

Equivalent Expressions

Name: _____

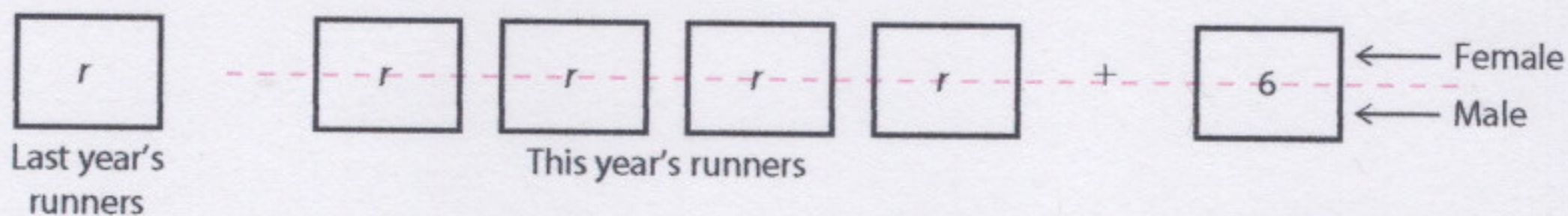
Prerequisite: Write and Evaluate Expressions with Variables

Study the example showing how to write and evaluate expressions with variables. Then solve problems 1–7.

Example

The number of runners on a marathon team this year is 6 more than 4 times the number of runners on last year's team. Half of the runners this year are female and half are male. What expression represents the number of female runners on the team this year?

You can draw a model to represent the situation.



The model shows that the number of female runners can be represented by the expression $\frac{1}{2}(4r + 6)$.

- 1 What does $4r + 6$ represent in the expression?

- 2 Does the expression $\frac{(4r + 6)}{2}$ also represent the number of females on the team this year? Explain.

- 3 If there were only 9 runners on the team last year, how many female runners are on the team this year? Explain how you found the answer.

Vocabulary

evaluate to find the value of an algebraic expression.



Solve.

Use the situation below to solve problems 4–6.

The temperature increased 12°F between 9 AM and noon.
It decreased 9°F between noon and 6 PM.

- 4 Write an expression with three terms to show the change in temperature. Let the first term represent the temperature at 9 AM.

- 5 If the temperature was 45°F at 9 AM, what was the temperature at 6 PM? _____

- 6 Suppose the temperature at 6 PM was 30°F . What would the temperature have been at 9 AM? Explain how you can use the expression you wrote in problem 4 to find the answer.

- 7 Jill makes purses and backpacks. To make each purse, she uses 1 foot less than $\frac{1}{2}$ the amount of fabric she uses to make a backpack. Write an expression for the amount of fabric that Jill needs to make a purse. If she uses 6 feet of fabric to make a backpack, how many feet of fabric will she use to make a purse?

Show your work.

Solution: _____