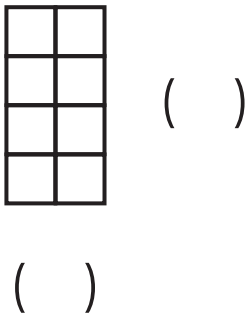
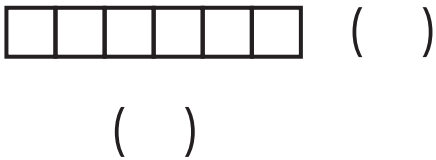
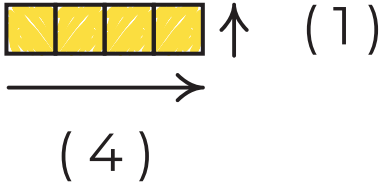
Multiplication Fact Sheet

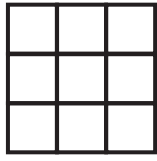
Rectangles, Factors And Products

Multiplication is really nothing more than multiple addition, where we count a number a certain number of times. For example, $2 + 2 + 2 + 2$ is the same as $(2) (4)$ or 2×4 , which is two counted four times and equal to eight. Every time we multiply we can build a rectangle with two dimensions (sometimes called factors)- one 'across' and one 'up'.

Look at the rectangles below. Build them, then write the length of the sides in the brackets shown as you draw an arrow to show the directions you have counted, across and up. Colour the blocks the colour of the integer block that is the across factor.

Example:





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()



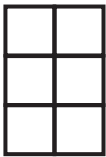
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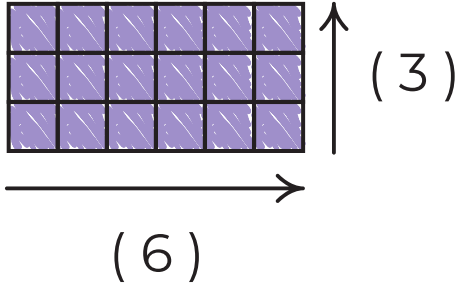
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Rectangles, Factors And Products

Look at the blocks below and build as a rectangle rather than a long line. Draw the rectangle, colour it with the correct colour then write the length of the sides in the brackets. Say the dimensions as you draw an arrow across and up.

Example:



Say 'six across, three up'
 'six counted three times'
 'six multiplied three times'



$$\square\square\square + \square\square\square$$

$$\square\square + \square\square + \square\square + \square\square$$

$$\square\square\square\square\square\square + \square\square\square\square\square\square + \square\square\square\square\square\square$$


$$\square + \square + \square + \square$$

Rectangles, Factors And Products

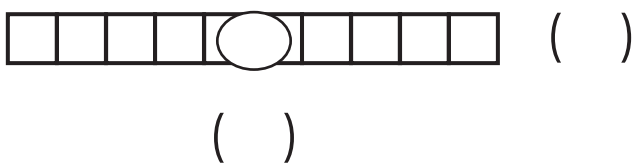
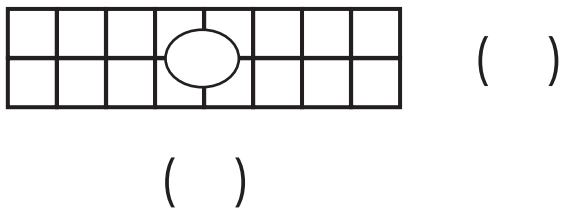
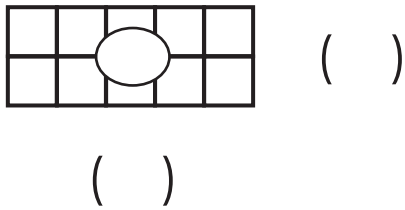
Look at the rectangles below. Build then colour them with the correct across colour, then write the length of the sides in the brackets. Say the directions you have counted. Write the number of square units you have in the circle inside the rectangle.

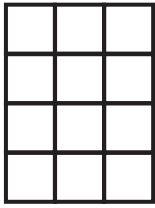
In maths we can use various maths symbols to communicate this multiplication question: using one or two brackets, using an 'x' fast addition symbol (also called multiplication symbol), and also using a floating dot. Write the following as maths sentences using these various symbols.

Example:



$$\begin{array}{l} \uparrow (1) \\ \xrightarrow{(2)} \end{array} \quad \begin{array}{l} (2) (1) = 2 \\ 2 \times 1 = 2 \\ 2 \cdot 1 = 2 \end{array} \quad \begin{array}{r} 2 \\ \times 1 \\ \hline 2 \end{array}$$





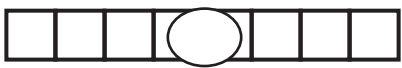
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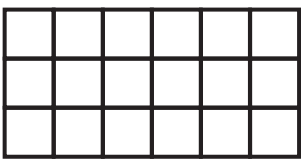
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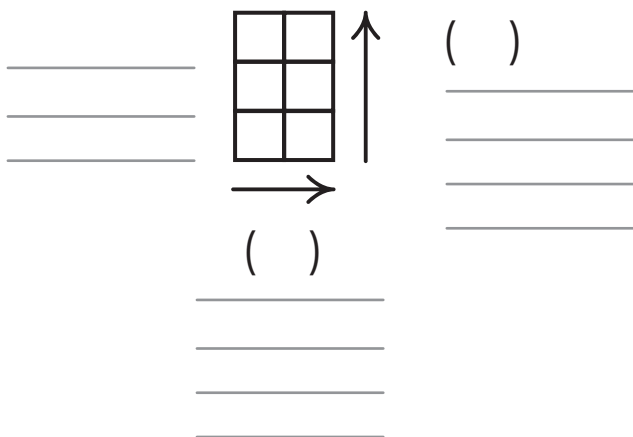
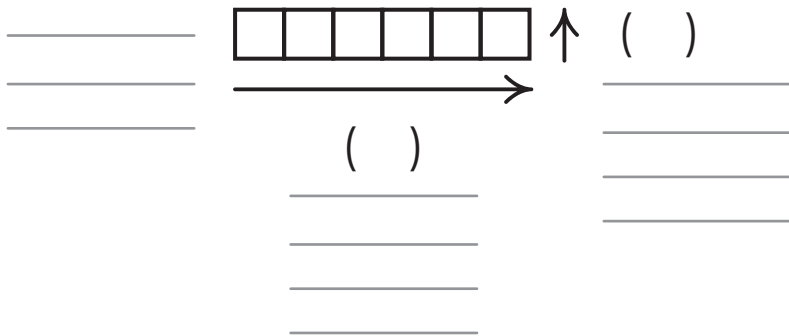
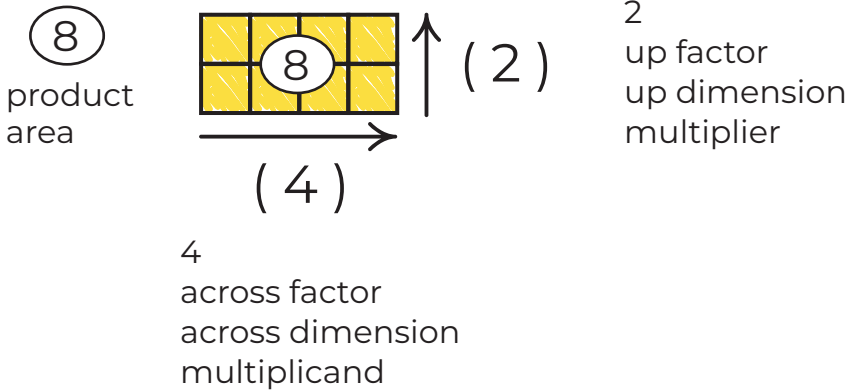
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Rectangles, Factors And Products

Look at the rectangles below. Count the across factor (across dimension) and record it in the 'across' brackets. Count the up factor (up dimension) and record it in the 'up' brackets. Write the total number of square units, called the product or area, in the circle in the middle.

In maths we also call the across factor the multiplicand and the up factor the multiplier. The number of square units is then called the area. Write the different names we can use for each part of the multiplication rectangle in the correct spaces.

Example:



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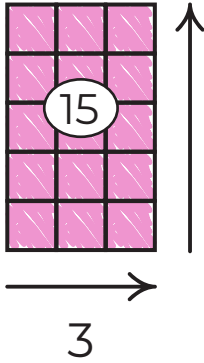
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Rectangles, Factors And Products

Draw and colour rectangles with the following dimensions and label them as you find the number of square units contained within. Write your answer using maths symbols.

Example:



Multiplicand = 3
 Multiplier = 5
 Area (product) = 15

$$3 \times 5 = 15$$

$$3 (5) = 15$$

$$(3)(5) = 15$$

$$3 \cdot 5 = 15$$

$$\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$$

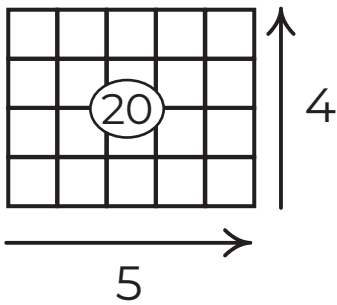
Multiplicand 8
 Multiplier 3

Across factor 5
 Up factor 2

Across dimension 4
 Up dimension 5

Colour the following rectangles. Identify the factors and write your answers in at least two different ways as multiplication questions.

Example:



$$5 \times 4 = 20$$

$$(5) (4) = 20$$

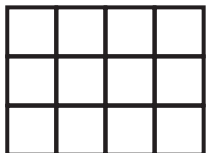
$$5 (4) = 20$$

$$5 \cdot 4 = 20$$

5

$\times 4$

20



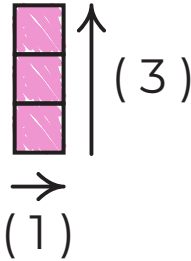
Rectangles, Factors And Products

Look at the rectangles below. Count the across and up distance / dimensions / factors, and record them. Write the various ways you can show these using maths symbols and identify the multiplier and multiplicand in each.

Example:

$$\begin{aligned} (1) (3) &= 3 \\ 1 \times 3 &= 3 \\ 1 \cdot 3 &= 3 \end{aligned}$$

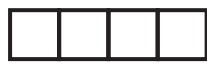
$$\begin{array}{r} 1 \\ \times 3 \\ \hline 3 \end{array}$$



Up factor = 3
Up dimension = 3
Multiplier = 3

Across factor = 1
Across dimension = 1
Multiplicand = 1

$$\begin{aligned} (\quad) (\quad) &= \underline{\quad} \\ \underline{\quad} \times \underline{\quad} &= \underline{\quad} \\ \underline{\quad} \cdot \underline{\quad} &= \underline{\quad} \end{aligned}$$



Multiplicand = _____
Multiplier = _____
Product = _____

$$\begin{aligned} (\quad) (\quad) &= \underline{\quad} \\ \underline{\quad} \times \underline{\quad} &= \underline{\quad} \\ \underline{\quad} \cdot \underline{\quad} &= \underline{\quad} \end{aligned}$$



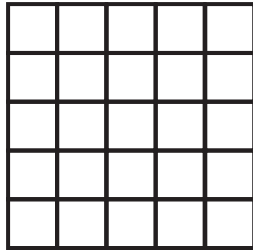
Across factor = _____
Up factor = _____
Area = _____

$$\begin{aligned} (\quad) (\quad) &= \underline{\quad} \\ \underline{\quad} \times \underline{\quad} &= \underline{\quad} \\ \underline{\quad} \cdot \underline{\quad} &= \underline{\quad} \end{aligned}$$



Multiplicand = _____
Multiplier = _____
Product = _____

$$\begin{array}{l} (\underline{\quad}) (\underline{\quad}) = \underline{\quad} \\ \underline{\quad} \times \underline{\quad} = \underline{\quad} \\ \underline{\quad} \cdot \underline{\quad} = \underline{\quad} \end{array}$$

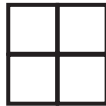


Multiplicand = _____

Multiplier = _____

Product = _____

$$\begin{array}{l} (\underline{\quad}) (\underline{\quad}) = \underline{\quad} \\ \underline{\quad} \times \underline{\quad} = \underline{\quad} \\ \underline{\quad} \cdot \underline{\quad} = \underline{\quad} \end{array}$$

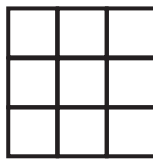


Multiplicand = _____

Multiplier = _____

Product = _____

$$\begin{array}{l} (\underline{\quad}) (\underline{\quad}) = \underline{\quad} \\ \underline{\quad} \times \underline{\quad} = \underline{\quad} \\ \underline{\quad} \cdot \underline{\quad} = \underline{\quad} \end{array}$$



Across dimension = _____

Up dimension = _____

Area = _____

$$\begin{array}{l} (\underline{\quad}) (\underline{\quad}) = \underline{\quad} \\ \underline{\quad} \times \underline{\quad} = \underline{\quad} \\ \underline{\quad} \cdot \underline{\quad} = \underline{\quad} \end{array}$$



Multiplicand = _____

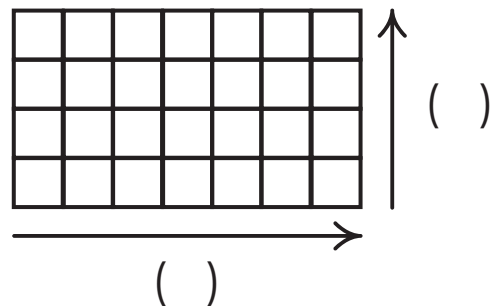
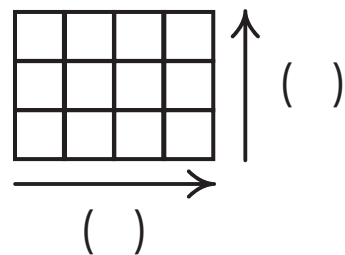
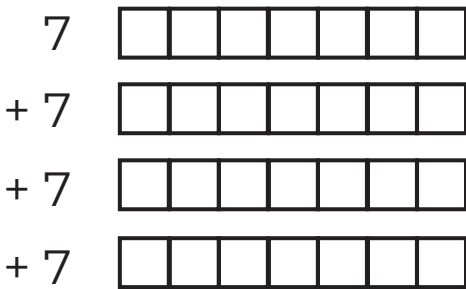
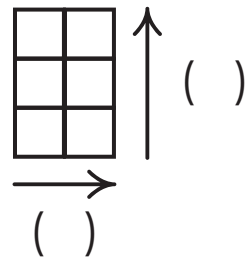
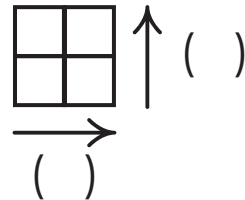
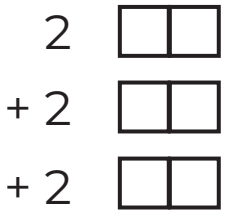
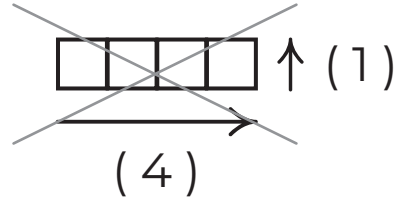
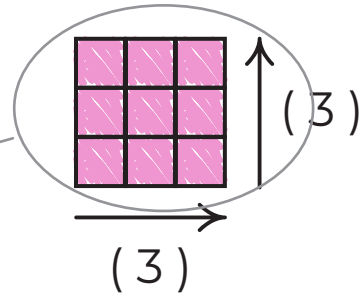
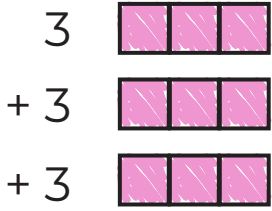
Multiplier = _____

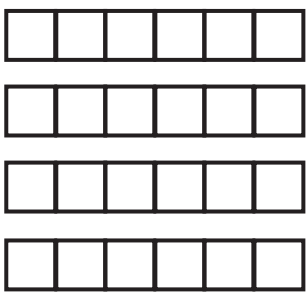
Product = _____

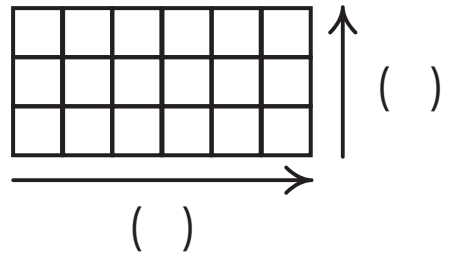
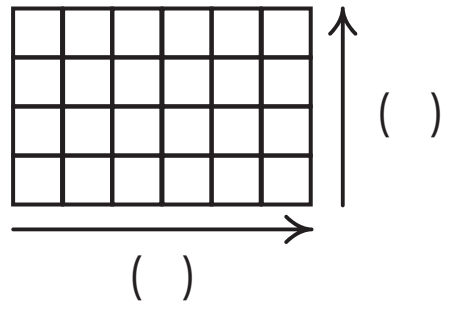
Rectangles, Factors And Products - Cumulative Review

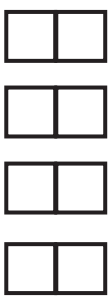
Look at the rectangles below. Write the factors then draw a line from the addition example on the left, to the correct multiplication answer on the right. Circle the correct answer, colour it in and cross out the wrong answer.

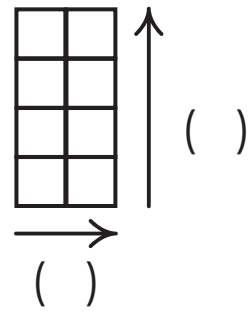
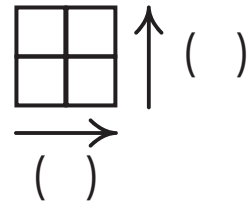
Example:

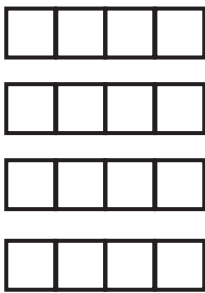


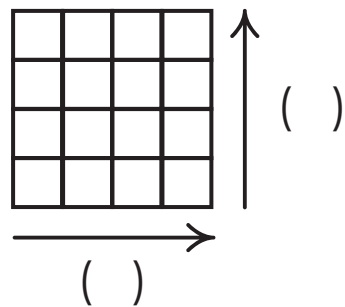
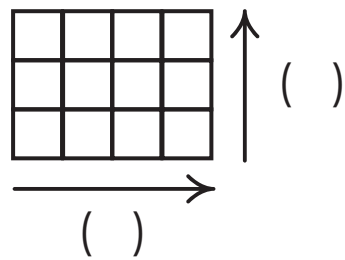
$$\begin{array}{r}
 6 \\
 + 6 \\
 + 6 \\
 + 6
 \end{array}$$




$$\begin{array}{r}
 2 \\
 + 2 \\
 + 2 \\
 + 2
 \end{array}$$




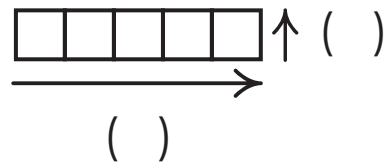
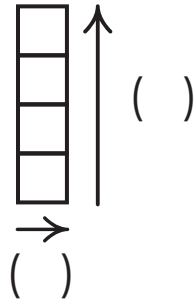
$$\begin{array}{r}
 4 \\
 + 4 \\
 + 4 \\
 + 4
 \end{array}$$




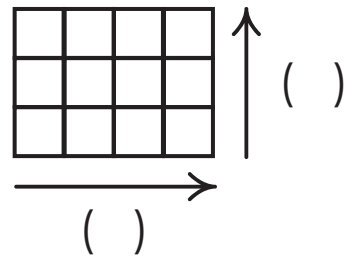
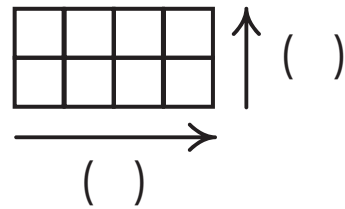
Rectangles, Factors And Products - Cumulative Review

Match the addition example on the left to the correct multiplication rectangle on the right. Write the factors as you cross out the wrong answer and colour the right answer.

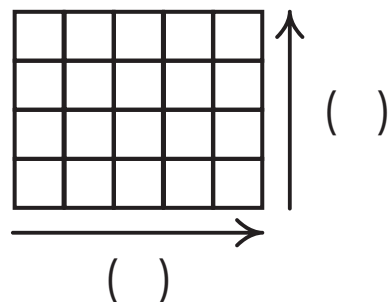
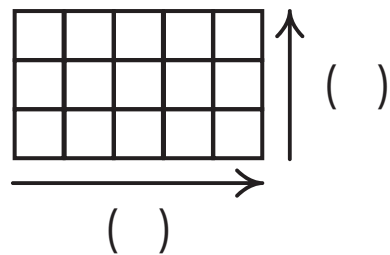
$$\begin{array}{r} 1 \\ + 1 \\ + 1 \\ + 1 \end{array}$$

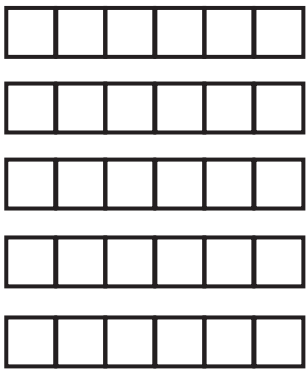


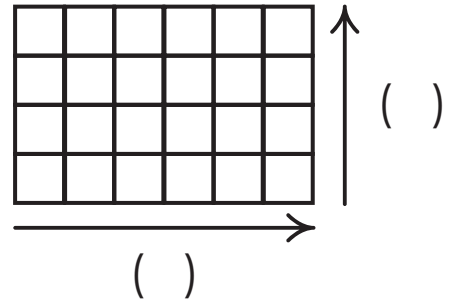
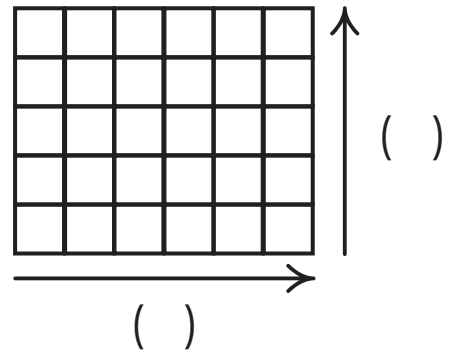
$$\begin{array}{r} 4 \\ + 4 \\ + 4 \end{array}$$

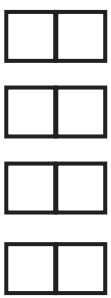


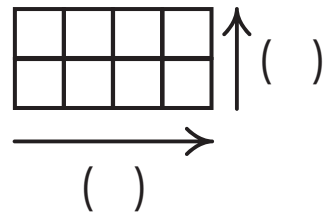
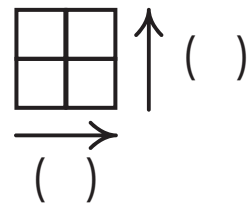
$$\begin{array}{r} 5 \\ + 5 \\ + 5 \\ + 5 \end{array}$$




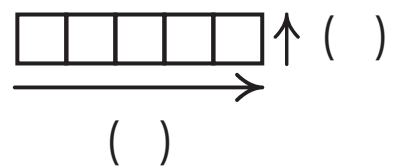
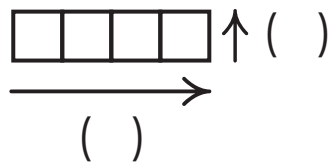
$$\begin{array}{r}
 6 \\
 + 6 \\
 + 6 \\
 + 6 \\
 + 6
 \end{array}$$




$$\begin{array}{r}
 2 \\
 + 2 \\
 + 2 \\
 + 2
 \end{array}$$




$$\begin{array}{r}
 1 \\
 + 1 \\
 + 1 \\
 + 1 \\
 + 1
 \end{array}$$






*Creating a whole generation of
kids that are confident in maths*

PINK LEVEL THREE

FOCUS: Multiplication

Pre-requisite: The student can add single and multiple digit numbers and understands place value.

- **Rectangles, Area, Product**
- **Skip Counting**
- **Single Digit Multiplication**
- **Factoring**
- **Money Introduction**
- **Measurement**
- **Rounding**
- **Place Value to Millions**
- **Multiple Digit Multiplication**
- **Prime and Composite Numbers**

The **Maths Australia** strategy involves three components:

Video and written instruction for the teacher and student, hands-on manipulatives to make abstract maths concepts understandable, and student workbooks to provide practice and review.

Watch the video until you understand the new topic, read the instruction material to reinforce your own learning, then use the manipulatives to teach understanding. Relate the lesson content to real life questions, have the student draw accurate representations, and only then move to the abstract squiggles on the piece of paper.

The Student Workbook will enable you to ensure mastery before you progress your student to the next lesson, confident of what they have learnt.

We look forward to your student's outstanding success as you teach them the way they learn!



PINK LEVEL THREE Student Workbook

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