

Inequality Story Builder

Turn real-life limits into math statements.

GRADE 8 • 8.PFA.5.c

8.PFA.5.c "Write multistep linear inequalities in one variable to represent a verbal situation, including those in context."

NAME _____

DATE _____

BUILD THE INEQUALITY

Read the order of operations in the situation before you write the expression. Use $\leq$ for no more than, $\geq$ for at least, $<$ for less than, and $>$ for greater than. Let x stand for the unknown quantity, then write the operation words in the order they happen.

WORKED EXAMPLE

A game store charges a \$9 membership fee and \$4 for each tournament. You can spend no more than \$37. Let x be the number of tournaments. Write an inequality. Do not solve it.

1. Let x = number of tournaments.
2. The tournament cost is $4x$, and the membership fee is 9.
3. "No more than" means $\leq$, so $4x + 9 \leq 37$.

Answer: $4x + 9 \leq 37$

PRACTICE 6 problems

- 1** A number is increased by 8, then the result is multiplied by 3. The result is at least 42. Write an inequality. Do not solve it.

ANSWER _____

- 2** Five less than twice a number is no more than 19. Write an inequality. Do not solve it.

ANSWER _____

- 3** When 7 is added to a number and the sum is divided by 5, the result is less than 11. Write an inequality. Do not solve it.

ANSWER _____

- 4** Seven more than 3 times a number is greater than 25. Write an inequality. Do not solve it.

ANSWER _____

- 5** Six times the difference of a number and 2 is at most 30. Write an inequality. Do not solve it.

ANSWER _____

- 6** One third of a number, plus 11, is at least 16. Write an inequality. Do not solve it.

ANSWER _____

APPLY IT Show your work

- 1** Your robotics club has \$48 for supplies. It must buy a \$12 tool kit, and each sensor costs \$6. Let x be the number of sensors. Write an inequality that shows the club cannot spend more than its budget. Do not solve it.

WORK SPACE

ANSWER _____

- 2** Your team has 60 minutes for a game tournament. Setting up takes 15 minutes, and each round takes 7 minutes. Let x be the number of rounds. Write an inequality that shows the team must finish on time. Do not solve it.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A student sells handmade sticker packs for \$8 each, then pays a \$5 table fee. They want their profit to be at least \$35 but less than \$65. Let x be the number of sticker packs sold. Write one compound inequality. Do not solve it.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A number is increased by 8, then the result is multiplied by 3. The result is at least 42. Write an inequality. Do not solve it.	$3(x + 8) \geq 42$
2	Five less than twice a number is no more than 19. Write an inequality. Do not solve it.	$2x - 5 \leq 19$
3	When 7 is added to a number and the sum is divided by 5, the result is less than 11. Write an inequality. Do not solve it.	$(x + 7)/5 < 11$
4	Seven more than 3 times a number is greater than 25. Write an inequality. Do not solve it.	$3x + 7 > 25$
5	Six times the difference of a number and 2 is at most 30. Write an inequality. Do not solve it.	$6(x - 2) \leq 30$
6	One third of a number, plus 11, is at least 16. Write an inequality. Do not solve it.	$x/3 + 11 \geq 16$

PART 2 • APPLY IT

1. $6x + 12 \leq 48$ Let x represent the number of sensors. The sensors cost $6x$, the tool kit costs 12, and the total cannot exceed 48.
2. $7x + 15 \leq 60$ Let x represent the number of rounds. The round time is $7x$, setup takes 15 minutes, and the total must be no more than 60 minutes.

CHALLENGE

$$35 \leq 8x - 5 < 65$$

Accept equivalent inequalities that keep the same relationship, such as $42 \leq 3(x + 8)$. For the challenge, accept an equivalent pair of inequalities, $8x - 5 \geq 35$ and $8x - 5 < 65$.