LESSON MAKER PRO

Variable Mission

Use x to show changing and unknown amounts.

GRADE 6 · NY-6.EE.6

NY-6.EE.6 "Use variables to represent numbers and write expressions when solving a real-world or mathematical problem. Understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set."

NAME _____ DATE _____

MAKE X MATTER

Use x to stand for an unknown amount or for any amount in a stated set. Multiply a rate by x, then combine it with fixed amounts. If x counts objects, its values are usually whole numbers, and the context may limit which whole numbers work.

WORKED EXAMPLE

A music app charges a $17 joining fee and $19 for each month. Let x represent the number of months. Write an expression for the total cost.

1. The joining fee is a fixed cost of 17.
2. The monthly cost is 19x.
3. Add the fixed cost and monthly cost: 17 + 19x.

Answer: 17 + 19x

PRACTICE 6 problems

1 A video creator earns $7 for each video posted. Let x represent the number of videos. Write an expression for the earnings.

ANSWER _____

2 A movie ticket costs $9, and each snack costs $5. Let x represent the number of snacks. Write an expression for the total cost.

ANSWER _____

3 A water tank starts with 50 liters and drains 6 liters each minute. Let x represent the number of minutes. Write an expression for the liters left.

ANSWER _____

4 Each student gets 3/8 cup of trail mix. Let x represent the number of students. Write an expression for the total cups of trail mix.

ANSWER _____

5 Let x represent the number of laps a runner completes. The runner may complete from 0 through 10 laps. List the possible values of x.

ANSWER _____

6 A bag has x marbles. Twelve marbles are blue, and the rest are red. x is a whole number. Write an expression for the red marbles. Then state a rule for possible values of x.

ANSWER _____

APPLY IT Show your work

1 A student club will order at least one friendship bracelet for a fundraiser. Each bracelet costs $6, and shipping costs $11 for the order. The club has $59. Let x represent the number of bracelets. Write an expression for the total cost. Then list every whole-number value of x that keeps the cost at or below $59.

WORK SPACE

ANSWER _____

2 At a game cafe, entry costs $8 plus $3 for each hour played. Let x represent the number of whole hours, where x can be 1 through 5. Write an expression for the total cost. Then find the cost for 5 hours.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A game club buys x whole packs of trading cards. Each pack has 8 cards, and the club receives 5 bonus cards. The club wants at least 53 cards but no more than 77 cards. Write an expression for the total number of cards. Then list all possible values of x and explain why x must be a whole number.

WORK SPACE AND ANSWER

ANSWER KEY

Variable Mission

GRADE 6 · NY-6.EE.6

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A video creator earns $7 for each video posted. Let x represent the number of videos. Write an expression for the earnings.	**7x**
2	A movie ticket costs $9, and each snack costs $5. Let x represent the number of snacks. Write an expression for the total cost.	**9 + 5x**
3	A water tank starts with 50 liters and drains 6 liters each minute. Let x represent the number of minutes. Write an expression for the liters left.	**50 - 6x**
4	Each student gets 3/8 cup of trail mix. Let x represent the number of students. Write an expression for the total cups of trail mix.	**(3/8)x**
5	Let x represent the number of laps a runner completes. The runner may complete from 0 through 10 laps. List the possible values of x.	**{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}**
6	A bag has x marbles. Twelve marbles are blue, and the rest are red. x is a whole number. Write an expression for the red marbles. Then state a rule for possible values of x.	**x - 12; x is a whole number greater than or equal to 12**

PART 2 · APPLY IT

1. **6x + 11; x = 1, 2, 3, 4, 5, 6, 7, or 8** The total is the $11 shipping fee plus $6 for each bracelet. Since 6(8) + 11 = 59, the possible positive whole-number values are 1 through 8.
2. **8 + 3x; $23** Add the fixed entry fee to the hourly charge, giving 8 + 3x. Substitute 5 for x: 8 + 3(5) = 23.

CHALLENGE

8x + 5; x = 6, 7, 8, or 9. x must be a whole number because packs cannot be split.

Accept equivalent expression forms, such as 5x + 9 for 9 + 5x. For sets of possible values, accept a correct list or an equivalent whole-number inequality when the context is included.