SPECIAL ED

Advanced Algebra
Solving Equations

$$6 + 2x = 12$$

INCLUDES GOOGLE SLIDES

This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, has a very short attention span, and has a few foundational math skills. With some support, he is able to do this unit and enjoys the challenge. He is my tester!!

COSMIC steps

This unit uses the COSMIC steps when solving an equation.

1. Copying/translating the problem
2. Operation choice (addition or subtraction)
3. Subtracting or adding
4. Multiply or divide to get rid of the coefficient
5. Isolate the variable
6. Check you answer

There are lots of worksheets to practice each step.

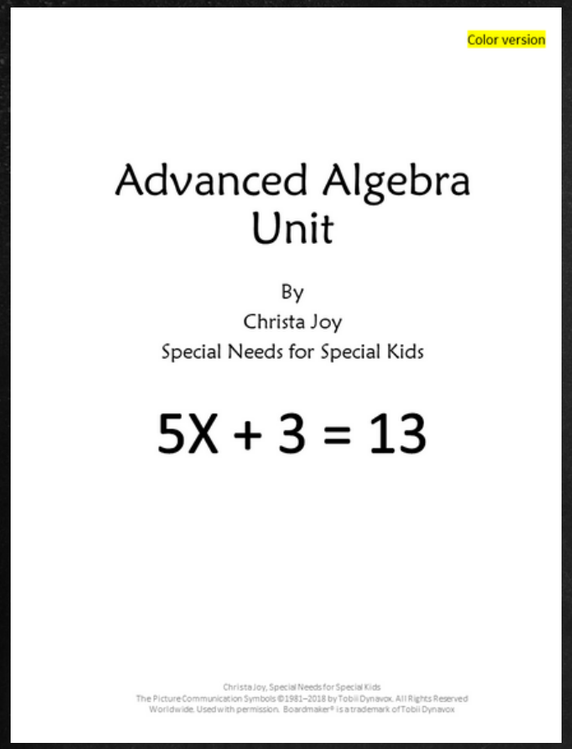


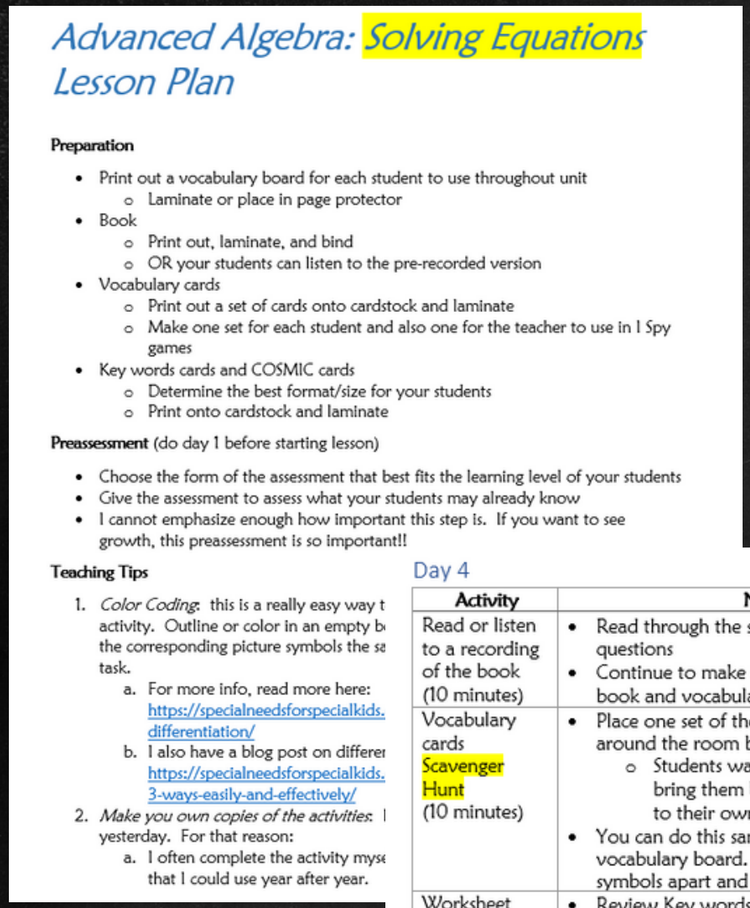
Table of Contents

Also included in this resource as separate files:

- Lesson plans
- Links and directions to digital activities
- PowerPoint **(this is the book in the lesson plan)**
- Voice recorded PowerPoint
- Activities in black and white

Advanced unit

This unit contains over 200 pages of material and 102 google slides. I have a lesson plan to help you make the most of everything in this unit including how to add some group activities.



Advanced Algebra: Solving Equations Lesson Plan

Preparation

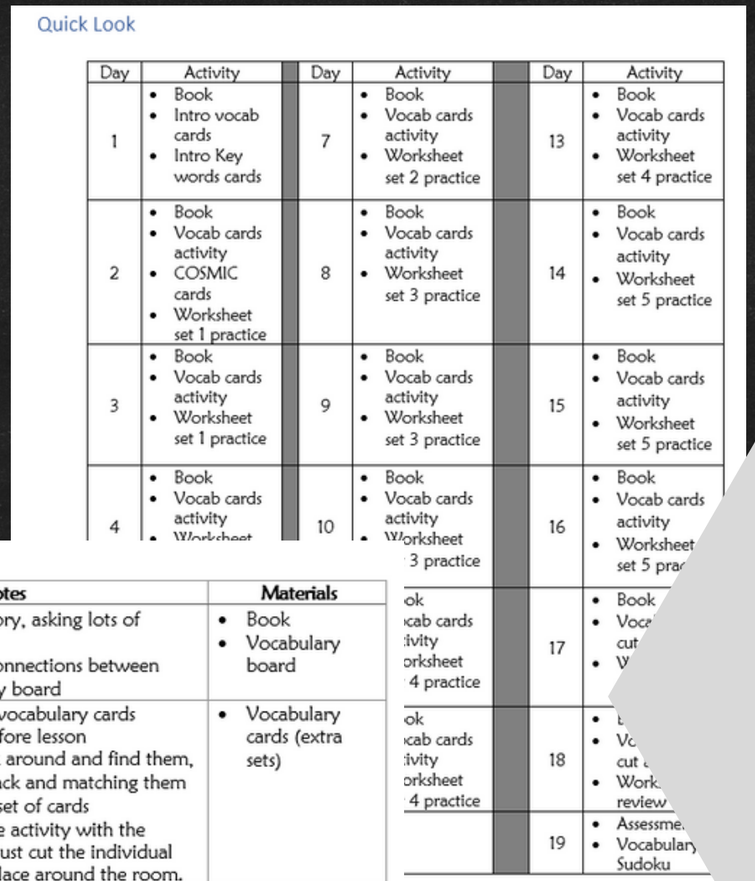
- Print out a vocabulary board for each student to use throughout unit
  - Laminate or place in page protector
- Book
  - Print out, laminate, and bind
  - OR your students can listen to the pre-recorded version
- Vocabulary cards
  - Print out a set of cards onto cardstock and laminate
  - Make one set for each student and also one for the teacher to use in I Spy games
- Key words cards and COSMIC cards
  - Determine the best format/size for your students
  - Print onto cardstock and laminate

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

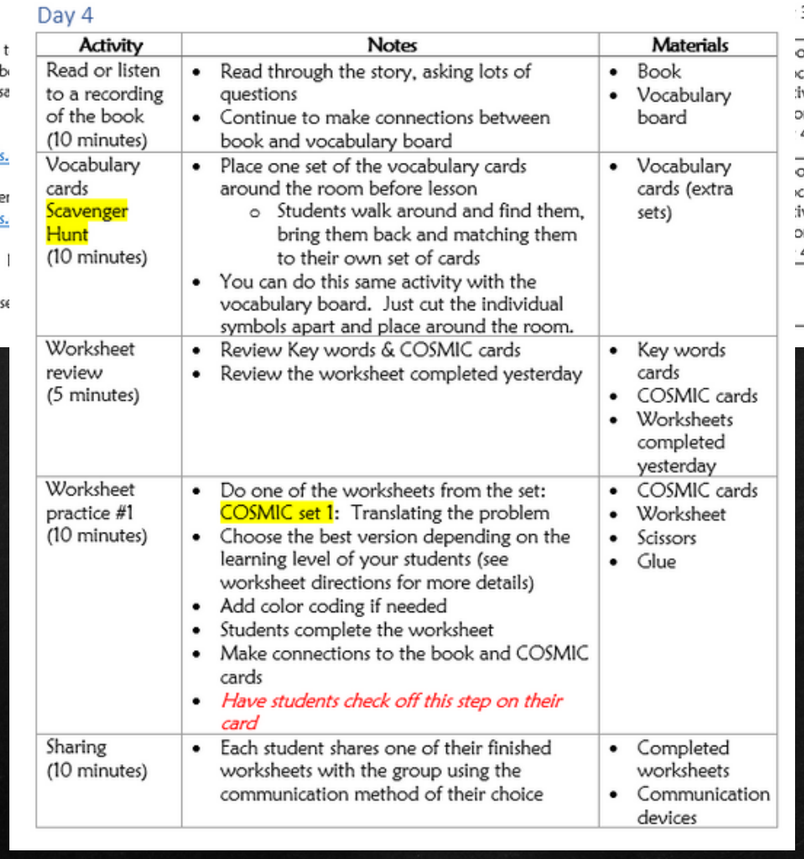
Teaching Tips

1. *Color Coding*: this is a really easy way t activity. Outline or color in an empty b the corresponding picture symbols the s task.
   a. For more info, read more here: https://specialneedsforspecialkids.differentiation/
   b. I also have a blog post on differe https://specialneedsforspecialkids.3-ways-easily-and-effectively/
2. *Make you own copies of the activities*: yesterday. For that reason:
   a. I often complete the activity mys that I could use year after year.



Quick Look

Day	Activity	Day	Activity	Day	Activity
1	• Book • Intro vocab cards • Intro Key words cards	7	• Book • Vocab cards activity • Worksheet set 2 practice	13	• Book • Vocab cards activity • Worksheet set 4 practice
2	• Book • Vocab cards activity • COSMIC cards • Worksheet set 1 practice	8	• Book • Vocab cards activity • Worksheet set 3 practice	14	• Book • Vocab cards activity • Worksheet set 5 practice
3	• Book • Vocab cards activity • Worksheet set 1 practice	9	• Book • Vocab cards activity • Worksheet set 3 practice	15	• Book • Vocab cards activity • Worksheet set 5 practice
4	• Book • Vocab cards activity • Worksheet	10	• Book • Vocab cards activity • Worksheet 3 practice	16	• Book • Vocab cards activity • Worksheet set 5 pra
ok cab cards ivity orksheet 4 practice				17	• Book • Voca cut • W
ok cab cards ivity orksheet 4 practice				18	• Vo cut • Work review
				19	• Assessme • Vocabulary Sudoku

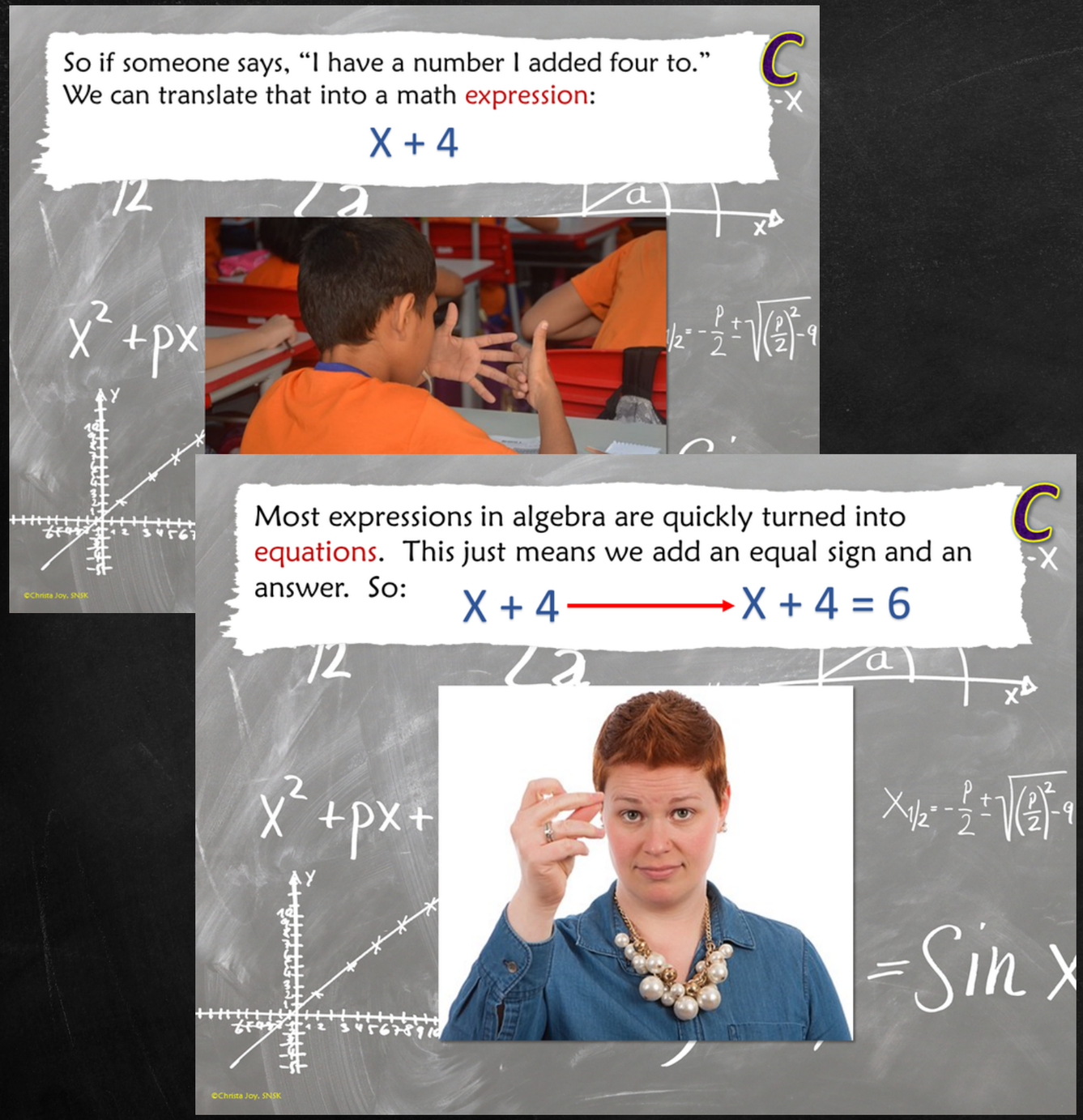


Day 4

Activity	Notes	Materials
Read or listen to a recording of the book (10 minutes)	• Read through the story, asking lots of questions • Continue to make connections between book and vocabulary board	• Book • Vocabulary board
Vocabulary cards Scavenger Hunt (10 minutes)	• Place one set of the vocabulary cards around the room before lesson ○ Students walk around and find them, bring them back and matching them to their own set of cards • You can do this same activity with the vocabulary board. Just cut the individual symbols apart and place around the room.	• Vocabulary cards (extra sets)
Worksheet review (5 minutes)	• Review Key words & COSMIC cards • Review the worksheet completed yesterday	• Key words cards • COSMIC cards • Worksheets completed yesterday
Worksheet practice #1 (10 minutes)	• Do one of the worksheets from the set: COSMIC set 1: Translating the problem • Choose the best version depending on the learning level of your students (see worksheet directions for more details) • Add color coding if needed • Students complete the worksheet • Make connections to the book and COSMIC cards • *Have students check off this step on their card*	• COSMIC cards • Worksheet • Scissors • Glue
Sharing (10 minutes)	• Each student shares one of their finished worksheets with the group using the communication method of their choice	• Completed worksheets • Communication devices

The lesson plans contain:

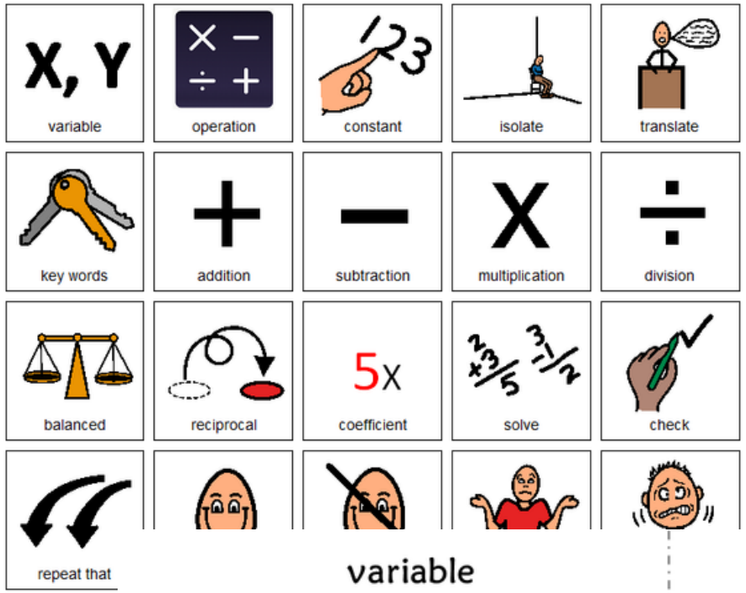
- Preparation needed
- Overall tips for teaching students with significant needs
- Daily flow of the lesson including individual and group activities

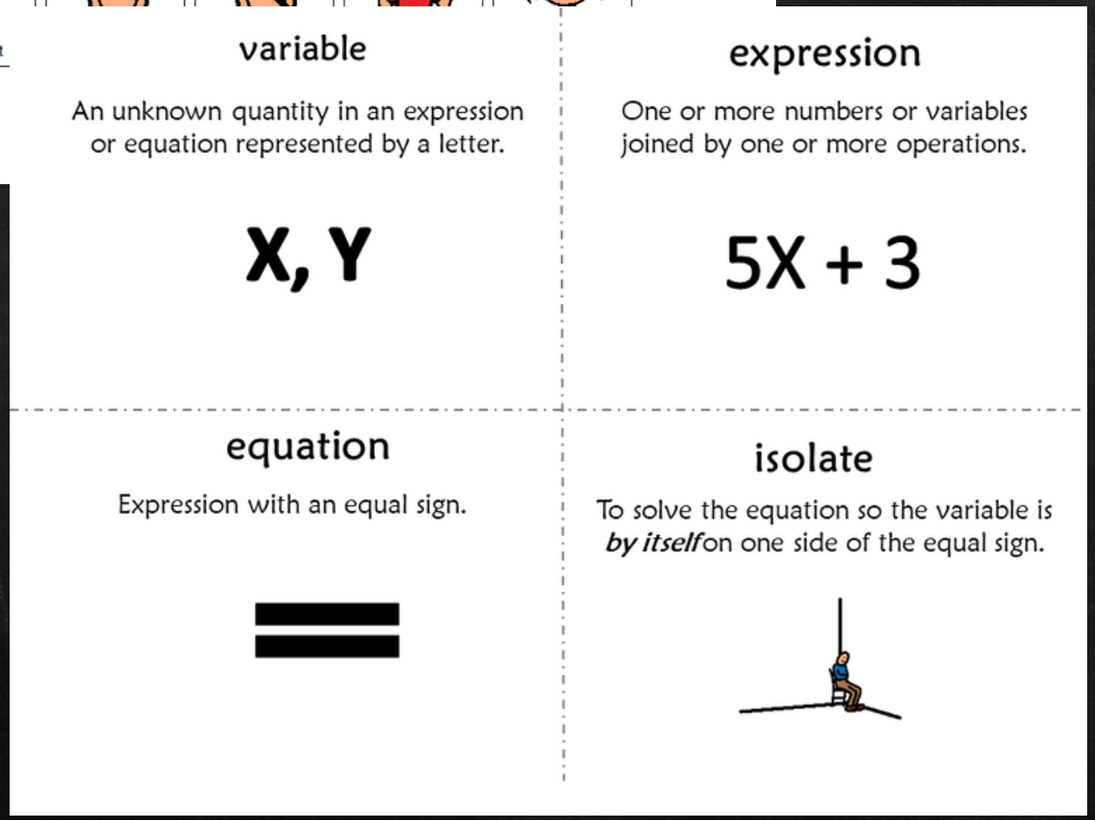


There is a 38 page book using simple text and photos. It walks students through the steps to solving an equation using the COSMIC steps.

- PowerPoint
- voice-recorded PPT
- mp4 movie format

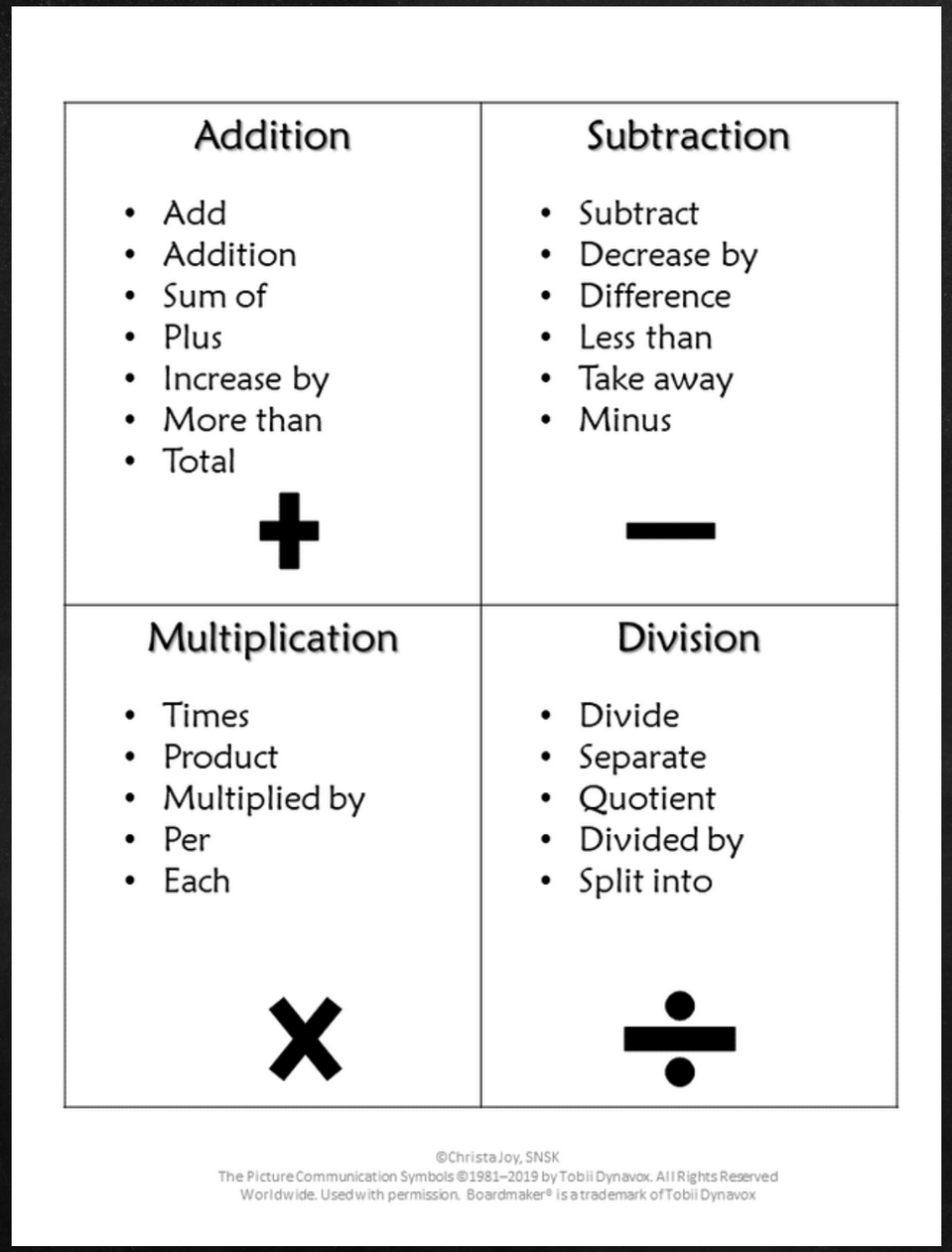
Vocabulary





There is a vocabulary board (used for class discussion) and vocabulary cards with cut and paste activities.

Key word cards



Addition	Subtraction
• Add • Addition • Sum of • Plus • Increase by • More than • Total +	• Subtract • Decrease by • Difference • Less than • Take away • Minus −
Multiplication	**Division**
• Times • Product • Multiplied by • Per • Each ×	• Divide • Separate • Quotient • Divided by • Split into ÷

There are 4 cards (in different sizes) that students can refer to looking for key words when solving equations.

COSMIC cards

COSMIC

- [ ] 1. Copy/translate the problem
- [ ] 2. Operation choice
- [ ] 3. Subtract or add
- [ ] 4. Multiply or divide IF coefficient
- [ ] 5. Isolate the variable
- [ ] 6. Check you answer

COSMIC

- [ ] 1. Copy/translate the problem
- [ ] 2. Operation choice
- [ ] 3. Subtract or add
- [ ] 4. Multiply or divide IF coefficient
- [ ] 5. Isolate the variable
- [ ] 6. Check you answer

Laminate so students can check off when complete.

COSMIC

1. Copy or translate the problem

Look for key words

COSMIC

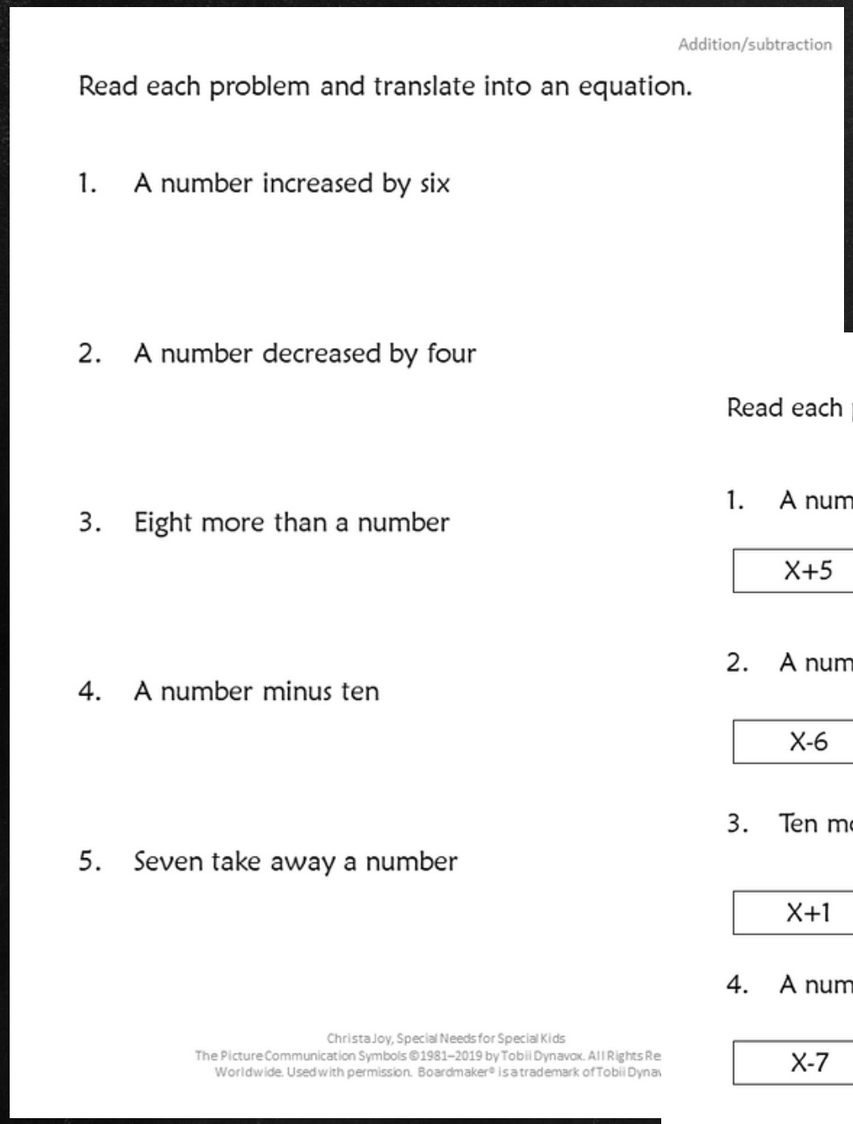
2. Operation Choice

Decide if you will add or subtract

There are cards for students to refer to listing the steps in the COSMIC method.

They come with and without pictures.

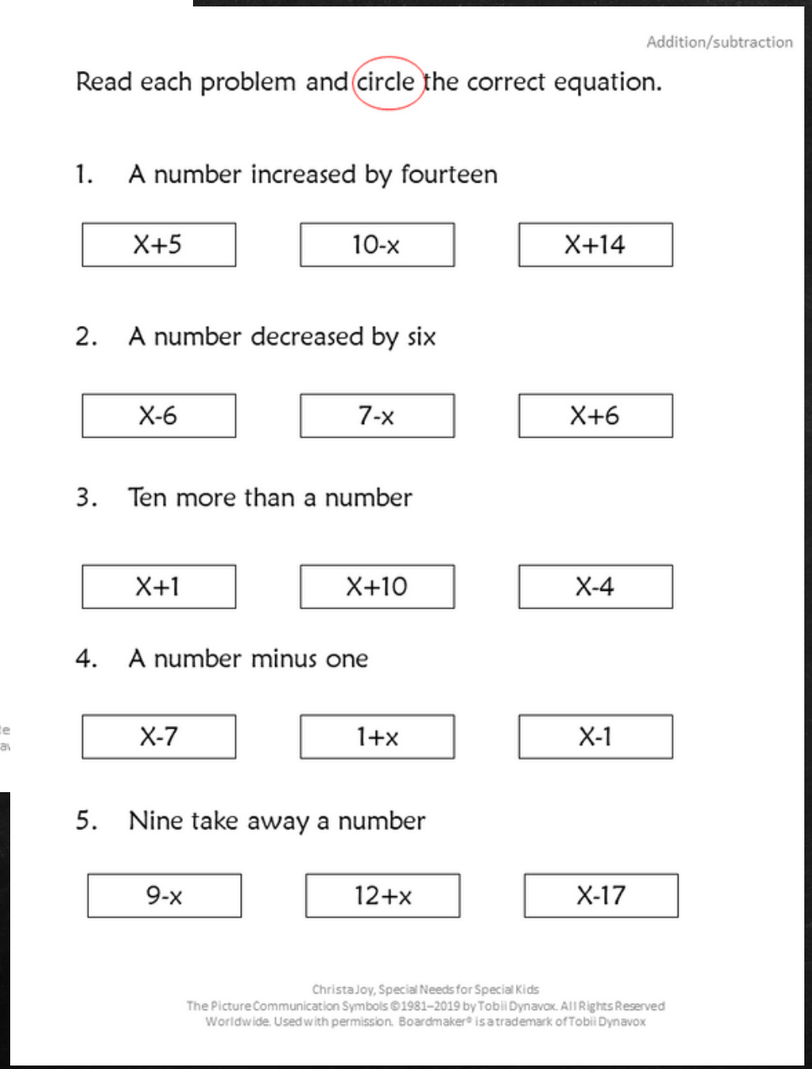
COSMIC step #1



Addition/subtraction

Read each problem and translate into an equation.

1. A number increased by six
2. A number decreased by four
3. Eight more than a number
4. A number minus ten
5. Seven take away a number



Addition/subtraction

Read each problem and circle the correct equation.

1. A number increased by fourteen

X+5	10-x	X+14

2. A number decreased by six

X-6	7-x	X+6

3. Ten more than a number

X+1	X+10	X-4

4. A number minus one

X-7	1+x	X-1

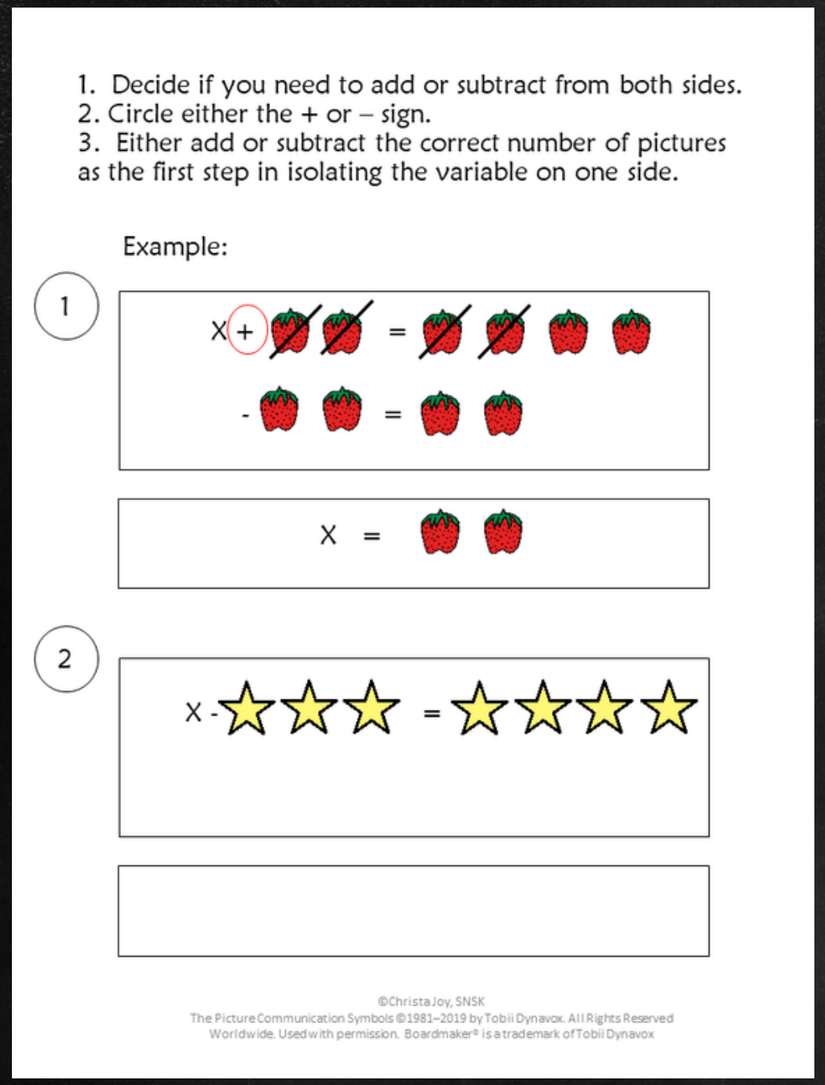
5. Nine take away a number

9-x	12+x	X-17

There are 15 worksheets where students will practice copying and translating the problem into an algebraic equation.

Students can write in answers or cut and paste answers provided on a separate page.

COSMIC step #2


1. Decide if you need to add or subtract from both sides.
2. Circle either the + or – sign.
3. Either add or subtract the correct number of pictures as the first step in isolating the variable on one side.

Example:

1

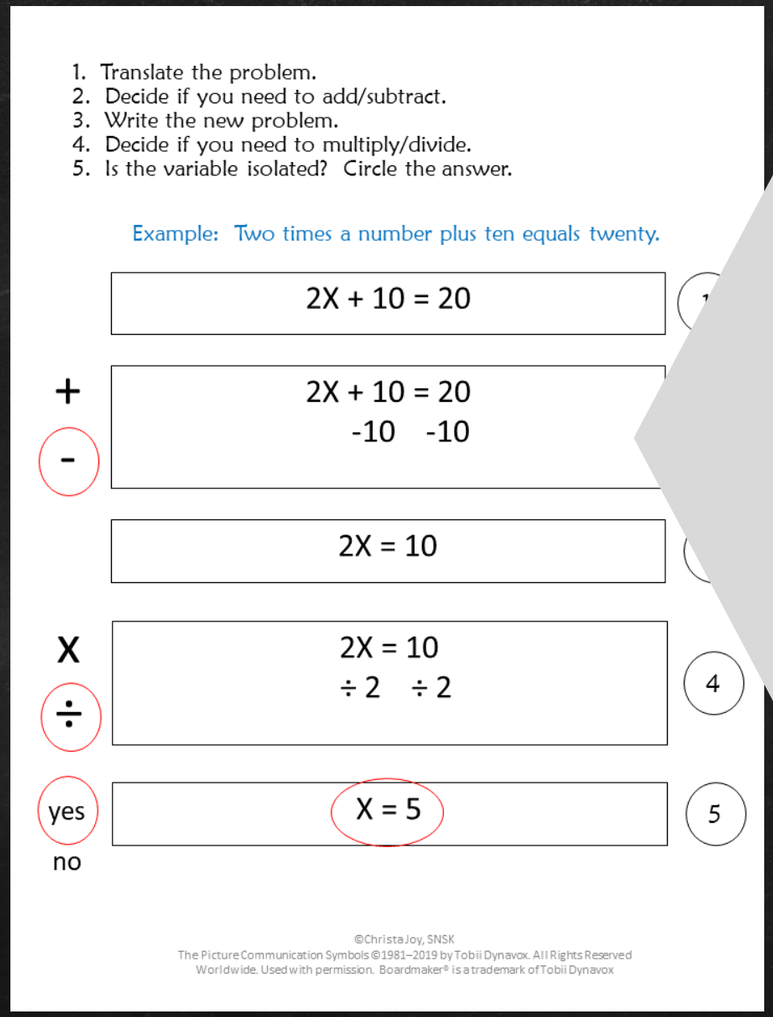
X + = =

- = =

X = =

2

X - = =


1. Translate the problem.
2. Decide if you need to add/subtract.
3. Write the new problem.
4. Decide if you need to multiply/divide.
5. Is the variable isolated? Circle the answer.

Example: Two times a number plus ten equals twenty.

2X + 10 = 20

\+ / -

2X + 10 = 20
-10 -10

2X = 10

X / ÷

2X = 10
÷ 2 ÷ 2

4

yes / no

X = 5

5

There are 4 worksheets where students will identify the operation in the equation.

There are 2 using pictures and 2 with numbers.

There is an example (shown here) worked out for you.

COSMIC step #3

Addition/subtraction

1. Decide if you need to add or subtract from both sides.
2. Circle either the + or – sign.
3. Either add or subtract the correct number as the first step in isolating the variable on one side.

Example:

1

$X + 10 = 20$

$-10 \quad -10$

$X = 10$

2

$X - 5 = 10$

1. Decide if you need to multiply or divide from both sides.
2. Write to the side if you will multiply (x) or divide (÷).
3. Either add or subtract the correct number of pictures as the first step in isolating the variable on one side.

3

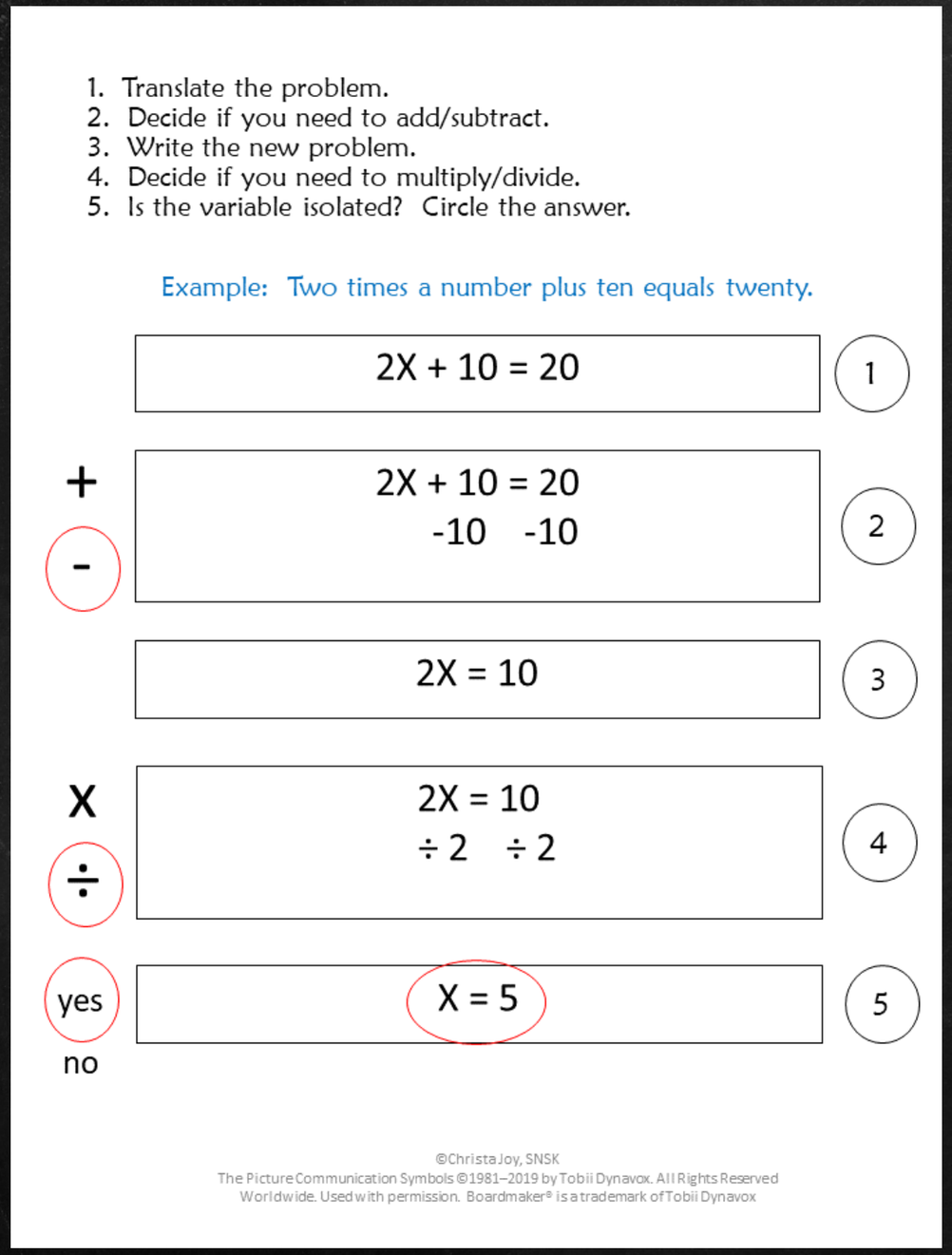
$X/3 = 4$

4

$10X = 20$

There are 4 worksheets where students will practice eliminating a coefficient.

There is an example (shown here) worked out for you.



1. Translate the problem.
2. Decide if you need to add/subtract.
3. Write the new problem.
4. Decide if you need to multiply/divide.
5. Is the variable isolated? Circle the answer.

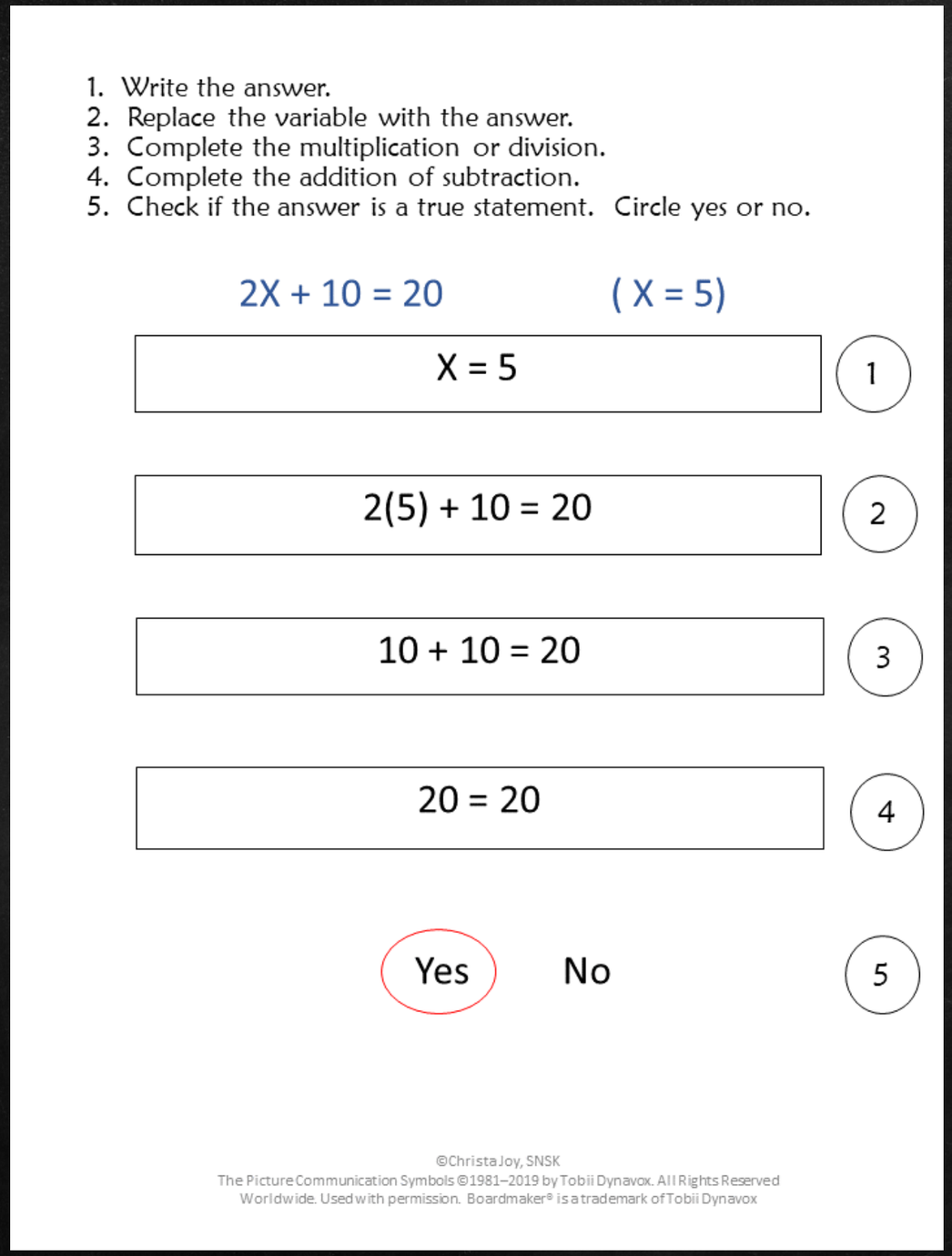
Example: Two times a number plus ten equals twenty.

	2X + 10 = 20	1
+ / -	2X + 10 = 20 -10 -10	2
	2X = 10	3
X / ÷	2X = 10 ÷ 2 ÷ 2	4
yes / no	X = 5	5

COSMIC step #4

There are 11 worksheets where students will practice isolating the variable.

There is an example (shown here) worked out for you.



1. Write the answer.
2. Replace the variable with the answer.
3. Complete the multiplication or division.
4. Complete the addition of subtraction.
5. Check if the answer is a true statement. Circle yes or no.

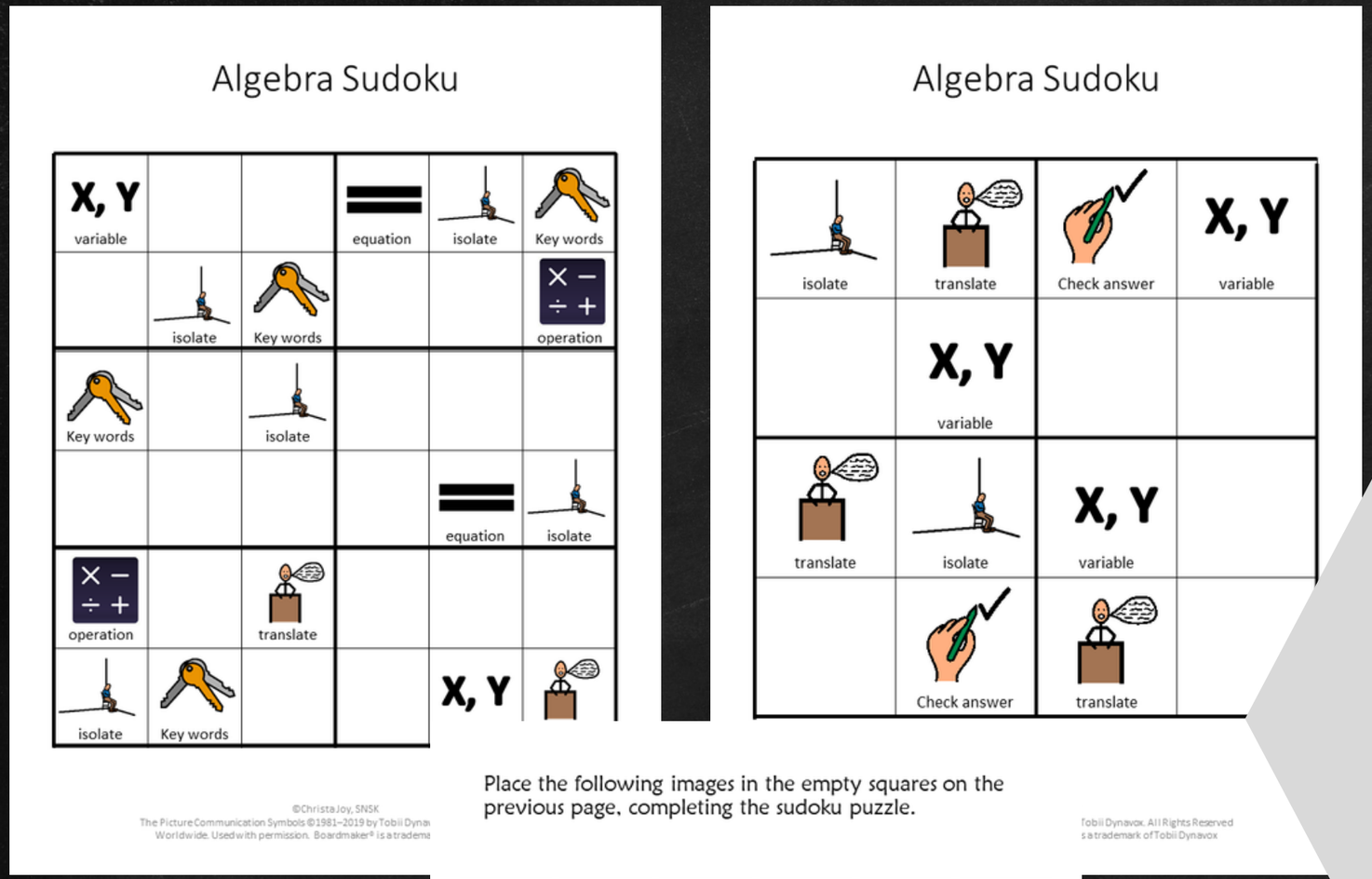
2X + 10 = 20 (X = 5)

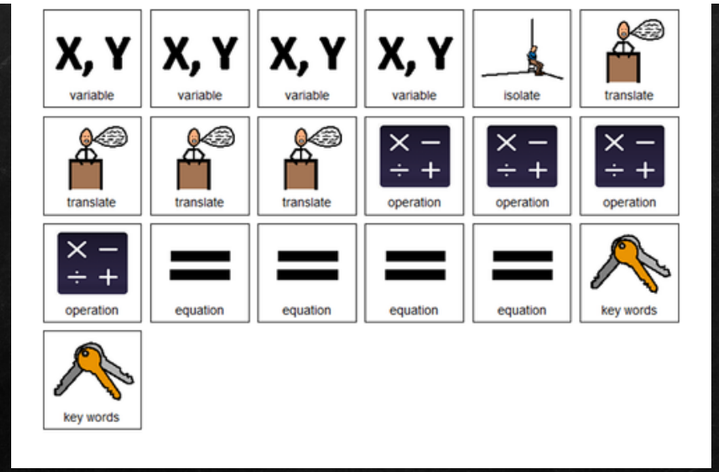
X = 5	1
2(5) + 10 = 20	2
10 + 10 = 20	3
20 = 20	4
Yes No	5

COSMIC step #5

There are 11 worksheets where students will practice checking their answers.

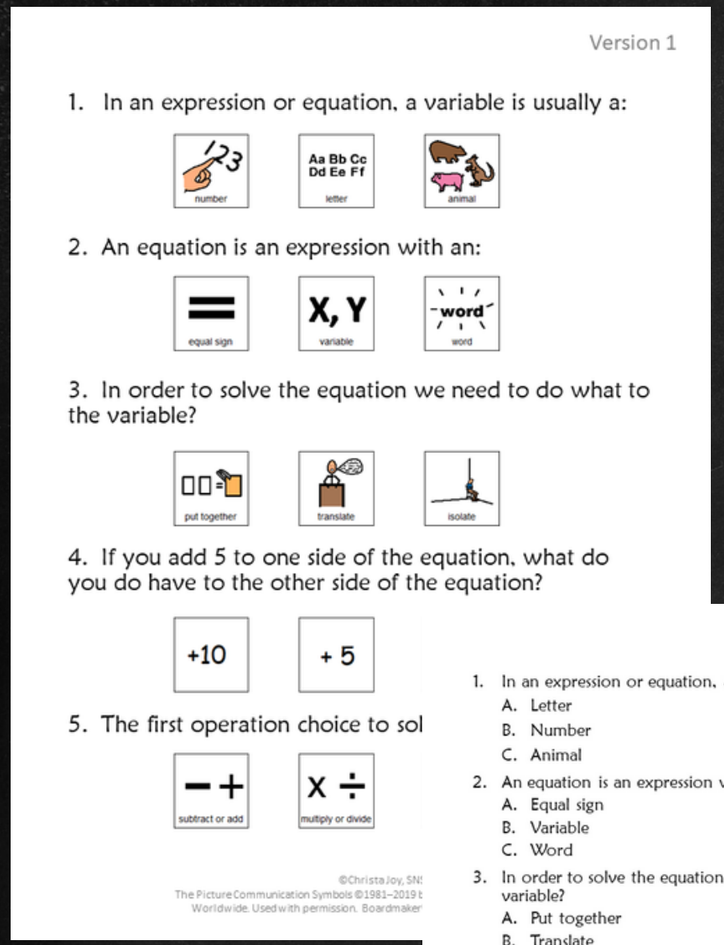
There is an example worked out for you.





There is a Sudoku puzzle in this unit as well. This is a great way to work with the new vocabulary!!

There are 2 versions plus answer keys.


Version 1

1. In an expression or equation, a variable is usually a:

number | letter | animal

2. An equation is an expression with an:

equal sign | variable | word

3. In order to solve the equation we need to do what to the variable?

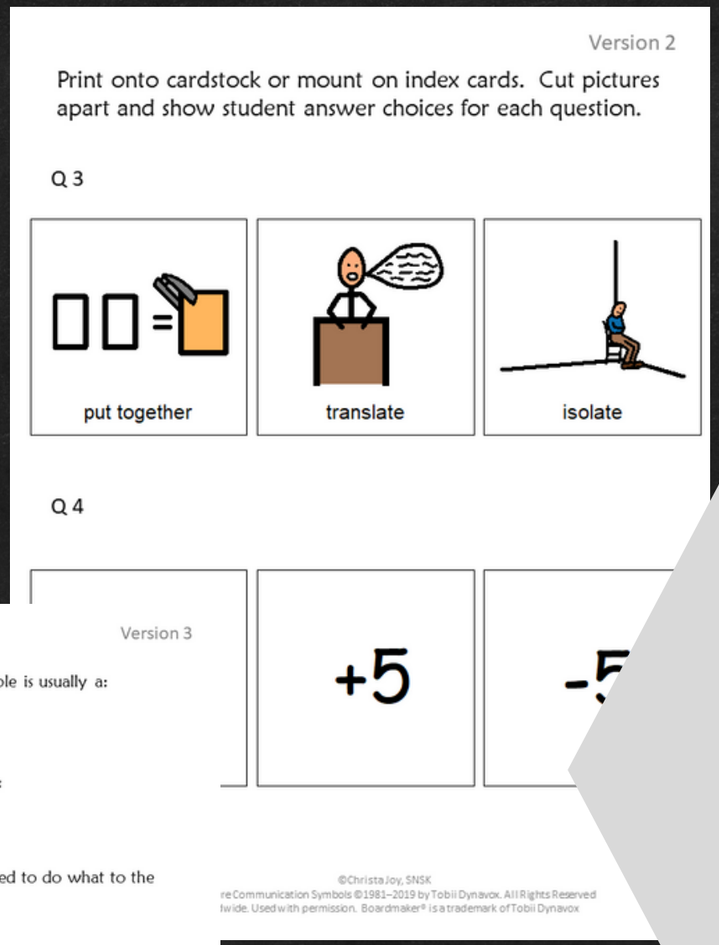
put together | translate | isolate

4. If you add 5 to one side of the equation, what do you do have to the other side of the equation?

+10 | + 5

5. The first operation choice to sol

subtract or add | multiply or divide


Version 2

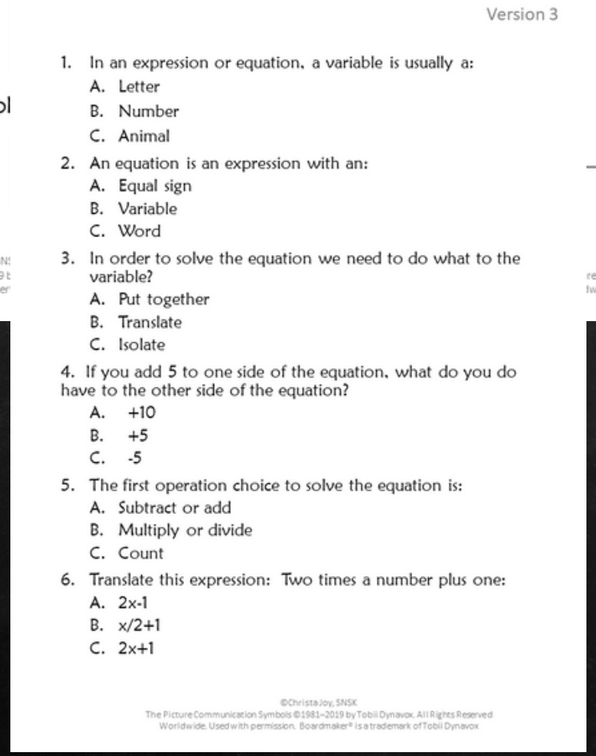
Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

Q 3

put together | translate | isolate

Q 4

+5 | -5


Version 3

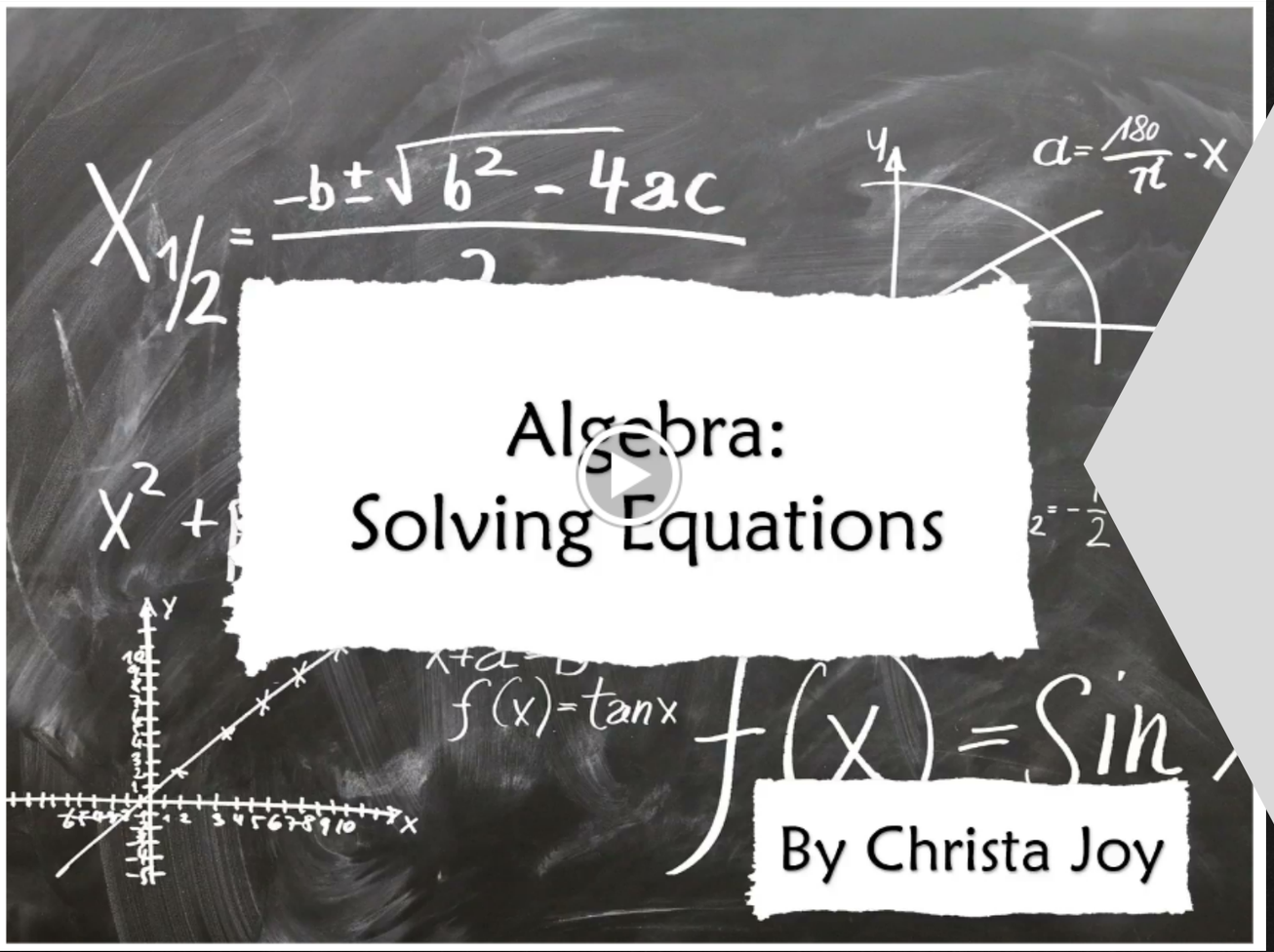
1. In an expression or equation, a variable is usually a:
   A. Letter
   B. Number
   C. Animal
2. An equation is an expression with an:
   A. Equal sign
   B. Variable
   C. Word
3. In order to solve the equation we need to do what to the variable?
   A. Put together
   B. Translate
   C. Isolate
4. If you add 5 to one side of the equation, what do you do have to the other side of the equation?
   A. +10
   B. +5
   C. -5
5. The first operation choice to solve the equation is:
   A. Subtract or add
   B. Multiply or divide
   C. Count
6. Translate this expression: Two times a number plus one:
   A. 2x-1
   B. x/2+1
   C. 2x+1

FINALLY the assessment!! There are 3 versions.

- 10 questions with 3 picture choices for each question
- cut out the answer choices and glue them on index cards
- traditional multiple choice

Answer key included.

Watch the movie on Solving Equations



This unit also has digital activities. There is a movie version of the book students can listen to read aloud.

Great for review

1. Two plus six plus three plus a number.
2. A number minus one plus eighteen.
3. A number divided by three plus four.
4. Eleven minus seven plus a number.
5. Fifteen minus two times a number.

COSMIC 1

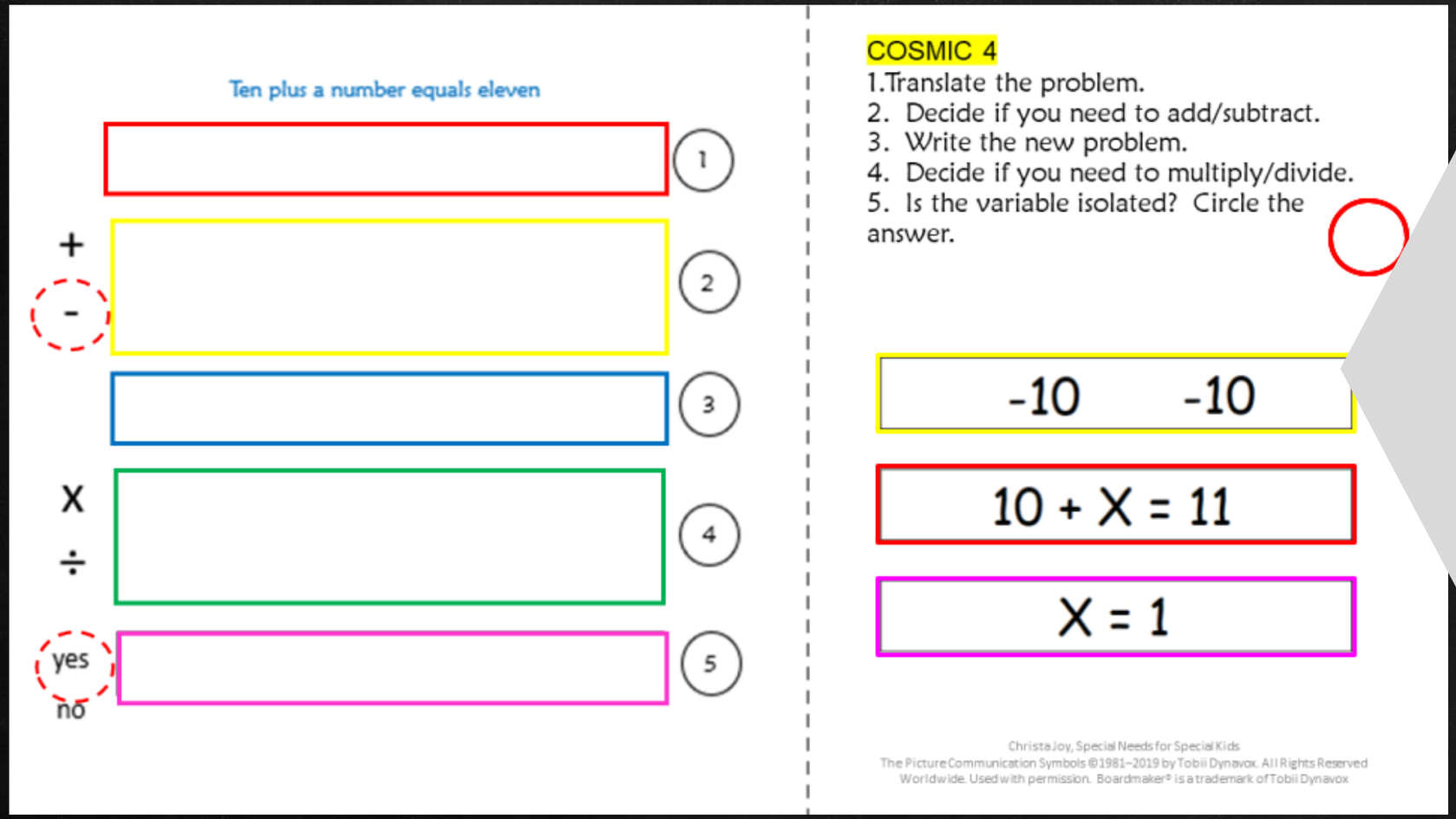
Read each problem and translate into an equation.

d - 1 + 18	15 - 2z
11 - 7 + c	
2 + 6 + 3 + f	m/3 + 4

The digital activities have students click and drag their answers.

There are 2 sets slides.

Perfect for all learning levels



The second set of slides is differentiated using either color or numbers for students to match to.

This resource comes in a zipped folder. You will need to unzip the folder to access all the contents which include:

- Lesson plan
- Algebra activities in BW
- Algebra activities in color
- Solving Equations book (PowerPoint) to use with activities
- Links and directions to digital activities

Save money and get this unit in a bundle with more advanced algebra units.

Algebra Bundle