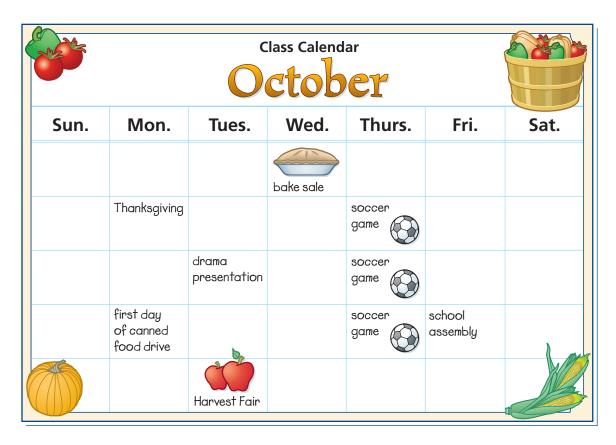# Describing Relationships Using Expressions

GOAL

Use variables in expressions.

Jolie is checking the dates on her class calendar. She says that the first soccer game in October is always three days after Thanksgiving.

Class Calendar
October

Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
			bake sale			
	Thanksgiving			soccer game		
		drama presentation		soccer game		
	first day of canned food drive			soccer game	school assembly	
	Harvest Fair					

How can you use expressions with variables to describe calendar dates?

Jolie's Expression

I'll use the **variable** t to represent the date of Thanksgiving.

I can write an **expression** to represent the date of the first soccer game.

$t + 3$

Communication Tip

When you represent a number with a letter, you may choose the first letter of the word that the letter stands for.

For example, Jolie chose t to stand for "Thanksgiving." She could have chosen h for "holiday."

A. Why can you describe the date for the second soccer game as $t + 10$?

B. Write an expression for the date of the third soccer game in October.

C. How do you know that the bake sale can be described as $t - 5$?

D. Write three different expressions to describe how the second Wednesday on the calendar is related to other events.

E. Choose two events on the October calendar. Write two expressions with variables to show how the dates for these events are related.

Reflecting

F. In expressions for comparing calendar dates, what do the $+$ and the $-$ mean?

G. Jolie says, "Using an expression to describe a date on the October calendar does not tell you the exact date. It only tells you how one date relates to another."
Do you agree? Why or why not?

Checking

1. The date of the first Friday in November can be represented by the variable f. Write an expression using f for each of the following dates in November.
   a) the first Tuesday
   b) the first Saturday
   c) the second Friday
   d) the third Friday

			November			
Sun.	**Mon.**	**Tues.**	**Wed.**	**Thurs.**	**Fri.**	**Sat.**

Practising
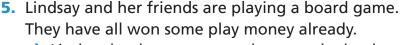
2. Write an expression for each situation.
   a) 6 more than a number
   b) 14 less than a number
   c) 20 more than a number
   d) 11 less than a number

3. What description goes with each expression?
   a) $p + 12$
   b) $12 + p$
   c) $p - 12$

   > 12 less than a number
   > 12 more than a number
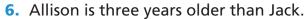
4. What does each expression mean?
   a) $j + 8$
   c) $j - 7$
   b) $10 + j$
   d) $50 - j$

5. Lindsay and her friends are playing a board game. They have all won some play money already.
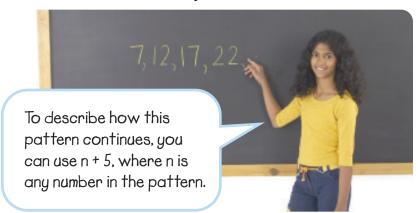 **a)** Lindsay lands on a square that says the bank must pay her $50. Write an expression to show how much money Lindsay has after the bank pays her $50.
  b) Trevor lands on a square that says he must pay the bank $20. Write an expression to show how much money Trevor has after he pays the bank $20.

6. Allison is three years older than Jack.
  a) Write two expressions to compare Allison's age with Jack's age. Use addition in one expression and subtraction in the other expression.
  b) The same expressions can be used to compare the ages of Allison's parents. What do you know about their ages?

7. Maya noticed that the numbers in the pattern 7, 12, 17, 22, … increase by 5 each time.

> To describe how this pattern continues, you can use n + 5, where n is any number in the pattern.

Do you agree with Maya? Why or why not?

8. Write an expression to describe how each pattern continues. See Question 7 for an example.
  a) 22, 33, 44, 55, …
  b) 75, 70, 65, 60, …
  c) 0, 110, 220, 330, …

9. Write an expression to describe how one event on a calendar relates to the date of another event in the same month. Explain what your expression means.