

Equation Mission

Write and solve two-step conditions.

GRADE 7 • TEKS 7.10.A

7.10.A "write one-variable, two-step equations and inequalities to represent constraints or conditions within problems;"

NAME _____

DATE _____

BUILD THE CONDITION

Use x for the unknown amount. Write an equation when the result is exact, and write an inequality when the result has a limit. Undo addition or subtraction first, then undo multiplication or division.

WORKED EXAMPLE

A game gives 6 starter coins and 4 coins for each quest. Write and solve an equation for 30 coins.

1. Let x = number of quests.
2. $6 + 4x = 30$
3. $4x = 24$
4. $x = 6$

Answer: 6 quests

PRACTICE 5 problems

- 1** A music app charges \$7 plus \$5 per month. Write and solve an equation for a total cost of \$32.

ANSWER _____

- 2** A number divided by 3, then increased by 8, equals 14. Write and solve.

ANSWER _____

- 3** A player earns 2 points per win but loses 9 points. The score is more than 15. Write and solve an inequality.

ANSWER _____

- 4** A snack has 3 calories per piece plus 2 calories of dip. Keep the total at most 23 calories. Write and solve an inequality.

ANSWER _____

- 5** Seven subtracted from twice a number is at least -9. Write and solve an inequality.

ANSWER _____

APPLY IT Show your work

- 1** Your phone plan has an \$8 base fee and costs \$5 per gigabyte of data. You can spend no more than \$23. Write and solve an inequality for x , the number of gigabytes.

WORK SPACE

ANSWER _____

- 2** Student council sells raffle tickets for \$5 each and spends \$7 on posters. It wants \$8 left for supplies after paying for the posters. Write and solve an equation for x , the number of tickets sold.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A battery has 18% charge and loses 2% each hour. It must stay at least 2% charged. Write and solve an inequality for x , the number of hours. Explain why the inequality sign changes during solving.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A music app charges \$7 plus \$5 per month. Write and solve an equation for a total cost of \$32.	$5x + 7 = 32$; $x = 5$ months
2	A number divided by 3, then increased by 8, equals 14. Write and solve.	$x/3 + 8 = 14$; $x = 18$
3	A player earns 2 points per win but loses 9 points. The score is more than 15. Write and solve an inequality.	$2x - 9 > 15$; $x > 12$ wins
4	A snack has 3 calories per piece plus 2 calories of dip. Keep the total at most 23 calories. Write and solve an inequality.	$3x + 2 \leq 23$; $x \leq 7$ pieces
5	Seven subtracted from twice a number is at least -9. Write and solve an inequality.	$2x - 7 \geq -9$; $x \geq -1$

PART 2 • APPLY IT

1. $5x + 8 \leq 23$; $x \leq 3$ gigabytes Subtract 8 from both sides to get $5x \leq 15$. Divide by 5, so the plan allows at most 3 gigabytes.
2. $5x - 7 = 8$; $x = 3$ tickets Add 7 to both sides to get $5x = 15$. Divide by 5.

CHALLENGE

$18 - 2x \geq 2$; $x \leq 8$ hours. After subtracting 18, divide by -2. Dividing an inequality by a negative reverses the sign.

Accept equivalent equation or inequality forms with the same solution. For context problems, accept a clear variable definition and the correct unit.