LESSON MAKER PRO

Equation Quest

Build equations from real situations and solve for x.

GRADE 7 · 7.PAR.3.1

7.PAR.3.1 "Construct algebraic equations to solve practical problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Interpret the solution based on the situation."

NAME _____ DATE _____

TURN WORDS INTO EQUATIONS

Use x for the unknown amount. Multiply when a rate is repeated, add or subtract any fixed amount, then undo the operations to find x. Check that your answer makes sense in the situation.

WORKED EXAMPLE

A photo-printing website charges $7/9 per print plus an $11 upload fee. The total cost is $25. How many prints did you order?

1. Write an equation: (7/9)x + 11 = 25.
2. Subtract 11: (7/9)x = 14.
3. Multiply by 9/7: x = 18.

Answer: x = 18, so you ordered 18 prints.

PRACTICE 6 problems

1 A streaming service charges $3 per month plus a $4 setup fee. Your total bill is $22. Write and solve an equation for x, the number of months.

ANSWER _____

2 A game club makes 5 prize bags. Each bag has x cards and 2 bonus cards. There are 30 cards altogether. Write and solve an equation for x.

ANSWER _____

3 You earn $1/2 for each bottle you recycle and receive a $6 bonus. You earn $12 total. Write and solve an equation for x, the number of bottles.

ANSWER _____

4 A craft store charges $3/4 for each of x + 4 beads. Your bill is $12. Write and solve an equation for x.

ANSWER _____

5 A fundraiser earns $5 for each bracelet sold and pays a $10 booth fee. Its profit is $20. Write and solve an equation for x, the number of bracelets.

ANSWER _____

6 A print shop charges $3/5 for each of x + 5 posters. The bill is $12. Write and solve an equation for x.

ANSWER _____

APPLY IT Show your work

1 You want to buy tickets for a school concert. Each ticket costs $6, and there is one $5 service fee for the order. You have $35. Write and solve an equation for x, the number of tickets you can buy. Interpret your answer.

WORK SPACE

ANSWER _____

2 A student orders x + 2 custom stickers for a laptop. Each sticker costs $3/4, and the total cost is $6. Write and solve an equation for x. Interpret your answer.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A club says it collected 31 bottles by filling 4 bags with the same whole number of bottles. It models the number of bottles in each bag as x + 1. Write and solve an equation. Is the club's claim possible? Explain.

WORK SPACE AND ANSWER

ANSWER KEY

Equation Quest

GRADE 7 · 7.PAR.3.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A streaming service charges $3 per month plus a $4 setup fee. Your total bill is $22. Write and solve an equation for x, the number of months.	**3x + 4 = 22; x = 6 months**
2	A game club makes 5 prize bags. Each bag has x cards and 2 bonus cards. There are 30 cards altogether. Write and solve an equation for x.	**5(x + 2) = 30; x = 4 cards**
3	You earn $1/2 for each bottle you recycle and receive a $6 bonus. You earn $12 total. Write and solve an equation for x, the number of bottles.	**(1/2)x + 6 = 12; x = 12 bottles**
4	A craft store charges $3/4 for each of x + 4 beads. Your bill is $12. Write and solve an equation for x.	**(3/4)(x + 4) = 12; x = 12**
5	A fundraiser earns $5 for each bracelet sold and pays a $10 booth fee. Its profit is $20. Write and solve an equation for x, the number of bracelets.	**5x - 10 = 20; x = 6 bracelets**
6	A print shop charges $3/5 for each of x + 5 posters. The bill is $12. Write and solve an equation for x.	**(3/5)(x + 5) = 12; x = 15**

PART 2 · APPLY IT

1. **6x + 5 = 35; x = 5. You can buy 5 tickets.** Subtract the service fee from the total, then divide the remaining amount by the cost of one ticket.
2. **(3/4)(x + 2) = 6; x = 6. The student orders 8 stickers total.** Divide the total cost by the cost per sticker to find the total number of stickers, then subtract 2.

CHALLENGE

4(x + 1) = 31; x = 27/4. No, the claim is not possible because each bag would need 31/4 bottles, which is not a whole number.

Accept equivalent equation forms and equivalent fraction notation. For context problems, accept answers that include both the value of x and a correct interpretation of what that value represents.