LESSON MAKER PRO

Move the Variable

Rearrange equations to reveal the variable you need.

HIGH SCHOOL · FA.A.6

FA.A.6 "Given an equation, solve for a specified variable of degree one (i.e., isolate a variable). (6.EE.7, 7.EE.4)"

NAME _____ DATE _____

ISOLATE THE VARIABLE

Treat letters other than the variable you are solving for as constants. Use inverse operations on both sides of the equation until the specified variable is alone. If it appears in more than one term, collect those terms first.

WORKED EXAMPLE

Solve 7a + 13b = 19 for b.

1. Subtract 7a from both sides: 13b = 19 - 7a.
2. Divide both sides by 13: b = (19 - 7a)/13.

Answer: b = (19 - 7a)/13

PRACTICE 6 problems

1 Solve 4x + y = 20 for y.

ANSWER _____

2 Solve p = 3q - 8 for q.

ANSWER _____

3 Solve 6m - 5n = 24 for m.

ANSWER _____

4 Solve A = (b + c)/2 for c.

ANSWER _____

5 Solve 9r + 2s = 3r - 10 for r.

ANSWER _____

6 Solve F = (9/5)C + 32 for C.

ANSWER _____

APPLY IT Show your work

1 A concert venue charges $18 per ticket plus a $6 service fee per order. The total cost T for n tickets is T = 18n + 6. Solve for n in terms of T. Then find n if the total is $78.

WORK SPACE

ANSWER _____

2 You sell stickers for $3 each at a school market. After paying a $12 booth fee, your profit P is P = 3s - 12, where s is the number of stickers sold. Solve for s in terms of P. How many stickers must you sell to make a $48 profit?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve k(x - 2) = 3x + 6 for x. Explain what happens when k = 3.

WORK SPACE AND ANSWER

ANSWER KEY

Move the Variable

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Solve 4x + y = 20 for y.	**y = 20 - 4x**
2	Solve p = 3q - 8 for q.	**q = (p + 8)/3**
3	Solve 6m - 5n = 24 for m.	**m = (24 + 5n)/6**
4	Solve A = (b + c)/2 for c.	**c = 2A - b**
5	Solve 9r + 2s = 3r - 10 for r.	**r = (-5 - s)/3**
6	Solve F = (9/5)C + 32 for C.	**C = 5(F - 32)/9**

PART 2 · APPLY IT

1. **n = (T - 6)/18; 4 tickets** Subtract 6 and divide by 18 to isolate n. Substitute 78 for T to get n = 72/18 = 4.
2. **s = (P + 12)/3; 20 stickers** Add 12 and divide by 3 to isolate s. Substitute 48 for P to get s = 60/3 = 20.

CHALLENGE

When k is not 3, x = (2k + 6)/(k - 3). When k = 3, the equation becomes 3x - 6 = 3x + 6, so there is no solution.

Accept algebraically equivalent expressions. In the challenge, students must exclude k = 3 from the fraction because its denominator would be zero.