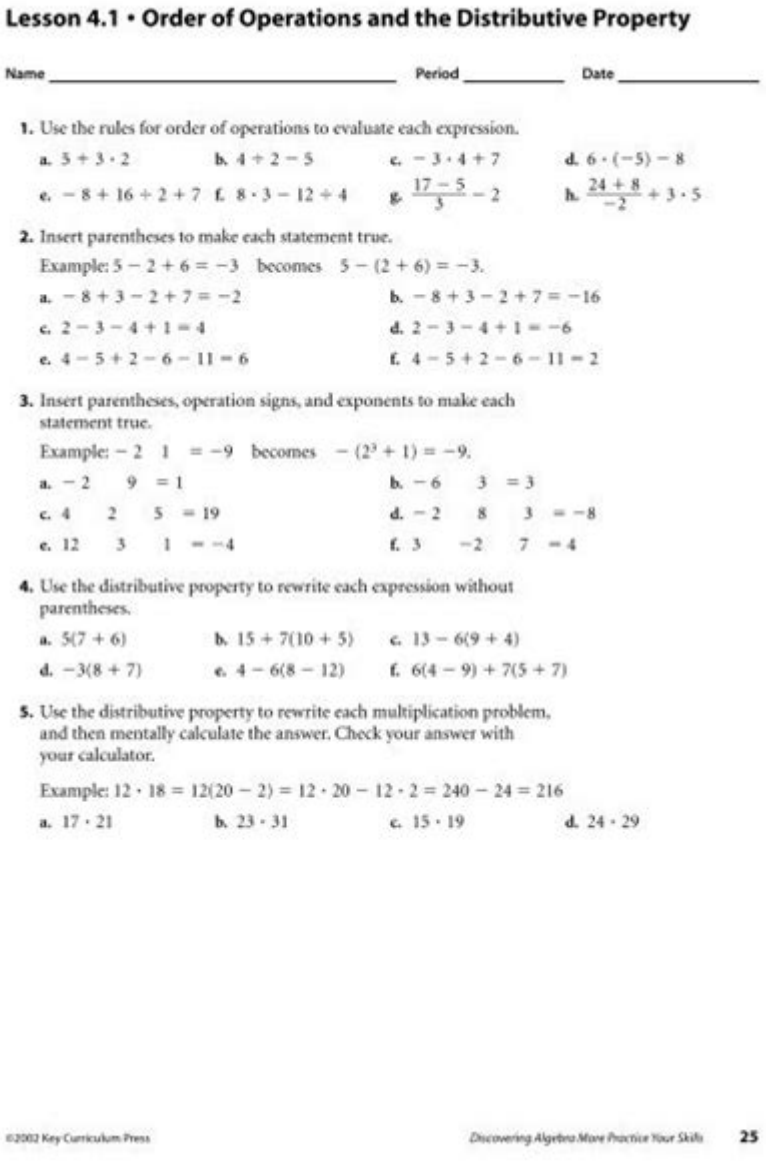
Lesson 6 Skills Practice Write Linear Equations



Lesson 4.1 • Order of Operations and the Distributive Property

Name _____ Period _____ Date _____

1. Use the rules for order of operations to evaluate each expression.

a. $5 + 3 \cdot 2$ b. $4 \div 2 - 5$ c. $-3 \cdot 4 + 7$ d. $6 \cdot (-5) - 8$

e. $-8 + 16 \div 2 + 7$ f. $8 \cdot 3 - 12 \div 4$ g. $\frac{17 - 5}{3} - 2$ h. $\frac{24 + 8}{-2} + 3 \cdot 5$

2. Insert parentheses to make each statement true.

Example: $5 - 2 + 6 = -3$ becomes $5 - (2 + 6) = -3$.

a. $-8 + 3 - 2 + 7 = -2$ b. $-8 + 3 - 2 + 7 = -16$

c. $2 - 3 - 4 + 1 = 4$ d. $2 - 3 - 4 + 1 = -6$

e. $4 - 5 + 2 - 6 - 11 = 6$ f. $4 - 5 + 2 - 6 - 11 = 2$

3. Insert parentheses, operation signs, and exponents to make each statement true.

Example: $-2 \quad 1 \quad = -9$ becomes $-(2^3 + 1) = -9$.

a. $-2 \quad 9 \quad = 1$ b. $-6 \quad 3 \quad = 3$

c. $4 \quad 2 \quad 5 \quad = 19$ d. $-2 \quad 8 \quad 3 \quad = -8$

e. $12 \quad 3 \quad 1 \quad = -4$ f. $3 \quad -2 \quad 7 \quad = 4$

4. Use the distributive property to rewrite each expression without parentheses.

a. $5(7 + 6)$ b. $15 + 7(10 + 5)$ c. $13 - 6(9 + 4)$

d. $-3(8 + 7)$ e. $4 - 6(8 - 12)$ f. $6(4 - 9) + 7(5 + 7)$

5. Use the distributive property to rewrite each multiplication problem, and then mentally calculate the answer. Check your answer with your calculator.

Example: $12 \cdot 18 = 12(20 - 2) = 12 \cdot 20 - 12 \cdot 2 = 240 - 24 = 216$

a. $17 \cdot 21$ b. $23 \cdot 31$ c. $15 \cdot 19$ d. $24 \cdot 29$

Lesson 6 Skills Practice: Write Linear Equations

In the realm of mathematics, particularly in algebra, writing linear equations is a fundamental skill that serves as a building block for more advanced concepts. Linear equations are equations of the first degree, meaning they involve variables raised only to the first power. They can be represented in various forms, such as slope-intercept form, point-slope form, and standard form. This lesson focuses on the skills necessary to write linear equations based on given information, including points on a graph, slope, and real-world scenarios. By mastering this skill, students will better understand how to model relationships between quantities and interpret linear relationships in various contexts.

Understanding Linear Equations

Before diving into the process of writing linear equations, it is essential to understand what linear equations are and their properties. A linear equation can be expressed in the general form:

$$ Ax + By = C $$

Where:
- $ A $, $ B $, and $ C $ are constants.
- $ x $ and $ y $ are variables.

Linear equations represent straight lines when graphed on a coordinate plane. The key characteristics of these equations include:

- Slope (m): The slope indicates the steepness of the line and is calculated as the change in $ y $ over the change in $ x $ (rise over run).
- Y-intercept (b): The y-intercept is the point where the line crosses the y-axis, representing the value of $ y $ when $ x = 0 $.

The most common forms of linear equations include:

1. Slope-Intercept Form:
$$ y = mx + b $$
Where $ m $ is the slope and $ b $ is the y-intercept.

2. Point-Slope Form:
$$ y - y_1 = m(x - x_1) $$
Where $ (x_1, y_1) $ is a point on the line and $ m $ is the slope.

3. Standard Form:
$$ Ax + By = C $$
Where $ A $, $ B $, and $ C $ are integers, and $ A $ should be non-negative.

Steps to Write Linear Equations

Writing linear equations can vary depending on the information provided. Here are some common scenarios and the steps to follow:

1. Given Two Points

When you are provided with two points, say $ (x_1, y_1) $ and $ (x_2, y_2) $, the linear equation can be derived through the following steps:

- Step 1: Calculate the slope (m):
$$ m = \frac{y_2 - y_1}{x_2 - x_1} $$

- Step 2: Use one of the points to apply the point-slope form:
$$ y - y_1 = m(x - x_1) $$

- Step 3: Rearrange the equation to the slope-intercept form or standard form as desired.

Example: Given points $(2, 3)$ and $(4, 7)$:

1. Calculate the slope:
$$ m = \frac{7 - 3}{4 - 2} = \frac{4}{2} = 2 $$

2. Use point-slope form with point $(2, 3)$:
$$ y - 3 = 2(x - 2) $$

3. Simplifying gives:
$$ y - 3 = 2x - 4 $$
$$ y = 2x - 1 $$ (slope-intercept form)

2. Given Slope and a Point

If you have the slope and a point, you can directly use the point-slope form:

- Step 1: Write the equation using the point-slope form:
$$ y - y_1 = m(x - x_1) $$

- Step 2: Rearrange it to the slope-intercept form or standard form.

Example: Given slope $m = -3$ and point $(1, 2)$:

1. Start with point-slope form:
$$ y - 2 = -3(x - 1) $$

2. Simplify:
$$ y - 2 = -3x + 3 $$
$$ y = -3x + 5 $$ (slope-intercept form)

3. Given a Graph

Sometimes, you may need to write the equation based on a graph. Here’s how:

- Step 1: Identify two clear points on the line and find their coordinates.
- Step 2: Calculate the slope using the two points.
- Step 3: Use one of the points to write the equation in point-slope form.
- Step 4: Convert to slope-intercept or standard form.

4. Real-World Scenarios

Writing linear equations can also be applied to real-world situations. Here’s how to approach it:

- Step 1: Define the variables relevant to the problem.
- Step 2: Identify the slope based on the context (rate of change).
- Step 3: Determine the y-intercept based on initial conditions.
- Step 4: Construct the equation using the slope-intercept form.

Example: A car rental company charges a flat fee of $50 plus $0.20 per mile driven.

- Let y be the total cost and x be the miles driven.
- The slope (cost per mile) is $0.20, and the y-intercept (initial fee) is $50.
- The equation is:
$$y = 0.20x + 50$$

Practice Problems

To enhance your skills in writing linear equations, consider solving the following practice problems:

1. Write the equation of the line that passes through the points $(-1, 4)$ and $(3, 8)$.
2. A line has a slope of 5 and passes through the point $(2, 3)$. Write its equation.
3. Given the equation $y = -2x + 6$, identify the slope and y-intercept.
4. A store sells notebooks for $2 each with a $10 initial fee. Write the equation representing the total cost.

Conclusion

Writing linear equations is a vital skill that extends beyond the classroom and into real-world applications. By understanding how to manipulate the various forms of linear equations and applying them to different scenarios, students can develop a strong mathematical foundation. Mastery of these concepts allows for the exploration of more complex functions and relationships in mathematics. Continuous practice with various problems will enhance proficiency and confidence in this essential algebraic skill. Embrace the challenges of writing linear equations, and you will find yourself better equipped to tackle a wide range of mathematical concepts in the future.

Frequently Asked Questions

What is the first step in writing a linear equation from a word problem?

Identify the variables and understand the relationship described in the problem.

How can you determine the slope of a linear equation from a graph?

The slope can be determined by selecting two points on the line and using the formula (y2 - y1) / (x2 - x1).

What is the standard form of a linear equation?

The standard form is Ax + By = C, where A, B, and C are integers, and A should be non-negative.

How do you convert a linear equation from slope-intercept form to standard form?

Rearrange the equation from y = mx + b to the form Ax + By = C by moving terms around and ensuring A, B, and C are integers.

What does the y-intercept represent in a linear equation?

The y-intercept represents the value of y when x is equal to zero, indicating where the line crosses the y-axis.

What is the importance of understanding linear equations in real-life applications?

Linear equations are used in various fields such as economics, physics, and engineering to model relationships and predict outcomes.

How can you find the x-intercept of a linear equation?

To find the x-intercept, set y = 0 in the equation and solve for x.

What are the characteristics of parallel lines in terms of their linear equations?

Parallel lines have the same slope but different y-intercepts, meaning their linear equations will have equal coefficients for x.

What is the method to graph a linear equation?

To graph a linear equation, plot the y-intercept on the y-axis, use the slope to find another point, and draw a straight line through the points.

How can you check if a point lies on the line of a linear equation?

Substitute the x and y coordinates of the point into the equation; if the equation holds true, the point lies on the line.

Lesson 6 Skills Practice Write Linear Equations

如何看待杰洛•齐贝林的五个**lesson?**又该如何做到? - 知乎
除非你有确凿的证据 lesson four尊敬你做的事，不要去在意结果果断放弃结果才有资格完成你的目标 lesson five 最远的路就是最近的路，不要抄近道老老实实练。本人对这五个lesson省油感 …

新概念英语第二册Lesson 60深精讲解 - 知乎
本号长期分析讲解新概念英语，新概念英语第二册里面的每个句子，句子结构，背后语法，上下文用法，今天，我们逐词逐句讲解新概念英语第二册Lesson 60，目的是带领大家背诵下来，但 …

course、class、lesson和subject译为“课”时有什么区别? - 知乎
Nov 19, 2021 · 泛读与词汇 英语学习方法与内容分享 6 人赞同了该回答 course是课程，针对某个主题讲授一系列的内容 class是强调课堂的形式 lesson是课本上一个单位的内容 subject是主题或 …

儿子五年级了，想揍一顿屁股，该怎么揍? - 知乎
1、告诉他因为什么事，所以要打他屁股。 2、可以给他3~5分钟准备时间。 3、准备时间到了之后，让他脱掉裤子还有nk，露出屁股，让他趴到你的腿上或者沙发上。建议选择一个工具，个人 …

如何解读杰洛说的「最短的捷径就是绕远路」? - 知乎
Apr 9, 2017 · 天下的事,有时是不以人的意志为转移的 你想这样作,却偏偏一下子办不到 但转了一个圈，事情又办成了 ---李德胜 (1935年5月完成巧渡金沙江后在会理的讲话) 最近看了B站UP 沙 …

新概念英语第二册Lesson 38深精讲解 - 知乎
本号长期分析讲解新概念英语，新概念英语第二册里面的每个句子，句子结构，背后语法，上下文用法，今天，我们逐词逐句讲解新概念英语第二册Lesson 38，目的是带领大家背诵下来，但 …

lesson与**subject**的区别? - 知乎
谢邀 lesson 课 如 piano lessons, the second lesson （这里跟class差不多）；课（就是几节课）如 30 lessons, a lesson;经验 教训 如give sb. a lesson （第二个意思也可以这么用 意为给某人 …

新概念英语第二册**Lesson 29**深精讲解与背诵指导 - 知乎
本号长期分析讲解新概念英语，新概念英语第二册里面的每个句子，句子结构，背后语法，上下文用法，今天，我们逐词逐句讲解新概念英语第二册Lesson 29，目的是带领大家背诵下来，但 …

中国人学韩语有多简单?！最好的韩语入门教程！不要再走弯路了~

May 5, 2022 · □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□~ □□□□ □□□□□□□□□□□□□□□□□□□□□□□□ 11 46 □□□□□□□□ □TOPIK6□□□N□□□□ …

□□□□□□□□*Lesson 27*□□□□□□□□□ - □□
□□Lesson 27□□□□□□□□□□□□□□ □ …

□□□□□□·□□□□□□*lesson?*□□□□□□□ - □□
□□□□□□□□□□ lesson four□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ lesson five □□□□□□□□□□□□□□□□□□□□□□□□□ □□□□□□lesson□□□ …

□□□□□□□□Lesson 60□□□□ - □□
□□Lesson 60□□□□□□□□□□□□□□ □ …

course□class□lesson□subject□□“□”□□□□□□□ - □□
Nov 19, 2021 · □□□□□ □□□□□□□□□□□□ 6 □□□□□□ course□□□□□□□□□□□□□□□□□□□□ class□□□□□□□□ lesson□□□□ □□□□□□ subject□□□ …

□□□□□□□□□□□□□□□□□□□□□ **-** □□
1□□□□□□□□□□□□□□□□□□□ 2□□□□□3□5□□□□□□□ 3□□□□□□□□□□□□□□□□□□□nk□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□ □□ …

□□□□□□□□□□□□□□□□□□□□□□□□□ - □□
Apr 9, 2017 · □□□□,□□□□□□□□□□□□□□□ □□□□,□□□□□□□□□□ □□□□□□□□□□□□□□□ ---□□□ (1935□5□□□□□□□□□□□□□□□□ □) □□□□B□UP □ …

□□□□□□□□*Lesson 38*□□□□ - □□
□□Lesson 38□□□□□□□□□□□□□□ □ …

lesson□subject□□□□ - □□
□□ lesson □ □ piano lessons, the second lesson□□□□class□□□□; □□□□□□□□□□ 30 lessons, a lesson;□□ □□ □give sb. a lesson □□□□□□□□□□□□□□ □□□□□ …

□□□□□□□□Lesson 29□□□□□□□□□ - □□
□□Lesson 29□□□□□□□□□□□□□□ □ …

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□~
May 5, 2022 · □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□~ □□□□ □□□□□□□□□□□□□□□□□□□□□□□□ 11 46 □□□□□□□□ □TOPIK6□□□N□□□□ …

□□□□□□□□Lesson 27□□□□□□□□□ - □□
□□Lesson 27□□□□□□□□□□□□□□ □ …

Master Lesson 6 skills practice on writing linear equations! Enhance your understanding and skills with our comprehensive guide. Learn more today!

Back to Home