LESSON MAKER PRO

Equation Detective

Turn words and situations into equations.

GRADE 7 · 7.AT.C.8.a

7.AT.C.8.a "Write equations of the form px + q = r and p(x + q) = r where p, q, and r are specific rational numbers."

NAME _____ DATE _____

WATCH WHAT GETS MULTIPLIED

If a number is multiplied and then another number is added, write px + q = r. If a whole sum is multiplied, put the sum in parentheses: p(x + q) = r.

WORKED EXAMPLE

A number is multiplied by 5/6. Then 7/10 is added, giving 13/5. Write an equation. Use x for the number.

1. Let x be the starting number.
2. Multiply x by 5/6 to get (5/6)x.
3. Add 7/10 to get (5/6)x + 7/10.
4. Set the expression equal to 13/5.

Answer: (5/6)x + 7/10 = 13/5

PRACTICE 6 problems

1 Multiply x by 3/4, then add 2 to get 8. Write an equation.

ANSWER _____

2 Multiply the sum of x and 1/3 by 6. The result is 14. Write an equation.

ANSWER _____

3 Subtract 5/2 from twice x. The result is 9/2. Write an equation.

ANSWER _____

4 Multiply the sum of x and 3/5 by 5/2 to get 7. Write an equation.

ANSWER _____

5 Multiply x by -2/3, then add 4/5. The result is -6/5. Write an equation.

ANSWER _____

6 Multiply the sum of x and -3/4 by -4. The result is 11. Write an equation.

ANSWER _____

APPLY IT Show your work

1 A gaming club buys 3 identical passes. Each pass costs x dollars plus a 1/2-dollar service fee. The club pays 33/2 dollars in all. Write an equation for the total.

WORK SPACE

ANSWER _____

2 A game is marked down to 3/4 of its original price, x dollars. A $3 download fee brings the total to $18. Write an equation for the total.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student writes 4x + 1/2 = 10 for the statement, “Four times the sum of x and 1/2 is 10.” Write the correct equation and explain the student's mistake in two sentences.

WORK SPACE AND ANSWER

ANSWER KEY

Equation Detective

GRADE 7 · 7.AT.C.8.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Multiply x by 3/4, then add 2 to get 8. Write an equation.	**(3/4)x + 2 = 8**
2	Multiply the sum of x and 1/3 by 6. The result is 14. Write an equation.	**6(x + 1/3) = 14**
3	Subtract 5/2 from twice x. The result is 9/2. Write an equation.	**2x - 5/2 = 9/2**
4	Multiply the sum of x and 3/5 by 5/2 to get 7. Write an equation.	**(5/2)(x + 3/5) = 7**
5	Multiply x by -2/3, then add 4/5. The result is -6/5. Write an equation.	**(-2/3)x + 4/5 = -6/5**
6	Multiply the sum of x and -3/4 by -4. The result is 11. Write an equation.	**-4(x - 3/4) = 11**

PART 2 · APPLY IT

1. **3(x + 1/2) = 33/2** Each pass costs x + 1/2 dollars. Multiply that cost by 3 to represent the total.
2. **(3/4)x + 3 = 18** The sale price is (3/4)x dollars. Add the $3 fee and set the total equal to $18.

CHALLENGE

The correct equation is 4(x + 1/2) = 10. The student's equation adds 1/2 after multiplying x, but the statement says to multiply the whole sum by 4.

Accept equivalent equations that keep the stated order of operations. Students do not need to solve for x.