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Unit 5, Lesson 4: Money and Debts

Let's apply what we know about signed numbers to money.

4.1: Concert Tickets

Priya wants to buy three tickets for a concert. She has earned $135 and each ticket costs $50. She borrows the rest of the money she needs from a bank and buys the tickets.

1. How can you represent the amount of money that Priya has after buying the tickets?

2. How much more money will Priya need to earn to pay back the money she borrowed from the bank?

3. How much money will she have after she pays back the money she borrowed from the bank?

4.2: Cafeteria Food Debt

At the beginning of the month Kiran had $24 in his school cafeteria account. Use a variable to represent the unknown quantity in each transaction below and write an equation to represent it. Then, represent each transaction on a number line. What is the unknown quantity in each case?

1. In the first week he spent $16 on lunches. How much was in his account then?

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2. Then he deposited some more money and his account balance was $28. How much did he deposit?

3. Then he spent $34 on lunches the next week. How much was in his account then?

4. Then he deposited enough money to pay off his debt to the cafeteria. How much did he deposit?

5. Explain why it makes sense to use a negative number to represent Kiran's account balance when he owes money.

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4.3: Bank Statement

Here is a bank statement.

Responsible Bank
210 2nd Street
Anytown, MH 06930

Checking Account Statement
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Andre Person
1729 Euclid Ave
Anytown, MH 06930

Statement Period	Account No.
2017-10-01 to 2017-11-01	1120635978

Date	Description	Withdrawals	Deposits	Balance
2017-10-03	Previous Balance			39.87
2017-10-05	Check Number 256	28.50		11.37
2017-10-06	ATM Deposit - Cash		45.00	56.37
2017-10-10	Wire Transfer	37.91		18.46
2017-10-17	Point of Sale - Grocery Store	16.43		2.03
2017-10-25	Funds Transfer from Savings		50.00	52.03
2017-10-28	Check Number 257	42.00		10.03
2017-10-29	Online Payment - Phone Services	72.50		-62.47

1. If we put withdrawals and deposits in the same column, how can they be represented?

2. Andre withdraws $40 to buy a music player. What is his new balance?

3. If Andre deposits $100 in this account, will he still be in debt? How do you know?

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Are you ready for more?

The *national debt* of a country is the total amount of money the government of that country owes. Imagine everyone in the United States was asked to help pay off the national debt. How much would each person have to pay?

Lesson 4 Summary

Banks use positive numbers to represent money that gets put into an account and negative numbers to represent money that gets taken out of an account. When you put money into an account, it is called a **deposit**. When you take money out of an account, it is called a **withdrawal**.

People also use negative numbers to represent debt. If you take out more money from your account than you put in, then you owe the bank money, and your account balance will be a negative number to represent that debt. For example, if you have $200 in your bank account, and then you write a check for $300, you will owe the bank $100 and your account balance will be -$100.

starting balance	deposits and withdrawals	new balance
0	50	$0 + 50$
50	150	$50 + 150$
200	-300	$200 + (-300)$
-100		

In general, you can find a new account balance by adding the value of the deposit or withdrawal to it. You can also tell quickly how much money is needed to repay a debt using the fact that to get to zero from a negative value you need to add its opposite.

Lesson 4 Glossary Terms

- withdrawal

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- deposit

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1. Decide whether or not each equation represents a proportional relationship.

   a. Volume measured in cups (c) vs. the same volume measured in ounces (z): $c = \frac{1}{8}z$

   b. Area of a square (A) vs. the side length of the square (s): $A = s^2$

   c. Perimeter of an equilateral triangle (P) vs. the side length of the triangle (s): $3s = P$

   d. Length (L) vs. width (w) for a rectangle whose area is 60 square units: $L = \frac{60}{w}$

   (from Unit 2, Lesson 8)

2. a. Clare has $54 in her bank account. A store credits her account with a $10 refund. How much does she now have in the bank?

   b. Mai owes the bank $60. She gets $85 for her birthday and deposits it into her account. How much does she now have in the bank?

   c. Tyler is overdrawn at the bank by $180. His brother has $70 more than him. How much money does Tyler's brother have?

   d. Andre has $37 in his bank account and writes a check for $87. After the check has been cashed, what will the bank balance show?

3. Last week, it rained x inches. This week, the amount of rain decreased by 5%. Which expressions represent the amount of rain that fell this week? Select **all** that apply.

   A. $g - 0.05$
   B. $g - 0.05g$
   C. $0.95g$
   D. $0.05g$
   E. $(1 - 0.05)g$

   (from Unit 4, Lesson 8)

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4. The table shows five transactions and the resulting account balance in a bank account, except some numbers are missing. Fill in the missing numbers.

	transaction amount	account balance
transaction 1	200	200
transaction 2	-147	53
transaction 3	90	
transaction 4	-229	
transaction 5		0

5. Add.

a. $5\frac{3}{4} + (-\frac{1}{4})$ b. $-\frac{2}{3} + \frac{1}{6}$ c. $-\frac{8}{5} + (-\frac{3}{4})$

(from Unit 5, Lesson 3)

6. In each diagram, x represents a different value. For each diagram,

a. What is something that is *definitely* true about the value of x?

b. What is something that *could be* true about the value of x?

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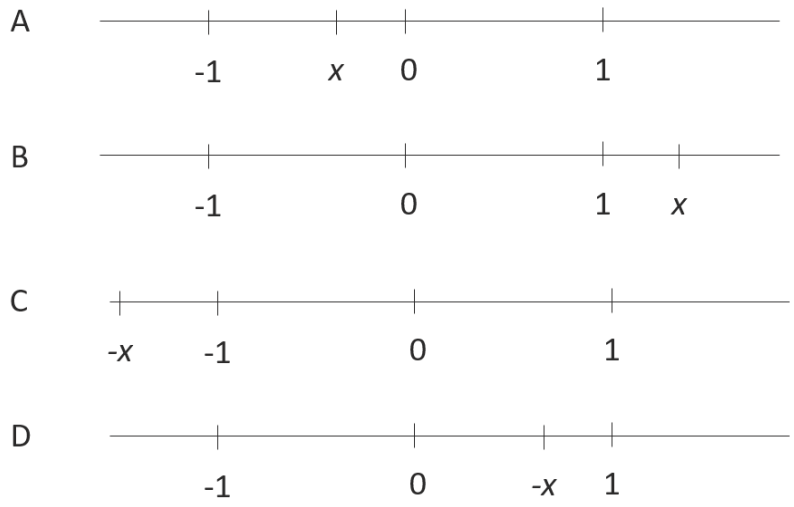

(from Unit 5, Lesson 1)