Patterns & Algebra

Unit 11: Equations

Lesson 57: Introduction to Algebra

Objective

*Use a box as a symbol to represent unknown numbers in addition and subtraction equations.
*Write and solve addition and subtraction equations with unknowns in all positions using diagrams and without using diagrams.
*Use diagrams and the relationship between multiplication and division to write and solve multiplication and division equations with an unknown number PA4-12 and PA4-13

Complete *all* **OR** *a selection* **of the following activities**

Warm-up: Missing numbers

Share a few simple equations with a box representing the missing piece:

5 + ▢ = 12 ▢ ÷ 4 = 4 5 x 5 = ▢ ▢ - 9 = 6

What could go in the box? How do you know?

Is there more than one way to figure it out?

Teaching Activity A: Adding and Subtracting Equations - finding the unknown

Together, *solve* equations with an unknown by introducing the idea of isolating the unknown on one side of the equal sign by adding or subtracting each side.
Possible equations to work through:

7 + ▢ = 11 ▢ - 4 = 8 5 + 12 = ▢ ▢ - 13 = 6

Make up your own, tell a story to go with the equations

Teaching Activity B: Multiplication and Division Equations - finding the unknown

Together, *solve* equations with an unknown by introducing the idea of isolating the unknown on one side of the equal sign by multiplying or dividing each side.
Possible equations to work through:

12 ÷ ▢ = 4 4 x ▢ = 8 15 ÷ 5 = ▢ ▢ x 3 = 18

Make up your own, tell a story to go with the equations

Real-Life Anchoring: Math in the World and Life

Scenario
You are helping to organize a lunch table for a community event. Each row needs the same amount of seats. You know 24 people are coming. How many configurations are possible by changing the amount of rows?

Just before lunch begins, you find out there will be an extra 6 people coming. How can you reconfigure the rows and tables so there are still the same number of seats in each row?

Exploration Stations: Playing with Math

Equation build
Use base 10 blocks or Unifix cubes and mystery boxes to create equations. Take turns building, writing with numbers and solving.

Equation stories
Write a mystery equation story and have a friend draw and solve it.

Matching
Match equations written on cards with solutions posted around the room.

Questions for Understanding: Perspective-taking and application

- [ ] What changes when the box is in a different place?
- [ ] How does the unknown help you understand the problem?

Wrap-Up Reflection: Learning into life

- [ ] What surprised or confused you about equations and finding the unknown?
- [ ] Consider this idea and how it connects to your understanding of finding the unknown in an equation: *Algebra begins with listening to what is not yet known. Wonder begins with not knowing.*

Extend Learning: Creative Invitation

Mystery Box Story

Create a comic strip, short story or dramatic scene about an equation where there is an unknown hiding in a box. Explore the equation and calculate the missing part in story form. Name the whole equation at the end.

JUMP Math 4.2 Lessons

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Use diagrams and the relationship between multiplication and division to write and solve multiplication and division equations with an unknown number PA4-12 and PA4-13

Lesson co-created by Open AI (2025), [Aiden Cinnamon Tea, Chat GPT 4.5], Jump Math Teacher Resources and Laura Mann @ NIDES, June 2025.