## Unit 5 Using Decimals in Real Life

## Topic A: Unit Pricing

This next skill you learn will help you practice some math skills you have already learned:

- Dividing
- Rounding
- Working with money
- Comparing numbers

Have you stood in front of a store shelf trying to decide on the "best buy"? Often the packages are different sizes so it is difficult to compare the prices. Many stores now help by putting the unit prices on the shelf below their products, but you may need to figure the unit price out yourself.

The unit price is the price for one measure or one unit of a product.

- The unit price for 6 kilograms $(\mathrm{kg})$ of tomatoes will be the price per one kilogram (price/kg).
- You may wish to compare the cost of soft drinks sold in 750 millilitre ( mL ) bottles, 500 mL cans and 2 litre (which is 2000 mL ) bottles. The unit price will be price per one millilitre (price/mL).
- Socks are often sold in bundles of several pairs. How do you decide on the best buy if the same socks are on sale in bundles of 6 pairs, bundles of 8 pairs and bundles of 4 pairs? You figure out the unit price which would be the price per one pair of socks (price/pair).

To calculate the unit price, do this:

$$
\text { Total Price } \div \text { Number of Units }=\text { Unit Price }
$$

To compare unit prices you need to compare the same unit measure to the same unit measure.

Compare kilograms to kilograms
Compare litres to litres
Compare pairs of slippers to pairs of slippers
Compare grams to grams
...and so on!

## Example:

A 12 gram bag of potato chips costs $\$ 1.08$ while an 8 g bag sells for $\$ 0.80$ Which is the better buy? We will compare the price per gram for the 12 g bag with the price per gram for the 8 g bag. The bag with the lower price per gram is the better buy.

Step 1 Be sure that the prices are written the same way; that is, all using the \$ (dollars) style or all using the $\phi$ (cents) style. Be sure that the units for all items are the same.

Step 2 Work out the unit price for each size bag by dividing the total price by the contents (the number of grams). Be careful to include the money sign and units.

$$
\$ 1.08 \div 12 \mathrm{~g}=\$ 0.09 / \mathrm{g} \quad \$ 0.80 \div 8 \mathrm{~g}=\$ 0.10 / \mathrm{g}
$$

Step 3 Compare the unit price to decide which size bag is the better value. The 12 g bag is the better buy.

Of course the item with the best unit price may not be the best buy for you. You may only have enough money to buy a small quantity, or you may not want to have a large quantity of something. This is a helpful skill to know for if you need to use it.

Exercise One
Calculate the unit price of these items which are of equal quality and then $\underline{V}$ the better buy. (Divide price by number of units.)

| Item | Unit to <br> Compare | Total <br> Price | Number <br> of Units | Unit <br> Price | $\sqrt{ }$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Socks-4 pair $\$ 2.80$ | pairs | $\$ 2.80$ | 4 | $\$ 0.70 / p r$ |  |
| Socks-6 pair $\$ 4.08$ | pairs | $\$ 4.08$ | 6 | $\$ 0.68 / p r$ | $\sqrt{ }$ |
| Toilet paper-8 rolls $\$ 2.56$ |  |  |  |  |  |
| Toilet paper-6 rolls \$1.86 |  |  |  |  |  |
| Laundry Soap-3 Litres \$5.94 |  |  |  |  |  |
| Laundry Soap-5 Litres \$9.80 |  |  |  |  |  |
| A dozen eggs \$2.79 |  |  |  |  |  |
| A dozen and a half eggs \$4.09 |  |  |  |  |  |

## Answers to Exercise One

| Item | Unit to <br> Compare | Total Price | Number of <br> Units | Unit Price | $\sqrt{ }$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Socks-4 pair $\$ 2.80$ | pairs | $\$ 2.80$ | 4 | $\$ 0.70 / p r$ |  |
| Socks-6 pair $\$ 4.08$ | pairs | $\$ 4.08$ | 6 | $\$ 0.68 / \mathrm{pr}$ | $\sqrt{ }$ |
| Toilet paper-8 rolls $\$ 2.56$ | rolls | $\$ 2.56$ | 8 | $\$ 0.32 /$ roll |  |
| Toilet paper-6 rolls $\$ 1.86$ | rolls | $\$ 1.86$ | 6 | $\$ 0.31 /$ roll | $\sqrt{ }$ |
| Laundry Soap-3 Litres $\$ 5.94$ | litres | $\$ 5.94$ | 3 | $\$ 1.98 / \mathrm{L}$ |  |
| Laundry Soap-5 Litres $\$ 9.80$ | litres | $\$ 9.80$ | 5 | $\$ 1.96 / \mathrm{L}$ | $\sqrt{ }$ |
| A dozen eggs $\$ 2.79$ | Eggs | $\$ 2.79$ | 12 | $\$ 0.2325 /$ egg |  |
| A dozen and a half eggs $\$ 4.09$ | eggs | $\$ 4.09$ | 18 | $\$ 0.227 /$ egg | $\sqrt{ }$ |

## Now look at this example:

The drugstore is advertising one brand of toothpaste at $\$ 1.39$ per 100 mL tube and an equal brand at $99 \not \subset$ per 75 mL tube. Which is the better buy?

Step 1 Check that the units are the same. You will compare millilitres to millilitres. Rewrite 99 as $\$ 0.99$

Step 2 Work out the unit price for each tube by dividing total price by the contents (number of mL ).

$$
\begin{aligned}
& \$ 1.39 \div 100 \mathrm{~mL}=\$ 0.0139 / \mathrm{mL} \\
& \$ 0.99 \div 75 \mathrm{~mL}=\$ 0.0132 / \mathrm{mL}
\end{aligned}
$$

Step 3 Decide which tube is cheaper per unit price. Even though the results look strange for money, you are still able to tell that $\$ 0.0132 / \mathrm{mL}$ is less than $\$ 0.0139 / \mathrm{ml}$. The 75 mL tube is the better buy.

This is a good time to review Dollars and Cents and Rounding.

Remember:

|  | Abbreviations |  |
| :--- | :--- | :--- |
|  | kilogram | kg |
|  | gram | g |
| 1 kilogram $=1000$ grams | litre | L |
| 1 litre $=1000$ millilitres | millilitre | mL |
|  | package | pkg |

Exercise Two
a) $\$ 2.438$ $\qquad$ b) $\$ 0.099$
c) $84.8 \propto$ $\qquad$ d) $\$ 6.409$
e) $0.9 \propto$ $\qquad$ f) $13.2 \not \subset$
h) 28.6 ¢
g) $\$ 0.051$ $\qquad$
i) $10.9 \not \subset$
j) $\$ 0.252$
k) $\$ 12.479$ $\qquad$ 1) $1.4 \varnothing$ $\qquad$

## Answers to Exercise Two

a) $\$ 2.44$
b) $\$ 0.10$
c) $85 ¢$
d) $\$ 6.41$
e) $1 \varnothing$
f) $13 ¢$
g) $\$ 0.05$
h) 29 C
i) $11 \varnothing$
j) $\$ 0.25$
k) $\$ 12.48$
l) $1 \varnothing$

Exercise Three
Decide which item in each group is the "best buy" by figuring out the unit price. Round the unit price to the nearest cent and $\underline{\sqrt{ }}$ the best buy.

|  | Item | Amount | Price | Unit price | Best <br> Buy |
| :--- | :--- | :--- | :--- | :--- | :--- |
| a) | Frozen waffles | See calculations below $)$ | 200 g | $\$ 4.99$ | $\$ 0.024 / g \approx$ <br> $\$ 0.02 / g$ |
|  | Frozen waffles | $1 \mathrm{~kg}(1000 \mathrm{~g})$ | $\$ 11.99$ | $\$ 0.011 / g \approx$ <br> $\$ 0.01 / \mathrm{g}$ | $\sqrt{ }$ |

$$
\begin{array}{r}
200 \lcm{4.024} \\
\frac{4000}{990} \\
\frac{800}{90} \\
\$ 11.99 \div 1000 g=\$ 0.0011 / g \approx \$ 0.01 / g
\end{array}
$$

| a) | Item | Amount | Price | Unit price | Best <br> Buy |
| :---: | :---: | :---: | :---: | :---: | :---: |
| b) | Box of laundry soap | 5 kg | \$9.99 |  |  |
|  | Box of laundry soap | 8 kg | \$16.99 |  |  |
| c) | Granola bars | 170 g | \$ 4.49 |  |  |
|  | Granola bars | 300 g | \$3.98 |  |  |
| d) | Garbage bags | 20 bags | \$2.29 |  |  |
|  | Garbage bags | 45 bags | \$3.98 |  |  |
| e) | Rice | 1.4 kg | \$3.69 |  |  |
|  | Rice | 2 kg | \$5.39 |  |  |
| f) | Knee hi stockings | 2 pair | 99¢ |  |  |
|  | Knee hi stockings | 5 pair | \$2.58 |  |  |
| g) | Orange juice | 5 L | \$ 4.99 |  |  |
|  | Orange juice | 2 one litre cartons | \$ 1.69 |  |  |
| h) | Bleach | 3.6 L | \$1.89 |  |  |
|  | Bleach | 5 L | \$2.49 |  |  |
| i) | Socks | 10 pair | \$ 5.99 |  |  |
|  | Socks | 2 pair | \$ 2.29 |  |  |
| j) | Cat food | 1.5 kg bag | 2 bags for $\$ 6.99$ |  |  |
|  | Cat food | 0.4 kg bag | \$1.25 |  |  |
| k) | 10-W-30 Motor oil | case of 121 L cans | \$14.60 |  |  |
|  | 10-W-30 Motor oil | 1 L can | 3 cans for \$3.49 |  |  |

Answers to Exercise Three

|  | Item | Amount | Price | Unit price | Best <br> Buy |
| :---: | :---: | :---: | :---: | :---: | :---: |
| b) | Box of laundry soap | 5 kg | \$9.99 | \$2.00/kg | $\checkmark$ |
|  | Box of laundry soap | 8 kg | \$16.99 | \$2.12/kg |  |
| c) | Granola bars | 170 g | \$ 4.49 | \$0.03/g |  |
|  | Granola bars | 300 g | \$3.98 | \$0.01/g | $\checkmark$ |
| d) | Garbage bags | 20 bags | \$2.29 | \$0.11/bag |  |
|  | Garbage bags | 45 bags | \$3.98 | \$0.09/bag | $\checkmark$ |
| e) | Rice | 1.4 kg | \$3.69 | \$2.64/kg | $\checkmark$ |
|  | Rice | 2 kg | \$5.39 | \$2.70/kg |  |
| f) | Knee hi stockings | 2 pair | 99¢ | \$0.50/pr | $\checkmark$ |
|  | Knee hi stockings | 5 pair | \$2.58 | \$0.52/pr |  |
| g) | Orange juice | 5 L | \$ 4.99 | \$1.00/L |  |
|  | Orange juice | 2 one litre cartons | \$ 1.69 | \$0.85/L | $\checkmark$ |
| h) | Bleach | 3.6 L | \$1.89 | \$0.53/L |  |
|  | Bleach | 5 L | \$2.49 | \$0.50/L | $\sqrt{ }$ |
| i) | Socks | 10 pair | \$ 5.99 | \$0.60/pr | $\sqrt{ }$ |
|  | Socks | 2 pair | \$ 2.29 | \$1.15/pr |  |
| j) | Cat food | 1.5 kg bag | $\begin{aligned} & 2 \text { bags for } \\ & \$ 6.99 \\ & \hline \end{aligned}$ | \$2.33/kg | $\checkmark$ |
|  | Cat food | 0.4 kg bag | \$1.25 | \$3.13/kg |  |
| k) | 10-W-30 Motor oil | case of 12 , one L cans | \$14.60 | \$1.22/L |  |
|  | 10-W-30 Motor oil | 1 L can | $\begin{aligned} & 3 \text { cans for } \\ & \$ 3.49 \end{aligned}$ | \$1.16/L | $\checkmark$ |

## Rounding to the Nearest Tenth of a Cent

We do not have a coin that equals one tenth of a cent, but this amount of money is often used to calculate prices and can be significant for large amounts. The unit price information on store shelves also may include tenths of a cent. One other place where you see tenths of a cent is at the gas station-gasoline is priced at cents per litre and is usually written like this, without the $\$$ or $\phi$ :
99.9 L (99.9 $\not \subset / \mathrm{L}) \quad$ or $\quad \mathbf{0 . 9 9 9} \mathbf{L}(\$ 0.999 / \mathrm{L})$

## Gas Pricing Now, Past and the Future

Gas prices have risen and fallen thousands of times in the past. On the gas station signs, the cost is listed as cents per litre ( $\phi / \mathrm{L})$. In early 2010, the cost of gas was about 103.4 $\phi / \mathrm{L}$. This could also be written as $\$ 1.034 / \mathrm{L}$. In the past it was unthinkable to have the gas price be so high that we would need to talk about dollars per litre. Before the 1970's gas prices were more stable. Here are a few pump prices from the past 20 years to compare:

Average Costs of Regular Gas in Canada in the Past 20 Years.

| Year | Average Cost of Regular Gas in <br> Canada in $\boldsymbol{\epsilon} / \mathbf{L}$ |
| :--- | :--- |
| 1987 | 50.1 |
| 1990 | 58.5 |
| 1995 | 54.1 |
| 2000 | 71.6 |
| 2005 | 92.3 |
| 2009 | 94.5 |
| (from M.J. Ervin \& Associates, http://www.mjervin.com/) |  |

Some Interesting Highest Average Prices in Canada (!!)

| Date | Location | Price (for regular <br> gas) <br> In $\mathbf{c / L}$ |
| :--- | :--- | :--- |
| June 2009 | Yellowknife | 122.0 |
| June 2009 | Vancouver | 113.3 |
| June 2009 | Fort St. John | 112.7 |

(from M.J. Ervin \& Associates, http://www.mjervin.com/)

Can you imagine what the future of gas prices will look like? How will the sellers show the prices on their signs in a few years from now? Do you think it will it be $\phi / \mathrm{L}$ or $\$ / \mathrm{L}$ ?

## Topic A: Self-Test

Sit down with this week's grocery sale fliers and comparison shop. Work out the unit price for at least 5 items that are advertised by more than one store. Decide on the "best buy".

You may prefer to go to a store and copy down the prices and sizes of different brands of an item that you use. Decide which size in what brand is the best buy. Do this for five items. If the store has the unit price labels on the shelves, the hard work has already been done!

If you are not satisfied with your skill in unit pricing, ask your instructor for assistance.

## Topic B: Decimal Problems

Spend a few minutes reviewing the key words that will help you identify addition, subtraction, multiplication and division problems. Read over some of the problems that you have done in each topic to remind yourself of the patterns to expect for different operations. Carefully review the five steps to use when solving problems (Unit Two, Topic A).

Step 1 Read, find the question.
Step 2 Get the necessary information from the problem. Draw pictures to help do this.

Step 3 Decide on the arithmetic operation.
Step 4 Estimate the answer, using rounded numbers.
Step 5 Solve the problem, using the actual numbers.
a) The weight of an A.T.V. is 293.937 kg . If a hiker, who weighs 62.142 kg packed an extra 68.39 kg , how much would her entire A.T.V. weigh when loaded?

## Estimation:

Actual Solution:
b) The Courtenay town shuttle bus drives a route that is 12.73 km . It drives this route 30 times a day. How many kilometres does the bus drive in one day?

Estimation:

Actual Solution:
c) John's take-home pay is $\$ 952.52$ every two weeks. If $\$ 221.21$ has been deducted (taken off) for income tax, $\$ 24.57$ for employment insurance, and $\$ 22.70$ for the Canada Pension Plan, what is his gross pay? (Gross pay is what he earns before deductions.

Estimation:

Actual Solution:
d) Which is the best buy? Find the unit price for each item, rounded to the nearest cent, and $\underline{\downarrow}$ the best buy.

|  | Item | Amount | Price | Unit price | Best <br> Buy |
| :--- | :--- | :--- | :--- | :--- | :--- |
| i) | Flour | 10 kg bag | $\$ 8.89$ |  |  |
| ii) | Flour | 4 kg bag | $\$ 3.79$ |  |  |
| iii) | Flour | 2.5 kg bag | $\$ 2.69$ |  |  |

e) Mary bought a TV set. She made a down payment of $\$ 75.00$ and then made monthly payments of $\$ 56.19$ for eight months. How much did she pay for the TV set altogether?

## Estimation:

Actual Solution:
f) The total number of employee hours to be paid on the weekly payroll for the Dryer Company was 19600 hours. The average rate of pay was $\$ 9.575$ per hour. How much money was paid out in the payroll that week?

## Estimation:

## Actual Solution:

g) Bill and his wife were on a week-end trip. They spent $\$ 68.25$ for gas, $\$ 74.96$ for motels, $\$ 124.80$ for meals and liquor, $\$ 29.50$ for the show, and $\$ 24.98$ for a gift for his parents who were baby-sitting. How much did they spend?

## Estimation:

Actual Solution:
h) Mr. Swift bought a 7.5 kg turkey for $\$ 18.91$ just before Thanksgiving. What was the cost of the turkey per kg ?

## Estimation:

Actual Solution:
i) Joe's truck holds 94.5 L of gasoline. If he can drive 896 km on that much gasoline, calculate the $\mathrm{km} / \mathrm{L}$ of gasoline for his truck. Answer to the nearest hundredth of a litre.

Estimation:

Actual Solution:
j) Calculate the total cost of having new carpet in the family room which will need 24 square metres $\left(\mathrm{m}^{2}\right)$ to cover the floor. Here are the costs for one square metre: (Note that this is a twostep problem.)

| carpet | $\$ 19.95 / \mathrm{m}^{2}$ |
| :--- | :--- |
| underlay | $\$ 4.50 / \mathrm{m}^{2}$ |
| taxes | $\$ 3.83 / \mathrm{m}^{2}$ |
| labour charges | $\$ 4.75 / \mathrm{m}^{2}$ |

## Estimations:

Actual Solutions:
k) When he bought his new cell phone, Lou paid $\$ 150$ in cash and said he would pay the rest at the end of the month. How much did he have left to pay on his $\$ 319.95$ cell phone?

Estimation:

Actual Solution:

1) Sarah figures that it takes 0.75 m of material to create a crest for a button blanket. How many crests can she make with 8.75 m of material?

## Estimation:

## Actual Solution:

m) Andy bought a shirt for $\$ 29.95$ and a tie for $\$ 13.50$. The HST was $\$ 5.21$.
i) How much did he spend?

Estimation:

Actual Solution:
ii) How much change did he get from his fifty dollar bill?

Estimation:

Actual Solution:
n) In a recent 48 -game season, the Campbell River Storm won 0.625 of their hockey games. How many games did they win? And how many games did they lose? Be sure that your games won and the games lost add up to 48 games when you are finished.

## Estimations:

Actual Solutions:
o) Ann got tired of packing her lunch every day so now she always buys the $\$ 6.25$ lunch from the catering service in the factory where she works. How much did she spend on lunches in the 22 days she worked in October?

## Estimation:

Actual Solution:
p) Jim's online bank statement showed a balance of $\$ 183.65$ before he used his debit card to pay $\$ 24.62$ at the grocery store and $\$ 14.89$ at the pharmacy. What is his new bank balance?

## Estimation:

Actual Solution:
q) If Diane takes a job paying $\$ 28606.60$ a year, what will her monthly salary (before deductions) be? ( 1 year $=12$ months $)$

Estimation:

Actual Solution:
r) Carl's total annual union dues are $\$ 235.75$ If he pays the same amount each month toward his union dues, what does he pay monthly?

## Estimation:

## Actual Solution:

s) What will Lynne pay for 12.8 litres (L) of gasoline at $99.9 \not \subset / \mathrm{L}$ for her new sports car? Round your answer to the nearest cent.

Estimation:

## Actual Solution:

t) Joan earns $\$ 86.25$ for working 7.5 hours. What is her hourly rate of pay?

Estimation:

Actual Solution:
u) Samantha's height and weight have both changed since she was sixteen. Her old height and weight were 160.02 cm and 56.82 kg . Her present height and weight are 165.1 cm and 58.18 kg . Find the increases in her height and weight.

Estimation:

Actual Solution:
v) A car stereo can be purchased for $\$ 199.99$ cash. If you wish to buy it "on time" you must pay $\$ 50.00$ a down payment and make monthly payments of $\$ 27.50$ for six months.
i) How much do you pay if you buy "on time"?
ii) How much do you save if you pay cash?

## Answers to Unit 2 - Topic B

a) Estimation: $300 \mathrm{~kg}+60 \mathrm{~kg}+70 \mathrm{~kg} \mathrm{~kg} \approx 430 \mathrm{~kg}$

Actual Solution: $293.937 \mathrm{~kg}+62.142 \mathrm{~kg}+68.39 \mathrm{~kg}=424.469 \mathrm{~kg}$
The ATV weighed 424.469 kg when loaded.
b) Estimation: $12 \mathrm{~km} \times 30 \mathrm{~km} \approx 360 \mathrm{~km}$ per day

Actual Solution: $12.73 \mathrm{~km} \times 30 \mathrm{~km}=381.9 \mathrm{~km}$
The bus drives 381.9 km a day.
c) Estimation: $\$ 950+\$ 220+\$ 25+\$ 25 \approx \$ 1220$

Actual Solution: $\$ 952.52+\$ 221.21+\$ 24.57+\$ 22.70=\$ 1221.00$
John's gross pay is $\$ 1221.00$.
d)

| Item | Amount | Price | Unit price | Best <br> Buy |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| i) | Flour | 10 kg bag | $\$ 8.89$ | $\$ 0.89$ | $\checkmark$ |
| ii) | Flour | 4 kg bag | $\$ 3.79$ | $\$ 0.95$ |  |
| iii) | Flour | 2.5 kg bag | $\$ 2.69$ | $\$ 1.08$ |  |

e) Estimation: $\$ 60 \times 8+\$ 75 \approx \$ 555$

Actual Solution: $\$ 56.19 \times 8+\$ 75.00=\$ 524.52$
Mary paid $\$ 524.52$ for the TV set.
f) Estimation: 20000 hours $\times \$ 10.00 \approx \$ 200000$

Actual Solution: 19600 hours $\times \$ 9.575=\$ 187670$
Dryer Company paid out $\$ 187670$ for the payroll that week.
g) Estimation: $\$ 70+\$ 75+\$ 125+\$ 30+25 \approx \$ 325$

Actual Solution: $\$ 68.25+\$ 74.96+\$ 124.80+\$ 29.50+\$ 24.98=\$ 322.49$
Bill and his wife spent $\$ 322.49$ on their weekend trip.
h) Estimation: $\$ 20 \div 8 \mathrm{~kg} \approx \$ 2.50$

Actual Solution: $\$ 18.91 \div 7.5 \mathrm{~kg}=\$ 2.52$
The cost of the turkey was $\$ 2.52$ per kilogram.
i) Estimation: $900 \mathrm{~km} \div 90 \mathrm{~L} \approx 10 \mathrm{~km} / \mathrm{L}$

Actual solution: $896 \mathrm{~km} \div 94.5 \mathrm{~L}=9.48 \mathrm{~km} / \mathrm{L}$
Joe's truck uses 9.48 kilometres per litre.

```
j) Estimations: $20 + $5 + $5+ $5 \approx $35
$35\times25 m
Actual Solutions: $19.95 + $4.50 + $3.83 + $4.75 = $33.03
$33.03 < 24 m
The cost to have the new carpet is $792.72.
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k) Estimation: $\$ 320-\$ 150 \approx \$ 170$

Actual Solution: $\$ 319.95-\$ 150=\$ 169.95$
Lou will have $\$ 169.95$ left to pay at the end of the month.

1) Estimation: $9 \mathrm{~m} \div 1 \mathrm{~m} \approx 9 \mathrm{~m}$

Actual Solution: $8.75 \mathrm{~m} \div 0.75=11.6$
Sarah can make 11 crests.
m) i) Estimation: $\$ 30+\$ 14+\$ 5 \approx \$ 49$

Actual Solution: $\$ 29.95+\$ 13.50+\$ 5.21=\$ 48.66$
Andy spent $\$ 48.66$
ii) Estimation: $\$ 50-\$ 49 \approx \$ 1$

Actual Solution: $\$ 50-\$ 48.66=\$ 1.34$
Andy got $\$ 1.34$ change from his $\$ 50$.
n) Estimations: $50 \times 0.50 \approx 25$ games won
$50 \times 0.50 \approx 25$ games lost (or $50-25=25$ )
Actual Solutions: $48 \times 0.625=30$ games won
$48 \times 0.375=18$ games lost $($ or $48-30=18)$
o) Estimation: $20 \times \$ 6 \approx \$ 120$

Actual Solution: $22 \times \$ 6.25=\$ 137.50$
Ann spent $\$ 137.50$ on lunches in October.
p) Estimation: $\$ 180-\$ 20-\$ 10 \approx \$ 150$

Actual Solution: \$183.65-\$24.62-\$14.89=\$144.14
Jim's new cheque book balance is $\$ 144.14$.
q) Estimation: $\$ 30000 \div 10 \approx \$ 3000$

Actual Solution: $\$ 28606.60 \div 12=\$ 2383.88$
Diane's monthly salary will be $\$ 2383.88$.
r) Estimation: $\$ 250 \div 10 \approx \$ 25$

Actual Solution: $\$ 235.75 \div 12=\$ 19.65$
Carl's will pay $\$ 19.65$ monthly.
s) Estimation: $13 \mathrm{~L} \times \$ 1.00 \approx \$ 13.00$

Actual Solution: $12.8 \mathrm{~L} \times 99.9 \phi=1278.7 \phi$ or $\$ 12.79$
Lynne will pay $\$ 12.79$ for gasoline.
t) Estimation: $\$ 90 \div 8$ hours $\approx \$ 11.25$

Actual Solution: $\$ 86.25 \div 7.5$ hours $=\$ 11.50$
Joan's hourly rate of pay is $\$ 11.50$.
u) Estimation: $165 \mathrm{~cm}-160 \mathrm{~cm} \approx 5 \mathrm{~cm}$
$58 \mathrm{~kg}-57 \mathrm{~kg}=1 \mathrm{~kg}$
Actual Solution: $165.1 \mathrm{~cm}-160.02 \mathrm{~cm}=5.08 \mathrm{~cm}$
$58.18 \mathrm{~kg}-56.82 \mathrm{~kg}=1.36 \mathrm{~kg}$
Samantha's height has changed by 5.08 cm and her weight has changed by 1.36 kg .
v) i) $\$ 27.50 \times 6=\$ 165$
$\$ 165+50=\$ 215$ If you pay "on time" you will pay $\$ 215$.
ii) $\$ 215-\$ 199.99=\$ 15.01$ If you pay cash, you will save $\$ 15.01$.
a) A machinist has to bore (drill) a hole through 2.6 cm of steel. He has drilled 1.25 cm . How much farther must he drill?

Estimation:

Actual Solution:
b) Cliff bought 15.5 kilograms of chicken feed for $\$ 0.98 / \mathrm{kg}$. That feed will last his chickens for 12 days. How many kilograms of this chicken feed do his chickens eat every day?

Estimation:

Actual Solution:
c) Mrs. Williams bought 6.5 m of fabric to make two dresses. The fabric was on sale for $\$ 8.95$ a metre and as part of the sale the store was paying all the taxes. How much did she pay?

## Estimation:

## Actual Solution:

d) The bus boys (table clearers) at the local restaurant only work while the dining room is busy, so they have to record their hours. Last week Jason worked 4.5 hours on Monday, 3.25 hours on Tuesday, 5.75 hours on Wednesday, none on Thursday or Friday, but 8.8 hours on Saturday. Find the total of the hours that Jason worked clearing dishes at the restaurant last week.

## Estimation:

Actual Solution:
e) Karla gets $\$ 12.75$ per hour when she works overtime. Yesterday she worked 3.25 hours overtime. How much money did she make for that time?

## Estimation:

## Actual Solution:

## Answers to Topic B Self-Test

a) Estimation: $3 \mathrm{~cm}-1 \mathrm{~cm} \approx 2 \mathrm{~cm}$

Actual Solution: $2.6 \mathrm{~cm}-1.25 \mathrm{~cm}=1.35 \mathrm{~cm}$
He has to drill 1.35 cm farther.
b) Estimation: $16 \mathrm{~kg} \div 10$ days $\approx 1.6 \mathrm{~kg}$

Actual Solution: $15.5 \mathrm{~kg} \div 12$ days $=1.292 \mathrm{~kg}$
Cliff's chickens eat 1.292 kg of chicken feed every day.
c) Estimation: $5 \mathrm{~m} \times \$ 10 \approx \$ 50$

Actual Solution: $6.5 \mathrm{~m} \times \$ 8.95=\$ 58.18$
Mrs. Williams paid $\$ 58.18$ for the fabric.
d) Estimation: $5+3+6+9 \approx 23$ hours

Actual Solution: $4.5+3.25+5.75+8.8=22.3$ hours
Jason worked 22.3 hours last week.
e) Estimation: $\$ 13 \times 3$ hours $\approx \$ 39$

Actual Solution: $\$ 12.75 \times 3.25$ hours $=\$ 41.44$
Karla made $\$ 41.44$ for that time.

## Unit 5 Review

Use the skills you learned in this unit to figure out the best buy:

|  | Item | Amount | Price | Unit <br> price | Best Buy |
| :--- | :--- | :--- | ---: | :--- | :--- |
| a) | Dish soap | 740 ml | $\$ 3.40$ |  |  |
|  | Dish soap | 4.3 L | $\$ 16.10$ |  |  |
| b) | Apples | Bag of 7 | $\$ 4.99$ |  |  |
|  | Apples | 1 | $\$ 0.75$ |  |  |
| c) | Lined paper | 500 sheets | $\$ 4.49$ |  |  |
|  | Lined paper | 50 sheets | $\$ 1.99$ |  |  |


| d) | Dog food | 1 can | $\$ 2.59$ |  |  |
| :--- | :--- | :--- | ---: | :--- | :--- |
|  | Dog food | 12 pack | $\$ 27.97$ |  |  |
| e) | Bread | 3 pack | $\$ 8.99$ |  |  |
|  | Bread | 1 loaf | $\$ 2.49$ |  |  |
| f) | Can of soup | Case of 9 | $\$ 10.99$ |  |  |
|  | Can of soup | 3 for the price of 2 | $\$ 2.50$ |  |  |
| g) | Light bulbs | Pack of 4 | $\$ 1.89$ |  |  |
|  |  |  |  |  |  |

## Answers to Review:

|  | Item | Amount | Price | Unit price | Best Buy |
| :---: | :---: | :---: | :---: | :---: | :---: |
| a) | Dish soap | 740 ml | \$3.40 | 4.59/L |  |
|  | Dish soap | 4.3 L | \$16.10 | 3.74/L | $\checkmark$ |
| b) | Apples | Bag of 7 | \$ 4.99 | 0.71 each | $\checkmark$ |
|  | Apples | 1 | \$0.75 | 0.75 each |  |
| c) | Lined paper | 500 sheets | \$4.49 | $\$ 00.00898$ <br> /sheet | $\checkmark$ |
|  | Lined paper | 50 sheets | \$1.99 | $\$ 0.0398$ <br> /sheet |  |
| d) | Dog food | 1 can | \$2.59 | \$2.59/can |  |
|  | Dog food | 12 pack | \$27.97 | \$2.33/can | $\checkmark$ |
| e) | Bread | 3 pack | \$8.99 | \$3.00/loaf |  |
|  | Bread | 1 loaf | \$2.49 | \$2.49/loaf | $\checkmark$ |
| f) | Can of soup | Case of 9 | \$ 10.99 | \$1.22/can |  |
|  | Can of soup | 3 for the price of 2 | \$ 2.50 | \$0.83/can | $\checkmark$ |
| g) | Light bulbs | Pack of 4 | \$1.89 | \$0.47/bulb | $\checkmark$ |
|  | Light bulbs | Econo pack of 12 | \$5.97 | \$0.50/bulb |  |

## Test time!

Please see your instructor to get your practice test.

When you are confident, you can write your unit 5 test.

## Congratulations!

