LESSON MAKER PRO

Find the Unknown

Write equations and solve for x.

GRADE 7 · 7.A.3.1

7.A.3.1 "Write and solve problems leading to linear equations with one variable in the form px + q = r and p(x + q) = r, where p, q, and r are rational numbers."

NAME _____ DATE _____

UNDO THE OPERATIONS

Use px + q = r when an amount is added after multiplication. Use p(x + q) = r when multiplication applies to the whole group. To solve, undo the operations in reverse order.

WORKED EXAMPLE

Solve $11(x + 1/6) = 55/2$.

1. Divide both sides by 11: x + 1/6 = 5/2.
2. Subtract 1/6 from both sides: x = 5/2 - 1/6.
3. Use a common denominator and simplify: x = 15/6 - 1/6 = 7/3.

Answer: x = 7/3

PRACTICE 6 problems

1 Solve 3x + 7 = 34.

ANSWER _____

2 Solve (4/5)x - 3 = 5.

ANSWER _____

3 Solve -4(x + 3) = 12.

ANSWER _____

4 Solve 3/4(x - 7) = 9/2.

ANSWER _____

5 A number x is increased by 5, then multiplied by 3 to get 36. Write an equation and solve for x.

ANSWER _____

6 A number x is multiplied by -2/3, then 4 is added. The result is -8. Write an equation and solve for x.

ANSWER _____

APPLY IT Show your work

1 A music app charges a $4 setup fee plus $3/2 per month. Your total is $13. Write an equation and find the number of months x you paid for.

WORK SPACE

ANSWER _____

2 A music studio charges $7/2 per hour for x hours of recording and 1 hour of setup. The total charge is $21. Write an equation and find the recording time.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A shop takes $3/4 off the original price of each phone case. Five cases cost $45 after the discount. Let x be the original price of one case. Write an equation and find x.

WORK SPACE AND ANSWER

ANSWER KEY

Find the Unknown

GRADE 7 · 7.A.3.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 3x + 7 = 34.	**x = 9**
2	Solve (4/5)x - 3 = 5.	**x = 10**
3	Solve -4(x + 3) = 12.	**x = -6**
4	Solve 3/4(x - 7) = 9/2.	**x = 13**
5	A number x is increased by 5, then multiplied by 3 to get 36. Write an equation and solve for x.	**3(x + 5) = 36; x = 7**
6	A number x is multiplied by -2/3, then 4 is added. The result is -8. Write an equation and solve for x.	**(-2/3)x + 4 = -8; x = 18**

PART 2 · APPLY IT

1. **(3/2)x + 4 = 13; x = 6 months** Subtract 4 to get (3/2)x = 9. Divide by 3/2 to get x = 6.
2. **7/2(x + 1) = 21; x = 5 hours** Divide by 7/2 to get x + 1 = 6. Subtract 1 to get x = 5.

CHALLENGE

5(x - 3/4) = 45; x = 39/4 dollars

Accept equivalent equations and exact answers in fraction or decimal form. For the challenge, $9.75 is equivalent to $39/4.