



What Is This Module About?

Water is life. It plays a vital role in the life of human beings. It is essential for the growth of all living things—humans, animals and plants.

In some places, water is available for use at no cost at all to consumers. But in many places, it is supplied to the users and electricity is used in the process. The users, therefore, have to pay for what they consume. This is why it is important for us as consumers to know how much water we use. This module will help you do just that. It will also cite ways on how you can conserve water to save money and at the same time help preserve our natural resources.

This module is divided into three lessons:

Lesson 1 – *Can You Read Me?*

Lesson 2 – *Let's Compute*

Lesson 3 – *Save the Planet, Save Water*



What Will You Learn From This Module?

After studying this module, you should be able to:

- ◆ read a water meter;
- ◆ identify the contents of a water bill;
- ◆ compute water consumption and its cost for a given period of time; and
- ◆ enumerate ways of conserving water.

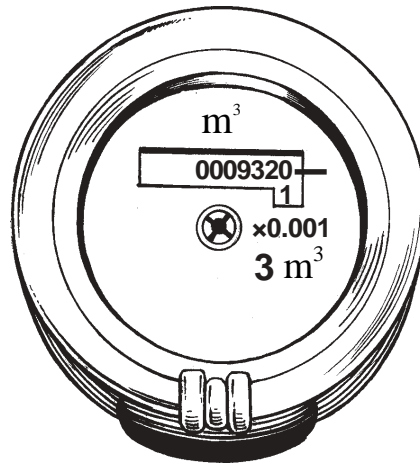


Let's See What You Already Know

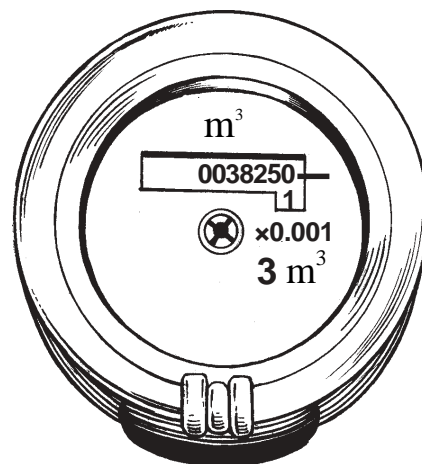
Before you start studying this module, take this simple test first to find out how much you already know about its topics.

A. Solve the following problems.

1. On June 17, 1999, a brand-new water meter was installed in Mr. Padolina's residence. After a week, Mr. Padolina read and recorded his family's water consumption. What was their water meter reading?



- a. $9320 m^3$
 - b. $932 m^3$
 - c. $9.32 m^3$
 - d. $9 m^3$
2. On July 18, 1999, the water meter reader came and read Mr. Padolina's water meter which is shown below.



What would appear on his water bill for the period June 17 to July 18, 1999.
Complete the water bill below.

Period Covered					Readings		Cubic Meters Consumed
From		To			Previous	Present	
Mo	Day	Mo	Day	Yr			
					37.75		

3. The General Tinio Water District (GTWD) determines the water fee this way:

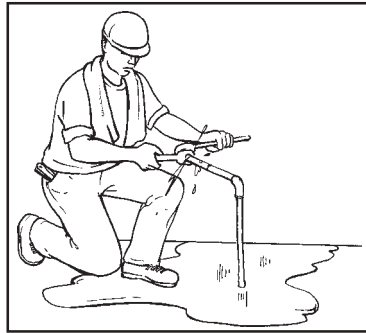
Water fee = Minimum charge for the first 10 m³ or less + Commodity charge (charge for every cubic meter of water consumed beyond the minimum)

Water Consumed in m ³	Commodity Charge	Total Cost
Minimum or first 10 m ³ or less		₱170.00
20 m ³ below	₱17.50 per m ³	
21 m ³ – 30 m ³	18.50 per m ³	
31 m ³ – 40 m ³	20.00 per m ³	
41 m ³ up	22.00 per m ³	

- Based on the table above, why do you think the cost of every cubic meter of water differs from bracket to bracket?
- Compute the cost of Mr. Padolina's water consumption using the information in the bill and the table above.
- A leaking faucet wastes two drops of water per second totalling approximately 6364 L of water in one year. How many cubic meters of water is this equivalent to?

B. Match the pictures on the left with their descriptions on the right. Write the letter of the correct answer in the blank provided for each item.

_____ 1.



a. Use a glass when brushing your teeth instead of continuously running water.

_____ 2.



b. Have leaking water pipes fixed immediately.

_____ 3.



c. Use a basin when washing dishes instead of continuously running water.

Well, how was it? Do you think you fared well? Compare your answers with those in the *Answer Key* on pages 34 and 35 to find out.

If all your answers are correct, very good! This shows that you already know much about the topics in this module. You may still study the module to review what you already know. Who knows, you might learn a few more new things as well.

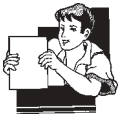
If you got a low score, don't feel bad. This means that this module is for you. It will help you understand some important concepts that you can apply in your daily life. If you study this module carefully, you will learn the answers to all the items in the test and a lot more! Are you ready?

You may go now to the next page and begin Lesson 1.

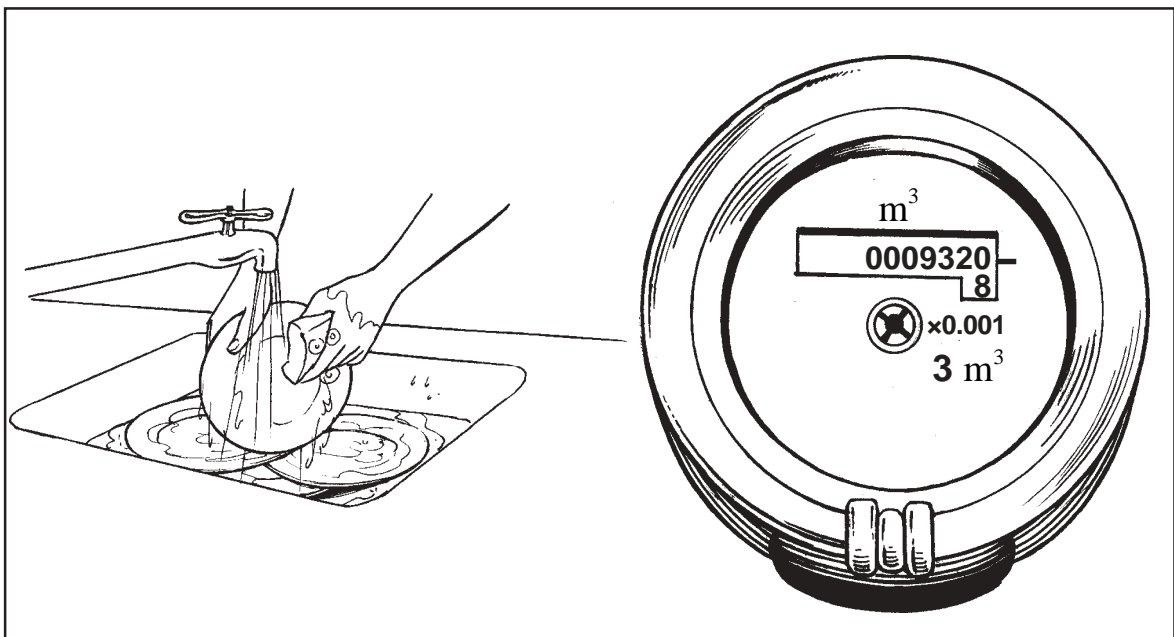
Can You Read Me?

The ability to read a water meter will surely help you determine how much water you use each month. It will make you aware of your water consumption. Most importantly, knowing this will enable you to check if the amount shown on your water bill is correct.

If your water is not supplied by a water company or district, this lesson will still be useful to you. You can share your knowledge with others who lack the skill. Your knowledge may even qualify you to be hired as a water meter reader.



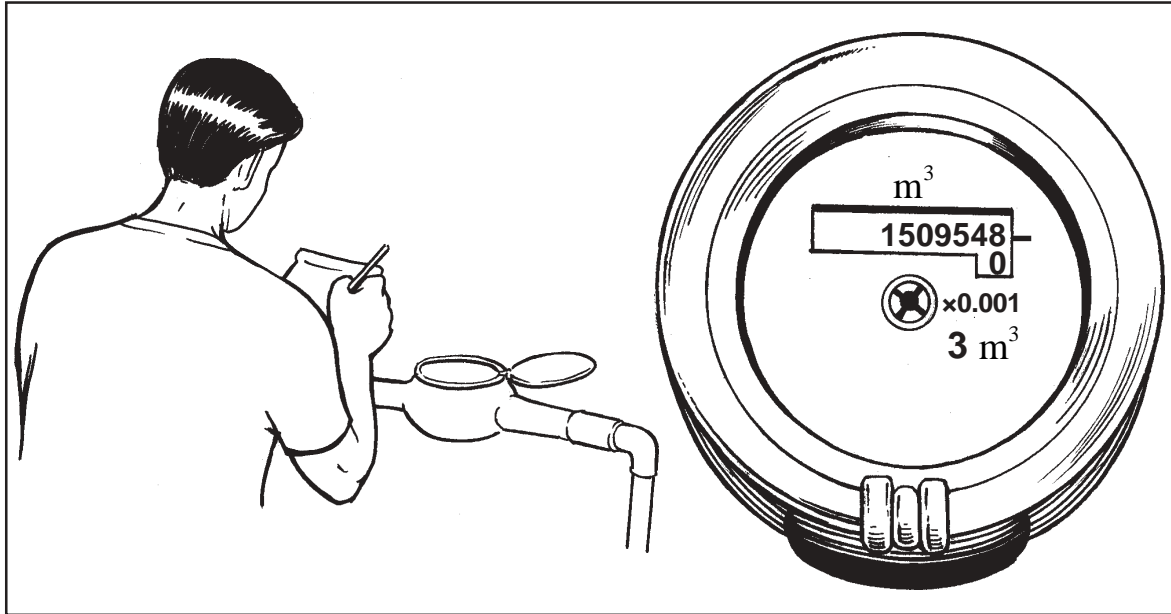
Let's Learn



How much water do you use in a month? How much does it cost you?

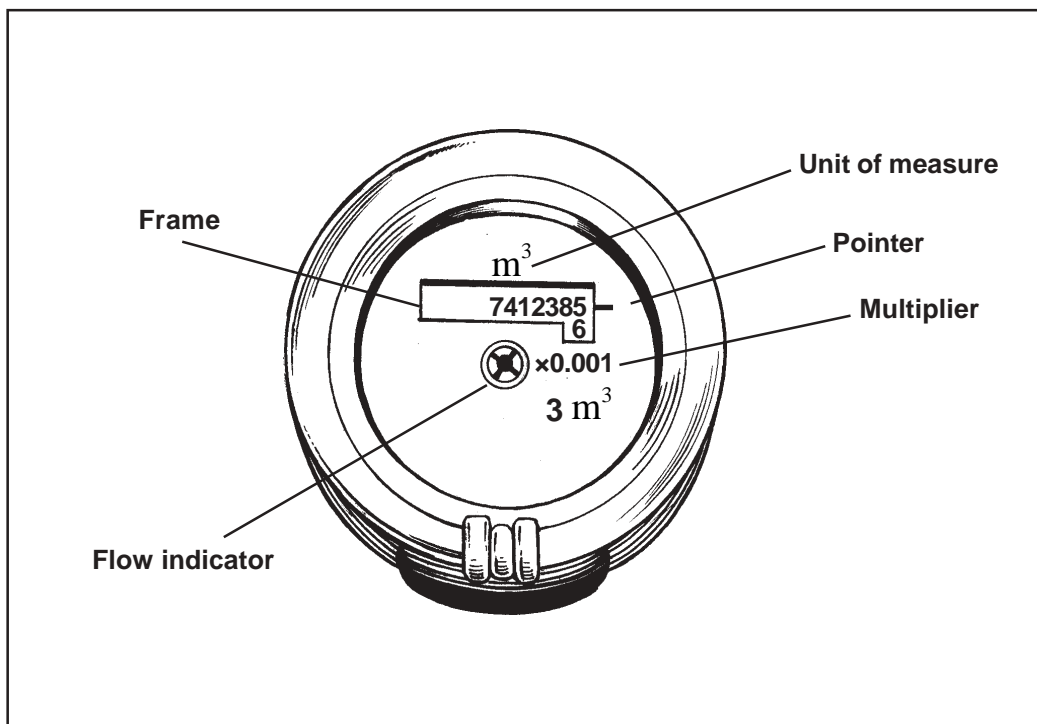
If your water is supplied by a water district, then you must have a water meter. Find out what water company or cooperative supplies water for your family.

A **water meter** measures and records the amount of water used in cubic meters. It enables your water supplier to keep track of your water consumption. Once a month, somebody from your water supplier reads your water meter.



Let's take a close look at the water meter above. Do you notice that there are numbers and symbols on its face? Do you know what they are?

If you have a water meter, examine it. Does it look like the one above? Can you now give the information found on the face of a water meter? You may already have a clear idea in your mind. It is also possible that you are still confused. The picture below will help you understand the parts of a water meter.



The information on a water meter can be described as follows:

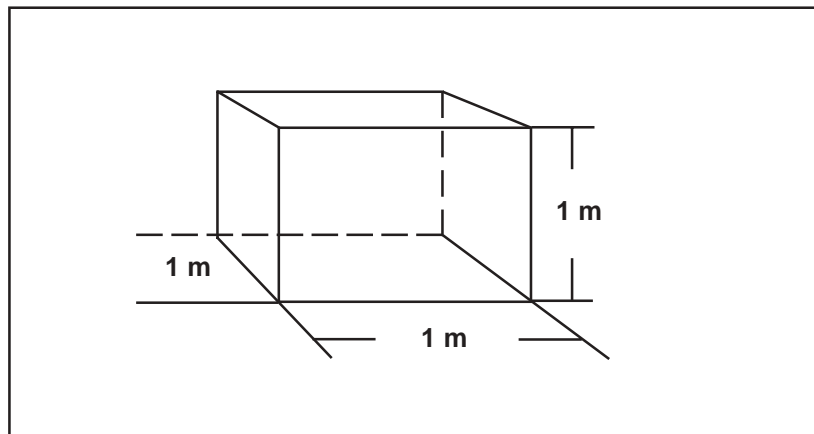
1. Unit of Measure

On the face of the water meter is the symbol m^3 . Do you have any idea what this means?

The symbol m^3 is read as “cubic meter/s” and can also be written as “cu m.” It is the unit of measure used in measuring how much water has been consumed by a household/business establishment over a certain period of time. The water meter on the previous page shows a reading of 7412.385 m^3 .

Can you imagine how much 1 m^3 of water is?

Imagine a square container whose sides measure 1 m each. Fill this container with water and that is how much 1 m^3 of water is!



A cubical container which can hold 1 m^3 of water

One cubic meter or 1 m^3 of water is equivalent to 1000 liters (L) of water. A typical drum used for storing water contains about 200 L. So, it takes five drums to make up 1 m^3 of water. Look at the following important conversions:

$$1 \text{ m}^3 = 1000 \text{ L}$$

$$1 \text{ drum} = 200 \text{ L}$$

$$5 \text{ drums} = 1000 \text{ L}$$

$$1 \text{ kerosene can} = 17 \text{ L}$$

$$60 \text{ kerosene cans} = 1000 \text{ L}$$

$$1 \text{ pail} = 15 \text{ L}$$

$$67 \text{ pails} = 1000 \text{ L}$$

Let us see how well you can make use of the conversion table in solving the following problems.

Example 1. The household of Aling Tinay consumes 5 drums of water in 3 days. How many liters of water do they consume?

Solution:

- ◆ Use the conversion factor: 1 drum = 200 L.
- ◆ Express the conversion factor in ratio form:

$$\frac{200 \text{ L}}{1 \text{ drum}}$$

- ◆ Multiply 5 drums by the conversion factor in ratio form:

$$5 \text{ drums} \times \frac{200 \text{ L}}{1 \text{ drum}} = 1000 \text{ L}$$

Example 2. A restaurant consumes 5000 L of water daily. How many m³ is its daily water consumption?

Solution:

- ◆ Use the conversion factor: 1 m³ = 1000 L
- ◆ Express the conversion factor in ratio form:

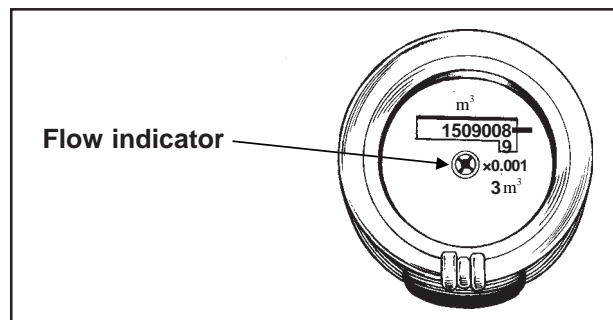
$$\frac{1 \text{ m}^3}{1000 \text{ L}}$$

- ◆ Multiply 5000 L by the conversion factor in ratio form:

$$5000 \text{ L} \times \frac{1 \text{ m}^3}{1000 \text{ L}} = 5 \text{ m}^3$$

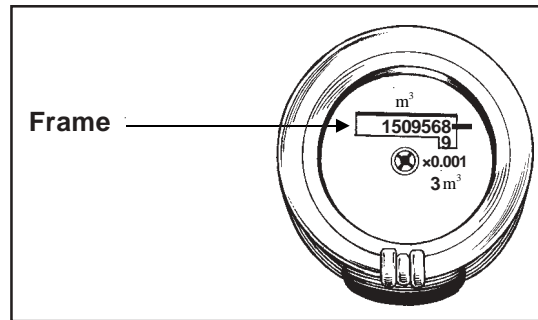
2. Flow Indicator

What about the little crosslike symbol in the lower portion of the water meter? What is it used for?



This crosslike figure is called the **flow indicator**. Observe the flow indicator of your water meter when water is being/not being used in your household. Did you notice that it spins around each time water is used? To what direction does it spin? The flow indicator spins clockwise faster when more water is used.

3. **Frame**

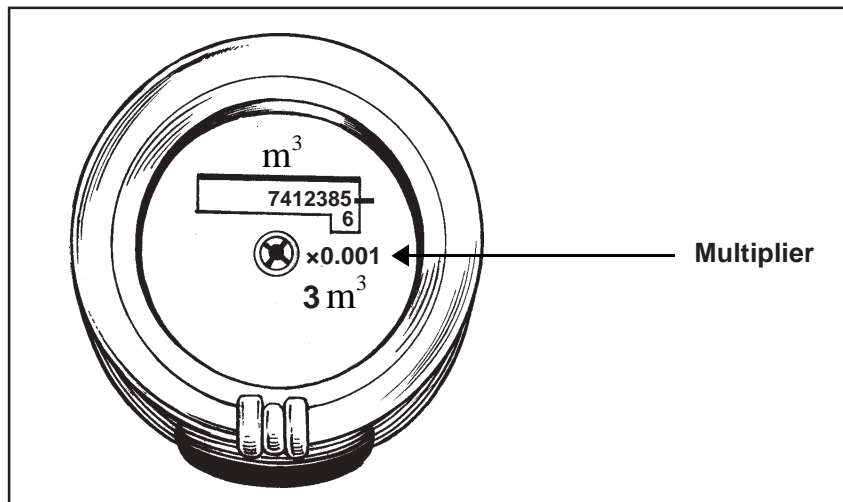


How do you know exactly how much water has been used? Which part of the water meter tells you this?

The **frame** in a water meter registers the amount of water used in m^3 . Inside it are numbers that tell how much water has been consumed.

4. **Multiplier**

The **multiplier** is a number written in small figures at the bottom of the frame of a water meter.



In the sample water meter above, this number is 0.001. The multiplier provides a more accurate reading of your water consumption because it allows your consumption to be calculated to a smaller part of a cubic meter, in this case, to the 1000th part.

But not all water meters have multipliers. Water meters with only four digits usually have no need for a multiplier.

So, how does the given water meter read?

Given the reading and the multiplier, let us compute the water consumption. We can get this the long way, by getting their product:

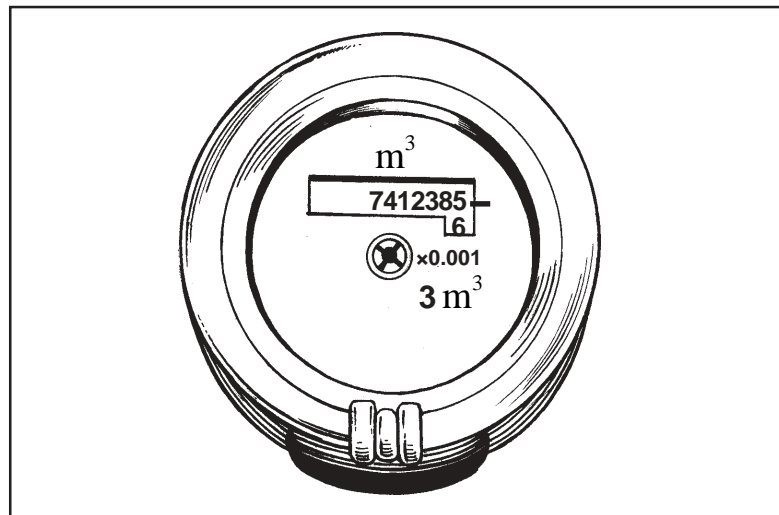
$$7412385 \times 0.001 = 7412.385 \text{ m}^3$$

Or we can just move the decimal point three places to the left (because there are three decimal places in the multiplier 0.001) as in:

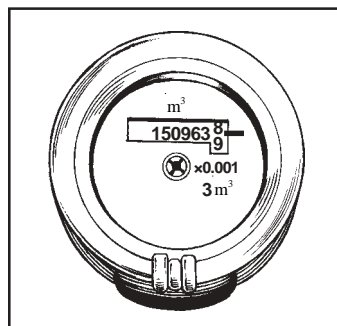
$$7412385, \text{ thereby getting the same answer — } 7412.385 \text{ m}^3$$

5. Pointer

Finally, the short line on the right side of the frame that points directly to a number is called the **pointer**. Do you know what it is for? It indicates the last number which should be recorded when your meter is read.



By looking at the pointer in the water meter above, you can see that it reads 7412385 and not 7412386. If, however, the pointer points exactly in-between two numbers, we take the smaller number as in the meter below which reads 1509638 and not 1509639.





Let's Try This

Imagine that the following are water meter readings ($\times 0.001 \text{ m}^3$). Write the total amounts of water consumption that would appear in the water bill in the blanks.

1. $\begin{array}{|c|} \hline 2010342 \\ \hline 3 \\ \hline \end{array}$ _____

2. $\begin{array}{|c|} \hline 01421 \\ \hline 2 \\ \hline \end{array}$ _____

3. $\begin{array}{|c|} \hline 0321 \\ \hline 2 \\ \hline \end{array}$ _____

4. $\begin{array}{|c|} \hline 434235 \\ \hline 6 \\ \hline \end{array}$ _____

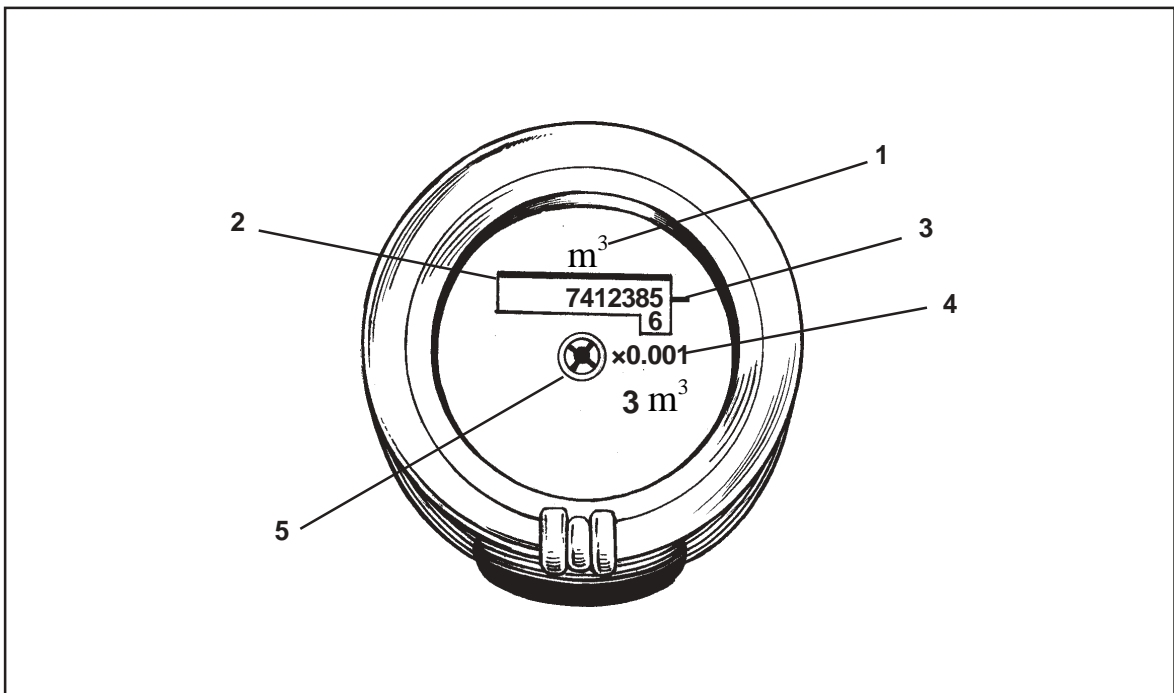
5. $\begin{array}{|c|} \hline 3542 \\ \hline 3 \\ \hline \end{array}$ _____

Compare your answers with those in the *Answer Key* on page 35. How well did you do? Did you get all the answers right?



Let's See What You Have Learned

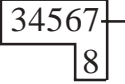
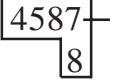
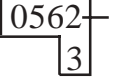
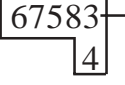
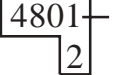
A. Label the different parts of a water meter in the figure below.



B. Convert the following measurements in the units of measure indicated.

1. $3 \text{ m}^3 = \underline{\hspace{2cm}} \text{ L}$
2. $\underline{\hspace{2cm}} \text{ drums} = 400 \text{ L}$
3. $4 \text{ kerosene cans} = \underline{\hspace{2cm}} \text{ L}$
4. $\underline{\hspace{2cm}} \text{ pails} = 90 \text{ L}$
5. $5 \text{ pails} = \underline{\hspace{2cm}} \text{ m}^3$

C. Write the total amount of water consumption ($\times 0.001 \text{ m}^3$) indicated by each water meter below.

1. $\underline{\hspace{2cm}}$ 
2. $\underline{\hspace{2cm}}$ 
3. $\underline{\hspace{2cm}}$ 
4. $\underline{\hspace{2cm}}$ 
5. $\underline{\hspace{2cm}}$ 

Compare your answers with those in the *Answer Key* on pages 35 and 36. How well did you do? Did you get a perfect score? If you did, that's very good! This means you learned a lot from this lesson. If you didn't, don't worry. Just review the parts of the lesson you didn't understand very well before going to Lesson 2.



Let's Remember

- ◆ A **water meter** measures and records the amount of water used by a household/business establishment over a certain period of time.
- ◆ The different parts of a water meter are:
 - unit of measure;
 - flow indicator;
 - frame;
 - multiplier; and
 - pointer.
- ◆ Water meter readings are usually expressed in **cubic meters** (m^3).

Let's Compute


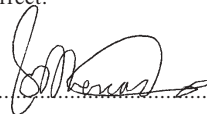
After learning how to read a water meter, you are now ready to go one step further. Do you know what each of the items in a water bill indicate? In this lesson, you will learn about these as well as how to actually compute water consumption for a given period of time.

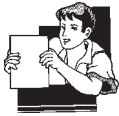


Let's Study and Analyze

Have you ever seen a water bill before? What is it for?

A **water bill** serves as notice so that a consumer will know how much he/she should pay for the water he/she consumed over a given period of time. A sample water bill is given below. Study the information indicated in it.

		<h3>GEN. TINIO WATER DISTRICT</h3> <p>Gen. Tinio, Nueva Ecija</p>																																																																					
Concessioner's Name and Service Address: <u>Gregorio Mallare</u> Account No. <u>73-8450</u> <u>Poblacion, Gen. Tinio P-8</u>				<p>BILL NO. 149963</p> Bill For <u>January</u> <u>200</u> Date Billed <u>February 2</u> <u>200</u> Due Date <u>February 12</u> <u>200</u> Grace Period <u>February 17</u> <u>200</u>																																																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5">PERIOD COVERED</th> <th colspan="2">METER READING</th> <th rowspan="2">Cubic Meters Consumed</th> <th rowspan="2">Amount</th> </tr> <tr> <th colspan="2">From</th> <th colspan="3">To</th> <th>Previous</th> <th>Current</th> </tr> <tr> <th>Mo.</th> <th>Day</th> <th>Mo.</th> <th>Day</th> <th>Yr.</th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td><u>1</u></td> <td><u>3</u></td> <td><u>2</u></td> <td><u>3</u></td> <td><u>0</u></td> <td><u>27</u></td> <td><u>29</u></td> <td style="text-align: center;">2</td> <td style="text-align: right;">₱ 32.00</td> </tr> </table>		PERIOD COVERED					METER READING		Cubic Meters Consumed	Amount	From		To			Previous	Current	Mo.	Day	Mo.	Day	Yr.					<u>1</u>	<u>3</u>	<u>2</u>	<u>3</u>	<u>0</u>	<u>27</u>	<u>29</u>	2	₱ 32.00	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Consumer Classification Code</th> <th colspan="2">METER SIZE CODE</th> <th rowspan="2">Other Charges</th> <th rowspan="2">Amount</th> </tr> <tr> <th>No.</th> <th>Meaning</th> <th>No.</th> <th>Meaning</th> </tr> <tr> <td>1</td> <td>Residential</td> <td>1</td> <td>3/8"</td> <td rowspan="5" style="text-align: center;">10% penalty</td> <td rowspan="5" style="text-align: right;">₱ 3.20</td> </tr> <tr> <td>2</td> <td>Government</td> <td style="border: 2px solid black;">2</td> <td>1/2"</td> </tr> <tr> <td>3</td> <td>Commercial & Industrial</td> <td>3</td> <td>3/4"</td> </tr> <tr> <td></td> <td></td> <td>4</td> <td>1"</td> </tr> <tr> <td></td> <td></td> <td>5</td> <td>1-1 1/4"</td> </tr> </table>		Consumer Classification Code		METER SIZE CODE		Other Charges	Amount	No.	Meaning	No.	Meaning	1	Residential	1	3/8"	10% penalty	₱ 3.20	2	Government	2	1/2"	3	Commercial & Industrial	3	3/4"			4	1"			5	1-1 1/4"	This serves as an official receipt when machine validated or signed. Payment of bills should be made direct to the office of the water district. A penalty of 10% is added to bills paid after due date. A grace period of five days is given after due date. Checks will not be honored. Certified correct: <div style="text-align: center; margin-top: 10px;">  _____ General Manager </div>	
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Let's Learn

A water bill should contain the following information:

1. name and address of the water supplier;
2. name, address and account number of the customer;
3. period of time covered by the bill;
4. meter reading and water consumption plus other charges, if any; and
5. due date and grace period, if any.

Let's discuss each of these in detail.

Period Covered					Meter Readings		Cubic Meters Consumed
FROM		TO			Previous	Present	
Mo	Day	Mo	Day	Yr			
1	3	2	1	00	277	299	22

In the sample water bill on the previous page, you can see that the water supplier's name is "General Tinio Water District" and that their office is located in General Tinio, Nueva Ecija. Indicating this information in the bill will let the consumer know to whom and where he/she can pay his/her water bill.

You can also see the consumer's name, address and account number. Indicating these in the bill will help the water supplier identify which account to access whenever payment is made.

The period of time covered is also indicated in the bill so that both water supplier and consumer will know whether the bill has already been settled or not. Of course, the bill won't be a bill if the meter reading as well as the other costs the consumer has to pay are not indicated.

Finally, the due date and a grace period, if any, are also indicated in the bill. This way the consumer knows when he/she should pay the bill so as to avoid having his/her water supply disconnected. If he/she fails to pay the bill on the due date, he/she is still given a certain number of days to make payment without penalty.

All we need to figure out now is how water suppliers come up with the actual amounts we have to pay when we consume a certain amount of water over a period of time, usually one month. How is this done?

The first step involves computing how much water was consumed. We do this by referring to the previous and present meter readings. The **previous reading** is the amount indicated on one's water meter at the start of the period covered by the water bill. In the sample water bill, this is 277 m^3 . This is the water consumption indicated in the consumer's water meter on January 3, 2000 (the first day of the billing period). The **present reading**, on the other hand, is the water consumption indicated on one's meter at the end of the billing period. In the same water bill, this is 299 m^3 . This is the water consumption indicated on the consumer's water meter on February 1, 2000.

We then subtract the previous reading from the present reading to get the amount of water consumed for the indicated billing period as in:

$$\begin{array}{r}
 \text{Present reading} \qquad \qquad \qquad 299 \text{ m}^3 \\
 \text{Minus: Previous reading} \qquad \quad \underline{- 277 \text{ m}^3} \\
 \text{Amount of water consumed} \qquad \qquad 22 \text{ m}^3
 \end{array}$$




Let's Try This

Solve the following problems.

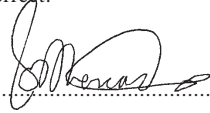
- On April 20, Mr. Pascual's water meter read 726 m^3 . On May 19, 2000, it read 747 m^3 . Using this data, fill up the partial water bill of Mr. Pascual, then compute how much water he used from April 20 to May 19, 2000.

Period Covered					Readings		Cubic Meters Consumed
From		To			Previous	Present	
Mo	Day	Mo	Day	Yr			

2. Study the water bill below then answer the following questions.

		GEN. TINIO WATER DISTRICT Gen. Tinio, Nueva Ecija						
Concessioner's Name and Service Address: <u>Teresita Castro</u> Account No. <u>75-4520</u> <small>Rizal, Poblacion Central, Gen. Tinio, N. E. B-9</small>				BILL NO. 196504 Bill For <u>July</u> <u>200</u> Date Billed <u>August 2</u> <u>200</u> Due Date <u>August 12</u> <u>200</u> Grace Period <u>August 17</u> <u>200</u>				
PERIOD COVERED From To			METER READING Previous Current		Cubic Meters Consumed	Amount		
Mo.	Day	Mo.	Day	Yr.	1057	1075	8	₱ 30.00
7	2	8	2	00				
Consumer Classification Code			METER SIZE CODE		Other Charges			
10% penalty					₱ 3.00			
No.	Meaning		No.	Meaning				
①	Residential		1	3/8"				
2	Government		②	1/2"				
3	Commercial & Industrial		3	3/4"				
			4	1"				
			5	1-1 1/4"				
Total Amount Due							₱ 34.00	

This serves as an official receipt when machine validated or signed.

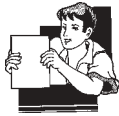
 Payment of bills should be made direct to the office of the water district. A penalty of 10% is added to bills paid after due date. A grace period of five days is given after due date. Checks will not be honored.
 Certified correct:


 General Manager

Form-No. BC-26
Original

1. When was the previous reading done?
2. What was the previous reading?
3. When was the present reading done?
4. What was the present reading?
5. How many cubic meters of water were consumed for the billing period?

Compare your answers with those in the *Answer Key* on pages 36 and 37. How well did you do? Did you get all the answers right?




Let's Learn

Even though our water bills give us a lot of information, it does not tell us everything we want to know about our monthly water consumption. It does not, for one, tell us how the amount we should pay is computed or where it is based. But don't worry, you will learn about that as well in this part of the lesson.

First, look at the table below. It shows how much a consumer should pay given the number of cubic meters of water he/she consumes in a month. Note though that this table can only be used for water meters measuring 1/2" only.

CLASS	METER SIZE	FIRST 10 m ³ OR LESS	COMMODITY CHARGES PER m ³				
			11-20 m ³	21-30 m ³	31-40 m ³	41-50 m ³	51 m ³ Up
Residential	1/2"	₱170.00	₱17.50	₱18.50	₱20.00	₱20.00	₱24.50
Semi-commercial—C	1/2"	212.50	21.85	23.10	25.00	27.50	30.60
Semi-commercial—B	1/2"	255.00	26.25	27.75	30.00	33.00	36.75
Semi-commercial—A	1/2"	297.50	30.60	32.35	35.00	38.50	42.85
Government	1/2"	340.00	35.00	37.00	40.00	44.00	49.00

Look at the given water bill below.



GEN. TINIO WATER DISTRICT

Gen. Tinio, Nueva Ecija

Concessioner's Name and Service Address: Apolinario Salvastr
 Account No. 79-1616 B-1

BILL NO. 149963

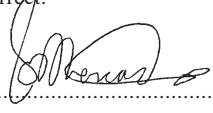
PERIOD COVERED					METER READING		Cubic Meters Consumed	Amount
From		To			Previous	Current		
Mo.	Day	Mo.	Day	Yr.	90	95	5	₱
2	2	3	3	00				
Consumer Classification Code				METER SIZE CODE		Other Charges		Total Amount Due
No.	Meaning			No.	Meaning			
1	Residential			1	3/8"			₱
2	Government			2	1/2"			
3	Commercial & Industrial			3	3/4"			
				4	1"			
				5	1-1 1/4"			

Bill For February 2000
 Date Billed March 3 2000
 Due Date March 13 2000
 Grace Period March 18 2000

This serves as an official receipt when machine validated or signed.

Payment of bills should be made direct to the office of the water district. A penalty of 10% is added to bills paid after due date. A grace period of five days is given after due date. Checks will not be honored.

Certified correct:


 General Manager

Form-No. BC-26
Original

Let us compute how much water Mr. Salvador consumed from February 2 to March 3, 2000.

First, let us look at his water meter's previous and present readings. Note these down then compute how many cubic meters of water he consumed for the month of February as in:

Present reading	995 m ³
Minus: Previous reading	<u>- 980 m³</u>
Amount of water consumed	15 m ³

Now that you know how much water he consumed for the month, you can now go to the next step—determining how much this actually costs. How?

Look at the water bill again. There you will find out what size Mr. Salvador's water meter is, that is, ½" and what kind of consumer he is, that is, "residential." By referring to the table given earlier, you will see that the basic charge for a consumer such as Mr. Salvador is ₱170.00 for the first 10 m³ of water consumed and that consuming 20 m³ of water or less in excess of 10 m³ will cost him ₱17.50 per m³. (Note that even if you consume less than 10 m³ of water per month, you still have to pay the basic charge indicated in the table for using the utilities offered by the water supplier.) So, how much should Mr. Salvador be charged?

We can compute this by subtracting 10 m³ from Mr. Salvador's actual water consumption as in:

Water consumption	15 m ³
Minus: Basic charge consumption	<u>- 10 m³</u>
Water consumption in excess of 10 m	5 m ³

We then multiply the amount of water he consumed in excess of 10 m³ by ₱17.50 as in:

Commodity charge per cubic meter	₱17.50
Times: Amount of water consumed	<u>× 5</u>
Commodity charges	₱87.50

We then get the sum of the basic charge and the amount he has to pay for water consumed in excess of 10 m³ to get the amount he has to pay as in:

Basic charge	₱170.00
Plus: Commodity charges	<u>+ 87.50</u>
Amount to be paid	₱257.50

Mr. Salvador would then have to pay ₱237.50 for the month of February, that is, if he will be able to pay on time. If he won't, then 10% of the amount he has to pay shall be added to his bill making a total of:

Amount to be paid	₱257.50
Times: Percentage of penalty	$\times 0.10$
Penalty charge	₱25.75
Thereby making the total amount he has to pay:	
Amount to be paid	₱257.50
Plus: Penalty	$+ 25.75$
Total amount to be paid	₱283.25

Mr. Salvador would have to pay ₱283.25 if he doesn't pay on time.

Let us take a look at another water bill and compute how much water was consumed.

Manila Water
 Manila Water Company, Inc.
 MWSS concessionaire for the East Zone
 489 Kalpanas Road, Balara, Quezon City 1115
 Tel: 002-838-428-900 VRT

Reference No. : **CBB1008639**
 Business Area : **Cubao**

CARAIG PRISCILO
 55 C CHICAGO Q CITY

Installation Information
 55 C CHICAGO Q CITY

Meter Information
 Brand : Asahi 13mm 4 dial
 Size : 4dia 13mm
 Meter No. : 26490242129
 000698 / 700 0561-01033

Customer Code : 002549820 Installation Code : 02649824

MONTHLY STATEMENT OF ACCOUNT

Period Covered : 18DEC00 TO 17JAN01 Present Meter Reading : 3796
 Due Date : 03FEB01 Previous Meter Reading: 3750
 Class : Residential Quarterly billing (water only) Consumption (cu.m.) 36
 Type :

DETAILS OF CHARGES

CURRENT CHARGES	
Basic Charge	55.00
CERA	35.00
Environment Charge	9.30
Sewer Charge	0.00
Meter Service Charge	1.50
Septic Tank De-sludging	0.00
Current Charges Before Taxes	103.75
Add VAT	10.38 10%
Total Current Charges	114.14
Previous Unpaid Amount (PUM)	
TOTAL AMOUNT DUE	

Your Monthly Water Consumption

Month	Consumption (cu.m.)
Fe	20
Ma	20
Ap	20
My	20
Jun	25
Jl	20
Au	20
Se	20
Oct	25
Nov	35
De	36
Jan	36

Visit the Manila Water website at <http://www.manilawateronline.com>
 Reminders: Please see reverse side for important information.
 For any inquiries regarding your bill, please call our 24-hour hotline **1627**

1627

838 Parnis LCN 84000001 (002) 838-428-900 (002) 838-428-900 (002) 838-428-900
 Printed by: ADVANCE COMPUTER FORMS, INC. Quezon City, Philippines Tel: 002-838-428-900 VRT

Your charges appear in the **Details of Charges** portion. The total amount due is calculated from two main items: (1) the previous charges and (2) the current charges.

1. The **previous charges** show payments made since the last bill was issued as well as your remaining balance.
2. The **basic charge** is the amount you should pay for your actual water consumption based on a rate per cubic meter (cu. m).

BASIC CHARGE (peso per cubic meter)	
RESIDENTIAL	RATE
First 10 cu. m	9.88/conn.
Next 10 cu. m	1.21/cu. m
Next 20 cu. m	2.29/cu. m
Next 20 cu. m	3.01/cu. m
Next 20 cu. m	3.52/cu. m
Next 20 cu. m	3.68/cu. m
Next 50 cu. m	3.85/cu. m
Next 50 cu. m	4.01/cu. m
Over 200 cu. m	4.18/cu. m

3. The **CERA** is a fixed rate of ₱1.00 per cu. m of water consumed.
4. The **environment charge** is 10% of the basic charge plus the CERA.
5. The **sewer charge**, if applicable, is 50% of the sum of the basic charge and the CERA.
6. The **meter service charge** is a fixed monthly charge for meter maintenance and is dependent on the size of your meter.
7. The **septic tank desludging charge**, if applicable, is the charge for the services of desludging your septic tank.
8. The government also charges a 10% **VAT** on the total charges.

There are also other figures in your water bill including:

1. The **installation number** is a control number assigned to your water consumption.
2. The **meter code** is the serial number of your water meter.
3. The **period covered** shows the period or duration of usage.
4. The **class** identifies customer classification and water/sewer connection.
5. The **type** indicates the type of establishment.
6. The **reading** reflects your previous and present meter readings.

7. The **consumption** shows in cu. m the difference between your previous and present readings.
8. The graph shows your consumption table. The table represents your consumption for the past 12 months plus your current consumption for the month you are billed for. You may use the graph as your guide to monitor your water consumption.
9. You may also refer to the back of your bill for the address and contact number of the water supplier office nearest you for information on your water bill.

Now that you know what the different information in your water bill show, you are now ready to compute the amount the customer has to pay for the water he consumed.

Based on the given water bill on page 20, compute the amount of water Mr. Caraig consumed from December 18, 2000 to January 17, 2001.

Mr. Caraig's previous meter reading was 3796 and his present meter reading was 3760. How much water did he consume?

$$3796 - 3760 = 36 \text{ cu. m}$$

Compute the basic charge.

Based on the water rate table on the previous page, he will be charged ₱9.88/conn. for the first 10 cu. m because he is maintaining a residential establishment, so you will have:

₱9.88 for the first 10 cu. m since he only has one water meter connected

$$36 \text{ cu. m} - 10 \text{ cu. m} = 26 \text{ cu. m}$$

Referring to the table again, he will be charged ₱1.21/cu.m for the next 10 cu. m, so you will have:

$$10 \text{ cu. m} \times 1.21 \text{ cu. m} = ₱12.10$$

$$26 \text{ cu. m} - 10 \text{ cu. m} = 16 \text{ cu. m}$$

Refer to the table again and you will see that he will be charged ₱2.29/cu.m for the next 20 cu. m, so you will have:

$$16 \text{ cu. m} \times 2.29/\text{cu. m} = ₱36.64$$

If you add all these charges, you will come up with the total basic charge.

$$₱9.88 + ₱12.10 + ₱36.64 = ₱58.62$$

Let us then compute for the CERA (₱1.00/cu. m).

$$36 \text{ cu. m} \times \text{₱}1.00 = \text{₱}36.00$$

Then we add the total basic charge and the CERA.

$$\text{₱}58.62 + 36.00 = \text{₱}94.62$$

To get the environmental charge (10% of the sum of the basic charge and the CERA), we have:

$$\text{₱}94.62 \times 0.10 = \text{₱}9.46$$

Then we add the meter service charge which depends on what type of establishment the customer is maintaining, in this case, it is a residence so the fixed amount he has to pay for his meter service charge is ₱1.50.

Let's sum them up as in:

$$\text{₱}58.62 + 36.00 + 9.46 + 1.50 = \text{₱}105.58$$

The answer we get here shows the current charges before taxes. Then we compute for the VAT (10% of the current charges) and we get:

$$\text{₱}105.58 \times 0.10 = \text{₱}10.56$$

Finally, we add the last two items and come up with the total current charges as in:

$$\text{₱}105.58 + 10.56 = \text{₱}116.14$$

Mr. Caraig then has to pay ₱116.14.



Let's See What You Have Learned

Solve the following problems.

GEN. TINIO WATER DISTRICT Gen. Tinio, Nueva Ecija				
Concessioner's Name and Service Address: Santos Commercial Center Account No. 80-6798				
BILL NO. 125478				
Bill For February 2001				
Date Billed February 1 2001				
Due Date February 11 2001				
Grace Period February 18 2001				
This serves as an official receipt when machine validated or signed.				
Payment of bills should be made direct to the office of the water district. A penalty of 10% is added to bills paid after due date. A grace period of five days is given after due date. Checks will not be honored. Certified correct:				
..... General Manager				

PERIOD COVERED					METER READING		Cubic Meters Consumed	Amount
From		To			Previous	Current		
Mo.	Day	Mo.	Day	Yr.				
1	2	2	1	0	106	130	5	₱
Consumer Classification Code					METER SIZE CODE		Other Charges	
No.	Meaning				No.	Meaning		
1	Residential				1	3/8"		
2	Government				2	1/2"		
③	Commercial & Industrial				③	1/2"		
					4	1"		
					5	1-1 1/4"		
							Total Amount Due	₱

Form-No. BC-26 Original

- Based on the information given above, compute how much Ms. Santos, the owner of the company, should pay assuming she meets the due date. Fill in the missing information in her water bill.

678453

 Manila Water Company, Inc. MWSS concessionaire for the First Zone 567 EDSA Cubao, Quezon City T.N. 002-538-428-930 VAT		Reference No. : CBB1000639 Business Area : Cubao
Joy Santos 1054 Annapolis St. Cubao, Q.C.	Installation Information DECS Pasig City	Meter Information Brand : Asahi 13mm 4 dials Size : 2 1/2" meter Meter No. : 26490242129 000096/700 0561-01033
Customer Code : 60-3209	Installation Code : 02649824	
MONTHLY STATEMENT OF ACCOUNT		
Period Covered : 2FEB01 TO 1MAR01 Due Date : 11MAR01 Class : Residential Type :	Present Meter Reading : 7809 Previous Meter Reading: 7654 Consumption (cu.m.) 155	
DETAILS OF CHARGES		
CURRENT CHARGES Basic Charge CERA Environment Charge Sewer Charge 0.00 Meter Service Charge Septic Tank De-sludging 0.00 Current Charges Before Taxes Add VAT 10% Total Current Charges 0.00 Previous Unpaid Amount (PUA) Please disregard PUA if payment has been made		Your Monthly Water Consumption 
TOTAL AMOUNT DUE		Visit the Manila Water website at http://www.manilawateronline.com Reminders: Please see reverse side for important information. For any inquiries regarding your bill, please call our 24-hour hotline 1627 
This statement will serve as an Official Water Receipt when received in full. <small>MANILA WATER COMPANY, INC. 567 EDSA CUBAO, QUEZON CITY TEL: 002-538-428-930 FAX: 002-538-428-931 PRINTED BY: ADVANCE COMPUTER FORMS, INC. 1000 GMA BLDG. 1000 GMA BLDG. 1000 GMA BLDG. 1000 GMA BLDG. 1000 GMA BLDG.</small>		

2. Based on the information given above, compute how much Ms. Santos has to pay granting she is able to meet the due date. Fill in the missing information in her water bill.

Compare your answers with those in the *Answer Key* on page 34. How well did you do? Did you get a perfect score? If you did, that's very good. This means you learned a lot from this lesson. If you didn't, don't worry. Just review the parts of the lesson you didn't understand very well before going to Lesson 3.

 **Let's Remember**

- ◆ Different water companies/suppliers/concessionaires have different ways of computing their monthly water bills.

Save the Planet, Save Water

Filipinos are fortunate because generally, water is abundant in most places in the country. At certain times, however, especially during dry spells, low-lying areas like Metro Manila experience water shortage. It is imperative, therefore, that people conserve water. Even in places where water shortage is not experienced though, people should still conserve water. Do you know why? This lesson will tell you why and more.



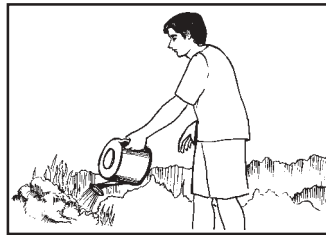
Let's Think About This

Look at the pictures below. What do they show?

1.



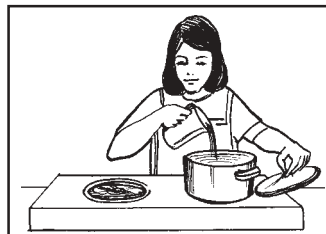
2.



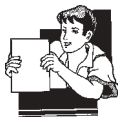
3.



4.



The pictures above show the different uses of water in everyday life. Would we still be able to do these things if there were no water left?



Let's Learn

Think of all the things you do from the time you wake up until you sleep. Which of these involve using water? Suppose water runs out, how will this affect you? Your answers to these questions will tell you how important water is.

Water is very important to all living organisms. Living things cannot exist without water. Human beings need water to drink, cook food with, take a bath with, clean utensils and vehicles with. We need water for plants to grow. We need water for animals to drink. We must, therefore, conserve water because without it, life would not be possible.

Most homes now, including yours perhaps, get water from the various water companies in the country. Are you aware that these companies use electricity to pump, purify and deliver water to our homes? And as we all know, oil, a limited and costly resource, is needed to generate electricity. So, when we waste water, we waste a lot of things—electricity, oil and money. Thus, when we conserve water, we save all of these too.

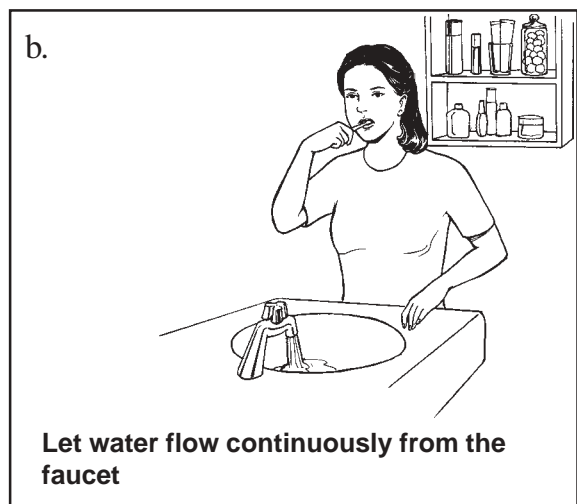
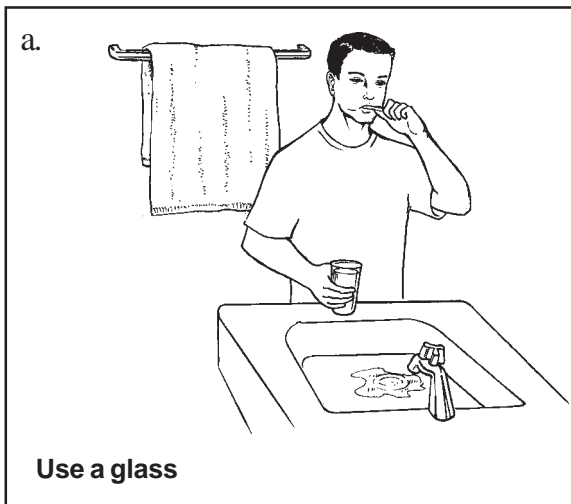
We should also consider that even though water is a renewable resource, meaning it can never run out, it is being used faster than it can be replenished. This is precisely why the threat of inadequate water supply is very real.



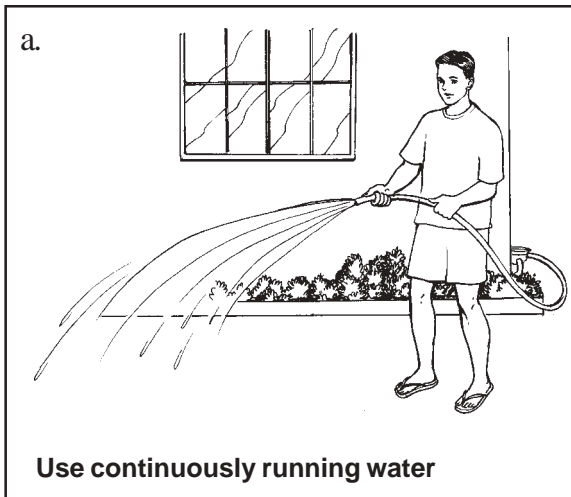
Let's Try This

Below are pictures of different activities we engage in that involve using water. Encircle the letter of the picture which shows wise use of water in each number.

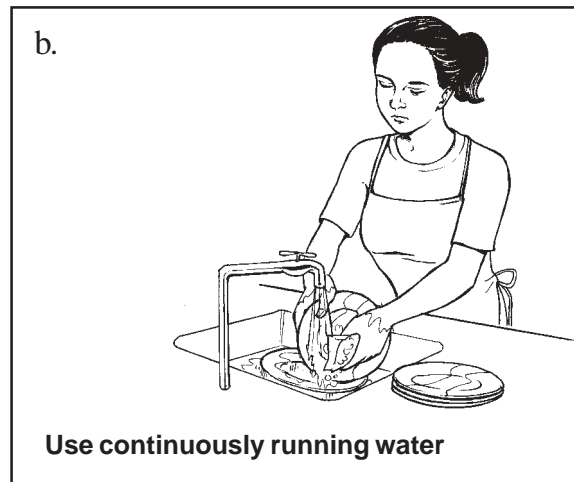
1. When brushing your teeth



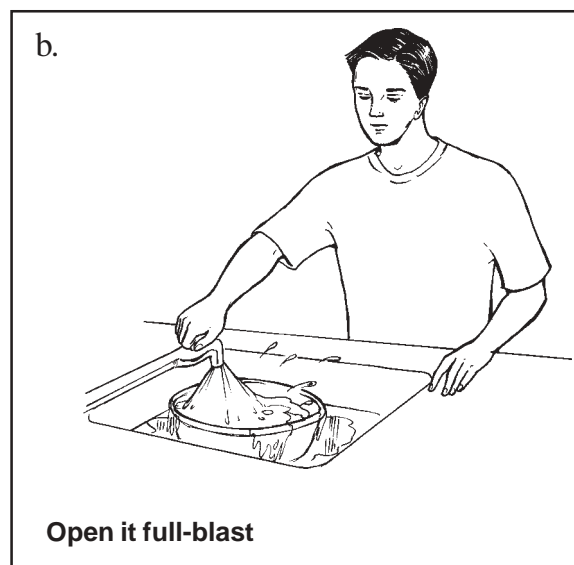
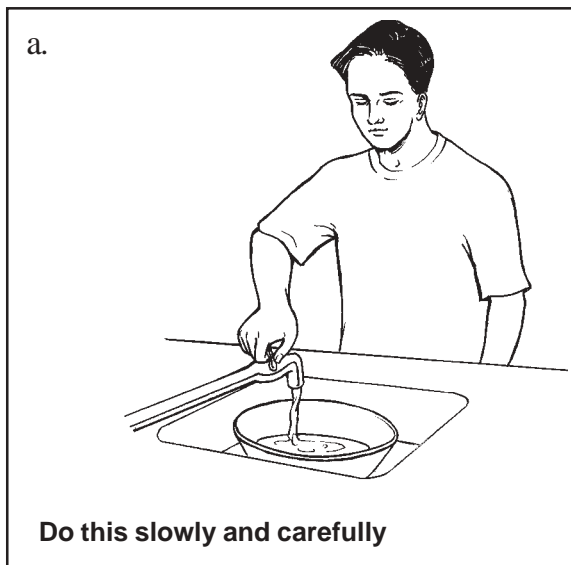
2. When wetting dusty ground



3. When washing the dishes



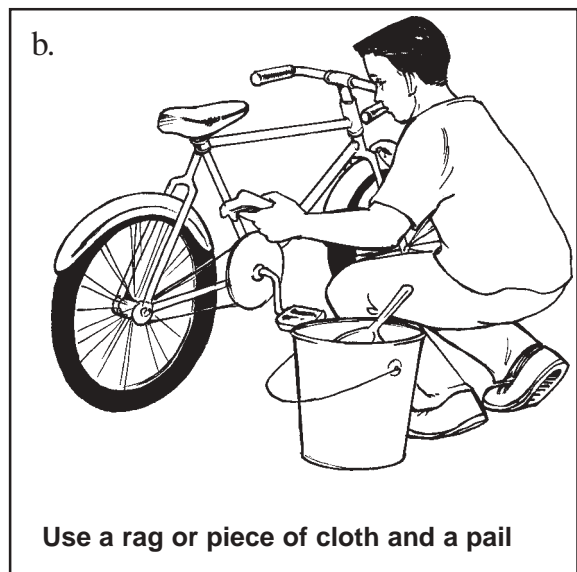
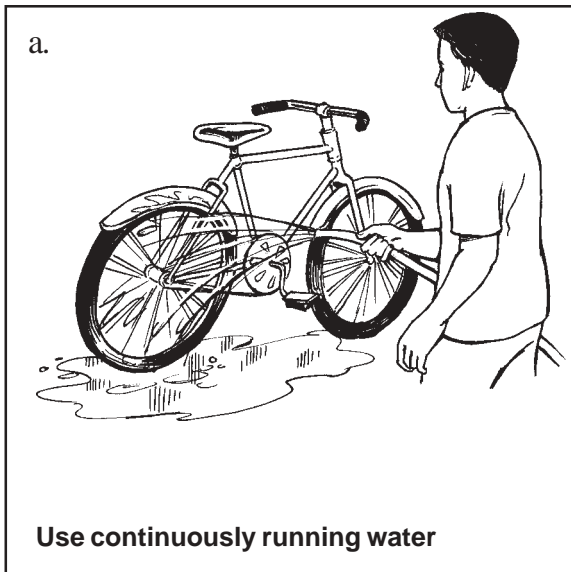
4. When opening the faucet



5. when closing the faucet



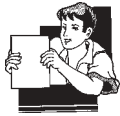
6. When cleaning a vehicle



7. When watering plants



Compare your answers with those in the *Answer Key* on page 37. How well did you do? Did you get all the answers right?



Let's Learn

In the previous activity, you learned how to use water wisely. What other ways can you think of? Look at my list below.

1. Store and use rainwater for cleaning your surroundings and watering plants.
2. Repair leaking pipes and faucets. Replace worn-out washers or fixtures.
3. Use a basin when washing fruits and vegetables so you can reuse water.
4. Take frozen food out from the freezer early so that you don't have to place them in a basin of water or under running water before cooking.
5. Reuse leftover drinking water for other chores.
6. Use other tools instead of water when cleaning.

Which of these do you do at home?



Let's See What You Have Learned

Apply what you have just learned, conserve water. Read your water meter and record your reading. Make sure you note down the date you read your meter. Do this for five consecutive weeks. Make sure that you read your meter on the same day each week. Record your observations in a table similar to the one below.

WEEK	METER READING	m ³ of WATER
Week 1		
Week 2		
Week 3		
Week 4		
Week 5		

Afterward, fill in the missing information in your table. To get the amount of water used each week, subtract the previous week's reading from the current one. For example, the water consumption for Week 1 is equal to the reading for Week 2 minus the reading for Week 1 and so on. Did your water consumption decrease from one week to another or were you able to maintain almost the same amount of water consumption over the five-week period? If it did, then you were able to apply what you learned successfully. If it didn't, check how you use water in your household.



Let's Remember

- ◆ We can conserve water by:
 - using a glass when brushing our teeth;
 - using the water we used for rinsing dishes and clothes for other tasks such as wetting dusty grounds, washing vehicles and watering plants;
 - using a basin instead of running water when washing dishes and other kitchen utensils;
 - opening faucets slowly and carefully instead of doing it full-blast;
 - making sure the faucet does not drip after we use it;
 - using a pail and a rag or piece of cloth when cleaning vehicles and other things instead of using running water;
 - storing and using rainwater instead of clean running water for cleaning and watering the plants and the like;
 - reusing the water we used for washing fruits and vegetables or left-over drinking water; and
 - taking frozen food out of the freezer early to thaw them without using water.

Well, this is the end of the module! Congratulations for finishing it. Did you like it? Did you learn anything useful from it? A summary of its main points is given on the next page to help you remember them better.



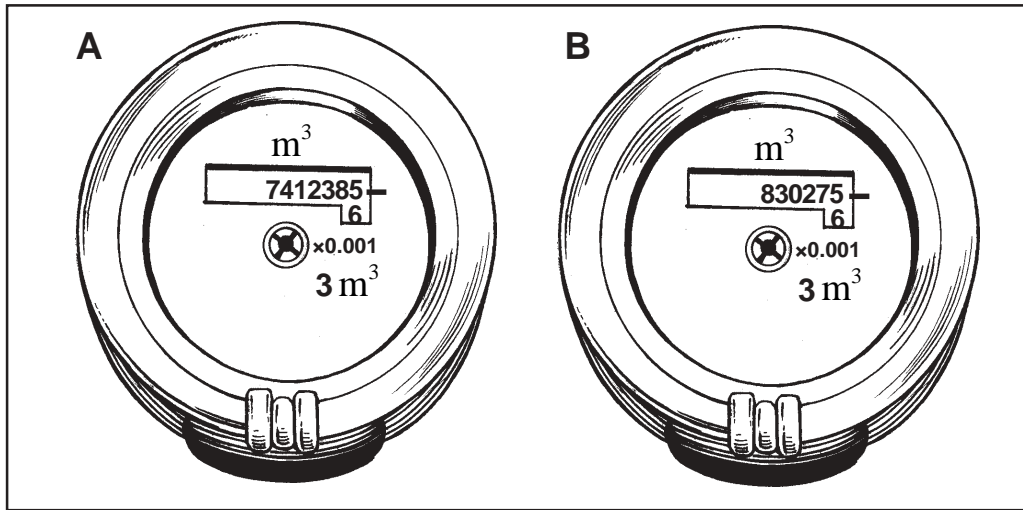
Let's Sum Up

- ◆ A **water meter** measures and records the amount of water used by a household/business establishment over a certain period of time.
- ◆ The different parts of a water meter are:
 - unit of measure;
 - flow indicator;
 - frame;
 - multiplier; and
 - pointer.
- ◆ Water meter readings are usually expressed in **cubic meters** (m³).
- ◆ Different water companies/suppliers/concessionaires have different ways of computing their monthly water bills.
- ◆ We can conserve water by:
 - using a glass when brushing our teeth;
 - using the water we used for rinsing dishes and clothes for other tasks such as wetting dusty grounds, washing vehicles and watering plants;
 - using a basin instead of running water when washing dishes and other kitchen utensils;
 - opening faucets slowly and carefully instead of doing it full-blast;
 - making sure the faucet does not drip after we use it;
 - using a pail and a rag or piece of cloth when cleaning vehicles and other things instead of using running water;
 - storing and using rainwater instead of clean running water for cleaning and watering the plants and the like;
 - reusing the water we used for washing fruits and vegetables or left-over drinking water; and
 - taking frozen food out of the freezer early to thaw them without using water.



What Have You Learned?

A. Read the two water meters below.



What is the reading on water meter?

1. A? _____
2. B? _____

B. Fill up the partial water bill below if Mrs. Paglinawan's water meter reading was 4865 m³ last June 1 (Gen. Tinio Water District).

Period Covered					Readings		Cubic Meters Consumed
From		To			Previous	Present	
Mo	Day	Mo	Day	Yr		4950	
		7	1	00			

C. Using the information above, compute how much Mrs. Paglinawan has to pay for the month of June (Residential, 1/2").

D. Aling Siony's leaking faucet wasted 9546 L of water after a year.

1. How much water is this in m³?

2. What should she have done to conserve water?

Compare your answers with those in the *Answer Key* on page 38. How well did you do? Did you get a perfect score? If you did, very good! You may study a new module. If you didn't, review the parts of this module you made mistakes in before doing so.



Answer Key

A. Let's See What You Already Know (pages 2–4)

A. 1. (c)

2. 38.25 m³

Period Covered					Readings		Cubic Meters Consumed
From		To			Previous	Present	
Mo	Day	Mo	Day	Yr			
6	17	7	18	99	37.75	38.25	0.5

3. a. Water becomes more expensive as the number of cubic meters used increases.

b. $0.5 < 10$ so he only has to pay ₱170.00.

c. $6364 \text{ L} = ? \text{ m}^3$

$$1 \text{ m}^3 = 1000 \text{ L}$$

$$6364 \cancel{\text{L}} \times \frac{1 \text{ m}^3}{1000 \cancel{\text{L}}} = 6.364 \text{ m}^3$$

- B. 1. (b)
 2. (c)
 3. (a)

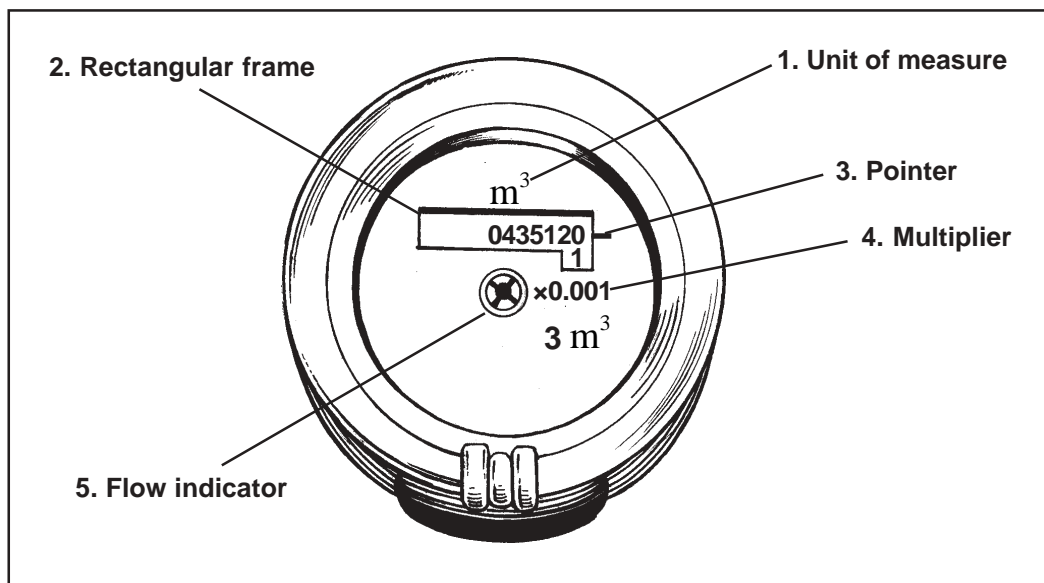
B. Lesson 1

Let's Try This (page 11)

1. 2010.342 m³
 2. 1.421 m³
 3. 0.321 m³
 4. 434.235 m³
 5. 3.542 m³

Let's See What You Have Learned (pages 11–12)

A.



- B. 1. $3 \text{ m}^3 = ? \text{ L}$
 $1 \text{ m}^3 = 1000 \text{ L}$
 $3 \cancel{\text{m}^3} \times \frac{1000 \text{ L}}{1 \cancel{\text{m}^3}} = 3000 \text{ L}$
2. $? \text{ drums} = 400 \text{ L}$
 $1 \text{ drum} = 200 \text{ L}$
 $400 \cancel{\text{L}} \times \frac{1 \text{ drum}}{200 \cancel{\text{L}}} = 2 \text{ drums}$

3. 4 kerosene cans = ? L

1 kerosene can = 17 L

$$4 \text{ kerosene cans} \times \frac{17 \text{ L}}{1 \text{ kerosene can}} = 68 \text{ L}$$

4. ? pails = 90 L

1 pail = 15 L

$$90 \text{ L} \times \frac{1 \text{ pail}}{15 \text{ L}} = 6 \text{ pails}$$

5. 5 pails = ? m³

67 pails = 1000 L = 1 m³

$$5 \text{ pails} \times \frac{1 \text{ m}^3}{67 \text{ pails}} = 0.07 \text{ m}^3$$

C. 1. 34.567 m³

2. 4.587 m³

3. 0.562 m³

4. 67.583 m³

5. 4.801 m³

C. Lesson 2

Let's Try This (pages 16–17)

A.

Period Covered					Meter Readings		Cubic Meters Consumed
From		To			Previous	Present	
Mo	Day	Mo	Day	Yr			
4	20	5	19	00	726	747	21

- B. 1. July 2, 2000
2. 1057
3. August 2, 2000
4. 1075
5. $1075 \text{ m}^3 - 1057 \text{ m}^3 = 18 \text{ m}^3$

Let's See What You Have Learned (pages 24–25)

1. $1350 \text{ m}^3 - 1096 \text{ m}^3 = 254 \text{ m}^3$
 $254 \text{ m}^3 - 10 \text{ m}^3 = 244 \text{ m}^3$
 $244 \text{ m}^3 \times \text{P}42.85/\text{m}^3 = \text{P}10455.40$
 $\text{P}10455.40 + 297.50 = \text{P}10752.90$

Ms. Santos should pay $\text{P}10752.90$ for her water consumption for the month of January.

2. $7809 \text{ m}^3 - 7654 \text{ m}^3 = 155 \text{ m}^3$
 $155 \text{ m}^3 - 10 \text{ m}^3 = 145 \text{ m}^3$
 $145 \text{ m}^3 \times \text{P}49/\text{m}^3 = \text{P}7105$
 $\text{P}7105 + 340 = \text{P}7445$
 $\text{P}7445 \times 0.1 = \text{P}744.50$
 $\text{P}7445 + 744.50 = \text{P}8189.50$

Ms. Santos should pay $\text{P}8189.50$ for her water consumption for the month of March.

D. Lesson 3

Lets Try This (pages 27–29)

1. (a)
2. (b)
3. (a)
4. (a)
5. (b)
6. (b)
7. (a)

E. What Have You Learned? (pages 33–34)

- A. 1. 7412.385 m³
 2. 830.275 m³

B.

Period Covered					Meter Readings		Cubic Meters Consumed
From		To			Previous	Present	
Mo	Day	Mo	Day	Yr			
6	1	7	1	00	4865	4950	85

C. $85 \text{ m}^3 - 10 \text{ m}^3 = 75 \text{ m}^3$
 $75 \text{ m}^3 \times \text{P}24.50/\text{m}^3 = \text{P}1837.50 + 170.00 = \text{P}2007.50$

D. 1. $9546 \text{ L} = ? \text{ m}^3$
 $1 \text{ m}^3 = 1000 \text{ L}$
 $9546 \cancel{\text{L}} \times \frac{1 \text{ m}^3}{1000 \cancel{\text{L}}} = 9.546 \text{ m}^3$

2. Aling Siony should have had her leaking faucet fixed so she wouldn't have wasted that much water.



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