

## Lesson 2: Real-World Positive and Negative Numbers and Zero

### Classwork

#### Example 1: Take It to the Bank

Read Example 1 silently. In the first column, write down any words and definitions you know. In the second column, write down any words you do not know.

For Tim's 13<sup>th</sup> birthday, he received \$150 in cash from his mom. His dad took him to the bank to open a savings account. Tim gave the cash to the banker to deposit into the account. The banker credited Tim's new account \$150 and gave Tim a receipt. One week later, Tim deposited another \$25 that he had earned as allowance. The next month, Tim's dad gave him permission to withdraw \$35 to buy a new video game. Tim's dad explained that the bank would charge a \$5 fee for each withdrawal from the savings account and that each withdrawal and charge results in a debit to the account.

Words I <u>Already Know</u> :	Words I <u>Want to Know</u> :	Words I <u>Learned</u> :
Bank account - place where you put your money.	Credited	
Receipt - ticket they give you to show how much you spent.	Debit	
Allowance - money for chores	Fee	
Charge - something you pay	Deposit	
	Withdraw	

In the third column, write down any new words and definitions that you learn during the discussion.

Exercises 1–2

1. Read Example 1 again. With your partner, number the events in the story problem. Write the number above each sentence to show the order of the events.

For Tim's 13<sup>th</sup> birthday, he received <sup>①</sup> \$150 in cash from his mom. His dad took him to the bank to open a savings account. <sup>②</sup>  
 Tim gave the cash to the banker to deposit into the account. The banker credited Tim's new account \$150 and gave Tim <sup>③</sup>  
 a receipt. One week later, Tim deposited another \$25 that he had earned as allowance. The next month, Tim's dad gave <sup>④</sup>  
 him permission to withdraw \$35 to buy a new video game. Tim's dad explained that the bank would charge a \$5 fee for <sup>⑤</sup>  
 each withdrawal <sup>⑥</sup> from the savings account and that each withdrawal and charge results in a debit to the account. <sup>⑦</sup>

2. Write each individual description below as an integer. Model the integer on the number line using an appropriate scale.

EVENT	INTEGER	NUMBER-LINE MODEL
Open a bank account with \$0.	0	
Make a \$150 deposit.	150	
Credit an account for \$150.	150	
Make a deposit of \$25.	25	
A bank makes a charge of \$5.	-5	
Tim withdraws \$35.	-35	

**Example 2: How Hot, How Cold?**

Temperature is commonly measured using one of two scales, Celsius or Fahrenheit. In the United States, the Fahrenheit system continues to be the accepted standard for nonscientific use. All other countries have adopted Celsius as the primary scale in use. The thermometer shows how both scales are related.

- a. The boiling point of water is  $100^{\circ}\text{C}$ . Where is 100 degrees Celsius located on the thermometer to the right?

It is not shown because the greatest temperature shown in Celsius is  $50^{\circ}\text{C}$ .

- b. On a vertical number line, describe the position of the integer that represents  $100^{\circ}\text{C}$ .

The integer is 100, so it would be located 100 units above 0 on the side of the scale.

- c. Write each temperature as an integer.

- i. The temperature shown on the thermometer in degrees Fahrenheit:

$100^{\circ}\text{F}$

- ii. The temperature shown on the thermometer in degrees Celsius:

$38^{\circ}\text{C}$

- iii. The freezing point of water in degrees Celsius:

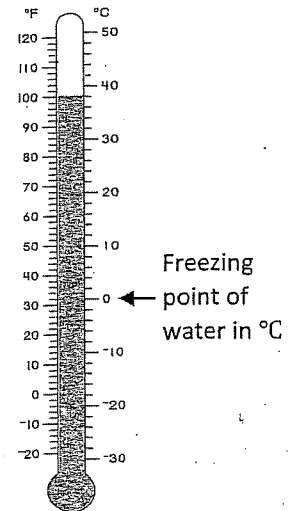
$0^{\circ}\text{C}$

- d. If someone tells you your body temperature is  $98.6^{\circ}$ , what scale is being used? How do you know?

Since water boils at  $100^{\circ}\text{C}$ , they must be using the Fahrenheit scale.

- e. Does the temperature 0 degrees mean the same thing on both scales?

No.  $0^{\circ}\text{C}$  corresponds to  $32^{\circ}\text{F}$  so  $0^{\circ}\text{F}$  corresponds to approx.  $-18^{\circ}\text{C}$ .



## Exercises 3–5

3. Write each word under the appropriate column, "Positive Number" or "Negative Number."

Gain    Loss    Deposit    Credit    Debit    Charge    Below Zero    Withdraw    Owe    Receive

Positive Number	Negative Number
Gain	Loss
Deposit	Debit
Credit	Charge
Receive	Below Zero
	Withdraw
	Owe

4. Write an integer to represent each of the following situations:

a. A company loses \$345,000 in 2011.

-345,000

b. You earned \$25 for dog sitting.

25

c. Jacob owes his dad \$5.

-5

d. The temperature at the sun's surface is about 5,500°C.

5,500

e. The temperature outside is 4 degrees below zero.

-4

f. A football player lost 10 yards when he was tackled.

-10

5. Describe a situation that can be modeled by the integer  $-15$ . Explain what zero represents in the situation.

I owe a best friend \$15. In this situation, 0 represents my owing nothing to my best friend.