Innovating with the Multimodalities-Entextualization Cycle in Language Across the Curriculum (LAC) to Improve ESL Junior Secondary Students' English Literacy

Materials tried out in teachers' lessons:

Algebraic Equations in One Unknown: An LAC Collaboration [Teacher Version]

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The lesson materials tried out represented an LAC collaboration between the **Math (S1)** department and the **English** department.

Unit Overview

Algebraic Equations in One Unknown

Module	Algebraic Equations in One Unknown
Target Class Level	Form 1
Learning Objectives	**Content learning objectives:** At the end of the module, students will: 1) apply the concept of algebraic equations in one unknown; 2) be able to formulate and solve algebraic equation in one unknown; 3) be able to solve daily-life problems by using algebraic equations. **Language learning objectives:** At the end of the module, students will: ● Understand the following language to formulate and solve algebraic equations in one unknown: the sum of …; in total, [A] and [B] share [C] / [C] is shared among [A] and [B] the product of … , [A] is greater / less than [B] by [C], [A] is [B] times [C]

Contents

Part 1 Addition

Lead-in: Listening to the song - Solving one-step equations
(Notes to teachers: This lead-in activity can be replaced by a shorter introduction with images or visuals.)

Listen to the song (0-1:30). Fill in the blanks according to the song lyrics and your mathematical knowledge.

Lyrics

 We're doing **algebra (代數, al/ge/bra [ˈæl.dʒə.brə])**.

We love that algebra.

We're doing algebra.

We love that algebra.

Algebra is my favorite class.

I like the way you use different kinds of math,

such as **operations (運算, operatℓ + ion= operation, o/pe/ra/tion [ˌɒp.ərˈeɪ.ʃən]) and variables (變數, va/ria/ble [ˈveə.ri.ə.bəl])**.

It makes my brain feel so wonderful.

I like **expressions (數學中的表達式, express + ion= expression, ex/pre/ssion [ɪkˈsp(=b)reʃ.ən]) and equations (方程式, equatℓ + ion= equation, e/qua/tion [ɪˈkweɪ.ʒən]) too**.

My favorite thing is to solve them, dude.

I like the **unknowns (未知數, know → known → unknown)**; I like the **ratios (比)**.

It's the algebra and I'm in the yo.

We're doing algebra.

We love that algebra.

We're doing algebra.

We love that algebra.

Let's talk about **solving equations (**解方程**, solv*e* + ing à solving):**

Addition (加法**, add + ition= addition, a/ddi/tion [əˈdɪʃ.ən]),**

subtraction (減法**, subtract +ion= subtraction, sub/trac/tion [səbˈtræk.ʃən]) or**

multiplication (乘法**, multipl*y* + cation= multipl*i*cation, mul/ti/pli/ca/tion[mʌl.tɪ.plɪˈkeɪ.ʃən]).**

Start on the side with the variable and

do the *inverse* (相反的**) operation. *Serve*(**發球**)!**

To *get the variable alone* (獲取單獨變量**) is what it's about.**

Once you do this, you can cancel them out.

I'll do the same thing to the other side:

Bring the variable down and the equal sign.

Solving one-step equations	
Step 1	Start on the side with the <u>variable</u>
Step 2	Do the <u>inverse</u> operation to get the variable <u>alone</u>. This means, When you see addition (+), you do subtraction (-) When you see <u>subtraction (-)</u>, you do a<u>ddition (+)</u> When you see <u>multiplication (*)</u>, you do division <u>(/)</u> When you see <u>division (/)</u>, you do <u>multiplication (*)</u>
Remember: whatever you do on one side, you have to do the same on the other side to balance the equation.	

Task 1 Language used for 'addition'

The plus sign "+" is for addition in maths. What English expressions mean "addition"? Read the following examples and find out.

(1) Visualizing what it means by "addition"

Expression	Mathematical	Everyday language (in daily life problems)		
	The sum of … (noun)	In total (adverbial phrase)	Share (active voice)	shared among (passive voice)
Example	The sum of 2 and x is 18. Find the value of x.	Amy has 2 apples. Carol has x apples. They have 18 apples in total. Find the value of x.	Amy and Carol share 18 apples. Amy has 2 apples. Coral has x apples. Find the value of x.	18 apples are shared among Amy and Carol. Amy has 2 apples. Carol has x apples. Find the value of x.
Algebraic equation	$2+x=18$ $(x=16)$			
As you can see, either in mathematical language or everyday language, there are different ways to express 'sum'. It is important to identify which number is the sum (和) and which are the addends (加數).				

Language Support 1 - Signals for addition

There are different ways to say "plus" (+) in English, including the following:

(1) The sum of...
Example: The sum of 2 and x is 18. ⇒

Structure:

The sum of A and B   is   C.   A+B=C

Subject   *Verb*   *Object*

Note: "the sum" is a noun (名詞) and "of" is a preposition.

(2) ...in total.
Example: They have 18 apples in total. ⇒

Structure:

A and B   have   C   in total   A + B = C

Subject   *verb*   *object*   *adv.*

(3) ...share...
Example: Amy and Carol share 18 apples. ⇒

Structure:

A and B   share   C   A + B = C

Subject   *Verb*   *object*
                        (active voice)

(4) … are shared among...
Example: 18 apples are shared among Amy and Carol. ⇒

Structure:

C	are shared	among A and B		A + B = C
Subject	*Verb (passive voice)*	*object*		
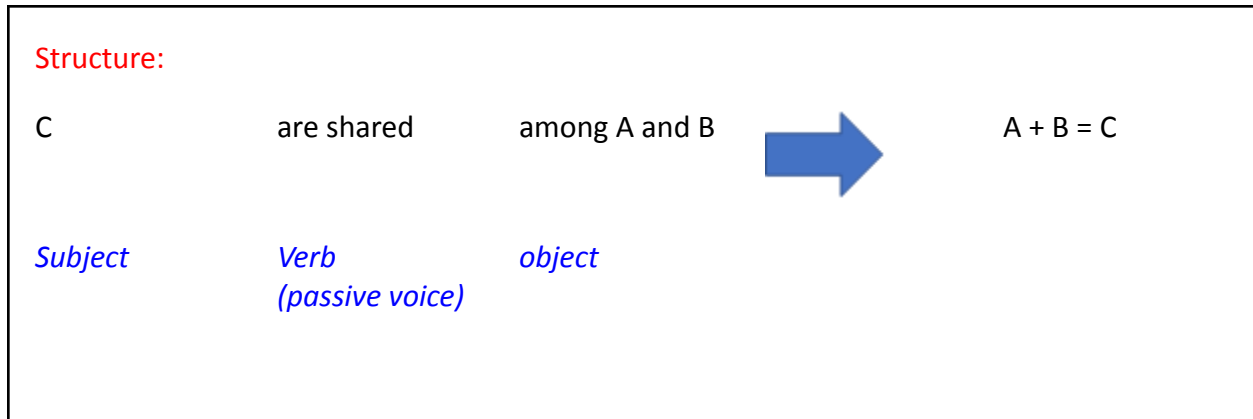
Task 2

A. Fill in the table and formulate algebraic equations.

1 Kevin has 4 candies. Luis has 7x candies. They have 32 candies in total. Find the value of x.

Kevin has 4 candies.	==>	4
Luis has 7x candies.	==>	7x
They have 32 candies **in total.**	==>	…+…=32
4+7x=32		

2 The sum of 4x and 8 is 80.

The sum of … and … is 80	==>	…+…=80
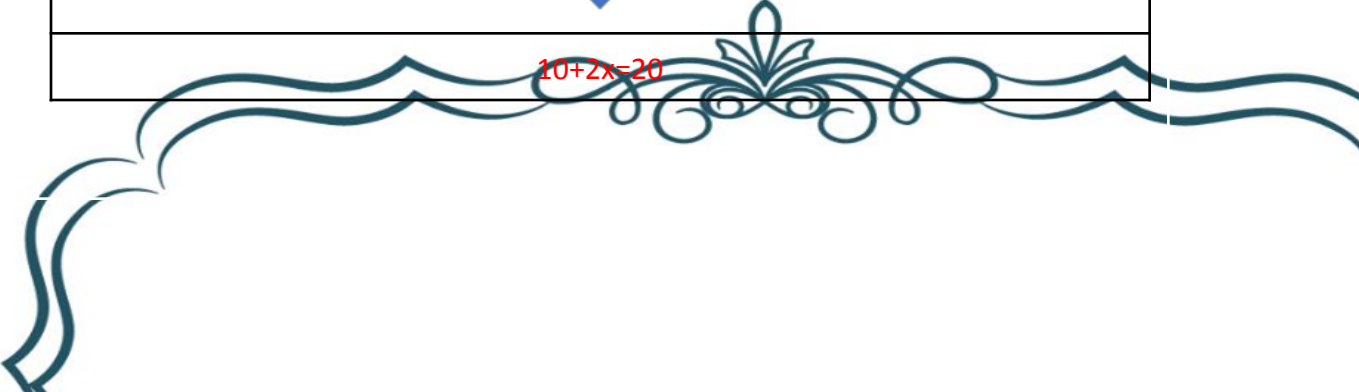
$$4x+8=80$$

3 $800 is shared among Lucy and Luca. Lucy has $200; Luca has 4x.

$800 is shared among Lucy and Luca.	==>	...+...=800
Lucy has $200.	==>	200
Luca has 4x.	==>	4x
200+4x=800		

4 Steven has 10 Pokémon cards. His friend gives him 2x. Now he has 20 in total.

Steven has 10 Pokémon cards.	==>	10
His friend gives him 2x.	==>	2x
Now he has 20 in total.	==>	...+...=20
10+2x=20		

B. Formulate Algebraic Equations and solve the equations.

5   Cindy and Dorris share 50 notebooks. Dorris has 25 of them; Cindy owns 5x of them. Find the value of x.

25+5x=50, x=5

6   The sum of 7 and 8 is 3x. Find the value of x.

7+8=3x, x=5

7   James and his sister share 5 pencils. James has 2x pencils. His sister has 3 pencils. Find the value of x.

2x+3=5, x=1

8   24 stickers are shared among Max and Linda. Max has 15, Linda has 3x. Find the value of x.

15+3x=24, x=3

Task 3
Rewrite the algebraic expressions in words with "the sum of…" and create a short story. One example has been done for you. When both you and your partner finish, check your partner's answers. Make sure his/her story matches the algebraic equation.

1   **6 + 5x = 26**

Mathematical   The sum of 6 and 5x is 26.
language

Short story in
everyday language

Read the equation	Operation used	Language that can be used for the operation	Talking about the terms	
			6	5x
	+	- share 26 - 26 is shared among - 26 in total	Daisy has 6 books	Jack has 5x books
Write the story	26 books are shared among Daisy and Jack. Daisy has 6			

	books. Jack has 5x books.

2

3x + 7 = 13

Mathematical language

The sum of <u>3x</u> and <u>7</u> is <u>13</u>.

Short story in everyday language

Read the equation	Operation used	Language that can be used for the operation	Talking about the terms	
			3x	7
	+	13 books in total	Daisy has 3x books	Jack has 7 books
Write the story	Daisy has 3x books. Jack has 7 books. They have 13 books in total.			

3

20 + 11x = 141

Mathematical language

The sum of 20 and 11x is 141.

Short story in everyday language

Read the equation	Operation used	Language that can be used for the operation	Talking about the terms	
	+	They share 141 books.	20	11x
			Daisy has 20 books	Jack has 11x books
Write the story	Daisy and Jack share 141 books. Daisy has 20 books. Jack has 11x books.			

4	**15x + 60 = 120**
Mathematical language	The sum of 15x and 60 is 120. Find the value of x.

Short story in everyday language

Read the equation	Operation used	Language that can be used for the operation	Talking about the terms	
	+	They share 120 books.	15x	60
			Daisy has 15x books	Jack has 60 books
Write the story	Daisy and Jack share 120 books. Daisy has 15x books. Jack has 60 books.			

Part 2 Subtraction
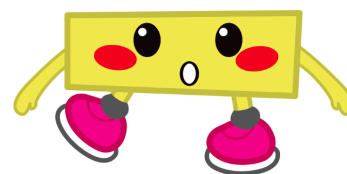
Task 4 Language used for 'subtraction'

"-" is the sign for subtraction in maths. What English expressions mean "subtraction"? Read the following examples and find out.

Expression	Mathematical	Mathematical & Everyday language		Everyday language (in daily life problems)
	Is subtracted from	**Greater than … by**	**Less than … by**	**Originally(初始)** **After** **Left (剩餘)**

Question	When 16 is subtracted from 3x, the result is 80. Find the value of x.	3y is greater than 16 by 80. Find the value of y.	16 is less than 3d by 80. Find the value of d.	Carol had 3k apples originally. After buying 16 apples, she has 80 left. Find the value of k.
Algebraic equation	3x-16=80, x=32	3y-16=80, y=32	3d-16=80, d=32	3k-16=80, x=32

As you can see, either in mathematical language or everyday language, there are different ways to express 'subtract'. It is important to identify which number is the **subtrahend** (減數) , which is the **minuend (被減數),** and which is the **remainder (差).**

*When you subtract two numbers, you subtract a **subtrahend** from a **minuend** to get the **remainder.**

Language Support 2 - Signals for subtraction

There are different ways to say "subtraction" (-) in English, including the following:

(1) Subtracted from… result…
Example: When 16 is subtracted from 3x, the result is 80. ⇒

Structure

When	B	is subtracted	from	A,	the result is C.
adv.		Verb in Passive voice	prep.		
		'condition (條件)'			'result (結果)'

A - B = C
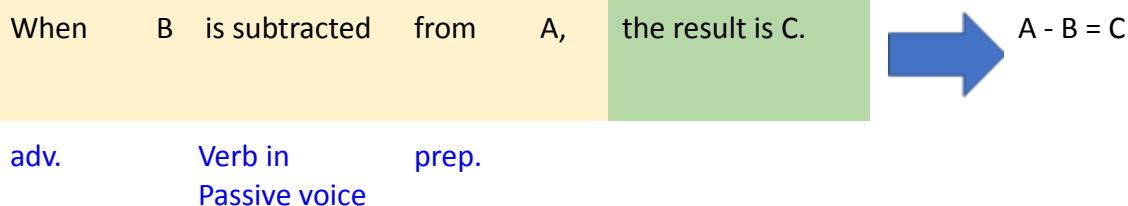
(2) Originally … after…, … left
Example: Carol had 3k apples originally. After buying 16 apples, she has 80 left. ⇒

Structure

Originally A, after B,	C left		$\Rightarrow$	A - B = C
adv.	adv.	adv.		
'condition (條件)'	'result (結果)'			
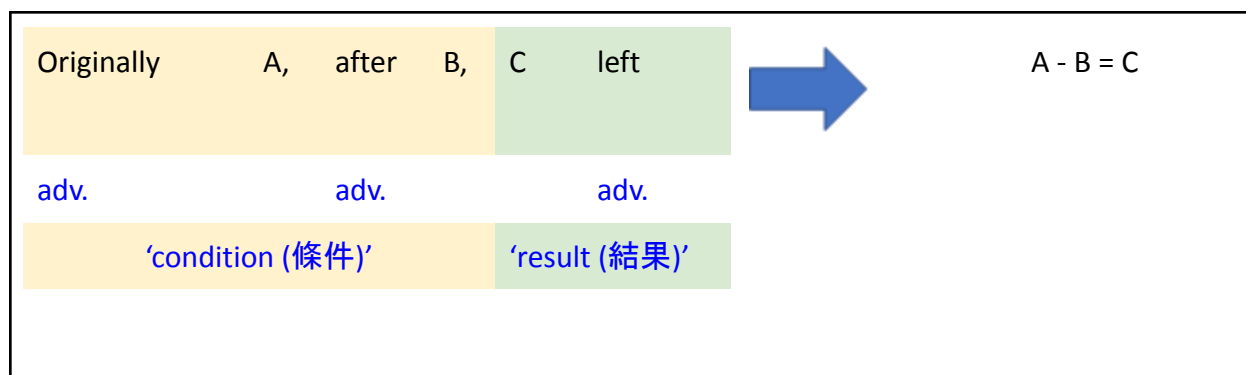
Language Support 3 - greater/less than … by		
You might get confused about which should be subtracted from which when seeing questions with 'greater/less than'. Follow these 3 steps!		
Expression	**A is greater than B by C**	**A is less than B by C**
Step 1 Compare A and B	A > B	A < B
Step 2 Use the greater one to subtract the smaller one	A - B	B - A
Step 3 The remainder is the number following 'by'	A - B = C	B - A = C

Task 5

A. Formulate *Algebraic Equations.*

1 David had 16 candies originally. After buying n candies, he has 2 candies left.

David had 16 candies originally.	==>	16
After buying n candies,	==>	-n
He has 2 candies left.	==>	… - … = 2

	↓	
16-n=2		

2   When 6x is subtracted from 35, the result is 11.

When 6x is subtracted from 35,	==>	35-6x
the result is 11.	==>	= 11
↓		
35-6x=11		

3   800 is greater than 4x by 200.

Step 1 (Compare) 800 > 4x
Step 2 (Make the greater number the minuend) 800 - 4x
Step 3 (Make the equation with the remainder) 800-4x=200

4   17x is less than 45 by 6.

Step 1 (Compare) 45 > 17x
Step 2 (Make the greater number the minuend) 45 - 17x
Step 3 (Make the equation with the remainder) 45-17x=6

B.   Formulate *Algebraic Equations* and solve the equations.

5   When 20 is subtracted from 5x, the result is 200. Find the value of x.

5x-20=200, x=44

6   The age of Amy, 46, is greater than Steven's, 4x, by 14. Find the value of x.

$46-4x=14$, $x=8$

7   Sherry had 100 pens originally. Amy borrows 5x from her. Now she has 50 left. Find the value of x.

$100-5x=50$, $x=10$

8   Bob has 10x books, less than Jessica's 140 books by 10. Find the value of x.

$140-10x=10$, $x=13$

Task 6
Rewrite the algebraic expressions in words and create a short story. One example has been done for you. When both you and your partner finish, check your partner's answers. Make sure his/her story matches the algebraic equation.

1   **6x-7=65**

Mathematical language	*(when ….is subtracted from...)* When 7 is subtracted from 6x, the result is 65.

Short story in everyday language

Read the equation	Operation used	Talking about the terms		
	–			
		The bigger term	**The smaller term**	**The difference**
		6x	7	65
	Language used	Originally Linda had 6x apples	She gave Tom 7 apples	Now she has 65 apples left.
write the story	Originally Linda had 6x apples. She gave Tom 7 apples. Now she has 65 apples left.			

2   **121-4x=21**

Mathematical language	*(...greater than...by...)* *121 is greater than 4x by 21*

Short story in everyday language

Read the equation	Operation used	Talking about the terms		
	–	**The bigger term**	**The smaller term**	**The difference**
		121	4x	21
	Language used	(Student's answer)	(Student's answer)	(Student's answer)
write the story	(Student's answer)			

3 **56-4=2x**

Mathematical language

(...less than...by...)
4 is less than 56 by 2x

Short story in everyday language

Read the equation	Operation used	Talking about the terms		
	–	**The bigger term**	**The smaller term**	**The difference**
		56	4	2x
	Language used	(Student's answer)	(Student's answer)	(Student's answer)
write the story	(Student's answer)			

4 **48-6x=6**

Mathematical language

When 6x is subtracted from 48, the result is 6.
48 is greater than 6x by 6.
6x is less than 48 by 6

Short story in everyday language

Read the equation	Operation used	Talking about the terms		
	−	**The bigger term**	**The smaller term**	**The difference**
		48	**6x**	**6**
	Language used	(Student's answer)	(Student's answer)	(Student's answer)
write the story	(Student's answer)			

Part 3 Multiplication
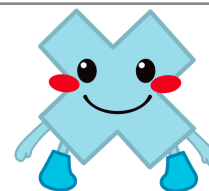
Task 7 Language used for 'multiplication'

"" is the sign for subtraction in maths. What English expressions mean "multiplication"? Read the following examples and find out.*

Expression	Mathematical	Everyday language (in daily life problems)	
	The product of …	**… times … (倍數)**	**…half… (fraction分數)**
Question	The product of 2 and x is 20. Find the value of x.	Bob is *y* years old. The age of Alan is twice the age of Bob. Alan is 20 years old. Find the age of Bob.	Linda is d years old. The age of Candy is half the age of Linda. Candy is 5 years old. Find the age of Linda.
Algebraic equation	2x=20, x=10	2y=20, y=10	½ d = 5, d= 10

Language Support 4 - Signals for multiplication

There are different ways to say "multiplication" (*) in English, including the following:

(1) The product of
Example: The product of 2 and x is 20. ⇒

Structure

The product of A and B	is	C		A * B = C
Subject	*verb*	*object*		
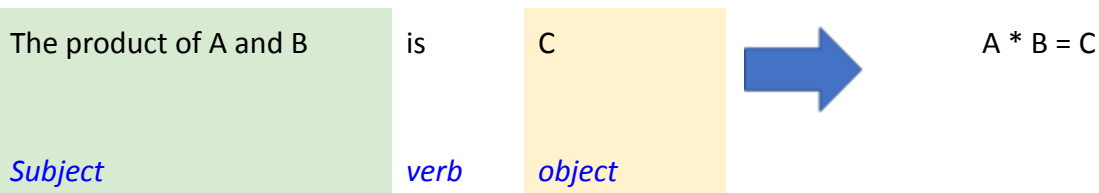
Note: 'product' is a noun; 'of' is a preposition

(2) Times / fraction

Example: The age of Alan is twice the age of Bob.
The age of Candy is half the age of Linda.

Structure

C	is	A times/fraction B		A * B = C
Subject	*verb*	*object*		
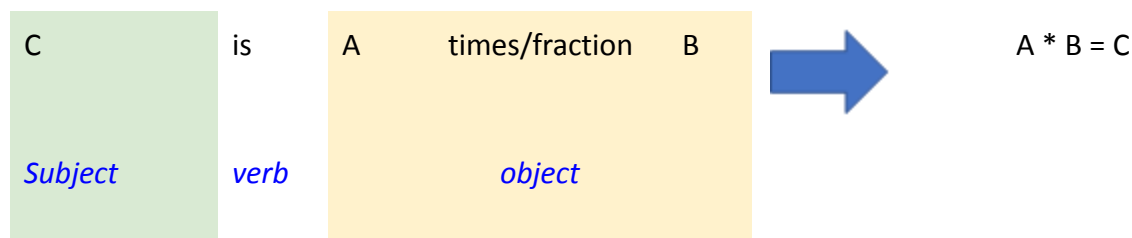
Language Support 5 - 倍數、分數

A. 倍數
Fill in the blanks in the 'In Chinese' column.

In English	In Chinese
twice	兩倍
three times	三倍

four times	四倍
X times	X 倍

In daily language	A	is	4	times	B
In algebraic term	A	=	4	*	B
	A=4B				

Tip: Take '***be***' as '**=**' when you translate daily language into algebraic terms.

Fill in the table

Question		Bob is *y* years old. Alan is 20 years old.			
		The age of Alan	is	twice	the age of Bob
Translating into algebraic equation	Step 1 (Locate the '=')	The age of Alan	=	twice	The age of Bob
	Step 2 (translate the known)	20	=	2*	
	Step 3 (translate the unknown)	20	=	2*	y
	Step 4 (tidy up the algebraic equation)	2y=20			

B. 分數

Fill in the blanks.

We write	We say
1/2	a half OR one half
1/3	a third OR one third
1/4	a fourth OR a quarter
1/9	a ninth OR one ninth
2/3	two thirds
3/5	three fifths
5/8	five eighths

In daily language	A	is	one-third	B
In algebraic term	A	=	⅓*	B

Fill in the table

Question	Linda is d years old. Candy is 5 years old.			
	The age of Candy	is	half	the age of Linda

Translating into algebraic equation	Step 1 (Locate the '=')	The age of Candy	=	half	The age of Linda
	Step 2 (translate the known)	5	=	½*	The age of Linda
	Step 3 (translate the	5	=	½*	d

	unknown)				
	Step 4 (tidy up the algebraic equation)	½ d = 5			

Task 8

> *A. Formulate Algebraic Equations.*

1　　The product of -2 and 3d is 12.

The product of … and … is 12.	==>		… * … = 12
-2 * 3d = 12			

2　　The weight of Mia is one-fourth the weight of Kalinda, X. Mia weighs 12kg.

Step 1: the weight of Mia = one-fourth the weight of Kalinda
Step 2: 12 = ¼ the weight of Kalinda.
Step 3: 12 = ¼ X
Step 4: ¼ X = 12.

3　　Vivian is 160 cm. Her height is four-fifth the height of her brother, X.

Step 1: the height of Vivian = four-fifth the height of her brother
Step 2: 160 = ⅘ the height of her brother.
Step 3: 160 = ⅘ X
Step 4: ⅘ X = 160

> *B. Formulate Algebraic Equations and solve the equations.*

4   Mark is 25 years old. The age of Flex is three times the age of Mark. Find the age of Flex.

Step 1: the age of Flex = three times the age of Mark
Step 2: the age of Flex = 3*25, Let the age of Flex be X.
Step 3: X = 3* 25
Step 4: X = 3*25, X=75

5   The number of Olivia's books is twice that of James'. James has 20 books. Find the number of Olivia's.

Step 1: the number of Olivia's books = twice that of James;
Step 2: the number of Olivia's books = 2*20, Let the number of Olivia's books be X.
Step 3: X = 2*20
Step 4: X =2*20, X = 40

6   The product of 12 and 2y is 240. Find the value of x.

12 x 2y = 240, y = 10

Task 9

Create a short story for each of the following algebraic equations. One example has been done for you. When both you and your partner finish, check your partner's answers. Make sure his/her story matches the algebraic equation.

1   **6x = 48**

Read the equation	Operation used	Talking about the terms	
	*	6x	48
		Tom's age is 6 times Linda's age. Linda is x years old.	Tom is 48 years old
Write the story	Tom is 48 years old. His age is 6 times Linda's age, which is x.		

2   **3x = 15**

Read the equation	Operation used	Talking about the terms	
	*	3x	15
		(Student's answer)	(Student's answer)
Write the story	(Student's answer)		

3   ⅔ x = 60

Read the equation	Operation used	Talking about the terms	
	*	⅔ x (two-third)	60
		(Student's answer)	(Student's answer)
Write the story	(Student's answer)		

4   ⅝ x = 40

Read the equation	Operation used	Talking about the terms	
	*	⅝ x (five-eighth)	40
		(Student's answer)	(Student's answer)
Write the story	(Student's answer)		

Part 4 Multiplication and Addition/Subtraction
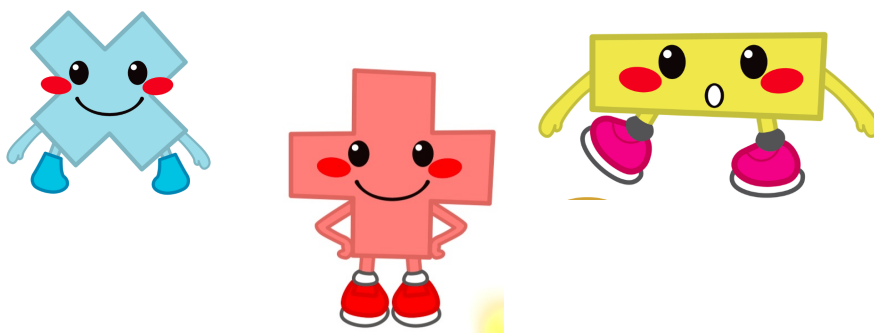
Lead-in:

Listen to the song (1:40-the end)and fill in the blanks according to the song and your mathematical knowledge

2-Step Equations

$$3x - 5 = 13$$
$$ + 5 \quad + 5$$
$$3x = 18$$
$$\frac{3x}{3} \quad \frac{18}{3}$$
$$x = 6$$

Lyrics

Let's try one that takes some patience.
I'm talking about a two-step equation,
like 3X *minus (*減*)* 5 *equals (*等於*)*13.
Start on the side with the X you see.
First thing I'm gonna do is to *get rid of (*擺脫*)* 5.
Inverse operation is *addition*, right?
Do the same thing to the other side and
bring down 3X and *the equal sign (*等號*)*.

Now we're not quite done: X isn't alone.
We gotta do the inverse is *division (*除法, *divide + sion= division, di/vi/sion [dɪˈvɪʒ.ən])*, yo!

This cancels out the 3 and leaves the X.
Gotta do the same thing to the other side next.

So I found that *the value of X（X的值）* **is 6.**
That's the end so you can circle it.
Yeah, we just did a little bit of *algebra*,
The United States of America.

Solving two-step equations	
Step 1	Start on the side with the <u>variable</u>
Step 2	Remove the number 'farthest' from the variable by doing the inverse operation. In the example given, <u>-5</u> is 'farthest' from 'x', <u>+3</u> is 'closest' to 'x', so we remove <u>-5</u> by <u>adding +5</u> on both sides.
Step 3	Do the <u>inverse</u> operation to get <u>x</u> alone. In the example, you see multiplication (*), the inverse operation is division (-), so you <u>divide +3</u> on both sides.
Remember: whatever you do on one side, you have to do the same on the other side to balance the equation.	

Now that you have learned about typical language features of addition, subtraction, and multiplication in algebraic equations in one known, you are ready to level up! In some scenarios, you may need to use both 'multiplication' and 'addition/subtraction' at the same time.

Task 10
Let's try to formulate the equation for the following scenario using the 4-step approach by filling in the table:

Q: Raymond has run x km. The distance that Gary has run is 2 km less than three times the distance that Raymond has run. If Gary has run 10 km, find the distance that Raymond has run. (distance = 距離; If A, B.=如果A，那麼B。)

Question		The distance that Gary has run	is	2km <mark>less than</mark>	<mark>three times</mark> The distance that Raymond has run
	Step 1	The	=	2km <mark>less</mark>	<mark>Three times</mark> the distance

				than	that Raymond has run
Translating into algebraic equations	(Locate the '=')	distance that Gary has run			than	that Raymond has run
	Step 2 (translate the known)	10	=	-2	3*the distance that Raymond has run
	Step 3 (translate the unknown)	10	=	-2	3x
	Step 4 (tidy up the algebraic equation)	10=3x-2, x=4			

Tip: Translate 'less than' into '-' before the number that follows; similarly, translate 'greater/more than' into '+' before the number that follows

Task 11 Fill in the table to formulate algebraic equation for the following questions

Q1: Samantha is z cm tall. Martina's height is 105 cm less than 2 times Samantha's height. If Martina is 165 cm tall, find the height of Samantha.

Question		Martina's height	is	105 com less than	2 times Samantha's height
Translating into algebraic	Step 1 (Locate the '=')	Martina's height	=	105 com less than	2 times Samantha's height
	Step 2 (translate the known)	165	=	-105	2*Samantha's height
	Step 3 (translate	165	=	-105	2z

equations	the unknown)				
	Step 4 (tidy up the algebraic equation)	2z-105=165, z=135			

Q2: Tom weighs m kg. Jack's weight is 15 kg less than twice that of Tom has. If their total weight is 90 kg, find the weight of Tom.

Question		Jack's weight	is	15kg less than	Twice that of Tom has (Tom's weight)
Translating into algebraic equations	Step 1 (Locate the '=')	Jack's weight	=	15kg less than	twice Tom's weight
	Step 2 (translate the known)	Jack's weight	=	-15	2*Tom's weight
	Step 3 (translate the unknown)	Jack's weight	=	-15	2m
	Step 4 (tidy up the algebraic equation)	2m-15 = Jack's weight			

Question		Their total weight	is	90 kg
Translating into	Step 1 (Locate the '=')	Jack's weight + Tom's weight	=	90

algebraic equations	Step 2 (translate the known)	(2m-15) + m	=	90
	Step 3	3m-15=90, m = 35		

Q3: Peter has y marbles. Tommy has 5 marbles less than 3 times the marbles that Peter has. If they have a total of 27 marbles, how many marbles does Tommy have?

Question		Tommy's marbles	is	5 less than	3 times the marbles that Peter has
Translating into algebraic equations	Step 1 (Locate the '=')	Tommy's marbles	=	5 less than	3 times the marbles that Peter has
	Step 2 (translate the known)	Tommy's marbles	=	-5	3*the marbles that Peter has
	Step 3 (translate the unknown)	Tommy's marbles	=	-5	3y
	Step 4 (tidy up the algebraic equation)	Tommy's marbles = 3y-5			

Question		they	have	A total of 27 marbles
Translating into algebraic equations	Step 1 (Locate the '=')	Tommy's marbles + Peter's marbles	=	27
	Step 2 (translate the known)	(3y-5) + y	=	27

	Step 3	4y-5=27, y =8, so Tommy has 3*8-5=19 marbles

Q4: The price of a rubber is \$p. The price of a pen is \$6 more than twice the price of the rubber. If the difference of the prices of the rubber and the pen is \$11, what is the price of the pen?

Question		The price of a pen	is	\$6 more than	Twice the price of the rubber
Translating into algebraic equations	Step 1 (Locate the '=')	The price of a pen	=	\$6 more than	twice the price of the rubber
	Step 2 (translate the known)	The price of a pen	=	+6	2*the price of the rubber
	Step 3 (translate the unknown)	The price of a pen	=	+6	2p
	Step 4	2p+6 = The price of a pen			

Question		the difference of the prices of the rubber and the pen	is	11
Translating into algebraic equations	Step 1 (Locate the '=')	The price of a pen - The price of a rubber	=	11
	Step 2 (translate the known)	(2p+6) - p	=	11
	Step 3	p+6=11, p=5, so the price of a pen is 2*5 + 6 = 16\$		

Task 12

Create a short story for each of the following algebraic equations. One example has been done for you. When both you and your partner finish, check your partner's answers. Make sure his/her story matches the algebraic equation.

1   **6x + 9 = 57**

Read the equation	Operation used	Talking about the terms		
	*	X: the price of a rubber is x		
		6x: The price of a pencil is 6 times the price of a rubber		
	+	6x	9	57
		The price of a pencil is 6 times the price of a rubber	9 greater than	The price of a pencil is 57
Write the story	The price of a pencil is 57. The price of a pencil is 9 dollars greater than 6 times the price of a rubber. What is the price of a rubber?			

2   **3x -2 = 13**

Read the equation	Operation used	Talking about the terms		
	*	x: the price of a rubber is x		
		3x: The price of a pencil is 3 times the price of a rubber		
	-	3x	-2	13
		The price of a pencil is 3 times the price of a rubber	2 less than	The price of a pencil is 13
Write the story	The price of a pencil is 13. The price of a pencil is 2 dollars less than 3 times the price of a rubber. What is the price of a			

	rubber?

3   **14 + ⅔ x = 74**

Read the equation	Operation used	Talking about the terms		
	*	x: the price of a rubber is x		
		⅔ x: The price of a pencil is two-third the price of a rubber		
	+	14	⅔ x	74
		14 greater than	The price of a pencil is two-third the price of a rubber	The price of a pencil is 74
Write the story	The price of a pencil is 74. The price of a pencil is 14 dollars greater than two-third the price of a rubber. What is the price of a rubber?			

4   **⅝ x -8 = 32**

Read the equation	Operation used	Talking about the terms		
	*	x: the price of a rubber is x		
		⅝ x: The price of a pencil is five-eighth the price of a rubber		
	-	⅝ x	-8	32
		The price of a pencil is	8 less than	The price of a pencil is 74

		five-eighth the price of a rubber		
Write the story	The price of a pencil is 32. The price of a pencil is 8 dollars less than five-eighth the price of a rubber. What is the price of a rubber?			

Part 5: My vocabulary bank and learning record

In this part, you will revise the topic vocabulary and assess your learning.

Task 13. My Vocabulary Bank

Algebraic equations in one unknown		
Subject-specific vocabulary	**General academic vocabulary**	**Linking words**
Sum (v.) *Subtract (v.)* *Multiply (v.)* *Minuend (n.)*	*Originally (adv.)* *Share (v.)* *Is shared among…(v. ph.)* *Is subtracted from … (v. ph.)*	***Expressing time or condition/ result:*** *When…* *After…*

Subtrahend (n.) *Remainder (n.)* *Fraction (n.)* *Algebraic equation (n. ph.)* *Algebraic term (n. ph.)*	*Ago…* *If...* ***Expressing comparison:*** *As...as..* *greater/more than…* *Less than*

Task 14. My learning record

Put a tick (√) if you think you can manage the item in this unit.   Do I know…?

	Item:	Yes (√) / No (X)
1.	the concept of algebraic equations in one unknown	
2.	How to formulate and solve algebraic equation in one unknown	
3.	How to solve daily life problem by using algebraic equations	

4.	the following language to formulate and solve algebraic equation in one unknown:
	   the sum of …;
	   in total,
	   [A] and [B] share [C] / [C] is shared among [A] and [B]
	   the product of … ,
	   [A] is greater / less than [B] by [C]
	   [A] is [B] times [C]	