Important Concepts . . .

Preview Review

Mathematics Grade 8 TEACHER KEY

W2 - Lesson 1: Modelling and Solving Linear Equations Using Algebra Tiles

Important Concepts of Grade 8 Mathematics

W1 - Lesson 1 ..... Perfect Squares and Square Roots
W1 - Lesson 2 ..... Working with Ratios and Rates
W1 - Lesson 3 ..... Multiplying and Dividing Fractions
W1 - Lesson 4 ..... Multiplying and Dividing Integers
W1 - Lesson 5 ..... Working with Percents
W1 - Review
W1 - Quiz

W2 - Lesson 1 ..... Modelling and Solving Linear Equations Using Algebra Tiles
W2 - Lesson 2 ..... Solving Linear Equations
W2 - Lesson 3 ..... Graphing and Analyzing Linear Relations
W2 - Lesson 4 ..... Critiquing the Representation of Data
W2 - Lesson 5 ..... Probability of Independent Events
W2 - Review
W2 - Quiz

W3 - Lesson 1 ..... Pythagorean Theorem
W3 - Lesson 2 ..... Calculating Surface Area
W3 - Lesson 3 ..... Calculating Volume
W3 - Lesson 4 ..... Drawing 3-D Objects
W3 - Lesson 5 ..... Congruence of Polygons
W3 - Review
W3 - Quiz

Materials Required

Protractor
Ruler
Calculator

No Textbook Required

This is a stand-alone course.

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Publisher: Alberta Distance Learning Centre
Written by: Monica dHamrait
Reviewed by: Patty Rogerson

Project Coordinator: Donna Silgard
Preview/Review Publishing Coordinating Team:
Heather Martel and Nicole Mckeand

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Preview/Review Concepts for Grade Eight Mathematics

Teacher Key

W1 – Lesson 1:

Modelling and Solving Linear Equations Using Algebra Tiles

OBJECTIVES

By the end of this lesson, you will be able to:

- Model a linear equation using algebra tiles
- Solve a linear equation using algebra tiles

GLOSSARY

Linear equation – equations that form a straight non-vertical and non-horizontal line when graphed

Variable – a symbol (usually a letter) that represents an unknown value or values

Zero pairs – tiles that represent opposite values that have a sum of zero

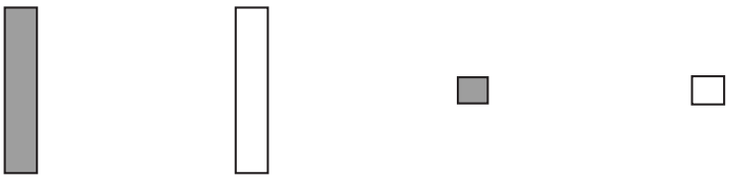
W2 – Lesson 1: Modelling and Solving Linear Equations using Algebra Tiles

Materials required:

- Paper, Pencil, and Algebra Tiles

Part 1: Modelling Linear Equations using Algebra Tiles

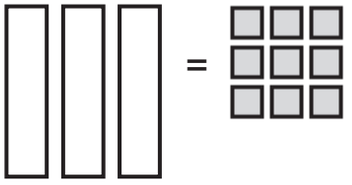
A linear equation can be modelled using algebra tiles.



- To represent a linear equation, first determine how many x-tiles you will need and whether they are positive or negative.
- Then determine how many unit tiles you will need and whether they will be positive or negative.

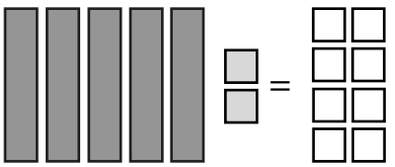
Example 1

Model the linear equation -3x = 9 using algebra tiles.
To represent -3x , you will need three unshaded x-tiles.
To represent 9, you will need nine shaded unit tiles.



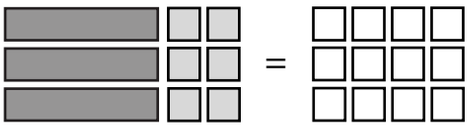
Example 2

Model the linear equation 5x + 2 = -8 using algebra tiles.
To represent 5x, you will need five shaded x-tiles.
To represent 2, you will need two shaded unit tiles.
To represent -8, you will need eight unshaded unit tiles.



Example 3

Model the linear equation 3(x + 2) = -12 using algebra tiles.
To represent x + 2, you will need a set that includes one shaded x-tile and two shaded unit tiles.
To represent 3(x + 2), you will need three sets of the x + 2 tiles.
To represent -12, you will need twelve unshaded unit tiles.

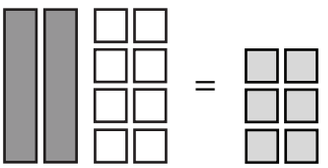


Practice Questions

Model the following linear equations using algebra tiles.

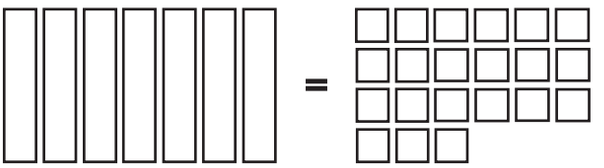
1. $2x - 8 = 6$

To represent 2x, you will need two shaded x-tiles.
To represent -8, you will need eight unshaded unit tiles.
To represent 6 you will need six shaded unit tiles.



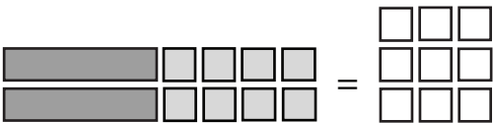
2. $-7x = -21$

To represent -7x, you will need seven unshaded x-tiles.
To represent -21, you will need twenty unshaded unit tiles.



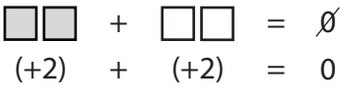
3. $2(x + 4) = -9$

To represent x + 4, you will need a set that includes one shaded x-tile and four shaded unit tiles.
To represent 2(x + 4), you will need two sets of the x+4 tiles.
To represent -9, you will need nine unshaded unit tiles.

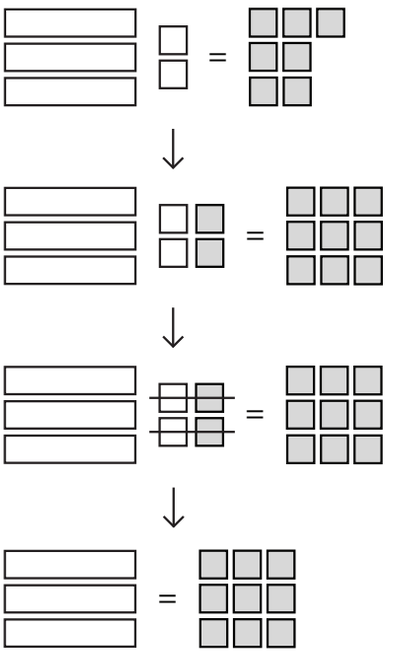


Part 2: Solving Linear Equations Using Algebra Tiles

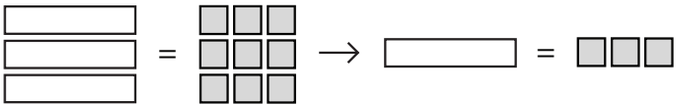
When solving linear equations using algebra tiles you must apply the concept of zero pairs. A zero pair is a pair of opposite coloured tiles that have a sum of zero. In other words they cancel each other out.



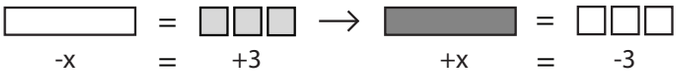
When solving linear equations, the goal is to get all the x-tiles on one side of the equal sign and all the unit tiles to the other side of the equal sign. Use the concept of zero pairs to do this.



When all the x-tiles are on one side of the equal sign and the units tiles are on the other side, distribute the unit tiles evenly among the x–tiles.



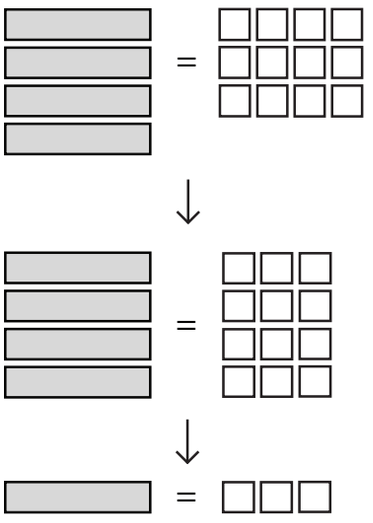
If you end up with negative x-tiles, change them to positive x-tiles and change the unit tiles to their opposite colours (hence value) as well.



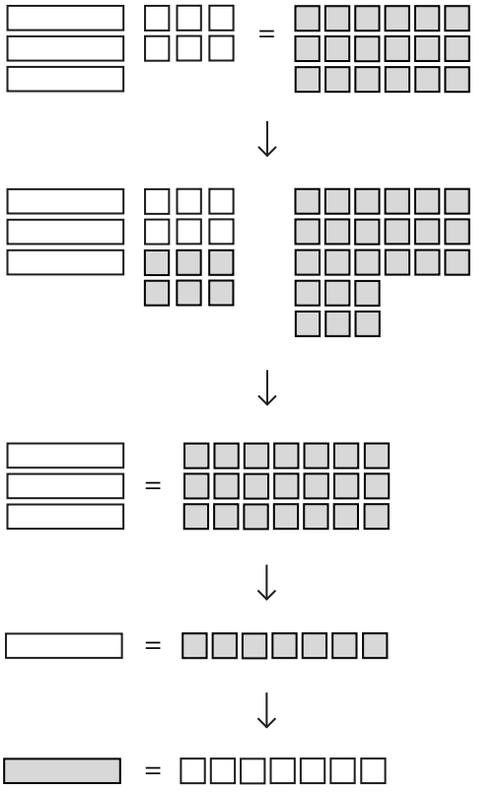
Practice Questions

Solve the following linear equations using algebra tiles.

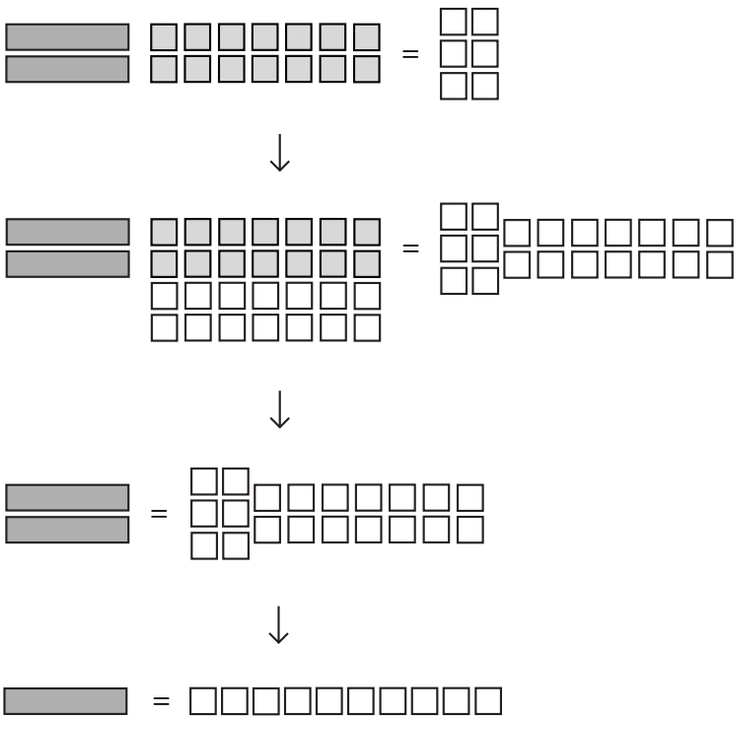
1. $4x = -12$



2. $-3x - 6 = 18$



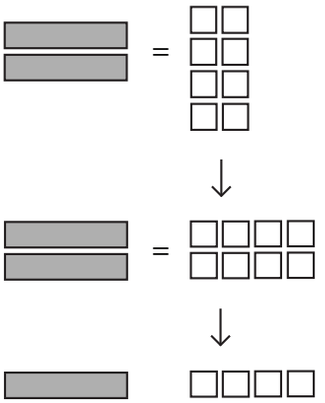
3. $2(x+7) = -6$



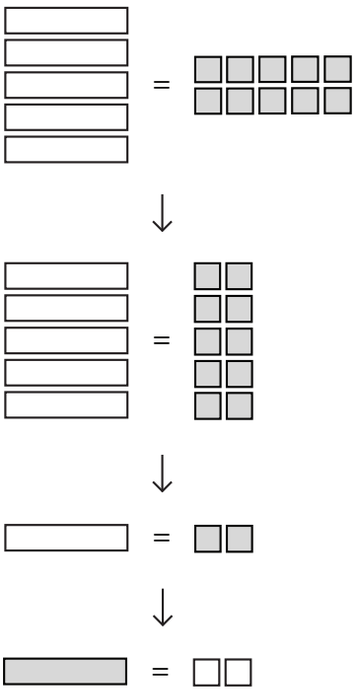
Lesson 6: Assignment

Solve the following linear equations using algebra tiles.

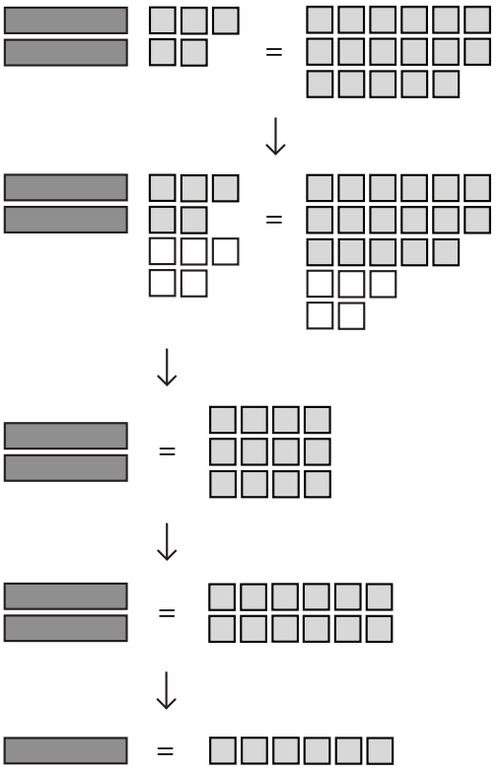
1. $2x = -8$



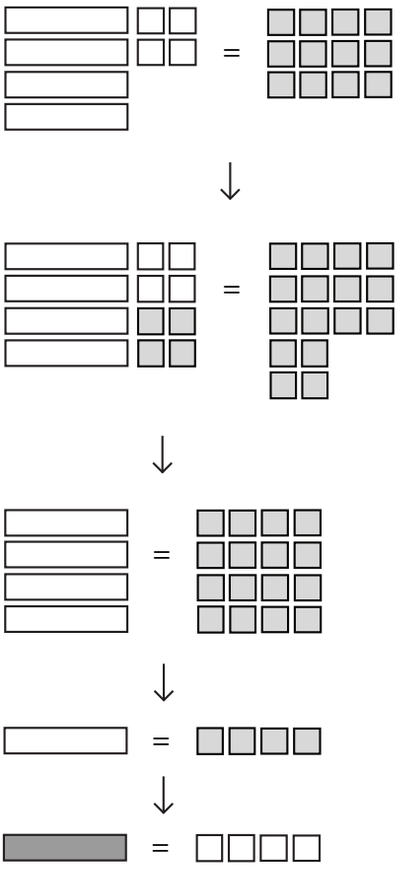
2. $-5x = 10$



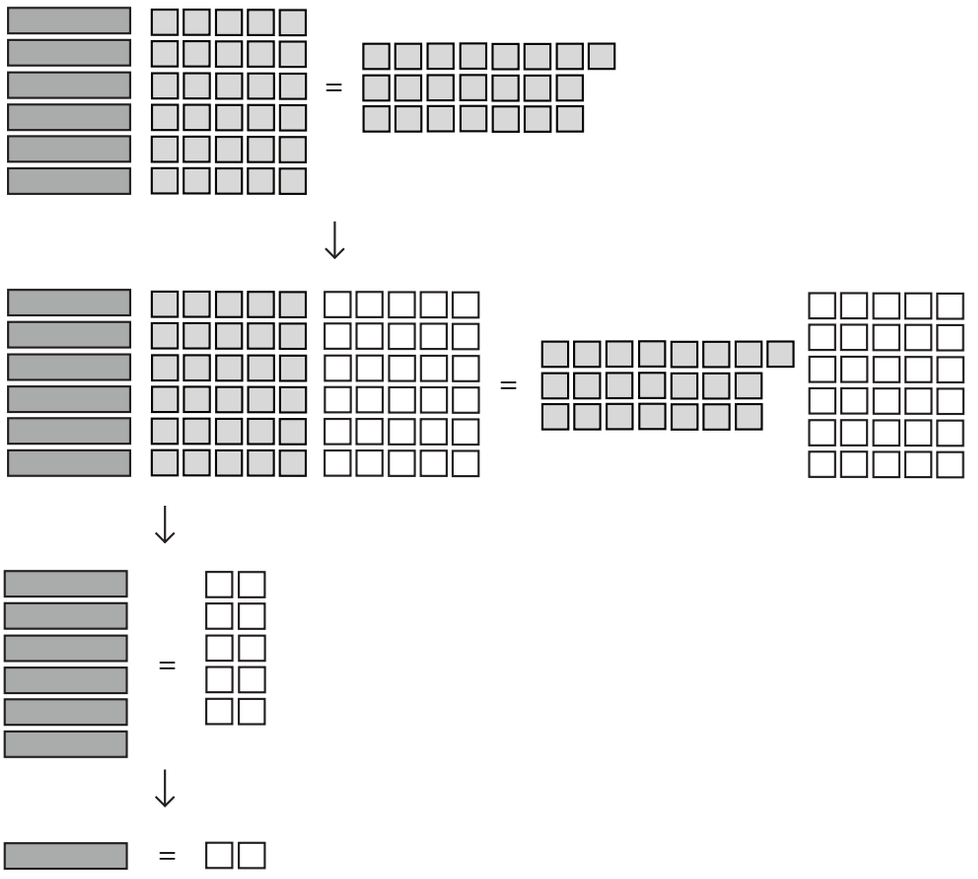
3. $2x + 5 = 17$



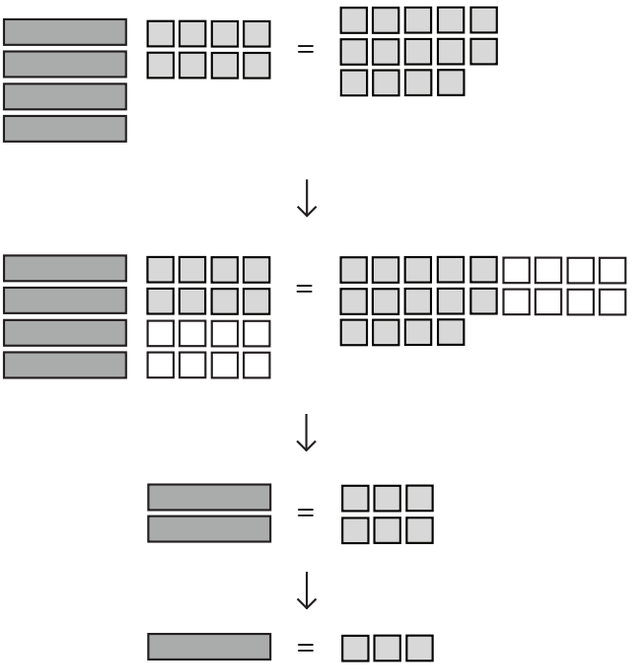
4. $-4x - 4 = 12$



5. $6\,(x + 5) = 22$



6. $2\,(x + 4) = 14$




LEARNING
ANYTIME ANYWHERE