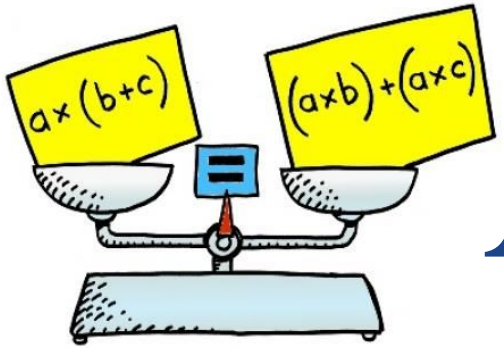
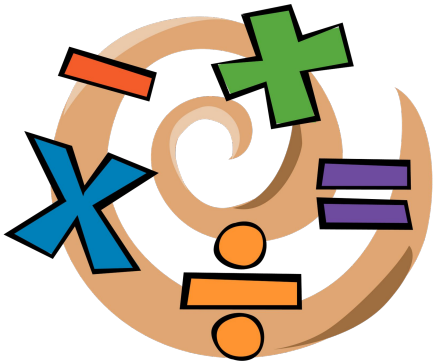
Inspiring Greatness
ISD
INDEPENDENCE SCHOOL DISTRICT

Online Lessons Created for IMPACT



Algebra



Hands on Equations

Algebra Unit One

Baby Yoda has been kidnapped!

Mrs. Bonner is so upset that someone has kidnapped Baby Yoda from her classroom! As you can imagine, Mrs. B is in tears about this! She found a note that said:

> If you ever want to see your precious Baby Yoda again, you better learn some algebra! All of my clues to finding him will involve solving a few equations!

Algebra Unit One

Learning Targets:

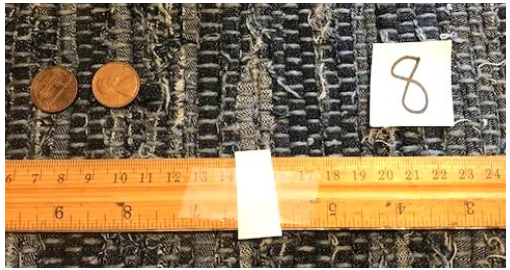
- Students will create their own math learning materials.
- Students will use the “guess and check” strategy to solve algebraic equations. (lesson one)
- Students will replace the “pawn” with an X in their equations. (lesson two)
- Students will learn how to balance each side of the equation. (lesson three)
- Students will learn that 3x means 3 sets of the number. (lesson three)
- Students will learn that the same value can be subtracted from each side and keep the balance in the equation. (lesson four)

Standards:

- **5.NBT.A.2** Compare two numbers from billions to thousandths using the symbols >, = or <, and justify the solution.
- ***5.RA.B*** Write and interpret numerical expressions.
- **6.EEI.A.2c** Evaluate non-negative rational number expressions.
- **6.EEI.A.2d** Write and evaluate algebraic expressions.
- **6.EEI.A.3** Identify and generate equivalent algebraic expressions using mathematical properties.

You need a few materials:

You can use anything around the house for your balance, pawns and numbers. Be as creative as you want! Here are a few examples of items I found around my house. The equation is 2x = 8 or ▲▲ = 8

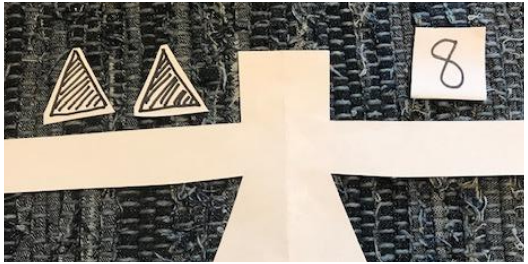


pennies and a ruler balance

buttons and a string ballance

chess pawns and a paper balance

Mancala pieces and a paper balance



everything cut out of paper

You don't have to use white paper; you can cut up bill envelopes, newspaper sale guides or use any game pieces. Just make sure you have your parent's permission!

Algebra Unit One

Let's Practice some Algebra!

Lesson One Video

In this lesson you will be reviewing how to use the guess and check strategy. Be sure to have your homemade algebra manipulatives ready! You may want to store your pieces in a baggie so you do not lose any of them.

Day One

Algebra Unit One

Try these equations!

1. ▲▲ = 4 ▲

2. ▲▲ = ▲ 10

3. ▲ 8 = 4 10

Don't look at the next slide until you have all of your answers written down!

Day One

Algebra Unit One

Let's check your answers!

1. $\triangle\triangle = 4\triangle$ X=4 $8 \leq 8$

2. $\triangle\triangle = \triangle 10$ X=6 $16 \leq 16$

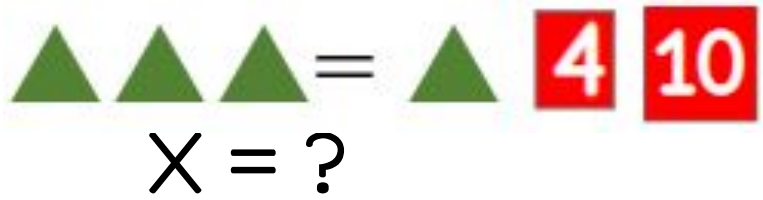
3. $\triangle 8 = 4\ 10$ X=6 $14 \leq 14$

Day One

Algebra Unit One

Here is your first clue!

My clues are like footprints that you must follow. A room like no other, you must discover and when you get there, beware! Search the room for your next clue! Here is your problem to solve:



Don't look ahead until you have the answer!

Day One

Algebra Unit One

What was your answer?

$X = 7$ $21 \div 21$

Day One

Algebra Unit One

You race to room 7 and find bookshelves lining the reading room at Blackburn Elementary! You know your next clue is in one of the books, but which one? Then you see a book on a table. You look closely and the title is ***Awesome Jokes That Every Seven Year Old Should Know*** by Mat Waugh and Indrek Einberg. You open the book and a small note falls out.

Well done, but you've only just begun!
Save your baby before it's too late, we
have no time for debate. After you
solve your clue, counting the letters of
the alphabet is what you must do!

Day Two

Algebra Unit One

Let's Practice some Algebra!

[Lesson Two Video]

In this lesson you will be reviewing that X is used for the name of the pawn. You will also recall that 3x means the same a set of three pawns.

Day Two

Algebra Unit One

Try these equations!

1. $3x = x + 6$
2. $2x + 4 = x + 10 + 2$
3. $4x = 2x + 10$

Don't look at the next slide until you have all of your answers written down!

Day Two

Algebra Unit One

Let's check your answers!

1. $3x = x + 6$ **X = 3** **9≟9**
2. $2x + 4 = x + 10 + 2$ **X = 8** **20≟20**
3. $4x = 2x + 10$ **X = 5** **20≟20**

Day Two

Algebra Unit One

Here is your second clue!

My clues are like footprints that you must follow. The alphabet holds the key. Count through the letters with me!

$$2x + 1 = x + 10 + 3$$

Don't look ahead until you have the answer!

Day Two

Algebra Unit One

What was your answer?

$$2x + 1 = x + 10 + 3$$

X = 12 **21 ≟24**

Day Two

Algebra Unit One

You count the letters of the alphabet until you reach the 12th letter and it is “L”. You think of all the rooms in Blackburn that start with an L. There is the library, the labs (computer and science) and maybe the lunch room. Which one will you search?

Library
Science Lab
Lunch Room
Computer Lab

Day Two

You searched the room and didn’t find anything!
Try another room please! Go Back!!

You searched the room and didn’t find anything!
Try another room please! Go Back!!

Algebra Unit One

You try the computer lab and walk around the room. You notice that computer number 12 is still on. Walking over to the computer, you see a message flashing on the screen.

Congrats on finding another clue. It wasn't something I thought you could do. How many clues can you gather? Can you figure out the answer? This next number represents time. How close can you get to solving this crime?

Day Two

Algebra Unit One

Let's Practice some Algebra!

[Lesson Three Video]

In this lesson you will be reviewing "a legal move". You must keep your equation balanced on both sides of the equal sign.

Day Three

Algebra Unit One

Try these equations!

1. $3x + 4 + 2x = x + 12$
2. $2x + 4x = 2 + 5x + 4$
3. $4x + 3 = 3x + 6$

Don't look at the next slide until you have all of your answers written down!

Day Three

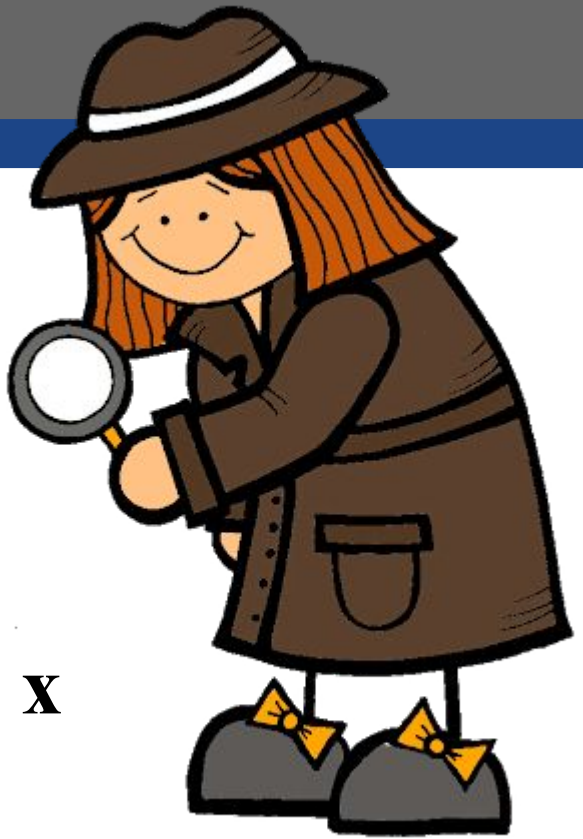
Algebra Unit One

Let's check your answers!

1. $3x + 4 + 2x = x + 12$ **X = 2** **14≟4**
2. $2x + 4x = 2 + 5x + 4$ **X = 6** **36≟36**
3. $4x + 3 = 3x + 6$ **X = 3** **15≟15**

Day Three

Algebra Unit One



Here is your second clue!

My clues are like footprints that you must follow. Time will be your next tip. Find the answer, and the room that you visit during that time of the day. Try not to trip!

$$5 + 2x + 3x = x + x + 10 + 6 + x + x$$

Don't look ahead until you have the answer!

Day Three

Algebra Unit One

What was your answer?

$$5 + 2x + 3x = x + x + 10 + 6 + x + x$$

$X = 11$ $\quad 60 \stackrel{\checkmark}{=} 60$

Day Three

Algebra Unit One

You think about your class schedule and where you might be at 11 o'clock. You decide you would either be eating lunch or at recess. Which area will you search?

Playground

Cafeteria

Day Three

Algebra Unit One

You walk to the playground and search for clues. You look around the trees, under the slides and by the monkey bars. Finally you notice a piece of paper under a rock near the playground swinging bridge. The paper says:

You did it! You found one more clue. Now I'll tell you what to do! The next number is another room!

Day Three

Algebra Unit One

Let's Practice some Algebra!

Lesson Four Video

In this lesson you will be reviewing another "legal move". You can remove the same value from each side of the equation as long as you keep the equation balanced on both sides of the equal sign.

Day Four

Algebra Unit One

Try these equations!

1. $2x + 8 + x = x + 10 + x + 4$
2. $28 + x = 8 + 2x + 7 + 5$
3. $2x + 14 + x = 2x + 21$

Don't look at the next slide until you have all of your answers written down!

Day Four

Algebra Unit One

Let's check your answers!

1. $2x + 8 + x = x + 10 + x + 4$ **$x = 6$ $26 \stackrel{?}{=} 26$**
2. $28 + x = 8 + 2x + 7 + 5$ **$x = 8$ $36 \stackrel{?}{=} 36$**
3. $2x + 14 + x = 2x + 21$ **$x = 7$ $35 \stackrel{?}{=} 35$**

Day Four

Algebra Unit One

Here is your second clue!

My clues are like footprints that you must follow. The room number is down a hall that is yellow.

$$2x + 14 + 4x = 3x + 43 + 2x$$

Don't look ahead until you have the answer!

Day Four

Algebra Unit One

What was your answer?

$$2x + 14 + 4x = 3x + 43 + 2x$$

X = 29 **188 ≟188**

Day Four

Algebra Unit One

You race to Mrs. Bailey's room (room 29) in the yellow hall. As you open the door, you notice that the kindergarten students are working on writing. You wave to the teacher as you walk around the room searching for your clue. Mrs. Bailey walks over to you and says, "I found this note taped to my door this morning. It has your name on it. How did you know it was here?" You explain the mystery you are trying to solve. The note says:

> You're almost done, you're almost there! The hardest part is next, beware! Counting letters in the alphabet is what you will do. I hope you see this mystery through!

Day Four

Algebra Unit One

Let's Practice some Algebra!

[Lesson Five Video]

In this lesson you will be reviewing how to subtract the variable X while solving your equations. A variable is used to represent something unknown.

Day Five

Algebra Unit One

Try these equations!

1. $5x - 2x + 4 = x + 24$
2. $4x - x + 6 = 2x + 10$
3. $5x - 3x + 13 = x + 19$

Don't look at the next slide until you have all of your answers written down!

Day Five

Algebra Unit One

Let's check your answers!

1. $5x - 2x + 4 = x + 24$ **x = 10 34≟34**
2. $4x - x + 6 = 2x + 10$ **x = 4 18≟18**
3. $5x - 3x + 13 = x + 19$ **x = 6 25≟25**

Day Five

Algebra Unit One

Here is your second clue!

My clues are like footprints that you must follow. The room number is down a hall that is yellow.

$$6x - 2x + 5 = 2x + 23$$

Don't look ahead until you have the answer!

Day Five

Algebra Unit One

What was your answer?

$$6x - 2x + 5 = 2x + 23$$

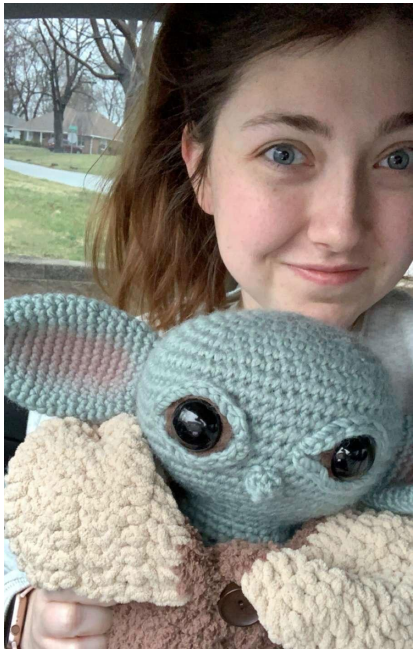
$X = 9$ $41 \stackrel{?}{=} 41$

Day Five

Algebra Unit One

You count the letters in the alphabet and realize the 9th letter is the letter I. Which room starts with the letter I? You guessed it, the IMPACT classroom. As you walk into Mrs. Bonner's classroom you see her daughter Hope holding Baby Yoda. She shows you a picture of the two of them outside near the playground. On the whiteboard she has written.

> You solved the mystery and found me! What an exciting day of math with Yoda. On this quest, you have earned your diploma!



Day Five

Student Reflection: What did you learn?

- Which strategy did you use the first day?
- Explain two legal moves to an adult.
- If you are not an IMPACT student, you can tell an adult three things that you learned during this unit.

Challenge Activities:

- Write your own mystery using algebra!
- Teach some in your house how to work an algebra problem using a legal move.