



LUMARA ENGLISH

PROFESSIONAL MULTILINGUAL ESL SERIES

MATHEMATICS THROUGH ENGLISH

The Complete Multilingual ESL Mathematics Textbook

CEFR A1-B2 | Vocabulary, communication, problem solving and assessment



EN

English



CL

Chile



CO

Colombia



VE

Venezuela



BR

Brasil

LEARN THE MATHS.

SPEAK THE LANGUAGE.

Ten progressive units with full-colour diagrams, multilingual vocabulary, readings, listening tasks, games, speaking, writing, printable worksheets, puzzles, quizzes and formal assessments.

STUDENT TEXTBOOK | LUMARA ENGLISH LIBRARY

Welcome to LUMARA Mathematics

Mathematics is a language you already know more of than you think.

This book helps multilingual learners connect mathematical understanding with confident English communication. It treats vocabulary, reasoning, reading, listening, speaking and writing as parts of the same learning journey.

FOR STUDENTS

Use the colour-coded vocabulary tables to compare languages. Say the English terms aloud, annotate the diagrams, discuss your method with a partner and complete the printable practice. Your goal is not only to get an answer; it is to explain why it makes sense.

FOR TEACHERS

Teach the language before demanding long explanations. Model one complete mathematical sentence, give rehearsal time and accept diagrams, gestures and multilingual thinking as bridges toward precise English.

LANGUAGE BRIDGE

EN	I can solve it, explain it and check it.
CL	Puedo resolverlo, explicarlo y comprobarlo.
CO	Puedo resolverlo, explicarlo y comprobarlo.
VE	Puedo resolverlo, explicarlo y comprobarlo.
BR	Eu consigo resolver, explicar e verificar.

How to Use This Book

1**LAUNCH**

Preview the unit mission and activate prior knowledge.

2**VOCABULARY**

Compare five language columns and use every term in context.

3**CONCEPT LAB**

Study diagrams, worked examples and language frames.

4**INPUT**

Read and listen for mathematical meaning.

5**COMMUNICATE**

Solve collaboratively through pair work, games and speaking.

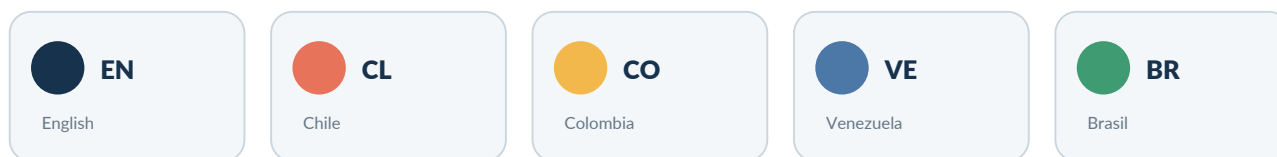
6**PRACTISE**

Complete printable worksheets, puzzles and unit quizzes.

Study routine: notice -> name -> model -> practise -> explain -> check -> reflect. Revisit the vocabulary pages whenever you need language support.

Language Key

The translations are learning bridges, not rigid one-to-one definitions. Mathematical usage can vary by school, country and context. The English column is the target language for classroom communication.



EN

Target English used in instructions, explanations and assessment.

CL

Chilean Spanish: common educational wording used in Chile.

CO

Colombian Spanish: common educational wording used in Colombia.

VE

Venezuelan Spanish: common educational wording used in Venezuela.

BR

Brazilian Portuguese: common educational wording used in Brazil.

Important notation note: English normally writes decimal values with a point (3.5). Spanish and Brazilian Portuguese frequently use a comma (3,5). Teach learners to identify the convention used by the current text or assessment.

Common Classroom Maths Phrases

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
Show your working.	Muestra tu desarrollo.	Muestra el procedimiento.	Muestra el procedimiento.	Mostre seus cálculos.
Explain your reasoning.	Explica tu razonamiento.	Explica tu razonamiento.	Explica tu razonamiento.	Explique seu raciocínio.
Check your answer.	Revisa tu respuesta.	Verifica tu respuesta.	Revisa tu respuesta.	Verifique sua resposta.
Work with a partner.	Trabaja con un compañero o una compañera.	Trabaja con un compañero o una compañera.	Trabaja con un compañero o una compañera.	Trabalhe com um colega.
Compare your methods.	Compara tus métodos.	Compara tus métodos.	Compara tus métodos.	Compare seus métodos.
Round to the nearest whole number.	Redondea al número entero más cercano.	Redondea al número entero más cercano.	Redondea al número entero más cercano.	Arredonde para o número inteiro mais próximo.
Estimate before calculating.	Estima antes de calcular.	Estima antes de calcular.	Estima antes de calcular.	Faça uma estimativa antes de calcular.
Include the correct units.	Incluye las unidades correctas.	Incluye las unidades correctas.	Incluye las unidades correctas.	Inclua as unidades corretas.
What does the graph show?	¿Qué muestra el gráfico?	¿Qué muestra el gráfico?	¿Qué muestra el gráfico?	O que o gráfico mostra?
Is your answer reasonable?	¿Tu respuesta es razonable?	¿Tu respuesta es razonable?	¿Tu respuesta es razonable?	Sua resposta é razoável?

CEFR A1-B2 Progression

A1

Numbers and operations

A2

Fractions, geometry and measurement

B1

Algebra, statistics and graphs

B2

Reasoning and academic communication

A1 FOUNDATION

Name numbers, symbols and operations; follow short instructions; give simple numerical answers.

A2 DEVELOPING

Describe fractions, shapes and measurements; ask and answer routine questions; explain short procedures.

B1 INDEPENDENT

Discuss algebra, statistics and graphs; link steps in a solution; interpret short mathematical texts.

B2 ACADEMIC

Evaluate representations, justify choices, discuss limitations and present coherent multi-step reasoning.

Progress is cumulative. Higher-level learners still need accurate foundational vocabulary, while lower-level learners benefit from hearing richer mathematical language supported by visuals and modelling.

Contents: Units 1-5

1**Number Sense and Mathematical Language**

CEFR A1 | Launch, vocabulary, concept lab, reading, listening, communication, worksheet, puzzle and quiz

9**2****Addition and Subtraction**

CEFR A1 | Launch, vocabulary, concept lab, reading, listening, communication, worksheet, puzzle and quiz

18**3****Multiplication, Division and Order of Operations**

CEFR A1-A2 | Launch, vocabulary, concept lab, reading, listening, communication, worksheet, puzzle and quiz

27**4****Fractions, Decimals and Percentages**

CEFR A2 | Launch, vocabulary, concept lab, reading, listening, communication, worksheet, puzzle and quiz

36**5****Geometry: Shapes, Angles, Perimeter and Area**

CEFR A1-A2 | Launch, vocabulary, concept lab, reading, listening, communication, worksheet, puzzle and quiz

45

Midterm assessment follows Unit 10 so learners can revise the complete sequence before formal testing.

Contents: Units 6-10 and Assessment

6

Measurement: Length, Mass, Capacity, Time and Temperature

CEFR A2-B1 | Nine-page unit

54

7

Algebra: Patterns, Expressions, Equations and Inequalities

CEFR B1 | Nine-page unit

63

8

Statistics and Probability

CEFR B1 | Nine-page unit

72

9

Graphs, Tables and Data Interpretation

CEFR B1-B2 | Nine-page unit

81

10

Word Problems and Academic Mathematical Communication

CEFR B2 | Nine-page unit

90

MIDTERM TEST

99-101

FINAL ASSESSMENT

102-108

LEARNER TRACKER + CERTIFICATE

109-110

MULTILINGUAL VOCABULARY INDEX

111-112

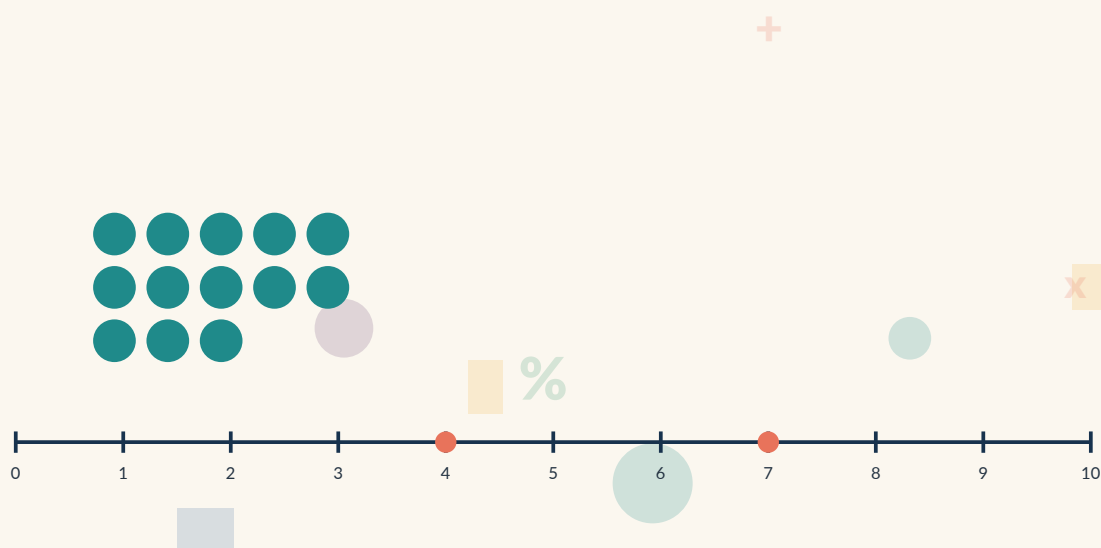
Unit 1 Launch

Number Sense and Mathematical Language

1

Number Sense and Mathematical Language

UNIT MISSION



LEARNING OBJECTIVES

- say and write whole numbers
- understand place value
- compare and order numbers
- use basic symbols in spoken English

LANGUAGE BRIDGE

- EN** Place value changes the value of a digit.
- CL** El valor posicional cambia el valor de un dígito.
- CO** El valor posicional cambia el valor de un dígito.
- VE** El valor posicional cambia el valor de un dígito.
- BR** O valor posicional muda o valor de um algarismo.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

Number Sense and Mathematical Language

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
number	número	número	número	número
digit	dígito	dígito	dígito	algarismo
zero	cero	cero	cero	zero
hundred	cien / ciento	cien / ciento	cien / ciento	cem / cento
thousand	mil	mil	mil	mil
million	millón	millón	millón	milhão
place value	valor posicional	valor posicional	valor posicional	valor posicional
ones	unidades	unidades	unidades	unidades

VISUAL MEMORY



Vocabulary Bank 2

Number Sense and Mathematical Language

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
tens	decenas	decenas	decenas	dezenas
hundreds	centenas	centenas	centenas	centenas
greater than	mayor que	mayor que	mayor que	maior que
less than	menor que	menor que	menor que	menor que
equal to	igual a	igual a	igual a	igual a
approximately	aproximadamente	aproximadamente	aproximadamente	aproximadamente
round	redondear	redondear	redondear	arredondar
number line	recta numérica	recta numérica	recta numérica	reta numérica

1. What number comes next?

2. Read the number aloud.

3. Which number is greater?

4. Round to the nearest ten.

5. Write the number in words.

Regional note: In all four translation varieties, número and dígito are standard. In English, a digit is one symbol from 0 to 9; a number may contain several digits.

Concept Lab

Number Sense and Mathematical Language

CORE IDEA

Place value changes the meaning of a digit. Compare numbers from the highest place value first.



WORKED EXAMPLES

PLACE VALUE

In 47,286, the digit 7 has a value of 7,000.

COMPARE

58,340 is greater than 58,304 because 4 tens is greater than 0 tens.

QUICK CHECK

1. Write 4,582 in words.

2. What is the value of 7 in 7,306?

3. Order: 409, 490, 94, 904.

Say it: What number comes next? Then explain which mathematical clue helped you choose the operation or method.

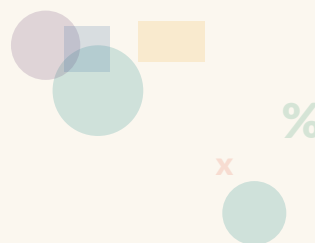
Reading Mathematics

Number Sense and Mathematical Language

READ

The School Supply Count

At LUMARA School, students count the supplies before class. There are 128 pencils, 46 rulers, 205 notebooks and 19 calculators. Camila writes each number in a table. She notices that the digit 2 has a different value in 128 and 205. In 128, it means twenty. In 205, it means two hundred. The class orders the quantities from least to greatest and rounds each number to the nearest ten.



COMPREHENSION

1. How many pencils are there?

2. What does the digit 2 mean in 128?

3. What does the digit 2 mean in 205?

4. Which quantity is the smallest?

5. Round 205 to the nearest ten.

LANGUAGE BRIDGE

- | | |
|----|---|
| EN | Place value changes the value of a digit. |
| CL | El valor posicional cambia el valor de un dígito. |
| CO | El valor posicional cambia el valor de un dígito. |
| VE | El valor posicional cambia el valor de un dígito. |
| BR | O valor posicional muda o valor de um algarismo. |

Listening for Mathematical Detail

Number Sense and Mathematical Language



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. Write the number of counters.

2. Write the number of rulers.

3. Write the number of flashcards.

4. Write the number of calculators.

5. Which number is greatest?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Number Sense and Mathematical Language

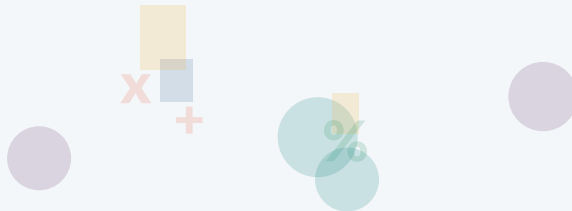
PAIR WORK

Student A reads six numbers. Student B writes them in digits and compares two using greater than, less than or equal to. Change roles.



CLASSROOM GAME

Human Number Line: learners stand in order from least to greatest without showing their cards. They may only use English comparison phrases.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: Read the number aloud.

WRITING TASK

Write five sentences comparing numbers in your city, school or daily life.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Number Sense and Mathematical Language

1. Write 4,582 in words.

2. What is the value of 7 in 7,306?

3. Order: 409, 490, 94, 904.

4. Round 267 to the nearest ten.

5. Round 2,451 to the nearest hundred.

6. Complete: 768 __ 786.

7. Write the number after 9,999.

8. Write a real-life sentence using approximately.

WORD SEARCH

X	Z	R	B	G	M	H	U	N	D	R	E	D	S
R	I	E	I	P	L	I	L	R	S	N	M	A	Q
O	Y	K	R	D	L	C	L	Y	X	Z	B	U	X
J	N	K	K	O	I	A	D	L	K	E	R	H	P
T	J	E	O	D	I	G	C	H	I	C	V	N	N
J	H	V	S	G	P	L	I	E	E	O	U	G	Q
Z	S	O	E	Z	J	C	N	T	V	M	N	O	Q
M	Y	Q	U	T	Y	E	V	R	B	A	E	F	S
R	K	P	Z	S	J	N	C	E	T	H	L	F	W
E	Y	H	N	R	A	K	R	R	Y	O	Y	U	Q
Z	E	J	H	P	I	N	Q	T	E	N	S	G	E
L	A	U	D	K	P	C	D	N	C	Q	M	H	F
C	J	C	J	K	Y	O	K	E	E	X	I	J	M
K	S	H	U	N	D	R	E	D	Q	U	E	N	D

Find these English words:

number, digit, zero, hundred, thousand, million, place value, ones, tens, hundreds

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Number Sense and Mathematical Language

1. Write nine hundred and six in digits.

2. What is the value of 5 in 3,572?

3. Choose: 809 greater than / less than / equal to 890.

4. Round 143 to the nearest ten.

5. Put 65, 506, 560 in ascending order.

6. Write 12,040 in words.

7. What comes before 1,000?

8. 4 hundreds + 2 tens + 7 ones = __.

UNIT CHALLENGE

Create a six-digit number in which 4 has a value of 40,000 and 7 has a value of 700. Explain.

I CAN...

☐ use the unit vocabulary accurately

☐ solve the core mathematical tasks

☐ explain a method in complete English sentences

☐ check and improve my work

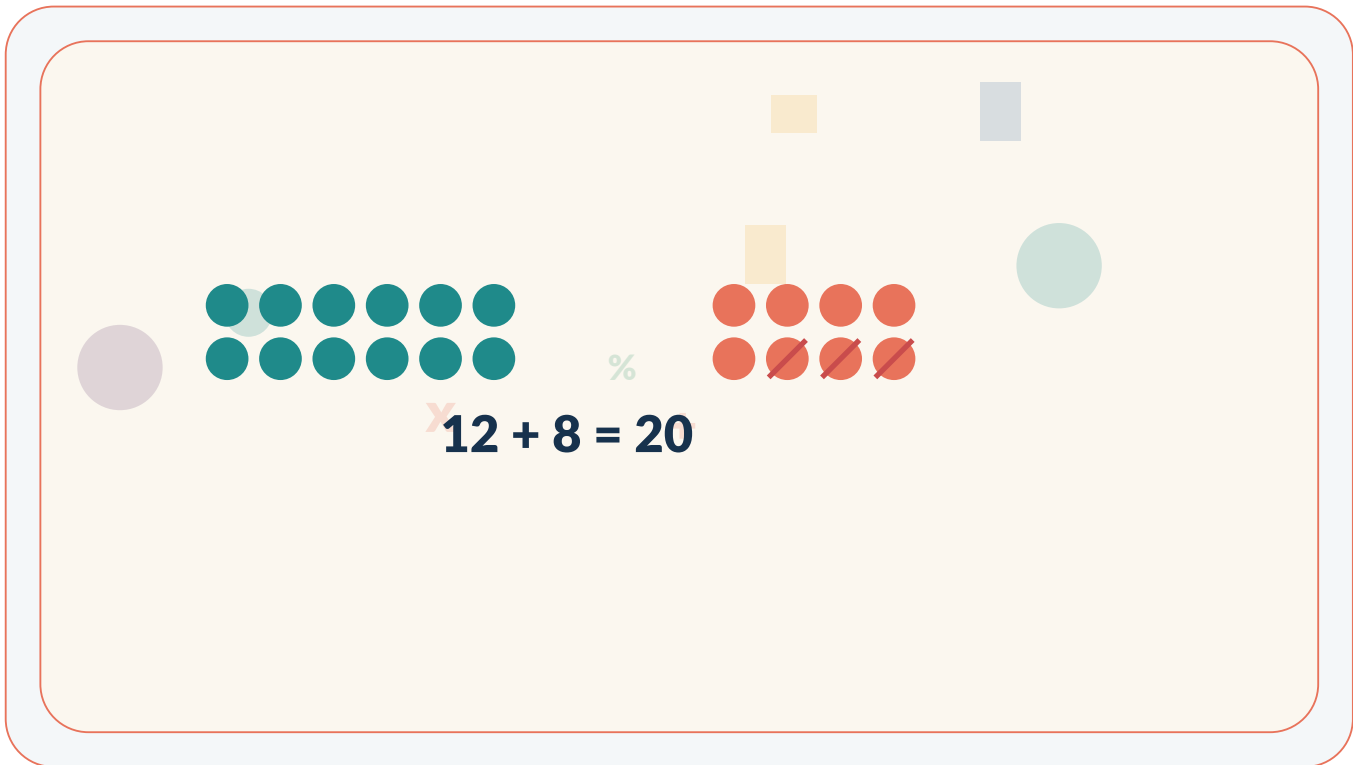
Unit 2 Launch

Addition and Subtraction

2

Addition and Subtraction

UNIT MISSION



LEARNING OBJECTIVES

- name parts of addition and subtraction
- read equations aloud
- solve one-step problems
- explain a simple method

LANGUAGE BRIDGE

EN	Add to find the total; subtract to find the difference.
CL	Suma para hallar el total; resta para hallar la diferencia.
CO	Suma para hallar el total; resta para hallar la diferencia.
VE	Suma para hallar el total; resta para hallar la diferencia.
BR	Some para encontrar o total; subtraia para encontrar a diferença.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

Addition and Subtraction

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
addition	suma / adición	suma / adición	suma / adición	adição
add	sumar	sumar	sumar	somar / adicionar
plus	más	más	más	mais
sum	suma / total	suma / total	suma / total	soma / total
addend	sumando	sumando	sumando	parcela
subtraction	resta / sustracción	resta / sustracción	resta / sustracción	subtração
subtract	restar	restar	restar	subtrair
minus	menos	menos	menos	menos

VISUAL MEMORY



Vocabulary Bank 2

Addition and Subtraction

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
difference	diferencia	diferencia	diferencia	diferença
minuend	minuendo	minuendo	minuendo	minuendo
subtrahend	sustraendo	sustraendo	sustraendo	subtraendo
total	total	total	total	total
calculate	calcular	calcular	calcular	calcular
estimate	estimar	estimar	estimar	estimar
regroup	reagrupar / llevar	reagrupar / llevar	reagrupar / llevar	reagrupar / fazer reserva
inverse operation	operación inversa	operación inversa	operación inversa	operação inversa

1. Add the two numbers.

2. Subtract 18 from 50.

3. What is the total?

4. Find the difference.

5. Check using the inverse operation.

Regional note: Resta is widely understood across Chile, Colombia and Venezuela. Sustracción is the more formal school term. Brazilian Portuguese commonly uses subtração.

Concept Lab

Addition and Subtraction

CORE IDEA

Addition combines quantities. Subtraction removes a quantity or finds a difference. Inverse operations check results.



WORKED EXAMPLES

ADDITION

$368 + 157 = 525$. Add ones, regroup, then add tens and hundreds.

SUBTRACTION

$702 - 286 = 416$. Regroup one hundred as ten tens, then one ten as ten ones.

QUICK CHECK

1. $47 + 36 = \underline{\hspace{2cm}}$

2. $205 + 189 = \underline{\hspace{2cm}}$

3. $90 - 47 = \underline{\hspace{2cm}}$

Say it: Add the two numbers. Then explain which mathematical clue helped you choose the operation or method.

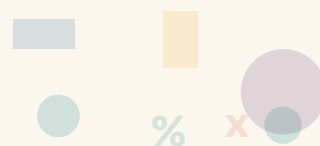
Reading Mathematics

Addition and Subtraction

READ

A Classroom Book Drive

Class 6A collects books for a community library. On Monday, students bring 38 books. On Tuesday, they bring 47 more. The class calculates $38 + 47$ and gets 85. On Wednesday, 12 damaged books are removed. The students subtract 12 from 85. The difference is 73. They check by adding 73 and 12.



COMPREHENSION

1. How many books arrive on Monday?

2. What is the total after Tuesday?

3. Why are 12 books removed?

4. How many books remain?

5. How is the subtraction checked?

LANGUAGE BRIDGE

EN	Add to find the total; subtract to find the difference.
CL	Suma para hallar el total; resta para hallar la diferencia.
CO	Suma para hallar el total; resta para hallar la diferencia.
VE	Suma para hallar el total; resta para hallar la diferencia.
BR	Some para encontrar o total; subtraia para encontrar a diferença.

Listening for Mathematical Detail

Addition and Subtraction



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. Morning notebooks?

2. Afternoon notebooks?

3. Notebook total?

4. Pens kept?

5. Combined total?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Addition and Subtraction

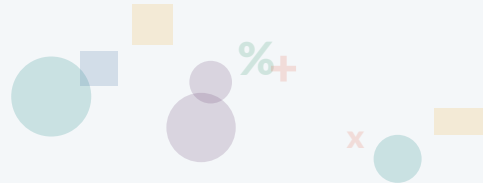
PAIR WORK

Information Gap: partners have different daily sales. Ask for missing numbers, calculate totals and compare results.



CLASSROOM GAME

Equation Relay: the next learner begins only after the previous learner says the full equation aloud in English.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: Subtract 18 from 50.

WRITING TASK

Explain how to solve $326 - 148$ using first, next, then and finally.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Addition and Subtraction

4. resta / sustracción

Unit Quiz and Self-Assessment

Addition and Subtraction

1. $18 + 27 = \underline{\hspace{2cm}}$.

2. $304 + 98 = \underline{\hspace{2cm}}$.

3. $73 - 29 = \underline{\hspace{2cm}}$.

4. $500 - 176 = \underline{\hspace{2cm}}$.

5. Difference between 91 and 38?

6. Estimate $612 + 188$.

7. Check $64 - 19 = 45$ using addition.

8. Write $37 + 48$ in words.

UNIT CHALLENGE

Write two different addition and subtraction equations using the same three numbers.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |

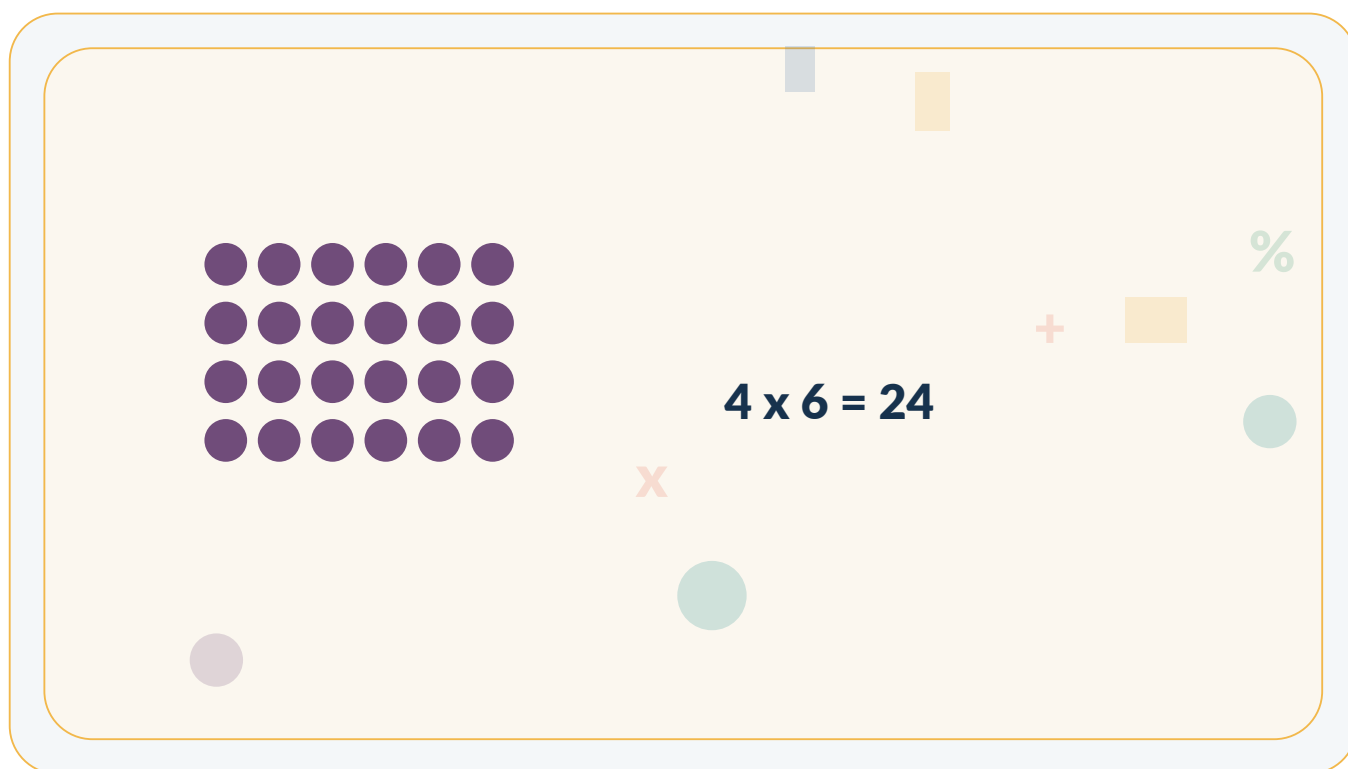
Unit 3 Launch

Multiplication, Division and Order of Operations

3

Multiplication, Division and Order of Operations

UNIT MISSION



LEARNING OBJECTIVES

- read multiplication and division equations
- use factors and multiples
- interpret remainders
- apply order of operations

LANGUAGE BRIDGE

EN	Multiplication makes equal groups; division shares or groups.
CL	La multiplicación forma grupos iguales; la división reparte o agrupa.
CO	La multiplicación forma grupos iguales; la división reparte o agrupa.
VE	La multiplicación forma grupos iguales; la división reparte o agrupa.
BR	A multiplicação forma grupos iguais; a divisão reparte ou agrupa.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

Multiplication, Division and Order of Operations

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
multiplication	multiplicación	multiplicación	multiplicación	multiplicação
multiply	multiplicar	multiplicar	multiplicar	multiplicar
times	por / veces	por / veces	por / veces	vezes
product	producto	producto	producto	produto
factor	factor	factor	factor	fator
multiple	múltiplo	múltiplo	múltiplo	múltiplo
division	división	división	división	divisão
divide	dividir	dividir	dividir	dividir

VISUAL MEMORY



Vocabulary Bank 2

Multiplication, Division and Order of Operations

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
divided by	dividido por	dividido por	dividido por	dividido por
quotient	cociente	cociente	cociente	quociente
dividend	dividendo	dividendo	dividendo	dividendo
divisor	divisor	divisor	divisor	divisor
remainder	resto / residuo	residuo	residuo	resto
array	arreglo / matriz	arreglo / matriz	arreglo / matriz	arranjo / matriz
brackets	paréntesis	paréntesis	paréntesis	parênteses
order of operations	orden de las operaciones	orden de las operaciones	orden de las operaciones	ordem das operações

1. Multiply 6 by 8.

2. How many equal groups are there?

3. Divide 45 by 5.

4. What is the remainder?

5. Calculate inside the brackets first.

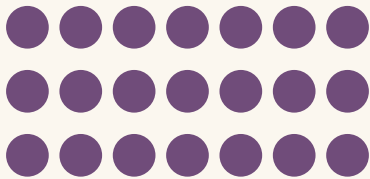
Regional note: English “times” is spoken in equations: six times seven. “By” also appears in dimensions, such as four by five metres.

Concept Lab

Multiplication, Division and Order of Operations

CORE IDEA

Multiplication and division describe equal groups and are inverse operations. Apply brackets and operation priority carefully.



3 groups of 7 = 21

WORKED EXAMPLES

MULTIPLICATION

$24 \times 6 = 144$. Think: $(20 \times 6) + (4 \times 6)$.

DIVISION

$156 / 12 = 13$ because $12 \times 13 = 156$.

QUICK CHECK

1. $7 \times 8 = \underline{\quad}$.

2. $14 \times 12 = \underline{\quad}$.

3. $96 / 8 = \underline{\quad}$.

Say it: Multiply 6 by 8. Then explain which mathematical clue helped you choose the operation or method.

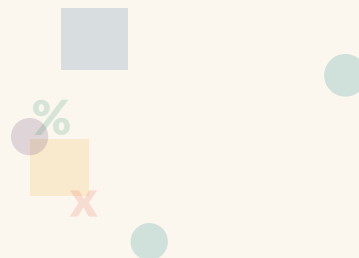
Reading Mathematics

Multiplication, Division and Order of Operations

READ

Packing Fruit Boxes

A cooperative packs fruit for schools. Each box holds 8 apples. The team has 152 apples, so it divides 152 by 8 and prepares 19 full boxes. Next, it packs 6 oranges in each of 14 boxes: 6 times 14 is 84. The manager uses brackets in $3 \times (8 + 6)$, so the addition happens first.



COMPREHENSION

1. Apples per box?

2. How many full apple boxes?

3. How many oranges?

4. What are 6 and 14 called?

5. What happens first inside brackets?

LANGUAGE BRIDGE

EN	Multiplication makes equal groups; division shares or groups.
CL	La multiplicación forma grupos iguales; la división reparte o agrupa.
CO	La multiplicación forma grupos iguales; la división reparte o agrupa.
VE	La multiplicación forma grupos iguales; la división reparte o agrupa.
BR	A multiplicação forma grupos iguais; a divisão reparte ou agrupa.

Listening for Mathematical Detail

Multiplication, Division and Order of Operations



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. Initial bottles?

2. Initial teams?

3. Bottles per team?

4. Extra bottles?

5. New total?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Multiplication, Division and Order of Operations

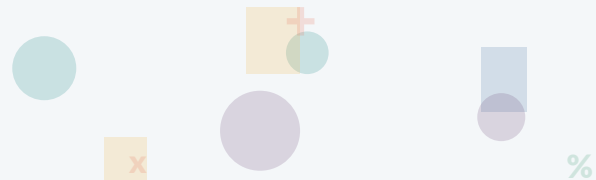
PAIR WORK

Array Designer: one partner describes an array; the other draws it and writes multiplication and related division equations.



CLASSROOM GAME

Factor Hunt: teams list factor pairs for a target number and say them aloud.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: How many equal groups are there?

WRITING TASK

Explain why 24 divided by 6 equals 4 and 24 divided by 4 equals 6 are related.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Multiplication, Division and Order of Operations

1. $7 \times 8 = \underline{\hspace{2cm}}$

2. $14 \times 12 = \underline{\hspace{2cm}}$

3. $96 \div 8 = \underline{\hspace{2cm}}$

4. $157 \div 10 = \underline{\hspace{1cm}}$ remainder $\underline{\hspace{1cm}}$.

5. List all factors of 18.

6. First five multiples of 7.

7. $5 + 3 \times 4 = \underline{\hspace{2cm}}$

8. $(5 + 3) \times 4 = \underline{\hspace{2cm}}$

WORD SEARCH

S	A	G	E	X	A	P	M	T	H	X	Q	S	Z
O	M	R	H	X	R	L	U	N	Y	A	U	Z	X
K	Q	R	P	O	U	P	L	W	B	T	O	C	O
U	I	D	D	L	G	M	T	Y	Z	G	T	J	N
U	C	U	I	C	D	W	I	N	R	V	I	Y	Q
M	C	V	Q	V	P	D	P	C	V	X	E	O	W
T	U	H	K	I	I	E	L	B	S	B	N	O	G
M	Z	L	W	Q	Y	S	Y	F	I	S	T	N	H
M	U	L	T	I	P	L	I	C	A	T	I	O	N
J	J	J	L	I	J	J	V	O	N	C	I	A	K
C	C	Z	N	Z	P	V	I	B	N	G	T	P	F
Q	Q	X	Q	X	E	L	N	L	Z	U	U	O	F
U	A	V	R	E	V	X	E	X	A	B	O	L	R
U	T	I	M	E	S	D	I	V	I	D	E	Q	V

Find these English words:

multiplication, multiply, times, product, factor, multiple, division, divide, divided by, quotient

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Multiplication, Division and Order of Operations

1. $9 \times 6 = __$.

2. $132 \div 11 = __$.

3. Product of 15 and 4?

4. Quotient of 81 and 9?

5. One factor pair of 36?

6. $20 - 2 \times 6 = __$.

7. $(20 - 2) \times 6 = __$.

8. $47 \div 5 = __ \text{ remainder } __$.

UNIT CHALLENGE

Use 2, 3 and 4 with different operations or brackets to make three different results.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |

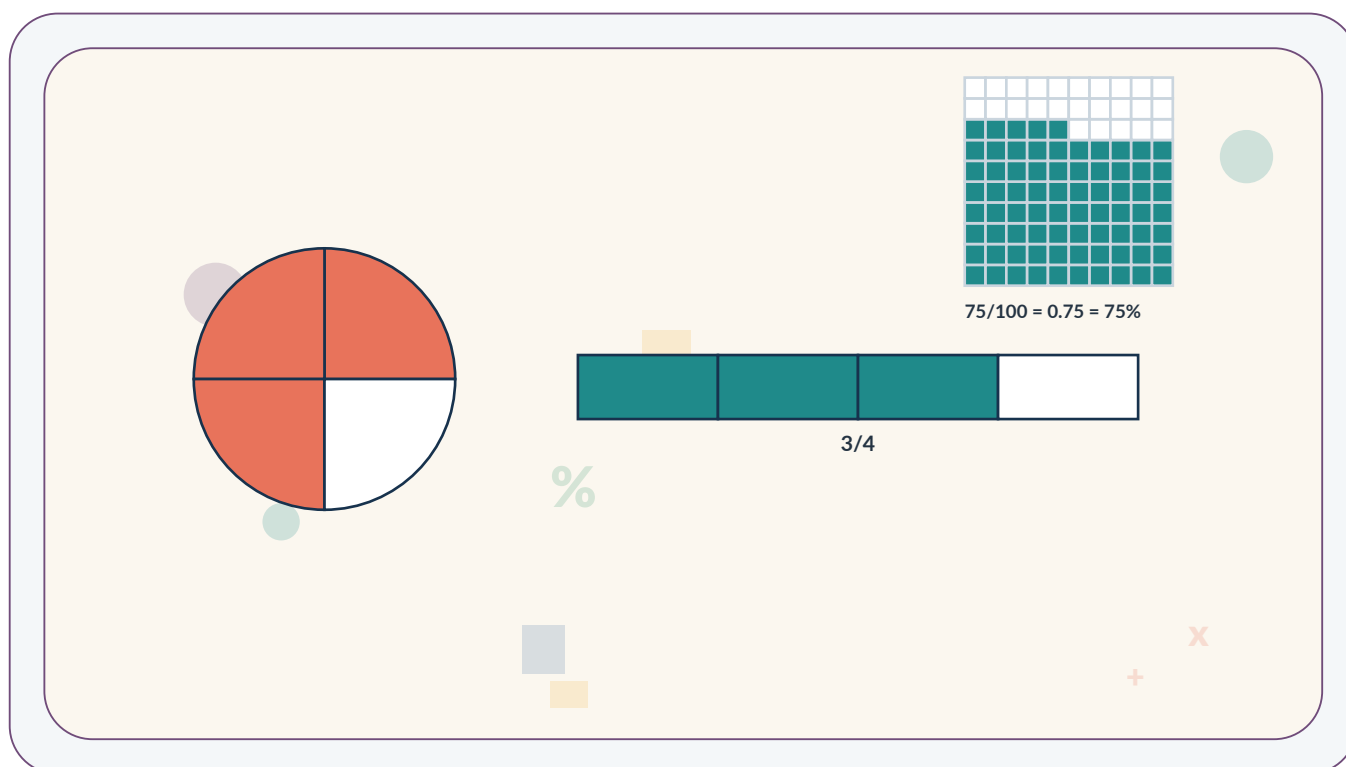
Unit 4 Launch

Fractions, Decimals and Percentages

4

Fractions, Decimals and Percentages

UNIT MISSION



LEARNING OBJECTIVES

- name parts of a fraction
- compare equivalent values
- read decimals and percentages
- solve percentage problems

LANGUAGE BRIDGE

- EN** Fractions, decimals and percentages can represent the same value.
- CL** Las fracciones, los decimales y los porcentajes pueden representar el mismo valor.
- CO** Las fracciones, los decimales y los porcentajes pueden representar el mismo valor.
- VE** Las fracciones, los decimales y los porcentajes pueden representar el mismo valor.
- BR** Frações, decimais e porcentagens podem representar o mesmo valor.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

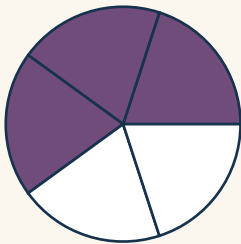
Fractions, Decimals and Percentages

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
fraction	fracción	fracción	fracción	fração
numerator	numerador	numerador	numerador	numerador
denominator	denominador	denominador	denominador	denominador
proper fraction	fracción propia	fracción propia	fracción propia	fração própria
improper fraction	fracción impropia	fracción impropia	fracción impropia	fração imprópria
mixed number	número mixto	número mixto	número mixto	número misto
equivalent	equivalente	equivalente	equivalente	equivalente
simplify	simplificar	simplificar	simplificar	simplificar

VISUAL MEMORY



3/5

Vocabulary Bank 2

Fractions, Decimals and Percentages

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
decimal	decimal	decimal	decimal	decimal
decimal point	coma decimal	coma decimal	coma decimal	vírgula decimal
tenths	décimos	décimos	décimos	décimos
hundredths	centésimos	centésimos	centésimos	centésimos
percentage	porcentaje	porcentaje	porcentaje	porcentagem
percent	por ciento	por ciento	por ciento	por cento
ratio	razón	razón	razón	razão
proportion	proporción	proporción	proporción	proporção

1. The numerator is three.

2. The denominator is eight.

3. These fractions are equivalent.

4. Write the decimal as a percentage.

5. Find twenty-five percent of eighty.

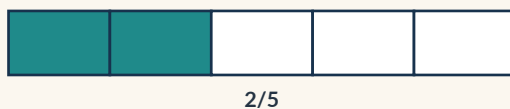
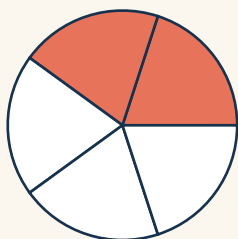
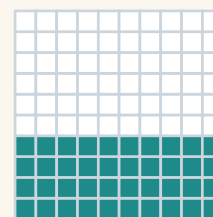
Regional note: Spanish normally uses a decimal comma in many school contexts; English uses a decimal point. Brazilian Portuguese also commonly uses a decimal comma.

Concept Lab

Fractions, Decimals and Percentages

CORE IDEA

Fractions, decimals and percentages are alternative representations of the same proportion or part of a whole.

 $\frac{2}{5}$  $\frac{40}{100} = 0.40 = 40\%$

WORKED EXAMPLES

EQUIVALENT FORMS

$$\frac{3}{4} = 0.75 = 75\%.$$

PERCENTAGE

$$25\% \text{ of } 80 = 0.25 \times 80 = 20.$$

QUICK CHECK

1. Numerator and denominator in $\frac{5}{8}$?

2. Simplify $\frac{6}{12}$.

3. $\frac{3}{4}$ as a decimal

Say it: The numerator is three. Then explain which mathematical clue helped you choose the operation or method.

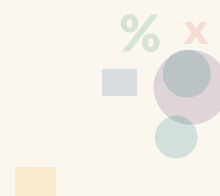
Reading Mathematics

Fractions, Decimals and Percentages

READ

The Community Garden Survey

A community garden uses one quarter of its land for herbs, three tenths for vegetables and twenty percent for fruit. Students convert the values to compare them. One quarter is 0.25, or 25%. Three tenths is 0.3, or 30%. A fraction, decimal and percentage can describe the same part of a whole.

**COMPREHENSION**

1. Fraction used for herbs?

2. One quarter as a decimal?

3. Percentage used for vegetables?

4. Which area is larger?

5. What do the three forms describe?

LANGUAGE BRIDGE

- | | |
|-----------|--|
| EN | Fractions, decimals and percentages can represent the same value. |
| CL | Las fracciones, los decimales y los porcentajes pueden representar el mismo valor. |
| CO | Las fracciones, los decimales y los porcentajes pueden representar el mismo valor. |
| VE | Las fracciones, los decimales y los porcentajes pueden representar el mismo valor. |
| BR | Frações, decimais e porcentagens podem representar o mesmo valor. |

Listening for Mathematical Detail

Fractions, Decimals and Percentages



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. Class size?

2. Music?

3. Sport?

4. Art?

5. Technology?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Fractions, Decimals and Percentages

PAIR WORK

Fraction Match: find matching fraction, decimal and percentage cards by asking questions without showing the cards.



CLASSROOM GAME

Percent Shop: teams calculate sale prices from price and discount cards and explain the calculation.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: The denominator is eight.

WRITING TASK

Compare one half, 0.45 and 40%. Explain the order from greatest to least.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Fractions, Decimals and Percentages

1. Numerator and denominator in $5/8$?

2. Simplify $6/12$.

3. $3/4$ as a decimal.

4. 0.62 as a percentage.

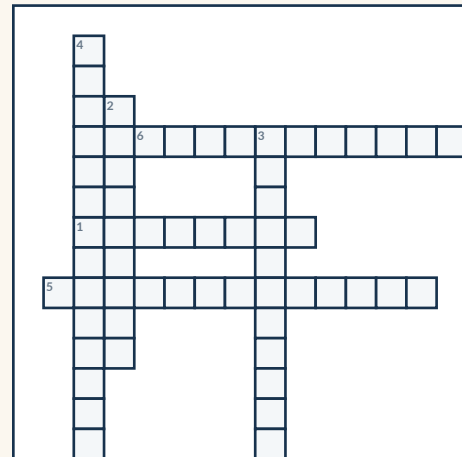
5. 35% as a decimal.

6. 20% of 150.

7. Which is greater: $2/5$ or 45%?

8. A \$40 jacket is 25% off. Sale price?

MINI CROSSWORD



Chilean Spanish clues -> English answers

- 1. fracción
- 2. numerador
- 3. denominador
- 4. fracción propia
- 5. fracción impropia
- 6. número mixto

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Fractions, Decimals and Percentages

1. Simplify $8/20$.

2. 0.7 as a fraction.

3. $3/5$ as a percentage.

4. 12% as a decimal.

5. 50% of 86.

6. 15% of 200.

7. Order 0.4, 35%, $1/2$ least to greatest.

8. Denominator in $7/9$?

UNIT CHALLENGE

Design a visual showing that $2/5$, 0.4 and 40% are equivalent.

I CAN...

☐ use the unit vocabulary accurately

☐ solve the core mathematical tasks

☐ explain a method in complete English sentences

☐ check and improve my work

Unit 5 Launch

Geometry: Shapes, Angles, Perimeter and Area

5

Geometry: Shapes, Angles, Perimeter and Area

UNIT MISSION



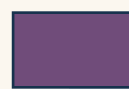
Circle



Square



Triangle



Rectangle



Pentagon



Hexagon



Trapezoid



Rhombus

LEARNING OBJECTIVES

- name 2D and 3D shapes
- describe properties
- classify angles
- calculate perimeter and area

LANGUAGE BRIDGE

EN	Perimeter measures the boundary; area measures the surface.
CL	El perímetro mide el contorno; el área mide la superficie.
CO	El perímetro mide el contorno; el área mide la superficie.
VE	El perímetro mide el contorno; el área mide la superficie.
BR	O perímetro mede o contorno; a área mede a superfície.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

Geometry: Shapes, Angles, Perimeter and Area

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
geometry	geometría	geometría	geometría	geometria
shape	figura / forma	figura / forma	figura / forma	forma
circle	círculo	círculo	círculo	círculo
triangle	triángulo	triángulo	triángulo	triângulo
square	cuadrado	cuadrado	cuadrado	quadrado
rectangle	rectángulo	rectángulo	rectángulo	retângulo
polygon	polígono	polígono	polígono	polígono
vertex	vértice	vértice	vértice	vértice

VISUAL MEMORY



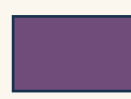
Circle



Square



Triangle



Rectangle



Pentagon



Hexagon



Trapezoid



Rhombus

Vocabulary Bank 2

Geometry: Shapes, Angles, Perimeter and Area

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
edge	arista	arista	arista	aresta
face	cara	cara	cara	face
angle	ángulo	ángulo	ángulo	ângulo
acute angle	ángulo agudo	ángulo agudo	ángulo agudo	ângulo agudo
right angle	ángulo recto	ángulo recto	ángulo recto	ângulo reto
obtuse angle	ángulo obtuso	ángulo obtuso	ángulo obtuso	ângulo obtuso
perimeter	perímetro	perímetro	perímetro	perímetro
area	área	área	área	área

1. How many sides does it have?

2. It has four equal sides.

3. This angle is acute.

4. Calculate the perimeter.

5. Find the area in square units.

Regional note: “Área” and “perímetro” are direct cognates. Teach pronunciation explicitly so learners do not rely only on spelling.

Concept Lab

Geometry: Shapes, Angles, Perimeter and Area

CORE IDEA

Shape properties help us classify objects. Perimeter measures the boundary; area measures the surface inside.



Circle



Square



Triangle



Rectangle



Pentagon



Hexagon



Trapezoid



Rhombus

WORKED EXAMPLES

PERIMETER

Rectangle 8 cm by 5 cm: $P = 2(8 + 5) = 26$ cm.

AREA

$A = \text{length} \times \text{width} = 8 \times 5 = 40$ cm².

QUICK CHECK

1. Name a five-sided polygon.

2. Vertices on a cube?

3. Classify 35 degrees.

Say it: How many sides does it have? Then explain which mathematical clue helped you choose the operation or method.

Reading Mathematics

Geometry: Shapes, Angles, Perimeter and Area

READ

Designing a Playground

A school plans a playground. The main activity area is a rectangle 18 metres long and 10 metres wide. Its perimeter is 56 metres and its area is 180 square metres. A circular garden sits beside it. The designer adds triangular shade sails and a square chess area. Students identify shapes, measure angles and find symmetry.



COMPREHENSION

1. Shape of the activity area?

2. Its perimeter?

3. Its area?

4. Name two other shapes.

5. What do students investigate?

LANGUAGE BRIDGE

EN	Perimeter measures the boundary; area measures the surface.
CL	El perímetro mide el contorno; el área mide la superficie.
CO	El perímetro mide el contorno; el área mide la superficie.
VE	El perímetro mide el contorno; el área mide la superficie.
BR	O perímetro mede o contorno; a área mede a superfície.

Listening for Mathematical Detail

Geometry: Shapes, Angles, Perimeter and Area



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. Rectangle dimensions?

2. Square side length?

3. Type of angle?

4. Circle radius?

5. What must be labelled?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Geometry: Shapes, Angles, Perimeter and Area

PAIR WORK

Mystery Shape: ask yes/no questions about sides, angles, faces, edges or vertices and guess the shape.



CLASSROOM GAME

Geometry Gallery Walk: match shape cards to property cards and justify each match in English.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: It has four equal sides.

WRITING TASK

Describe a room or outdoor space using eight geometry words and one calculation.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Geometry: Shapes, Angles, Perimeter and Area

1. Name a five-sided polygon.

2. Vertices on a cube?

3. Classify 35 degrees.

4. Classify 90 degrees.

5. Perimeter of 9 cm by 4 cm rectangle.

6. Area of the rectangle.

7. Lines of symmetry in a square?

8. Draw and label one 3D shape.

WORD SEARCH

V	X	P	O	L	Y	G	O	N	Y	C	Y	S	Q
E	Q	Q	R	Q	X	W	T	I	H	S	X	V	N
X	O	V	K	T	T	R	I	A	N	G	L	E	U
U	H	E	H	W	G	E	O	M	E	T	R	Y	N
T	V	R	P	J	H	J	P	V	L	Q	P	R	E
P	V	T	I	O	G	F	G	P	K	G	S	E	K
C	H	E	T	G	S	K	D	B	S	Q	T	C	A
V	E	X	Z	S	N	C	B	H	U	A	F	T	M
I	R	P	C	X	A	Z	A	A	A	F	S	A	C
I	E	B	A	G	M	P	R	F	E	K	E	N	E
C	I	R	C	L	E	E	J	D	W	W	J	G	D
C	J	Y	H	C	C	F	A	C	E	X	K	L	G
F	D	Q	B	E	O	I	D	Y	Y	Y	W	E	E
H	D	Z	H	Y	I	Z	U	X	P	U	F	C	C

Find these English words:

geometry, shape, circle, triangle, square, rectangle, polygon, vertex, edge, face

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Geometry: Shapes, Angles, Perimeter and Area

1. Sides on a hexagon?

2. 3D shape with one circular base and one vertex?

3. Classify 120 degrees.

4. Perimeter of square side 7 cm.

5. Area of the square.

6. Faces on a cube?

7. Define vertex.

8. One shape with no vertices.

UNIT CHALLENGE

Design two rectangles with area 24 square units. Compare their perimeters.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |

Unit 6 Launch

Measurement: Length, Mass, Capacity, Time and Temperature

6

Measurement: Length, Mass, Capacity, Time and Temperature

UNIT MISSION

$$2.4 \text{ m} = 240 \text{ cm}$$



LEARNING OBJECTIVES

- select appropriate metric units
- read measuring instruments
- convert common units
- describe measurements precisely

LANGUAGE BRIDGE

- EN** Choose a unit that matches the size of what you measure.
- CL** Elige una unidad adecuada al tamaño de lo que mides.
- CO** Elige una unidad adecuada al tamaño de lo que mides.
- VE** Elige una unidad adecuada al tamaño de lo que mides.
- BR** Escolha uma unidade adequada ao tamanho do que você mede.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

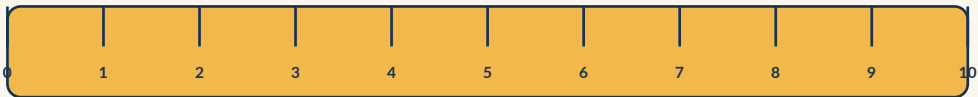
Measurement: Length, Mass, Capacity, Time and Temperature

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
measurement	medición	medición	medición	medição
length	longitud	longitud	longitud	comprimento
width	ancho	ancho	ancho	largura
height	altura	altura	altura	altura
distance	distancia	distancia	distancia	distância
millimetre	milímetro	milímetro	milímetro	milímetro
centimetre	centímetro	centímetro	centímetro	centímetro
metre	metro	metro	metro	metro

VISUAL MEMORY



Vocabulary Bank 2

Measurement: Length, Mass, Capacity, Time and Temperature

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
kilometre	kilómetro	kilómetro	kilómetro	quilômetro
mass	masa	masa	masa	massa
gram	gramo	gramo	gramo	grama
kilogram	kilogramo	kilogramo	kilogramo	quilograma
capacity	capacidad	capacidad	capacidad	capacidade
millilitre	mililitro	mililitro	mililitro	mililitro
litre	litro	litro	litro	litro
temperature	temperatura	temperatura	temperatura	temperatura

1. How long is it?

2. Which unit is most appropriate?

3. The scale increases by...

4. Convert metres to centimetres.

5. The temperature rose by five degrees.

Regional note: The textbook uses British spellings metre and litre. American materials may use meter and liter. The mathematical values are identical.

Concept Lab

Measurement: Length, Mass, Capacity, Time and Temperature

CORE IDEA

Choose a unit that matches the size of the object. Use multiplication to convert from a larger metric unit to a smaller one and division to convert back.

$$1 \text{ m} = 100 \text{ cm}$$



WORKED EXAMPLES

CONVERSION

$2.4 \text{ m} = 240 \text{ cm}$ because $2.4 \times 100 = 240$.

ELAPSED TIME

$09:35 \text{ to } 11:10 = 1 \text{ hour } 35 \text{ minutes}$.

QUICK CHECK

1. Convert 3 m to cm.

2. Convert 2.5 kg to g.

3. Convert 1 500 mL to L

Say it: How long is it? Then explain which mathematical clue helped you choose the operation or method.

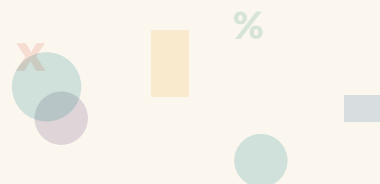
Reading Mathematics

Measurement: Length, Mass, Capacity, Time and Temperature

READ

Preparing the Community Garden

A class plans a small community garden. The rectangular space is 12 metres long and 8 metres wide. Students buy 25 kilograms of soil and carry 2 litres of water to each planting bed. The lesson begins at 9:15 and ends at 10:45. At the start, the temperature is 18 degrees Celsius. By the end, it is 23 degrees. The students record every measurement because accurate data helps them plan materials and time.

**COMPREHENSION**

1. How long is the garden?

2. How wide is it?

3. How much soil do students buy?

4. How long does the lesson last?

5. By how many degrees does the temperature rise?

LANGUAGE BRIDGE

- | | |
|----|---|
| EN | Choose a unit that matches the size of what you measure. |
| CL | Elige una unidad adecuada al tamaño de lo que mides. |
| CO | Elige una unidad adecuada al tamaño de lo que mides. |
| VE | Elige una unidad adecuada al tamaño de lo que mides. |
| BR | Escolha uma unidade adequada ao tamanho do que você mede. |

Listening for Mathematical Detail

Measurement: Length, Mass, Capacity, Time and Temperature



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. How long is the blue ribbon?

2. How long is the red ribbon?

3. What is the bottle capacity?

4. What is the parcel mass?

5. What is the classroom temperature?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Measurement: Length, Mass, Capacity, Time and Temperature

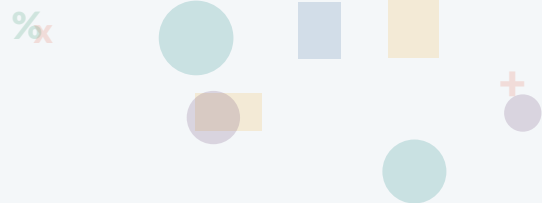
PAIR WORK

Measurement Detective: Student A describes an object and gives a realistic estimate. Student B chooses the best unit, asks one follow-up question and records the estimate. Then measure and compare.



CLASSROOM GAME

Unit Corners: label four classroom corners mm, cm, m and km. Read an object or distance. Teams move to the most suitable unit and justify their choice in English.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: Which unit is most appropriate?

WRITING TASK

Write a short measurement report about one room. Include length, width, an estimated area, temperature and the time taken to measure it.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Measurement: Length, Mass, Capacity, Time and Temperature

1. Convert 3 m to cm.

2. Convert 2.5 kg to g.

3. Convert 1,500 mL to L.

4. Choose the best unit for the length of a pencil.

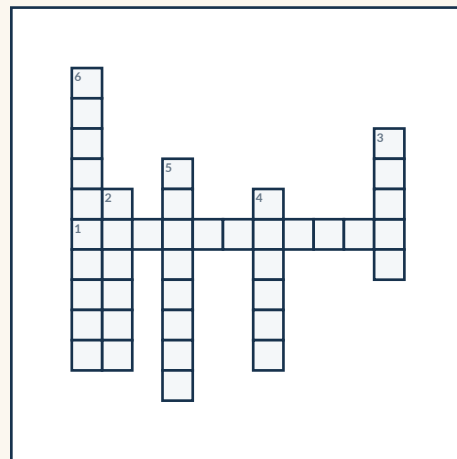
5. A film starts at 14:20 and ends at 16:05. How long is it?

6. The temperature changes from 12 to 19 degrees Celsius. Find the increase.

7. A 4 m ribbon is cut into 50 cm pieces. How many pieces?

8. Write one sentence comparing two measurements.

MINI CROSSWORD



Chilean Spanish clues -> English answers

- 1. medición
- 2. longitud
- 3. ancho
- 4. altura
- 5. distancia
- 6. milímetro

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Measurement: Length, Mass, Capacity, Time and Temperature

1. Best unit for the distance between cities?

2. How many centimetres are in 2.4 m?

3. How many grams are in 3 kg?

4. 2,250 mL equals how many litres?

5. From 08:35 to 10:00 is how long?

6. A freezer is -4 degrees Celsius and a room is 20 degrees Celsius. What is the difference?

7. Name the instrument used to measure temperature.

8. Explain why kilograms are better than grams for an adult body mass.

UNIT CHALLENGE

Plan a one-day class trip. Include distances, departure and arrival times, water capacity and estimated mass of supplies. Show at least three conversions.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |

Unit 7 Launch

Algebra: Patterns, Expressions, Equations and Inequalities

7

Algebra: Patterns, Expressions, Equations and Inequalities

UNIT MISSION



$$3x + 5 = 20$$

LEARNING OBJECTIVES

- identify variables and constants
- evaluate expressions
- solve one-step and two-step equations
- explain algebraic reasoning

LANGUAGE BRIDGE

- | | |
|----|--|
| EN | Keep an equation balanced by doing the same thing to both sides. |
| CL | Mantén la ecuación equilibrada haciendo lo mismo en ambos lados. |
| CO | Mantén la ecuación equilibrada haciendo lo mismo en ambos lados. |
| VE | Mantén la ecuación equilibrada haciendo lo mismo en ambos lados. |
| BR | Mantenha a equação equilibrada fazendo a mesma coisa nos dois lados. |

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

Algebra: Patterns, Expressions, Equations and Inequalities

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
algebra	álgebra	álgebra	álgebra	álgebra
variable	variable	variable	variable	variável
constant	constante	constante	constante	constante
coefficient	coeficiente	coeficiente	coeficiente	coeficiente
term	término	término	término	termo
expression	expresión	expresión	expresión	expressão
equation	ecuación	ecuación	ecuación	equação
inequality	desigualdad	desigualdad	desigualdad	desigualdade

VISUAL MEMORY



Vocabulary Bank 2

Algebra: Patterns, Expressions, Equations and Inequalities

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
unknown	incógnita	incógnita	incógnita	incógnita
substitute	sustituir	sustituir	sustituir	substituir
evaluate	evaluar	evaluar	evaluar	calcular o valor
simplify	simplificar	simplificar	simplificar	simplificar
solve	resolver	resolver	resolver	resolver
balance	equilibrar	equilibrar	equilibrar	equilibrar
sequence	secuencia	secuencia	secuencia	sequência
rule	regla	regla	regla	regra

1. Let x represent the unknown.

2. Substitute the value into the expression.

3. Do the same operation on both sides.

4. The sequence increases by...

5. The solution satisfies the equation.

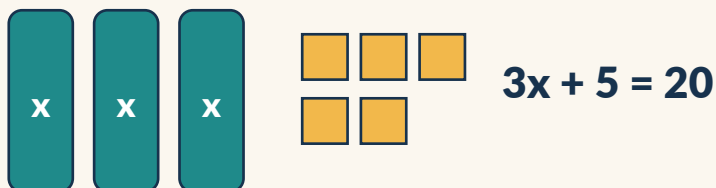
Regional note: Spanish ecuación and Portuguese equação are useful cognates. English expression and equation are not synonyms.

Concept Lab

Algebra: Patterns, Expressions, Equations and Inequalities

CORE IDEA

An equation is like a balanced scale: whatever operation you perform on one side must also be performed on the other. A variable represents a number that can change or is unknown.


$$3x + 5 = 20$$

WORKED EXAMPLES

SOLVE

$3x + 5 = 20$; subtract 5: $3x = 15$; divide by 3: $x = 5$.

CHECK

Substitute 5: $3(5) + 5 = 20$. The solution is correct.

QUICK CHECK

1. Evaluate $4x + 3$ when $x = 5$.

2. Simplify $3a + 2a$.

3. Solve $x + 14 = 31$.

Say it: Let x represent the unknown. Then explain which mathematical clue helped you choose the operation or method.

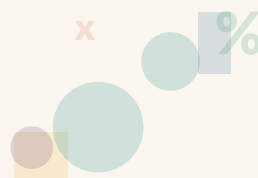
Reading Mathematics

Algebra: Patterns, Expressions, Equations and Inequalities

READ

The Pattern in the Tile Design

Lucía creates a border using square tiles. Design 1 uses 5 tiles, Design 2 uses 8 tiles and Design 3 uses 11 tiles. She notices that each new design adds 3 tiles. She writes the rule $3n + 2$, where n is the design number. For Design 4, she substitutes 4 and calculates 3 times 4 plus 2, which equals 14. Her classmate checks the rule by testing the first three designs. The expression models every design in the sequence.



COMPREHENSION

1. How many tiles are in Design 2?

2. What is added for each new design?

3. What does n represent?

4. How many tiles are in Design 4?

5. Why does the classmate test earlier designs?

LANGUAGE BRIDGE

- | | |
|----|--|
| EN | Keep an equation balanced by doing the same thing to both sides. |
| CL | Mantén la ecuación equilibrada haciendo lo mismo en ambos lados. |
| CO | Mantén la ecuación equilibrada haciendo lo mismo en ambos lados. |
| VE | Mantén la ecuación equilibrada haciendo lo mismo en ambos lados. |
| BR | Mantenha a equação equilibrada fazendo a mesma coisa nos dois lados. |

Listening for Mathematical Detail

Algebra: Patterns, Expressions, Equations and Inequalities



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. Find x.

2. Find y.

3. Find z.

4. Find a.

5. Write the inequality solution for b.

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Algebra: Patterns, Expressions, Equations and Inequalities

PAIR WORK

Equation Coach: Student A solves an equation aloud but deliberately omits one reasoning step. Student B identifies the missing step and checks the solution by substitution. Change roles.



CLASSROOM GAME

Algebra Relay: teams receive expression, equation, solution and verbal-description cards. They race to create correct sets and then read each set aloud.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: Substitute the value into the expression.

WRITING TASK

Explain how to solve $3x - 5 = 16$ in four or five complete sentences. Use first, next, then and finally.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Algebra: Patterns, Expressions, Equations and Inequalities

1. Evaluate $4x + 3$ when $x = 5$.2. Simplify $3a + 2a$.3. Solve $x + 14 = 31$.4. Solve $5y = 45$.5. Solve $z/4 = 7$.6. Solve $2a + 6 = 20$.

7. Continue: 7, 12, 17, 22, __, __.

8. Write an expression for five more than twice n .

WORD SEARCH

S	U	B	S	T	I	T	U	T	E	S	K	A	I
L	J	V	U	X	J	L	O	Q	D	K	U	C	N
Q	S	K	I	Z	Z	D	Q	W	Y	C	D	O	E
E	Q	U	A	T	I	O	N	C	O	A	I	N	Q
B	D	E	J	K	V	U	P	E	L	C	R	S	U
U	O	A	Y	B	Q	V	F	G	Q	F	Q	T	A
P	E	G	J	H	X	F	E	W	F	W	S	A	L
T	E	R	M	A	I	B	U	L	S	V	C	N	I
V	T	Y	F	C	R	A	E	U	T	U	H	T	T
A	S	Z	I	A	A	D	D	P	K	F	F	C	Y
Z	F	E	X	P	R	E	S	S	I	O	N	A	Z
G	N	F	Z	P	A	V	A	R	I	A	B	L	E
T	Q	U	N	K	N	O	W	N	G	M	J	U	I
T	H	I	V	X	P	X	B	R	Z	S	D	Z	R

Find these English words:

algebra, variable, constant, coefficient, term, expression, equation, inequality, unknown, substitute

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Algebra: Patterns, Expressions, Equations and Inequalities

1. Identify the coefficient in $6x + 4$.

2. Evaluate $2m - 1$ when $m = 9$.

3. Solve $p - 8 = 15$.

4. Solve $4q = 36$.

5. Solve $3r + 2 = 20$.

6. Write an inequality for a number x that is less than 10.

7. Find the next term: 4, 9, 14, 19.

8. Explain how substitution checks a solution.

UNIT CHALLENGE

Create a visual pattern with a linear rule. Draw Designs 1 to 4, write an expression for Design n and prove that your rule works.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |

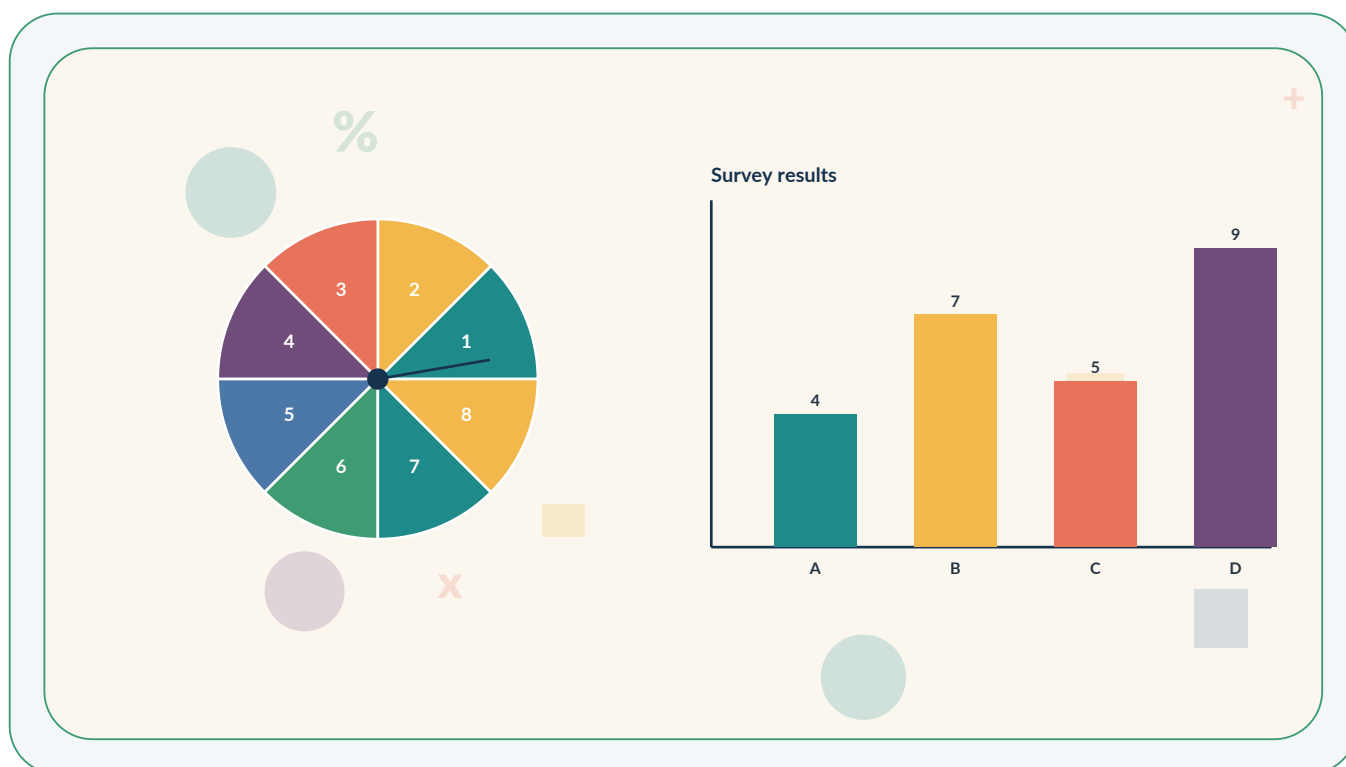
Unit 8 Launch

Statistics and Probability

8

Statistics and Probability

UNIT MISSION



LEARNING OBJECTIVES

- describe data sets
- calculate measures of centre and spread
- interpret simple probability
- communicate conclusions cautiously

LANGUAGE BRIDGE

- EN** Statistics summarises data; probability describes likelihood.
- CL** La estadística resume datos; la probabilidad describe qué tan posible es algo.
- CO** La estadística resume datos; la probabilidad describe qué tan posible es algo.
- VE** La estadística resume datos; la probabilidad describe qué tan posible es algo.
- BR** A estatística resume dados; a probabilidade descreve a chance de algo acontecer.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

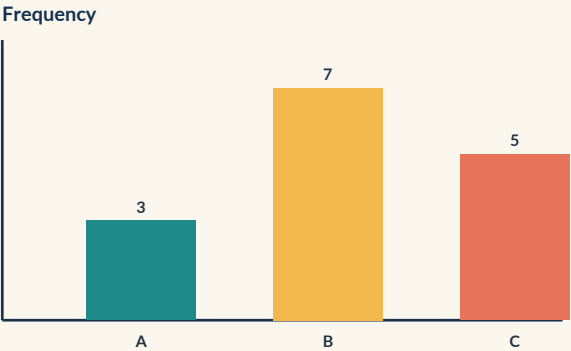
Statistics and Probability

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
data	datos	datos	datos	dados
survey	encuesta	encuesta	encuesta	pesquisa
population	población	población	población	população
sample	muestra	muestra	muestra	amostra
frequency	frecuencia	frecuencia	frecuencia	frequência
mean	promedio / media	promedio / media	promedio / media	média
median	mediana	mediana	mediana	mediana
mode	moda	moda	moda	moda

VISUAL MEMORY



Vocabulary Bank 2

Statistics and Probability

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
range	rango	rango	rango	amplitude
probability	probabilidad	probabilidad	probabilidad	probabilidade
certain	seguro	seguro	seguro	certo
likely	probable	probable	probable	provável
unlikely	poco probable	poco probable	poco probable	improvável
impossible	imposible	imposible	imposible	impossível
outcome	resultado posible	resultado posible	resultado posible	resultado possível
random	al azar	aleatorio	al azar	aleatório

1. The mean is calculated by...

2. The median is the middle value.

3. The most frequent value is...

4. The probability is three out of ten.

5. The sample may not represent the population.

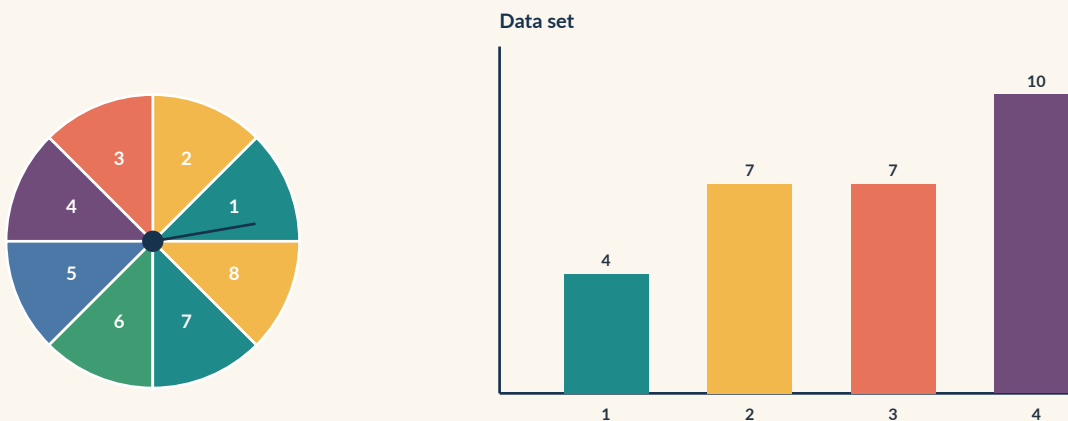
Regional note: Promedio is common in everyday Spanish; media aritmética is more formal. Portuguese uses média.

Concept Lab

Statistics and Probability

CORE IDEA

Statistics summarises data, while probability describes how likely an outcome is. Always consider how data was collected before making a conclusion.



WORKED EXAMPLES

MEAN

For 4, 7, 7, 10: mean = $28 / 4 = 7$.

PROBABILITY

3 blue out of 8 equal outcomes: $P(\text{blue}) = 3/8$.

QUICK CHECK

1. Find the mean of 4, 6, 8, 10.

2. Find the median of 3, 5, 9, 11, 20.

3. Find the mode of 2, 4, 4, 5, 7.

Say it: The mean is calculated by... Then explain which mathematical clue helped you choose the operation or method.

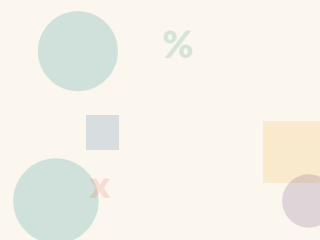
Reading Mathematics

Statistics and Probability

READ

How Do Students Travel to Class?

A group surveys 40 students about how they travel to class. Eighteen use the bus, ten walk, seven travel by car and five cycle. The researchers calculate percentages and display the results. They also record travel times: 15, 20, 20, 25, 30, 35 and 50 minutes. The median is 25 minutes, while the range is 35 minutes. The group notes that its sample is small, so the results may not describe every student in the city.



COMPREHENSION

1. How many students use the bus?

2. Which method is least common?

3. What is the median travel time?

4. What is the range?

5. Why should the conclusion be cautious?

LANGUAGE BRIDGE

- | | |
|----|--|
| EN | Statistics summarises data; probability describes likelihood. |
| CL | La estadística resume datos; la probabilidad describe qué tan posible es algo. |
| CO | La estadística resume datos; la probabilidad describe qué tan posible es algo. |
| VE | La estadística resume datos; la probabilidad describe qué tan posible es algo. |
| BR | A estatística resume dados; a probabilidade descreve a chance de algo acontecer. |

Listening for Mathematical Detail

Statistics and Probability



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. How many sections are on the spinner?

2. What is the probability of blue?

3. Which colours are equally likely?

4. Which colour is least likely?

5. Why is purple impossible?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Statistics and Probability

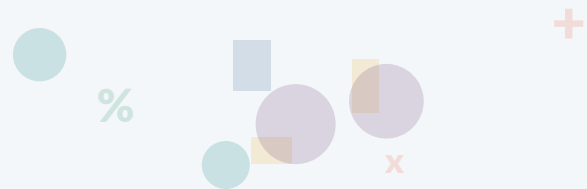
PAIR WORK

Mini Survey: choose one safe classroom question, collect ten responses, make a frequency table and tell your partner one conclusion and one limitation.



CLASSROOM GAME

Probability Line: place event cards from impossible to certain. Teams must defend any disputed placement using likely, unlikely, equally likely and certain.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: The median is the middle value.

WRITING TASK

Write a 100-word data commentary describing a small data set. Include the mean or median, range, one comparison and one cautious conclusion.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Statistics and Probability

1. Find the mean of 4, 6, 8, 10.

2. Find the median of 3, 5, 9, 11, 20.

3. Find the mode of 2, 4, 4, 5, 7.

4. Find the range of 12, 18, 19, 25.

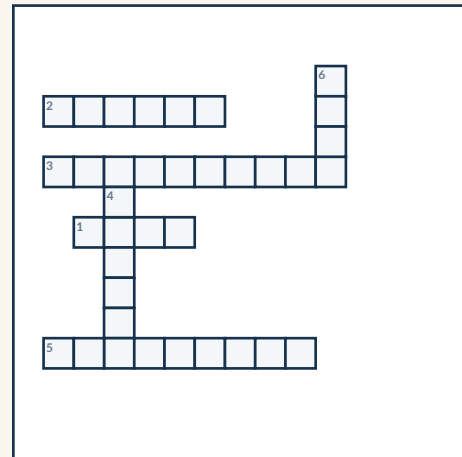
5. A bag has 5 red and 3 blue counters. Probability of blue?

6. Probability of rolling a 7 on a standard six-sided die?

7. Order: impossible, unlikely, likely, certain from least to most likely.

8. Give one reason a sample could be biased.

MINI CROSSWORD



Chilean Spanish clues -> English answers

1. datos
2. encuesta
3. población
4. muestra
5. frecuencia
6. promedio / media

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Statistics and Probability

1. Find the mean of 5, 7, 7, 9.

2. Find the median of 2, 6, 8, 10.

3. Find the mode of 1, 3, 3, 3, 8.

4. Find the range of 14, 17, 29, 31.

5. A fair coin is tossed. Probability of heads?

6. A jar has 2 green and 8 orange counters. Probability of green?

7. Define population.

8. Why might the mean be affected by an extreme value?

UNIT CHALLENGE

Design a fair game using a spinner or dice. State all outcomes, calculate each probability, explain why the game is fair and test it at least 30 times.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |

Unit 9 Launch

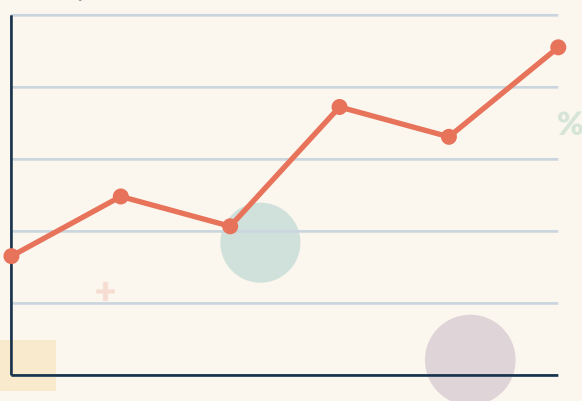
Graphs, Tables and Data Interpretation

9

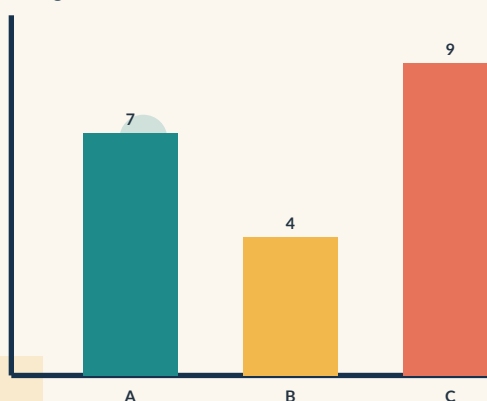
Graphs, Tables and Data Interpretation

UNIT MISSION

Monthly trend



Categories



LEARNING OBJECTIVES

- identify parts of graphs
- select suitable displays
- compare trends and categories
- evaluate misleading representations

LANGUAGE BRIDGE

- EN** Always check the title, labels, units and scale before interpreting a graph.
- CL** Revisa siempre el título, las etiquetas, las unidades y la escala antes de interpretar un gráfico.
- CO** Revisa siempre el título, las etiquetas, las unidades y la escala antes de interpretar un gráfico.
- VE** Revisa siempre el título, las etiquetas, las unidades y la escala antes de interpretar un gráfico.
- BR** Sempre verifique o título, os rótulos, as unidades e a escala antes de interpretar um gráfico.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

Graphs, Tables and Data Interpretation

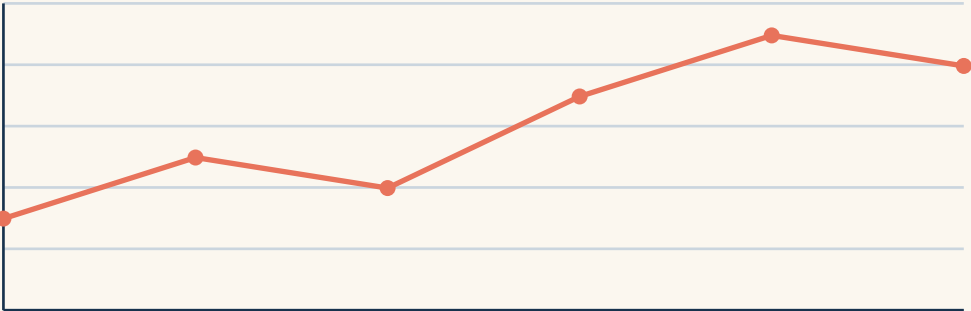
WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
table	tabla	tabla	tabla	tabela
chart	gráfico	gráfico	gráfico	gráfico
bar chart	gráfico de barras	gráfico de barras	gráfico de barras	gráfico de barras
line graph	gráfico de líneas	gráfico de líneas	gráfico de líneas	gráfico de linhas
pie chart	gráfico circular	gráfico circular	gráfico circular	gráfico de setores
horizontal axis	eje horizontal	eje horizontal	eje horizontal	eixo horizontal
vertical axis	eje vertical	eje vertical	eje vertical	eixo vertical
scale	escala	escala	escala	escala

VISUAL MEMORY

Trend



Vocabulary Bank 2

Graphs, Tables and Data Interpretation

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
interval	intervalo	intervalo	intervalo	intervalo
label	etiqueta	etiqueta	etiqueta	rótulo
category	categoría	categoría	categoría	categoria
trend	tendencia	tendencia	tendencia	tendência
increase	aumento	aumento	aumento	aumento
decrease	disminución	disminución	disminución	diminuição
peak	punto máximo	pico	pico	pico
fluctuate	variar	fluctuar	fluctuar	oscilar

1. The graph shows that...

2. There was a steady increase.

3. The value reached a peak of...

4. By contrast, the second category...

5. The scale may exaggerate the difference.

Regional note: English uses graph and chart flexibly. In Spanish and Portuguese, gráfico is a broad equivalent; tabla/tabela refers specifically to a table.

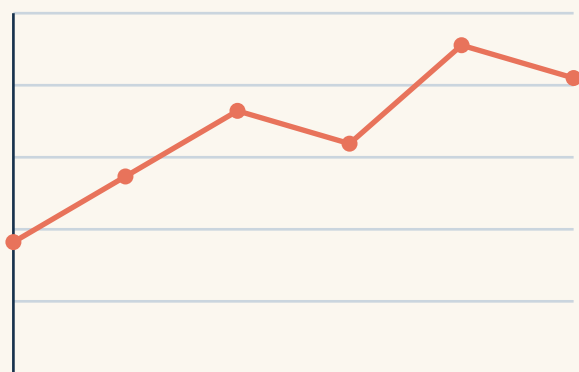
Concept Lab

Graphs, Tables and Data Interpretation

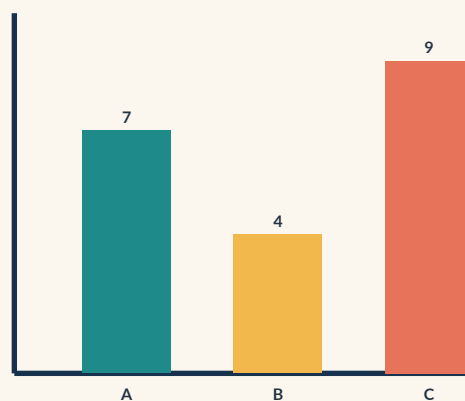
CORE IDEA

A graph should communicate data clearly and honestly. Read the title, labels, units, scale and source before interpreting patterns or comparing values.

Trend



Compare



WORKED EXAMPLES

ABSOLUTE CHANGE

From 80 to 100: increase = 20.

PERCENTAGE CHANGE

$20 / 80 \times 100 = 25\%$ increase.

QUICK CHECK

1. Name the two axes on a standard graph.

2. Best graph for change over time?

3. Best graph for comparing categories?

Say it: The graph shows that... Then explain which mathematical clue helped you choose the operation or method.

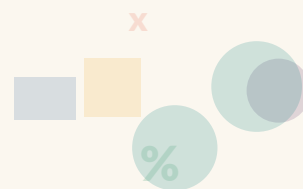
Reading Mathematics

Graphs, Tables and Data Interpretation

READ

Reading Energy Use Responsibly

A line graph shows monthly electricity use in a school. Consumption rises from 420 units in March to a peak of 610 units in June. It then falls steadily to 390 units in September. At first glance, the June bar appears more than twice as high as the March bar. However, the vertical axis begins at 350 rather than zero, which exaggerates the visual difference. Students conclude that the increase is important but not as dramatic as the graph first suggests.



COMPREHENSION

1. What is the March value?

2. When does energy use peak?

3. What is the September value?

4. Why does the graph look dramatic?

5. What conclusion do students make?

LANGUAGE BRIDGE

- | | |
|----|--|
| EN | Always check the title, labels, units and scale before interpreting a graph. |
| CL | Revisa siempre el título, las etiquetas, las unidades y la escala antes de interpretar un gráfico. |
| CO | Revisa siempre el título, las etiquetas, las unidades y la escala antes de interpretar un gráfico. |
| VE | Revisa siempre el título, las etiquetas, las unidades y la escala antes de interpretar un gráfico. |
| BR | Sempre verifique o título, os rótulos, as unidades e a escala antes de interpretar um gráfico. |

Listening for Mathematical Detail

Graphs, Tables and Data Interpretation



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. What is the January value?

2. What happens in April?

3. What is the May value?

4. When is the lowest value?

5. Describe the change from May to June.

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Graphs, Tables and Data Interpretation

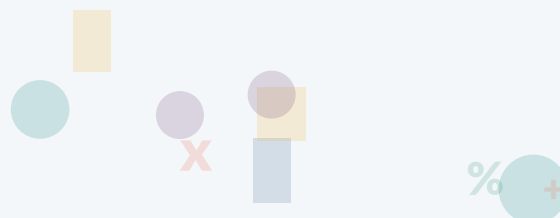
PAIR WORK

Information Gap Graph: Student A receives values for January to June; Student B has the blank graph. Ask and answer precise questions, then compare the completed graph with the original.



CLASSROOM GAME

Graph Gallery Walk: teams match data stories, graphs and interpretations. One card in each set is misleading; identify it and explain why.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: There was a steady increase.

WRITING TASK

Write a 120-word report comparing two categories in a graph. Include an overview, two data details, one contrast and a comment on the scale.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Graphs, Tables and Data Interpretation

1. Name the two axes on a standard graph.

2. Best graph for change over time?

3. Best graph for comparing categories?

4. A value rises from 80 to 100. Find the increase.

5. Find the percentage increase from 80 to 100.

6. What does a peak mean?

7. Give one reason a truncated axis may mislead.

8. Write one sentence describing a fluctuating trend.

WORD SEARCH

V	T	A	N	I	S	D	B	W	K	G	V	Z	R
T	T	S	U	I	C	C	R	Z	P	N	E	L	W
L	Q	H	C	T	Q	L	F	I	W	S	R	A	D
Z	E	T	J	A	A	C	E	L	T	Q	T	B	C
K	B	J	Z	B	L	C	H	H	U	O	I	A	O
L	S	Q	E	O	H	E	B	A	E	T	C	R	I
Y	I	L	Y	A	L	F	X	V	R	D	A	C	N
B	H	N	R	S	P	Y	C	L	W	T	L	H	T
T	Y	T	E	F	T	W	C	C	M	N	A	A	E
P	Q	W	K	G	N	N	B	N	T	Y	X	R	R
P	T	X	M	J	R	C	N	A	M	T	I	T	V
E	G	U	V	K	T	A	B	W	W	G	S	O	A
Y	Y	T	X	Y	E	L	P	W	D	G	W	A	L
S	H	K	Z	F	E	F	I	H	T	H	A	D	H

Find these English words:

table, chart, bar chart, line graph, pie chart, horizontal axis, vertical axis, scale, interval, label

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Graphs, Tables and Data Interpretation

1. What information should a graph title provide?

2. What does the scale tell the reader?

3. A value falls from 150 to 120. Find the decrease.

4. Find the percentage decrease from 150 to 120.

5. Which graph shows parts of a whole?

6. Define a steady trend.

7. Name two features to check for misleading graphs.

8. Write a comparison using whereas.

UNIT CHALLENGE

Create two graphs from the same data: one fair and one intentionally misleading. Explain exactly which design choice changes the reader's impression.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |

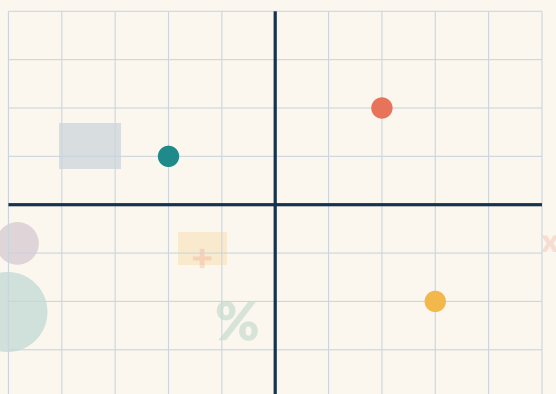
Unit 10 Launch

Word Problems and Academic Mathematical Communication

10

Word Problems and Academic Mathematical Communication

UNIT MISSION



READ
MODEL
SOLVE
CHECK

LEARNING OBJECTIVES

- decode multi-step problems
- justify methods with evidence
- present mathematical arguments
- evaluate and revise solutions

LANGUAGE BRIDGE

- EN** A complete solution explains the method, checks the result and interprets it.
- CL** Una solución completa explica el método, comprueba el resultado y lo interpreta.
- CO** Una solución completa explica el método, comprueba el resultado y lo interpreta.
- VE** Una solución completa explica el método, comprueba el resultado y lo interpreta.
- BR** Uma solução completa explica o método, verifica o resultado e o interpreta.

LANGUAGE MISSION

Use at least four new terms and two complete reasoning phrases when you explain the final unit challenge.

Vocabulary Bank 1

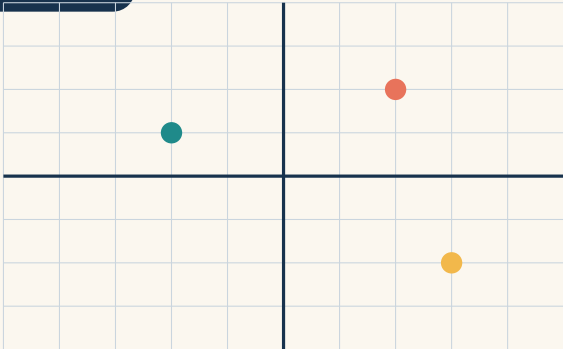
Word Problems and Academic Mathematical Communication

WORDS 1-8

Read across the five language columns. Highlight familiar cognates, circle important spelling differences and practise the English term in a complete sentence.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
word problem	problema escrito	problema verbal	problema planteado	problema contextualizado
given information	información dada	información dada	información dada	informações fornecidas
unknown quantity	cantidad desconocida	cantidad desconocida	cantidad desconocida	quantidade desconhecida
assumption	supuesto	supuesto	supuesto	suposição
constraint	restricción	restricción	restricción	restrição
strategy	estrategia	estrategia	estrategia	estratégia
method	método	método	método	método
calculation	cálculo	cálculo	cálculo	cálculo

VISUAL MEMORY



MODEL -> SOLVE -> CHECK

Vocabulary Bank 2

Word Problems and Academic Mathematical Communication

WORDS 9-16

Say each English term, cover the English column and retrieve it from another language, then use it in a mathematical example.

ENGLISH	CHILE	COLOMBIA	VENEZUELA	PORTUGUES (BR)
estimate	estimación	estimación	estimación	estimativa
reasonable	razonable	razonable	razonable	razoável
justify	justificar	justificar	justificar	justificar
evidence	evidencia	evidencia	evidencia	evidência
conclusion	conclusión	conclusión	conclusión	conclusão
interpret	interpretar	interpretar	interpretar	interpretar
verify	verificar	verificar	verificar	verificar
revise	revisar	revisar	revisar	revisar

1. The relevant information is...

2. I represented the situation by...

3. This method is efficient because...

4. The result is reasonable since...

5. A limitation of this model is...

Regional note: Encourage learners to translate the situation, not every word. They should identify quantities, relationships, units and the question.

Concept Lab

Word Problems and Academic Mathematical Communication

CORE IDEA

Strong problem solving combines comprehension, representation, calculation, checking and communication. A correct number without a clear interpretation may not fully answer the question.

MODEL**SOLVE****CHECK**

WORKED EXAMPLES

MODEL

Taxi cost: $C = 3 + 1.20k$, where k is kilometres.

INTERPRET

For 8 km, $C = 12.60$. The journey costs \$12.60.

QUICK CHECK

1. A class of 28 shares 196 cards equally. How many each?

2. A jacket costs \$80 and is reduced by 25%. New price?

3. A rectangle is 9.5 m by 6 m. Find area.

Say it: The relevant information is... Then explain which mathematical clue helped you choose the operation or method.

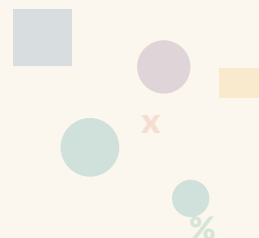
Reading Mathematics

Word Problems and Academic Mathematical Communication

READ

Planning a Multilingual Maths Fair

The LUMARA team plans a maths fair for 180 visitors. Tickets cost 6 dollars for adults and 4 dollars for students. The organisers expect 70 adults and 110 students. The hall costs 350 dollars, materials cost 280 dollars and refreshments cost 1.50 dollars per visitor. First, the team estimates total revenue. Next, it calculates all expected costs and compares the two totals. Finally, it considers a limitation: actual attendance may be lower than expected. The team therefore prepares a second scenario with 15 percent fewer visitors.



COMPREHENSION

1. How many visitors are expected?

2. What is the expected ticket revenue?

3. What are the refreshment costs?

4. What is the expected profit before the lower-attendance scenario?

5. Why is a second scenario useful?

LANGUAGE BRIDGE

- | | |
|----|--|
| EN | A complete solution explains the method, checks the result and interprets it. |
| CL | Una solución completa explica el método, comprueba el resultado y lo interpreta. |
| CO | Una solución completa explica el método, comprueba el resultado y lo interpreta. |
| VE | Una solución completa explica el método, comprueba el resultado y lo interpreta. |
| BR | Uma solução completa explica o método, verifica o resultado e o interpreta. |

Listening for Mathematical Detail

Word Problems and Academic Mathematical Communication



Listen, record and verify

BEFORE LISTENING

Predict the type of answer required: a number, unit, term, comparison or explanation. Your teacher will read the track twice.

LISTENING TASK

1. How many notebooks are ordered?

2. What is the cost of the boxes before discount?

3. What is the discount amount?

4. What is the discounted box cost?

5. What is the final amount including delivery?

AFTER LISTENING

Compare answers with a partner. Use: **I recorded..., I heard..., Can you repeat the quantity?** and **Let us check the unit.** Then listen to the script once more and correct in a different colour.

Communicate and Create

Word Problems and Academic Mathematical Communication

PAIR WORK

Problem-Solving Conference: Student A presents a multi-step solution. Student B asks about the representation, assumptions, units and checking method, then gives one specific improvement.



CLASSROOM GAME

Maths Escape Challenge: teams solve five linked problems. Each answer unlocks a code. Teams earn an extra clue by explaining one solution clearly in academic English.



SPEAKING CHALLENGE

Explain one worked example from this unit without reading. Your partner listens for accurate vocabulary, logical sequencing and correct units. Use: I represented the situation by...

WRITING TASK

Write a 180-word solution to a real-world problem. Include the known information, unknown, strategy, calculations, units, check, conclusion and one limitation.

Peer feedback: One thing that was mathematically clear was... | One English phrase that worked well was... | One next step is...

Printable Worksheet and Puzzle

Word Problems and Academic Mathematical Communication

1. A class of 28 shares 196 cards equally. How many each?

2. A jacket costs \$80 and is reduced by 25%. New price?

3. A rectangle is 9.5 m by 6 m. Find area.

4. A taxi charges \$3 plus \$1.20 per kilometre. Cost for 8 km?

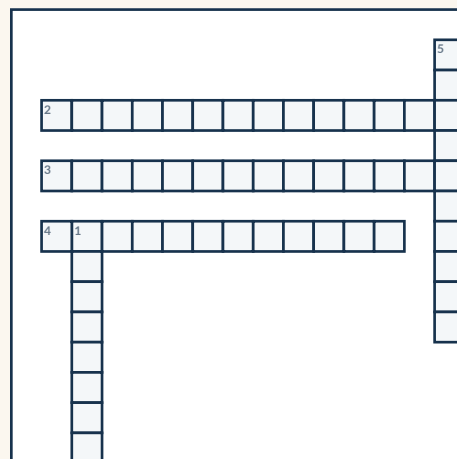
5. A recipe for 4 uses 300 g flour. How much for 10?

6. A tank is $\frac{3}{5}$ full. Capacity 250 L. How much water?

7. Explain one way to check the answer to question 5.

8. Write a complete conclusion for question 6.

MINI CROSSWORD



Chilean Spanish clues -> English answers

- 1. problema escrito
- 2. información dada
- 3. cantidad desconocida
- 4. supuesto
- 5. restricción
- 1. estrategia

REFLECTION

Which question required the most thinking? Explain the strategy you used and one way you checked your answer.

Unit Quiz and Self-Assessment

Word Problems and Academic Mathematical Communication

1. A shop buys 15 items at \$8 each and sells all at \$11 each. Profit?

2. A trip is 240 km. After 35%, how many kilometres remain?

3. Solve: $4x + 12 = 60$.

4. Mean of 12, 15, 18, 19, 21?

5. A bag has 4 red, 5 blue and 1 green counter. Probability of not green?

6. A floor is 7 m by 5 m. Tiles cover 0.25 m² each. How many tiles without waste?

7. State one assumption in a travel-cost model.

8. Explain why units belong in the final answer.

UNIT CHALLENGE

Investigate a real decision such as class-event costs, travel time or resource use. Build a model, state assumptions, compare two scenarios and present a recommendation supported by mathematics.

I CAN...

- | | |
|---|--|
| ☐ use the unit vocabulary accurately | ☐ solve the core mathematical tasks |
| ☐ explain a method in complete English sentences | ☐ check and improve my work |



MIDTERM TEST

Cumulative assessment | Units 1-5 | Number sense, operations, fractions, decimals, percentages and geometry

NAME:

DATE:

Assessment habits

Read each question carefully. Show working. Include units. Estimate when useful. Check whether your answer is reasonable. Use complete English sentences when asked to explain.

Midterm Test: Part A

Units 1-5

VOCABULARY AND CALCULATION

1. Write 7,405 in words.

2. What is the value of 8 in 28,613?

3. Round 6,749 to the nearest hundred.

4. Calculate $3,486 + 2,759$.

5. Calculate $8,000 - 3,674$.

6. Calculate 46×7 .

7. Calculate $864 \div 12$.

8. Write the next two terms: 5, 11, 17, 23, ...

9. Simplify $\frac{3}{8} + \frac{2}{8}$.

10. Write 0.62 as a percentage.

11. Write 35% as a decimal.

12. Find 20% of 450.

Language check: Choose two answers and write how you calculated them. Use sequence words such as first, next, then and finally.

Midterm Test: Part B

Units 1-5

GEOMETRY AND REASONING

13. Name a polygon with five sides.

14. Classify an angle of 35 degrees.

15. Classify an angle of 90 degrees.

16. Find the perimeter of a rectangle 12 cm by 7 cm.

17. Find the area of the same rectangle.

18. A square has perimeter 36 cm. Find one side length.

19. A shape has 6 equal square faces. Name the 3D shape.

20. A cake is cut into 8 equal pieces. Three are eaten. What fraction remains?

21. A \$120 item is reduced by 15%. What is the new price?

22. Explain the difference between perimeter and area.

23. Draw two different rectangles with area 24 square units. Find both perimeters.

24. Which is greater: $\frac{5}{8}$ or 0.6? Explain.

Extended response: A classroom floor is 8 m by 6 m. Carpet costs \$18 per square metre. Calculate the area and total carpet cost. Explain every step and include units.



FINAL ASSESSMENT

Cumulative assessment | Units 1-10 | Mathematical knowledge, communication, problem solving and academic English

NAME:

DATE:

Assessment habits

Read each question carefully. Show working. Include units. Estimate when useful. Check whether your answer is reasonable. Use complete English sentences when asked to explain.

Final Assessment: Vocabulary and Number

Units 1-10

PART A

1. Match or define: variable, median, scale, coefficient and estimate.

2. Write 905,070 in words.

3. Round 48,765 to the nearest thousand.

4. Calculate $7,942 - 3,586$.

5. Calculate 325×18 .

6. Calculate $2,772 \div 21$.

7. Write $7/20$ as a decimal and percentage.

8. Find 17.5% of 240.

9. Put in ascending order: 0.45, 48%, $1/2$, 0.405.

10. A price rises from \$80 to \$92. Find the percentage increase.

Academic language: Write two complete comparison sentences about question 9. Use greater than, less than, whereas or by contrast.

Final Assessment: Algebra, Geometry and Measurement

Units 1-10

PART B

11. Evaluate $5x - 4$ when $x = 7$.

12. Simplify $4a + 3a - 2$.

13. Solve $3y + 8 = 35$.

14. Solve $z/6 - 2 = 5$.

15. Continue the sequence 2, 6, 10, 14 and write a rule for term n .

16. Find the perimeter and area of a rectangle 9.5 m by 4 m.

17. Convert 3.75 km to metres.

18. Convert 2,450 mL to litres.

19. A lesson begins at 13:45 and lasts 1 hour 55 minutes. When does it end?

20. A temperature changes from -6 degrees Celsius to 11 degrees Celsius. Find the increase.

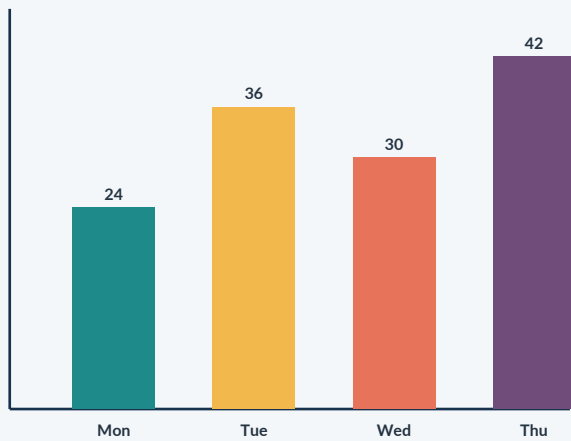
21. A right triangle has one angle of 38 degrees. Find the third angle.

22. Explain why square centimetres, not centimetres, are used for area.

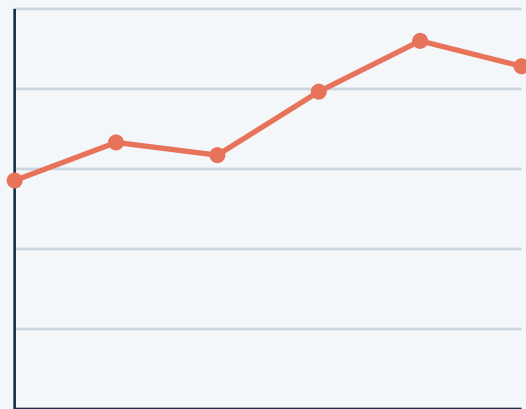
Final Assessment: Statistics and Graphs

Units 1-10

Books borrowed



Temperature trend



23. From the bar chart, which day has the highest value?

24. How many more books are borrowed on Thursday than Monday?

25. Describe the line-graph trend in one or two sentences.

26. Find the mean of 8, 10, 10, 12, 15.

27. Find the median, mode and range of the same data.

28. A bag contains 4 blue, 3 red and 5 yellow counters. Find $P(\text{red})$.

29. Explain why a graph with a vertical axis beginning at 29 could exaggerate a change from 30 to 32.

30. Name one limitation of a survey of only one class.

Data conclusion: Write one evidence-based conclusion and one cautious limitation about either visual above.

Final Assessment: Multi-Step Problem Solving

Units 1-10

PART D**31. SCHOOL EVENT**

A school sells 96 adult tickets at \$7.50 and 144 student tickets at \$4.25. Venue hire costs \$500, materials cost \$185 and refreshments cost \$1.20 per attendee. Calculate total revenue, total cost and profit or loss.

32. WATER USE

A 600-litre tank is 35% full. Then 180 litres are added and 75 litres are used. What percentage full is the tank now?

33. TRAVEL MODEL

A bus journey is 315 km. The first 40% is travelled at an average of 70 km/h and the rest at 90 km/h. Estimate the total travel time, excluding stops.

34. EVALUATE

Choose one problem above. State an assumption or limitation, explain how it could affect the answer and suggest one improvement to the model.

Final Speaking Assessment

Units 1-10

PART E

A. EXPLAIN A SOLUTION

Select a multi-step problem from page 106. Explain the known information, model, calculations, check and conclusion.

B. INTERPRET DATA

Use a teacher-provided graph. Describe the overview, key values, comparisons, trend and one limitation.

C. TEACH A CONCEPT

Teach one topic from Units 1-9 to a classmate. Include a definition, visual example, worked example and quick-check question.

SPEAKING CHECKLIST

- | | | |
|--|--|--|
| ☐ accurate vocabulary | ☐ clear sequence | ☐ correct mathematics |
| ☐ appropriate units | ☐ answers follow-up questions | |

Units 1-10

A community centre wants to reduce energy use. Monthly consumption fell from 800 units to 680 units after a campaign, but the target is a 25% reduction from the original value. Calculate the percentage reduction achieved, calculate the target value and explain whether the target has been met. Recommend two next steps and mention one limitation of the available data.

Given information and unknowns

Learner Progress Tracker

Rate each skill: 1 = I need support | 2 = I am developing | 3 = I can do it independently | 4 = I can explain it to someone else.

UNIT	CORE SKILL	1	2	3	4	NEXT STEP
1	say and write whole numbers	☐	☐	☐	☐	
2	name parts of addition and subtraction	☐	☐	☐	☐	
3	read multiplication and division equations	☐	☐	☐	☐	
4	name parts of a fraction	☐	☐	☐	☐	
5	name 2D and 3D shapes	☐	☐	☐	☐	
6	select appropriate metric units	☐	☐	☐	☐	
7	identify variables and constants	☐	☐	☐	☐	
8	describe data sets	☐	☐	☐	☐	
9	identify parts of graphs	☐	☐	☐	☐	
10	decode multi-step problems	☐	☐	☐	☐	

My strongest mathematical English skill is: _____

My next learning goal is: _____



CERTIFICATE

MATHEMATICS THROUGH ENGLISH

This certificate is proudly awarded to

for successfully completing the LUMARA English multilingual mathematics programme and demonstrating growth in mathematical vocabulary, reasoning, problem solving and academic communication from CEFR A1 to B2.

TEACHER SIGNATURE

DATE



LUMARA

Multilingual Vocabulary Index A-M

acute angle	ángulo agudo	ángulo agudo	ángulo agudo	ângulo agudo	5
add	sumar	sumar	sumar	somar / adicionar	2
addend	sumando	sumando	sumando	parcela	2
addition	suma / adición	suma / adición	suma / adición	adição	2
algebra	álgebra	álgebra	álgebra	álgebra	7
angle	ángulo	ángulo	ángulo	ângulo	5
approximately	aproximadamente	aproximadamente	aproximadamente	aproximadamente	1
area	área	área	área	área	5
array	arreglo / matriz	arreglo / matriz	arreglo / matriz	arranjo / matriz	3
assumption	supuesto	supuesto	supuesto	suposição	10
balance	equilibrar	equilibrar	equilibrar	equilibrar	7
bar chart	gráfico de barras	gráfico de barras	gráfico de barras	gráfico de barras	9
brackets	paréntesis	paréntesis	paréntesis	parênteses	3
calculate	calcular	calcular	calcular	calcular	2
calculation	cálculo	cálculo	cálculo	cálculo	10
capacity	capacidad	capacidad	capacidad	capacidade	6
category	categoría	categoría	categoría	categoria	9
centimetre	centímetro	centímetro	centímetro	centímetro	6
certain	seguro	seguro	seguro	certo	8
chart	gráfico	gráfico	gráfico	gráfico	9
circle	círculo	círculo	círculo	círculo	5
coefficient	coeficiente	coeficiente	coeficiente	coeficiente	7
conclusion	conclusión	conclusión	conclusión	conclusão	10
constant	constante	constante	constante	constante	7
constraint	restricción	restricción	restricción	restrição	10
data	datos	datos	datos	dados	8
decimal	decimal	decimal	decimal	decimal	4
decimal point	coma decimal	coma decimal	coma decimal	vírgula decimal	4
decrease	disminución	disminución	disminución	diminuição	9
denominator	denominador	denominador	denominador	denominador	4
difference	diferencia	diferencia	diferencia	diferença	2
digit	dígito	dígito	dígito	algarismo	1
distance	distancia	distancia	distancia	distância	6
divide	dividir	dividir	dividir	dividir	3
divided by	dividido por	dividido por	dividido por	dividido por	3
dividend	dividendo	dividendo	dividendo	dividendo	3
division	división	división	división	divisão	3
divisor	divisor	divisor	divisor	divisor	3
edge	arista	arista	arista	aresta	5
equal to	igual a	igual a	igual a	igual a	1
equation	ecuación	ecuación	ecuación	equação	7

Multilingual Vocabulary Index N-Z

number	número	número	número	número	1
number line	recta numérica	recta numérica	recta numérica	reta numérica	1
numerator	numerador	numerador	numerador	numerador	4
obtuse angle	ángulo obtuso	ángulo obtuso	ángulo obtuso	ângulo obtuso	5
ones	unidades	unidades	unidades	unidades	1
order of operations	orden de las operaciones	orden de las operaciones	orden de las operaciones	ordem das operações	3
outcome	resultado posible	resultado posible	resultado posible	resultado possível	8
peak	punto máximo	pico	pico	pico	9
percent	por ciento	por ciento	por ciento	por cento	4
percentage	porcentaje	porcentaje	porcentaje	porcentagem	4
perimeter	perímetro	perímetro	perímetro	perímetro	5
pie chart	gráfico circular	gráfico circular	gráfico circular	gráfico de setores	9
place value	valor posicional	valor posicional	valor posicional	valor posicional	1
plus	más	más	más	mais	2
polygon	polígono	polígono	polígono	polígono	5
population	población	población	población	população	8
probability	probabilidad	probabilidad	probabilidad	probabilidade	8
product	producto	producto	producto	produto	3
proper fraction	fracción propia	fracción propia	fracción propia	fração própria	4
proportion	proporción	proporción	proporción	proporção	4
quotient	cociente	cociente	cociente	quociente	3
random	al azar	aleatorio	al azar	aleatório	8
range	rango	rango	rango	amplitude	8
ratio	razón	razón	razón	razão	4
reasonable	razonable	razonable	razonable	razoável	10
rectangle	rectángulo	rectángulo	rectángulo	retângulo	5
regroup	reagrupar / llevar	reagrupar / llevar	reagrupar / llevar	reagrupar / fazer reserva	2
remainder	resto / residuo	residuo	residuo	resto	3
revise	revisar	revisar	revisar	revisar	10
right angle	ángulo recto	ángulo recto	ángulo recto	ângulo reto	5
round	redondear	redondear	redondear	arredondar	1
rule	regla	regla	regla	regra	7
sample	muestra	muestra	muestra	amostra	8
scale	escala	escala	escala	escala	9
sequence	secuencia	secuencia	secuencia	sequência	7
shape	figura / forma	figura / forma	figura / forma	forma	5
simplify	simplificar	simplificar	simplificar	simplificar	4

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substitute	sustituir	sustituir	sustituir	substituir	7
subtract	restar	restar	restar	subtrair	2