LESSON MAKER PRO

Equation Expedition

Solve equations and inequalities one step at a time.

GRADE 8 · MA.8.AR.2

MA.8.AR.2 "Solve multi-step one-variable equations and inequalities."

NAME _____ DATE _____

UNDO OPERATIONS IN ORDER

Use inverse operations to get x alone. Simplify each side first, then undo addition or subtraction before undoing multiplication or division. When you multiply or divide an inequality by a negative number, reverse the inequality sign.

WORKED EXAMPLE

Solve: 13(x - 17) + 19 = 97

1. Distribute: 13x - 221 + 19 = 97
2. Combine constants: 13x - 202 = 97
3. Add 202 to both sides: 13x = 299
4. Divide both sides by 13: x = 23

Answer: x = 23

PRACTICE 6 problems

1 1. Solve: 6x + 11 = 47

ANSWER _____

2 2. Solve: 9(x + 2) - 1 = 98

ANSWER _____

3 3. Solve: -2x + 15 > 27

ANSWER _____

4 4. Solve: 21 - 6x <= -33

ANSWER _____

5 5. Solve: (7/12)x + 16 = 44

ANSWER _____

6 6. Solve: x/14 - 10 < -7

ANSWER _____

APPLY IT Show your work

1 1. An esports club pays an $18 registration fee and $7 for each student who joins. The club spends $95 total. How many students join? Write and solve an equation.

WORK SPACE

ANSWER _____

2 2. Noah has $104 to spend at a gaming convention. His entry wristband costs $14, and each game-token pack costs $6. How many token packs can he buy without spending more than $104? Write and solve an inequality.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve: $5(x - 7)/6 + 9 = (x + 15)/3$

WORK SPACE AND ANSWER

ANSWER KEY

Equation Expedition

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	1. Solve: 6x + 11 = 47	**x = 6**
2	2. Solve: 9(x + 2) - 1 = 98	**x = 9**
3	3. Solve: -2x + 15 > 27	**x < -6**
4	4. Solve: 21 - 6x <= -33	**x >= 9**
5	5. Solve: (7/12)x + 16 = 44	**x = 48**
6	6. Solve: x/14 - 10 < -7	**x < 42**

PART 2 · APPLY IT

1. **11 students** Use 18 + 7x = 95. Subtract 18, then divide by 7 to get x = 11.
2. **x <= 15, so Noah can buy at most 15 token packs.** Use 14 + 6x <= 104. Subtract 14 and divide by 6 to get x <= 15.

CHALLENGE

x = 11/3

Accept equivalent equation work and equivalent inequality notation. For the word problems, accept the numerical answer only when it includes the correct whole-number context.