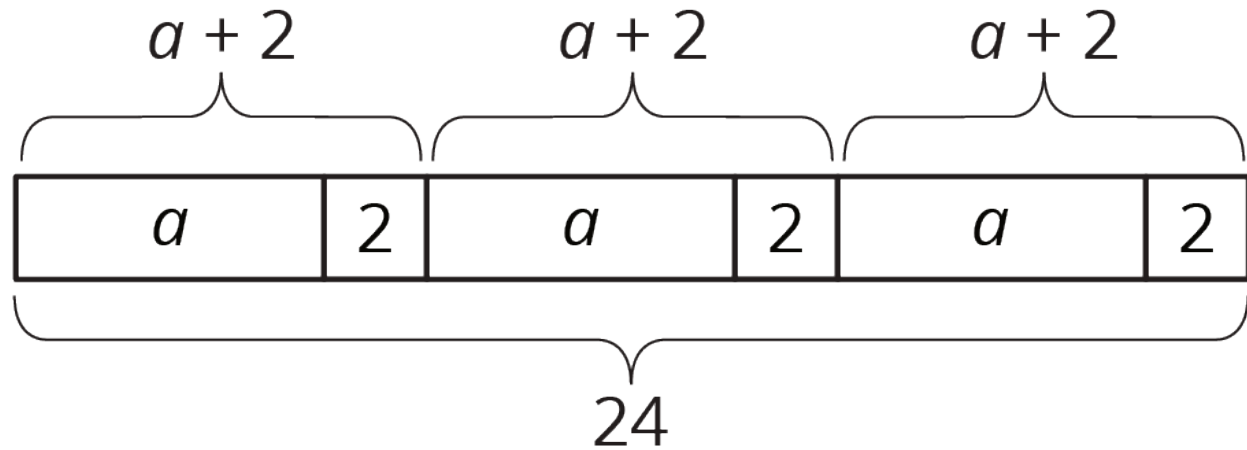


## Unit 6 Lesson 11: Using Equations to Solve Problems

### 1 Remember Tape Diagrams (Warm up)

Student Task Statement

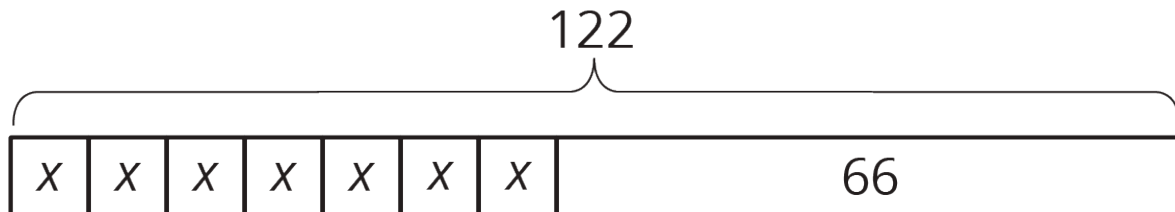


1. Write a story that could be represented by this tape diagram.
2. Write an equation that could be represented by this tape diagram.

## 2 At the Fair

### Student Task Statement

1. Tyler is making invitations to the fair. He has already made some of the invitations, and he wants to finish the rest of them within a week. He is trying to spread out the remaining work, to make the same number of invitations each day. Tyler draws a diagram to represent the situation.



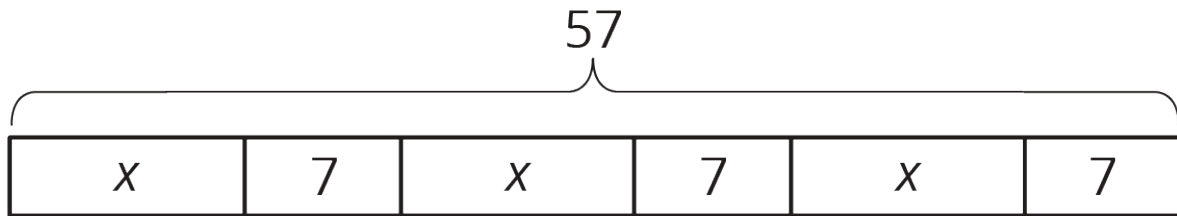
- a. Explain how each part of the situation is represented in Tyler's diagram:

How many total invitations Tyler is trying to make.

How many invitations he has made already.

How many days he has to finish the invitations.

- b. How many invitations should Tyler make each day to finish his goal within a week?  
Explain or show your reasoning.
- c. Use Tyler's diagram to write an equation that represents the situation. Explain how each part of the situation is represented in your equation.
- d. Show how to solve your equation.
2. Noah and his sister are making prize bags for a game at the fair. Noah is putting 7 pencil erasers in each bag. His sister is putting in some number of stickers. After filling 3 of the bags, they have used a total of 57 items.



- a. Explain how the diagram represents the situation.
- b. Noah writes the equation  $3(x + 7) = 57$  to represent the situation. Do you agree with him? Explain your reasoning.
- c. How many stickers is Noah's sister putting in each prize bag? Explain or show your reasoning.

3. A family of 6 is going to the fair. They have a coupon for \$1.50 off each ticket. If they pay \$46.50 for all their tickets, how much does a ticket cost without the coupon? Explain or show your reasoning. If you get stuck, consider drawing a diagram or writing an equation.

### 3 Running Around

#### Student Task Statement

Priya, Han, and Elena, are members of the running club at school.

1. Priya was busy studying this week and ran 7 fewer miles than last week. She ran 9 times as far as Elena ran this week. Elena only had time to run 4 miles this week.
  - a. How many miles did Priya run last week?
  - b. Elena wrote the equation  $\frac{1}{9}(x - 7) = 4$  to describe the situation. She solved the equation by multiplying each side by 9 and then adding 7 to each side. How does her solution compare to the way you found Priya's miles?
2. One day last week, 6 teachers joined  $\frac{5}{7}$  of the members of the running club in an after-school run. Priya counted a total of 31 people running that day. How many members does the running club have?

3. Priya and Han plan a fundraiser for the running club. They begin with a balance of -80 because of expenses. In the first hour of the fundraiser they collect equal donations from 9 family members, which brings their balance to -44. How much did each parent give?
  
4. The running club uses the money they raised to pay for a trip to a canyon. At one point during a run in the canyon, the students are at an elevation of 128 feet. After descending at a rate of 50 feet per minute, they reach an elevation of -472 feet. How long did the descent take?