Chapter 3
Lesson 7

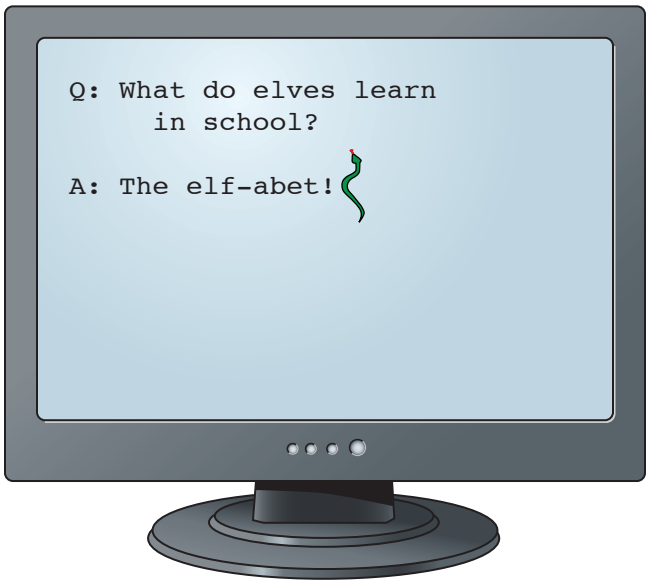
Representing Integers

You will need
- number lines

GOAL

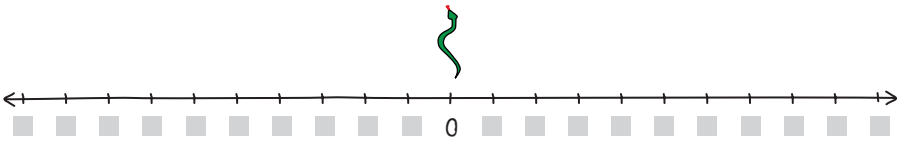
Use integers to describe situations.

Jason is using a computer to write a list of jokes for his friends.



He uses the ← and → keys to move the cursor so that he can make changes.

He draws a number line to represent the position of the cursor. The number 0 represents the original position. Each ■ represents a number that is a possible cursor position.

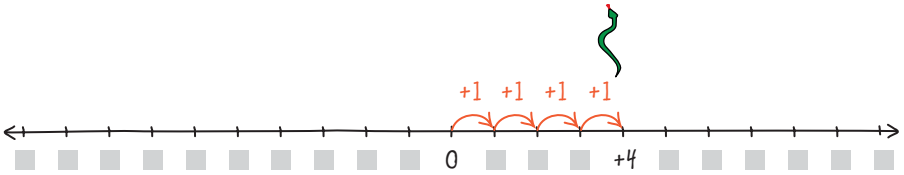


What number does each ■ represent?

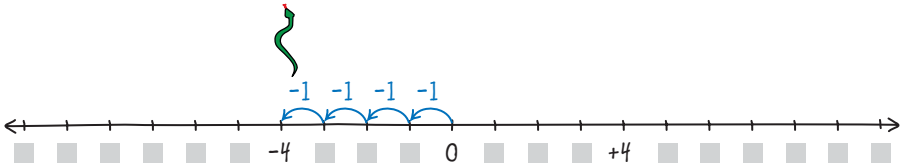
Jason's Number Line

I can write **integers** to represent the positions of the cursor.

The cursor is at 0 now. If I press → four times, the positive integer +4 represents the new position.



I move the cursor back to 0. If I press ← four times after that, the negative integer −4 represents the new position.



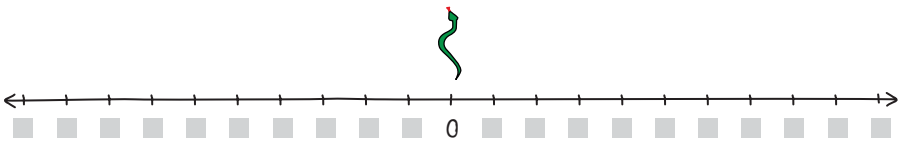
integers

The counting numbers (+1, +2, +3, ...), zero (0), and the opposites of the counting numbers (–1, –2, –3, ...)

A. The cursor is at 0. What integer can Jason use to describe the new position when he presses ← twice?

B. The cursor moved from 0 to −6. Which key did Jason use? How many times did he press it?

C. What integer does each ▪ on Jason's number line represent?



opposite integers

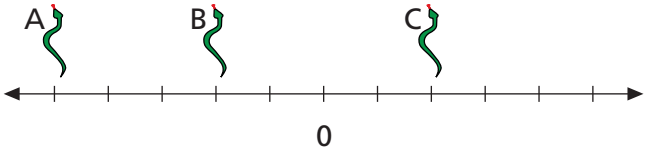
Integers that are the same distance from 0 but on opposite sides of a number line

Reflecting

D. Why do you think −4 and +4 are called **opposite integers**?

Checking

1. a) Write an integer to describe each cursor position.



b) Which arrow key would you press to move the cursor from 0 to each integer? How many times would you press the arrow key for each integer?

2. What integers are between -5 and $+5$? Use a number line.

Practising

3. Use each clue and a number line to identify an integer.

a) It is the same distance from 0 as $+3$ is from 0.

b) It is between -3 and -5.

c) It is the next integer to the right of -2.

d) It is halfway between 0 and -10.

4. What integers are between each pair of integers? Use a number line.

a) -4 and $+4$

b) -3 and 0

c) -2 and -5

d) 0 and -1

5. In a countdown to a rocket launch, the time 5 s before takeoff is called "T minus five seconds." The time 5 s after takeoff is called "T plus five seconds." Use launch words to describe each integer.

a) 0

b) -60

c) $+10$

6. Choose one of the following situations, or think of a different situation. Show how you can use positive and negative integers to represent this situation.

- days before and after your birthday
- kilometres north and south of your town
- money taken from or added to a piggy bank