

From farm to fridge

Let's learn about dairy



**The food path to produce milk
and other dairy products**

For Grade R to Grade 3
in the
**Foundation
Phase**



An Initiative by the
Consumer Education Project of Milk SA

Teacher's Guide

● Easy to use ● Colour coded ● Complements the CAPS curriculum

Accompanied by a poster and handouts



About this guide

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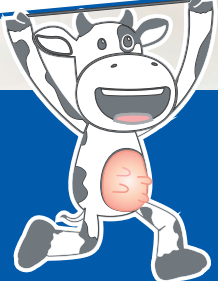
At the Consumer Education Project of Milk SA we are passionate about sharing the goodness of milk and other dairy products with consumers. Milk and dairy contain nine important nutrients needed to build strong, healthy bodies.

Milk and other dairy products are also the best dietary sources of calcium, a mineral that is essential for building strong bones and healthy teeth. As calcium intake during the childhood and adolescent years determines bone strength for the rest of one's life, we want to encourage young learners to make the most of the goodness of milk.

You can use this guide to complement your teaching of Life Skills in the Foundation Phase.

- The content *aligns with CAPS learning content* that focuses on topics such as dairy farming, farm animals and dairy as part of a healthy diet.
- The information is *concise*. Each topic fits on one page so that you have everything you need neatly in one place.
- The information is *easy to understand and supported by photos* to help you prepare for your lessons efficiently and with enthusiasm.
- Important *subject terms are highlighted* in the text and explained in a *glossary* to help build learners' vocabulary. Look out for the 'Word box' feature on every page.
- You can find useful hints and interesting information about dairy in the 'Take note' feature. Look out for it at the bottom of every page.
- The content is colour coded per grade so that you can navigate easily to the information most relevant for your class. Look out for the colour strip at the bottom of every page.
- Engaging activities are included, and more can be downloaded from www.dairykids.co.za

Supermoo points you to engaging activities for your learners.



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WORD BOX

These are important words about the topic, explained in the glossary on page 12.

TAKE NOTE:

We give useful hints and interesting information about dairy.

Dairy farming

Milk comes from mammals such as cows or goats. Milk and the products made from milk are called **dairy**. Farmers who rear animals for milking are dairy farmers.

Milk from cows and goats

Cows and goats eat grass or hay. They need enough feed and fresh water every day. Cows and goats have four stomachs to help them digest their grassy feed properly. A dairy cow usually calves once a year and she gives milk for about 10 months afterwards. A dairy goat produces milk for about 9 months after **kidding**. Milk is stored in the animal's **udder**. A cow's udder has four teats and a goat's udder has two.

Milking

A cow or goat has to be milked at least once a day. Milking can be done by hand or by machine in a room called a milking parlour. Most commercial dairy farmers use a milking machine because it is faster and more **hygienic** than milking by hand.

A milking machine has up to four teat cups and a vacuum pump. The cups are gently connected to the animal's udder. The vacuum pump squeezes the milk from the udder. The milk is pumped into a refrigerated storage tank so that it stays fresh. After milking, the animal is taken back to the barn to eat or walk around.

The farmer has to make sure that milking is hygienic to prevent germs from getting into the milk. The udder is washed thoroughly before milking. All the parts of the milking machine are made from materials that are easy to clean so that the machine can be cleaned thoroughly before and after milking.

Taking dairy to consumers

Refrigerated tanker trucks take milk from the farm to a processing plant. Here the milk is **pasteurised** to make it safe for use. Pasteurisation kills any germs that may be in the milk. In South Africa, all milk has to be pasteurised.

Once pasteurised, the milk is packed or used to make dairy products such as yoghurt, amasi (maas) or cheese. We can buy packaged milk and other dairy products in shops.



WORD BOX

dairy
hygienic
kidding
pasteurise
udder



TAKE NOTE:

Always store milk below 5 °C.

Dairy products

WORD BOX

churn
curds
ferment
rennet



We use milk to make many different dairy products.

Yoghurt has a thicker texture than milk. It is made by adding good bacteria to milk. The bacteria break down the sugar found naturally in milk (lactose). We say the milk is **fermented**.

We can buy yoghurt in tubs of various sizes. The yoghurt we buy in a bottle is usually drinking yoghurt. We can buy unflavoured (plain) yoghurt or we can enjoy yoghurt with added fruit, flavourants, sugar or artificial sweeteners.



There are many types of **cheese**. To make cheese, **rennet** is added to fermented milk. This lets the milk form lumps called **curds**. The watery part of the milk is drained off, so that only the curds are left. The curds are then pressed together into a solid form. Sometimes colourants are added to cheese. The cheese can be left for several months to develop a strong flavour.



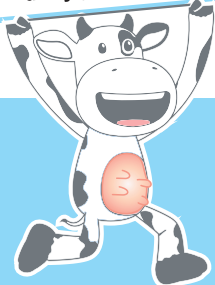
Amasi is a popular traditional dairy drink. It is made by adding healthy bacteria to milk to let it ferment. Amasi has a smooth, thick texture and tastes sour. We can drink amasi just as it is or add it to pap (maize meal porridge).



Buttermilk is similar to amasi, but made using a different type of bacteria. Buttermilk tastes sour. It can be somewhat lumpy. Buttermilk is often used for baking rusks or muffins.

Butter is made from cream, which is the fat from milk. The cream is **churned** until it thickens and then pressed into rectangular blocks. The blocks are cooled to let them set into a solid form. Butter contains mostly fat (80%), some water (about 16%) and a small amount of milk solids (3–4%). Always keep butter in a cool place so that it does not turn bad.

See page 8
for an activity on
dairy products.



TAKE NOTE:

Many of the ice creams produced today are not made from milk and should not be considered as dairy. They contain lots of sugar and fat and should best be eaten only occasionally.

Dairy processing

Dairy is part of a healthy diet. South African dairy farmers and processors work hard to bring healthy, safe milk from the farm to our fridges.

From farm to fridge

Cows eat grass and drink lots of water to make milk. A cow's milk is pumped directly into a refrigerated storage tank as she is milked. A tanker truck then collects the milk from the farm and takes it to the processing plant. Here the milk is first **pasteurised** and then usually **homogenised**. Homogenisation ensures that the fat is mixed evenly throughout the milk for a consistent texture and taste. After this step, the milk is packaged and taken to shops. Getting milk from the farm to a shop can take about 2 days. The milk is refrigerated the whole time to keep it fresh. We call this the **cold chain**.

Keeping milk fresh and safe

Milk has to be handled hygienically all the way from the farm to the fridge to keep it healthy and safe. At the farm, the cow's udder is washed well before milking and all the milking equipment is cleaned thoroughly every day. Milk producers also take a sample of each batch of milk to do quality checks.

Heat treatment is the best way to keep milk safe. The most common form of heat treatment is pasteurisation, which involves heating milk to 72 °C for 15 seconds and then cooling it rapidly to 4 °C. This process kills any germs that may be in the milk.

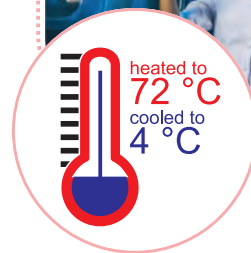
Another process is ultra-high temperature (UHT) treatment. This involves heating the milk to a high temperature (135–150 °C) and then cooling it down rapidly. This process is used to produce what is commonly known as **long-life milk**.

We should always keep fresh milk in the fridge and try to use an opened container within 4–7 days. Once UHT milk has been opened, we should handle it the same way as fresh milk. Remember also to look at the indicated **shelf life** of the milk. The sell-by date printed on the container shows until when the milk will be good in its unopened form.



WORD BOX

cold chain
homogenise
long-life milk
pasteurise
shelf life



TAKE NOTE:

Raw milk is milk just as it comes from the cow and has not been heat treated.

Raw milk should always be heated before use. Raw milk may not be sold unless approved by health authorities.

WORD BOX

full-cream milk
lactose-
intolerance
nutrients



Why dairy is healthy

Dairy is full of many important **nutrients** that help to keep our bodies healthy and strong. Research shows that the goodness of eating dairy comes not only from the type of nutrients in milk but also from the way they work together as a team.

dairyTM
3-A-DAY EVERY DAY



Every portion of dairy contains the following nutrients:

Protein: Dairy is an excellent source of high-quality protein. Protein helps our bodies to grow, build strong muscles and repair wounds or damaged tissue. The protein in dairy also helps to keep us feeling full for longer and is an affordable source of animal proteins when households cannot afford meat.

Calcium: Dairy is the best source of dietary calcium. Together with magnesium and phosphorus, it helps to build strong bones and teeth. It is especially important that children and adolescents get enough calcium every day, as maximum bone development occurs during this period. Three to four servings of dairy per day will give them almost all the calcium they need.

Vitamins A, B2 and B12: These vitamins are important for keeping our brains sharp, building a strong immune system and keeping our skin and eyes healthy. Remember that vitamin A is dissolved in the fat component of milk, so it is best for children to drink **full-cream milk**.

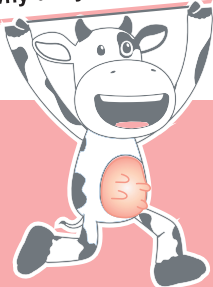
Carbohydrates: Dairy contains the carbohydrate lactose, which is also called milk sugar. Our bodies need carbohydrates for energy. The sugar in dairy is released gradually, which helps to control the body's blood sugar level.

Some people suffer from a condition called **lactose intolerance**. They often feel uncomfortable after drinking milk, because they cannot digest lactose. However, people who are lactose intolerant can build up their tolerance by drinking small amounts of milk at a time or using milk with other food (e.g. with breakfast cereal or porridge, in a white sauce or in tea or coffee). They can also enjoy fermented products such as amasi, yoghurt and cheese without any discomfort.

See page 9
for an activity on
why dairy is healthy.

Grade 1

4



TAKE NOTE:

Choose one of these options as a portion of dairy:



- 1 glass of milk (250 ml)
- 1 glass of amasi (200 ml)
- 2 small tubs of yoghurt (200 g)
- 2 slices of cheese (40 g)

Dairy cows and goats

Cows and goats are **farm animals**. They give us milk, which we can drink or use to make dairy products such as yoghurt and cheese.

Daisy the dairy cow

Daisy is a Holstein cow. She started giving milk when she had her first baby, called a **calf**. Daisy moos to her calf or other cows.

A Holstein cow like Daisy has a black-and-white hide and can produce approximately 25 litres of milk a day.

Daisy has many dairy cow friends around South Africa, including Guernsey, Ayrshire and Jersey cows. Guernsey and Ayrshire cows both have brown-and-white hides, while a Jersey cow is light brown and somewhat smaller than the other breeds.

Dairy cows like Daisy eat grass, hay or **silage**. Cows are **ruminants**. Daisy spends about 8 hours a day chewing **cud** to make sure that she digests her food properly. Daisy's farmer also puts out **salt licks** so that she can get enough minerals to keep her healthy.

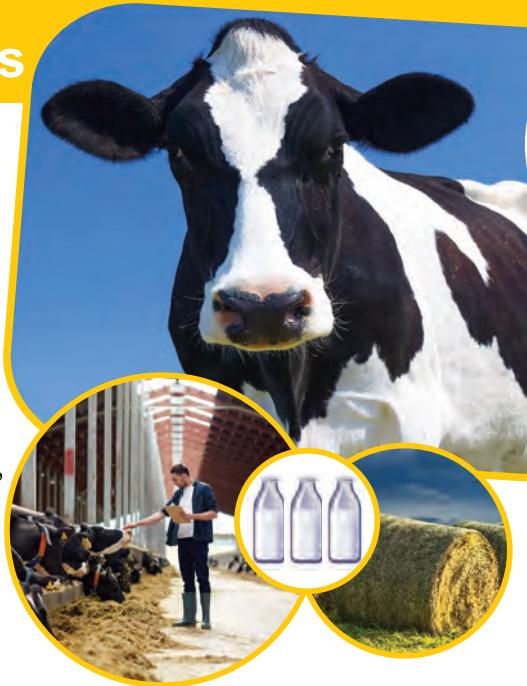
Daisy is a healthy cow. She is alert, has bright eyes and moves about easily. Her nose and muzzle are moist and her coat is smooth and shiny. Daisy's farmer checks on her and the rest of her herd every day to make sure that they are well. He also trims her hooves twice or three times a year. This keeps her feet healthy so that she can walk around comfortably all day.

Gabi the goat

Gabi is a Saanen goat. She has short, fine white hair. Other popular dairy goat breeds are the Toggenburg and British Alpine. Toggenburgs are coffee-brown. British Alpine goats have a shiny black coat. An adult female goat is called a **doe** and her baby is called a **kid**.

A dairy goat like Gabi can typically produce about 3 litres of milk a day. Dairy goats are also ruminants, just like cows, but unlike cows, goats eat with their lips and not their tongues.

Gabi eats **fodder** such as hay or lucerne, which her farmer chops up and mixes with vitamins and other supplements. Gabi loves it when people enjoy her rich, creamy milk or eat the cheese and yoghurt made from it.



WORD BOX

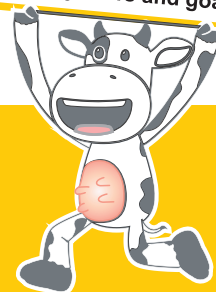
calf
cud
doe
farm animal
fodder
kid
ruminant
salt lick
silage



See page 10
for an activity on
dairy cows and goats.

TAKE NOTE:

Many different mammals can produce milk for us. Elsewhere in the world people drink milk from buffalo, sheep, camels, donkeys and reindeer.



Dairy in our daily diet

Dairy contains nine important nutrients we should all eat every day.

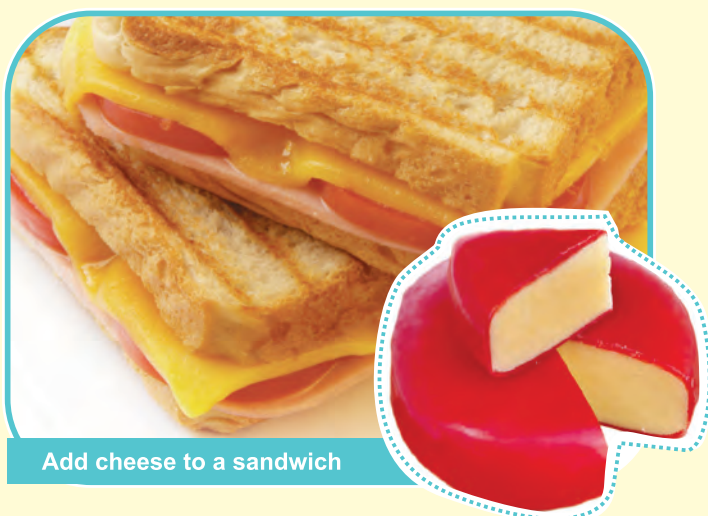
Add milk to cereal or porridge



Milk

We can buy milk in many forms, all offering the same nutritional goodness.

- Many people enjoy fresh, pasteurised milk, which comes in different fat options. Full-cream milk typically contains 3.5 g fat per 100 ml, whereas **skimmed milk** is virtually fat free.
- Unopened UHT milk (also called long-life milk) can be stored for a long time, as indicated on the package. But once opened, it must be treated like fresh milk and be kept refrigerated and used within 4–7 days.



Add cheese to a sandwich

Cheese

We can choose from many different types of cheese.

- Although all cheeses are made according to the same basic process, each type of cheese has a distinct texture, flavour or appearance. Cheese contains almost no **lactose** and is a good dairy option for people who are **lactose intolerant**.
- Cheddar can be white or yellow. They taste the same and are made according to a similar process. The only difference is that a natural, plant-based colourant called **annatto** is added to the cheese to make it yellow.

Use yoghurt or cream cheese as a topping for crumpets or French toast



Yoghurt, drinking yoghurt and amasi

These are all **fermented** milk products.

- The fermentation process causes the milk to thicken and develop a characteristic sour taste. Yoghurt is a good source of protein, calcium, potassium, vitamins A, B12 and B2, magnesium, phosphorus and zinc. Sugar, sweeteners, fruit or fruit flavours can be added, making yoghurt tasty and a perfect snack to enjoy with or between meals.

TAKE NOTE:

Plant-based drinks are made from nuts or grains and are not real milk. They do not have the same nutritional value as dairy milk.



Three to four servings of dairy every day will give children and teenagers almost all the calcium they need to build strong bones and stay healthy.

It is easy to make dairy part of a healthy, balanced diet every day.



- Milk powder is a dry, powdered form of pasteurised milk. Simply mix it with clean water in the ratio stated on the package to get liquid milk. Because you can prepare only as much as you need at a time, milk powder is a useful option when you do not have a fridge to store fresh milk. Once prepared it must be refrigerated.
- Children love flavoured milk. Although some sugar has been added, flavoured milk provides the same nine essential nutrients as unflavoured milk. Flavoured milk is usually heat treated so that it has a long shelf life.

Choose flavoured milk as a recovery drink after sport.
Include a bottle of flavoured milk in a lunch box.
Have a cup of warm milk as a comforting drink before bedtime.

WORD BOX

annatto
cultures
ferment
lactose
lactose-intolerant
skimmed-milk



- Gouda and Mozzarella have a mild flavour and are popular choices for sandwiches, toppings or sauces.
- Emmental cheese is full of holes. This is because the bacterial **cultures** used in making the cheese produce gas bubbles, which then become trapped in the curd during ripening. Emmental has a sweet, nutty flavour and melts easily.
- Processed cheese is cheese that has been heated and blended with butter or oil and flavourants or colourants. It is easy to spread or cut. Processed cheese can be stored for longer than natural cheese.

Cheese fills you up and makes you feel fuller for longer.
Eat a piece of cheese directly after a meal for healthy teeth.
Cheese is a good source of vitamin A, which helps to maintain good eyesight.



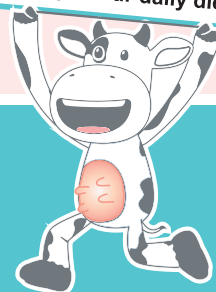
- Drinking yoghurt is typically somewhat runnier than yoghurt in a tub and is usually packaged in a bottle or carton. The fat content of yoghurt depends on the fat content of the milk used to make the yoghurt.
- Yoghurt contains less lactose (milk sugar) and is suited for people who are lactose intolerant.

Choose amasi, milk, flavoured milk or drinking yoghurt as an on-the-go snack.
Use yoghurt and fresh fruit to make a delicious fruit smoothie.
Eat yoghurt as a snack between meals.

See page 11
for an activity on
dairy in our daily diet.

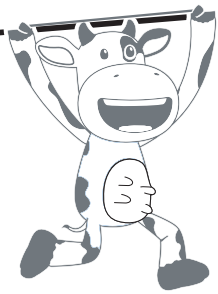
TAKE NOTE:

Coffee creamer is not the same as milk powder. It is made from vegetable fats and does not provide nutrients such as protein and calcium. Coffee creamers cannot replace milk in the diet.

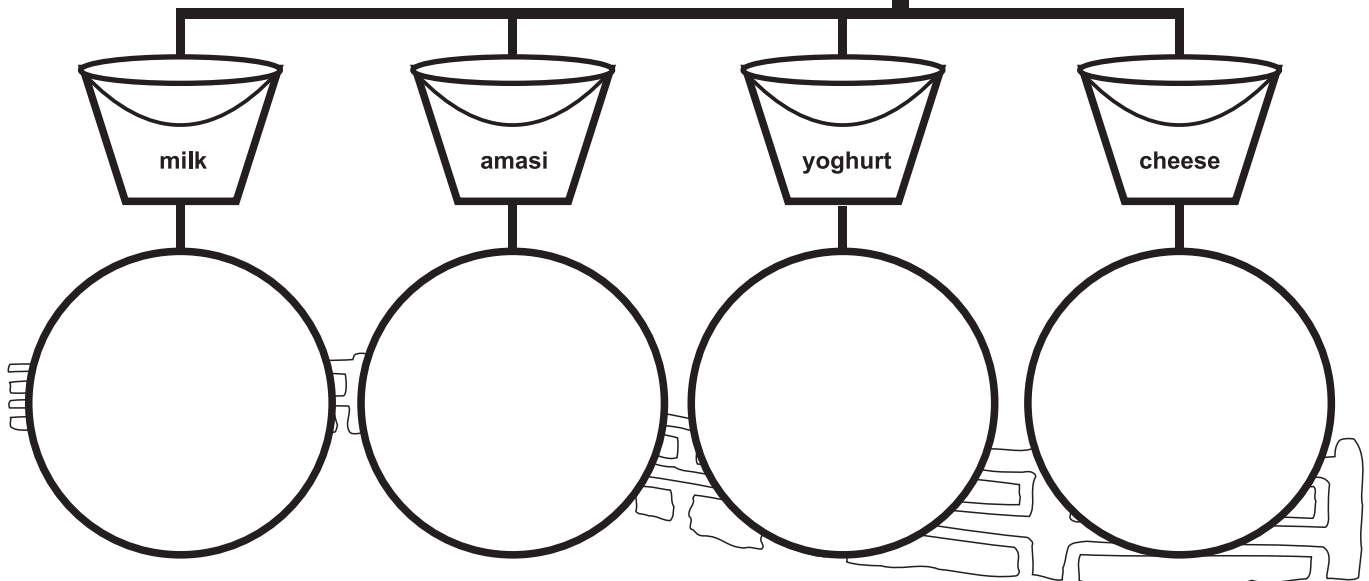
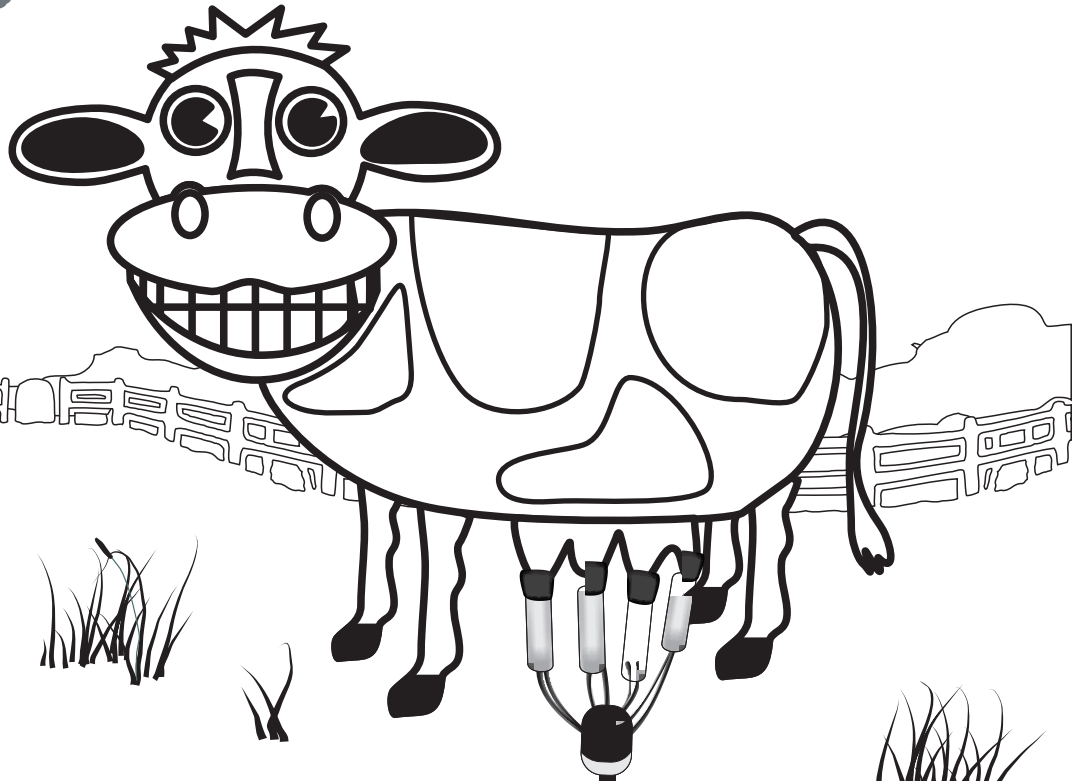


Grade R - Activity

Dairy products

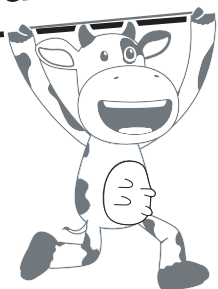


Colour in the cow.
See what products can be produced from her milk.
Draw or paste a picture of
milk, amasi, yoghurt and cheese
into the circles.

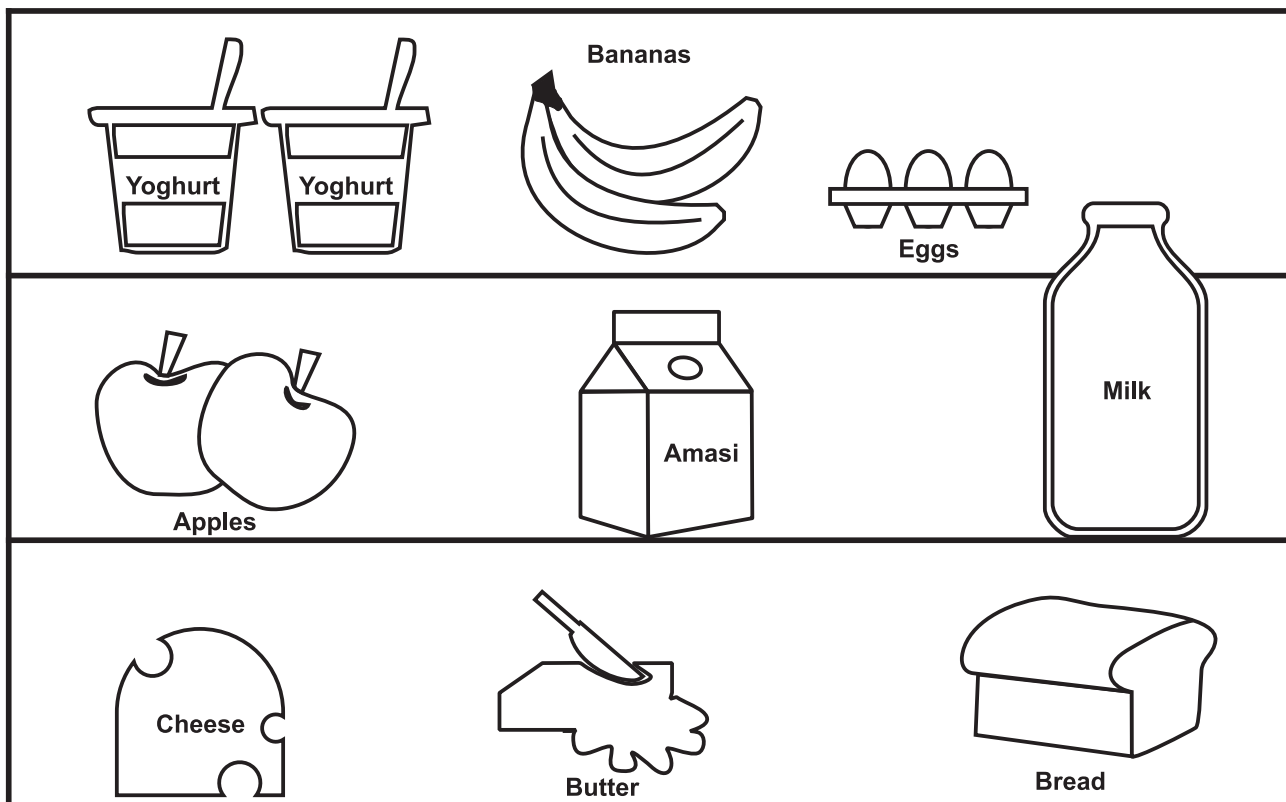


Grade 1 - Activity

Why dairy is healthy

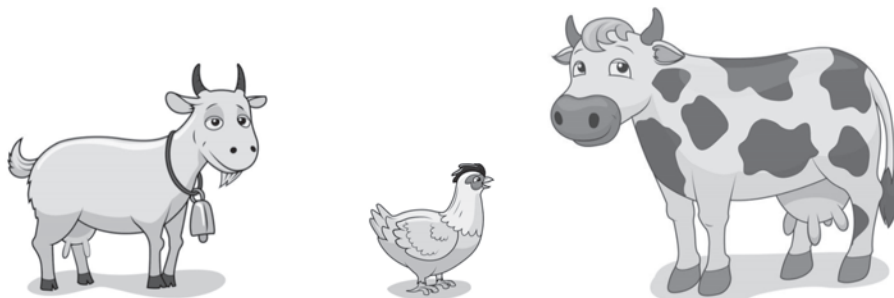


Milk is full of goodness. It builds strong bones.
 It keeps our teeth healthy. It helps us become strong!
 Milk is used to make many other good foods.



1. Circle the items in the cupboard that come from milk. Colour them in.
2. Circle the animals that give you the milk you drink.
3. Which is your favourite dairy product? Why?

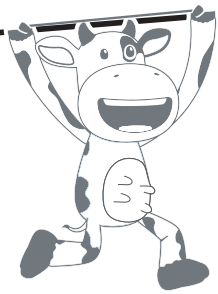
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From farm to fridge. Let's learn about dairy. The food path to produce milk and other dairy products.
 An Initiative by the Consumer Education Project of Milk SA
www.dairykids.co.za

Grade 2 - Activity

Dairy cows and goats



Cows and goats are dairy animals. See if you can find these 10 words about cows and goats on the farm:

silage	ruminant	hooves	doe	fodder
Guernsey	kid	muzzle	cud	calf

Circle all the words you find.

k	s	i	l	a	g	e	o	g	h
d	x	p	a	b	c	r	e	u	i
r	u	m	i	n	a	n	t	e	o
d	u	u	q	z	l	b	g	r	x
c	i	z	x	i	f	h	u	n	f
u	y	z	h	o	o	v	e	s	o
d	w	l	a	g	f	t	k	e	d
a	g	e	k	q	m	u	k	y	d
x	r	a	d	o	e	k	i	p	e
k	i	a	p	b	m	t	d	u	r



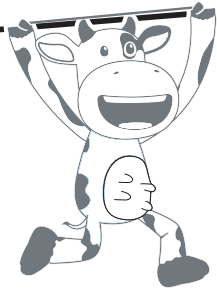
Moo moo Gabi Goat, have you any milk? I am Daisy Cow with many litres full.

De de Daisy Cow, I give tasty milk, 1 litre, 2 litres 3 litres full.



Grade 3 - Activity

Dairy in our daily diet



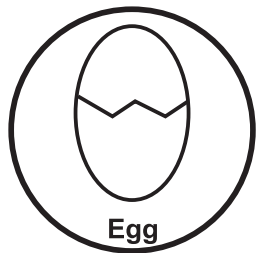
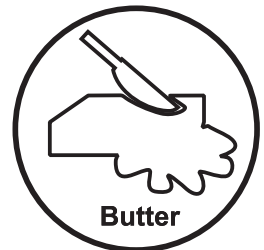
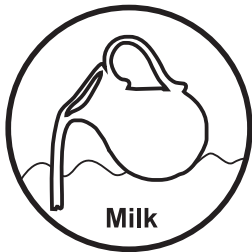
Help Lucy to make a peanut butter smoothie for an after-school snack.

Add ingredients to the blender by drawing arrows from the products she will need. Colour in the products.

She will need:

- 1 banana
- 2 tablespoons peanut butter
- ½ cup yoghurt
- ½ cup milk

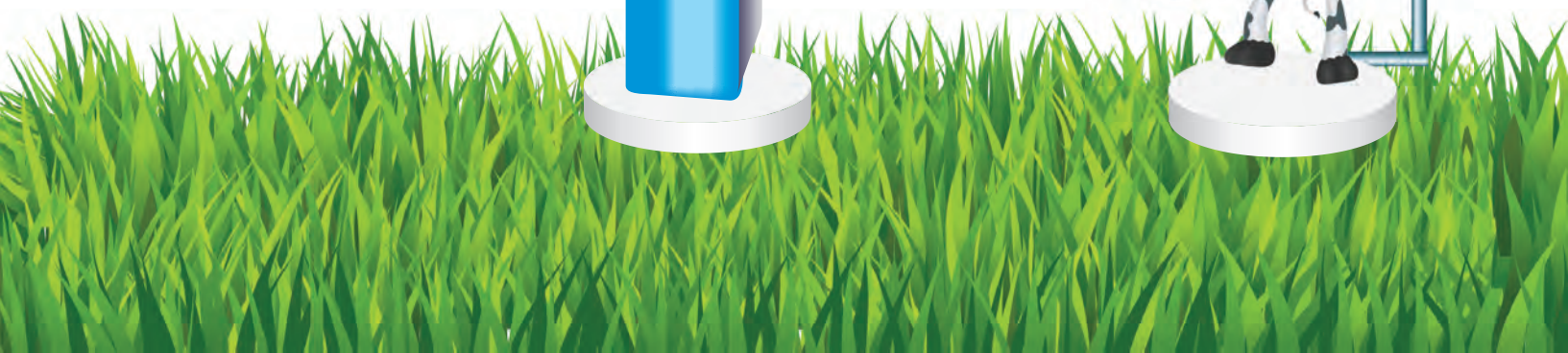
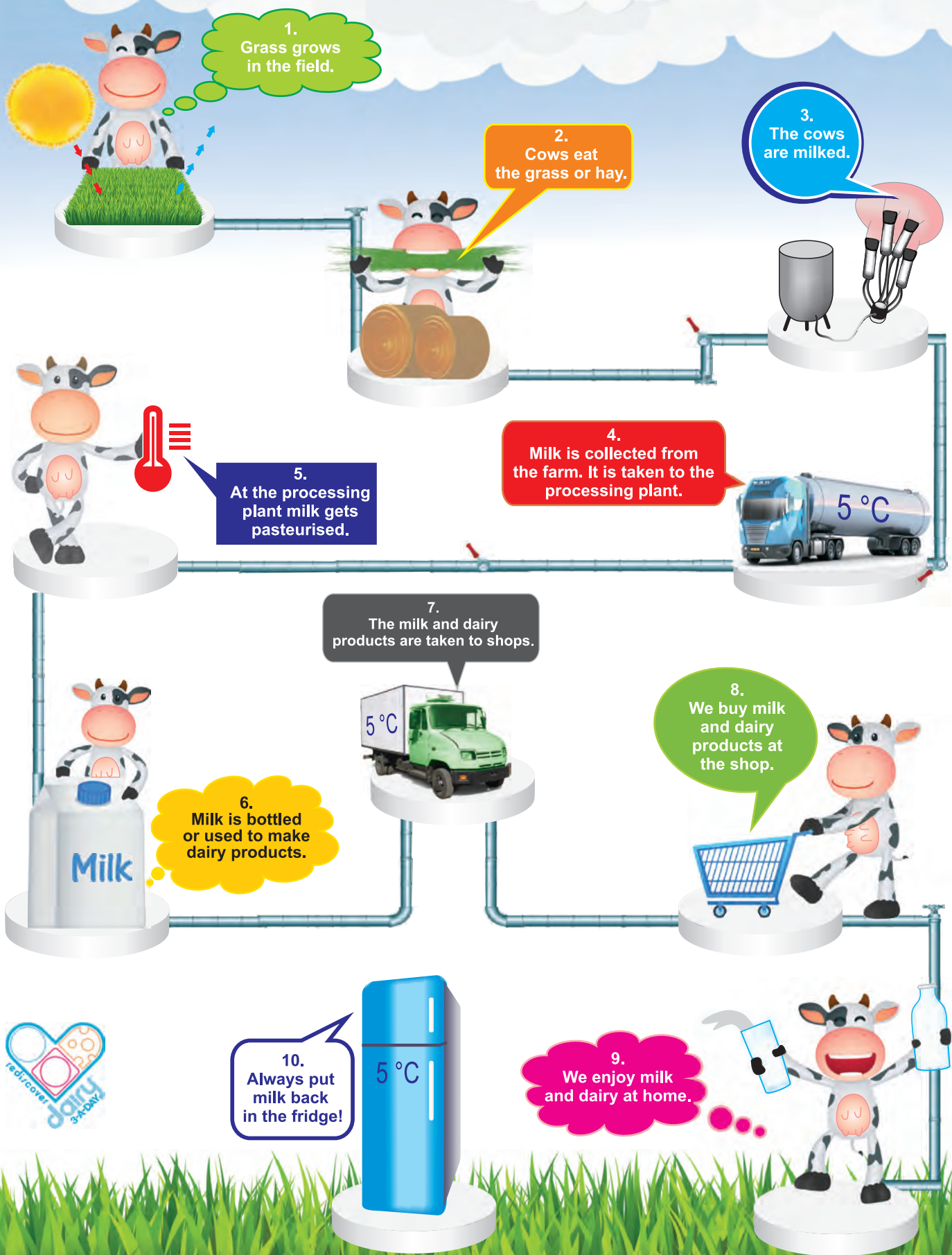
SMOOTHIE



Use this glossary to help build your learners' vocabulary and explain terms easily.

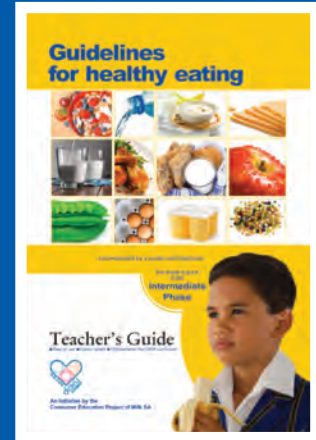
annatto:	a natural food colourant, used to give cheese a yellow colour
calf:	a baby cow
churn:	to shake or whisk cream until it thickens
cold chain:	a series of steps in the supply process during which the product is always refrigerated
cud:	partially digested plant material that a cow chews again
cultures:	live beneficial bacteria added to food
curds:	the thickened solids formed when milk starts to ferment during cheese-making
dairy:	milk and products made from milk; milk from cows or goats is most commonly used
doe:	a female goat
farm animal:	animal raised on a farm to produce food for humans
ferment:	to change sugar into a different chemical structure during a biological process
fodder:	dried hay or straw eaten by goats and other ruminant farm animals
full-cream milk:	milk that contains about 3.5 g fat per 100 ml
homogenise:	to mix the creamy part of milk evenly into the rest of the milk
hygienic:	clean and free of disease-causing agents
kid:	a baby goat
kidding:	giving birth to a baby goat (kid)
lactose:	the type of sugar that occurs naturally in milk
lactose intolerance:	the inability of the body to digest lactose (milk sugar)
long-life milk:	milk that has been heat treated so that it can be stored unrefrigerated for a long time while sealed
nutrients:	substances in food needed by the body to stay healthy
pasteurise:	to heat a food briefly to kill any harmful bacteria
rennet:	a substance used to let milk curdle during cheese-making
ruminant:	an animal that brings up partially digested food from its stomach and chews it again
salt lick:	a mineral supplement given to cows and goats
shelf life:	the period for which a food item will stay good for consumption
silage:	grassy feed for cows, which has been stored and compacted without being dried first
skimmed milk:	milk that contains less than 0.5 g fat per 100 ml (also called fat-free milk)
udder:	a large gland in a cow or goat that produces and stores milk

From farm to fridge: the food path to produce milk



About the Consumer Education Project of Milk SA

The Consumer Education Project of Milk SA is a voluntary, non-profit organisation set up to promote the development of the dairy industry. Its members are the Milk Producers Organisation and the SA Milk Processors Organisation. The Project communicates the health and nutritional benefits of dairy to consumers and health professionals through various communication channels.



As part of our school programme, the Consumer Education Project of Milk SA developed learning material aimed at learners in the:

- **Foundation Phase – For Grade R to Grade 3:**
From farm to fridge
- **Intermediate Phase – For Grade 5 and Grade 6:**
Guidelines for healthy eating

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- **How to obtain a copy:**
Hard copies can be obtained from the Consumer Education Project of Milk SA by sending an email to info@rediscoverdairy.co.za
 - All material can be downloaded from www.dairykids.co.za



dairyTM **EVERY**
3-A-DAY **DAY**

An Initiative by the
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