



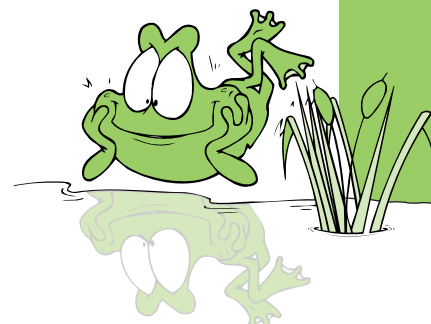
Extras - Contents

For the teacher

Record Sheet	92
Urban Stormwater Quiz	93
Bits And Pieces	94
Stormwater Photos	95
Certificates	96

For students

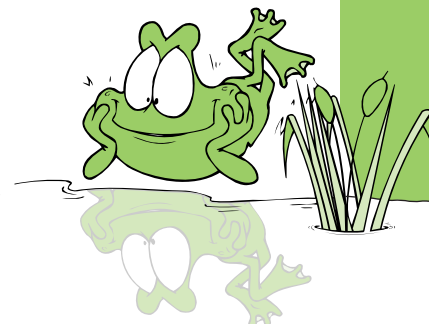
Stormwater Booklet Cover	97
Stormwater And Me	98
Stormwater Crossword	99
Stormwater Find-a-Word	100
Acrostic Poem	101
Stormwater Mini Tasks	102
Brain Boosters	103
Stormwater Cartoons	104
Spot The Difference	105
Stormwater To Scale	107
Link It All Together	108
Recycle City	109
Stormwater Survey	111
Stormwater Students Mini Tasks	116



Urban Stormwater Quiz

Use the following cards to write stormwater quiz questions in preparation for a fun quiz.

<p>Q Most urban stormwater is treated or untreated before it flows into a waterway?</p> <p>A Untreated</p>	<p>Q What is urban stormwater?</p> <p>A Runoff from hard surfaces in towns that enters street drains.</p>	<p>Q Name three reasons why stormwater drains have water flowing in them when it isn't raining.</p> <p>A eg. Water from sprinklers, washing the car, broken water main, hosing out a drain, illegal discharges from sewer.</p>
<p>Q Why might a deciduous tree (drops leaves in winter) cause pollution?</p> <p>A eg. Rotting leaves use up the oxygen in water, blocks drains and waterways, and native animals can't eat the leaves.</p>	<p>Q How many cigarette butts are discarded in Bendigo each week?</p> <p>A About 1.8 million</p>	<p>Q How long does it take for a cigarette butt to break down?</p> <p>A Approximately 15 years, however when immersed in water 2 years.</p>
<p>Q Is water that goes down your sink and shower urban stormwater?</p> <p>A No, it is sewage.</p>	<p>Q Name three types of urban stormwater pollution.</p> <p>A eg. Vegetation, Litter, Dirt, Droppings, Salt.</p>	<p>Q Name three invisible pollutants in stormwater</p> <p>A eg. Nutrients, salt, pesticides, oils.</p>
<p>Q Which large river do almost all stormwater drains in the North Central Region eventually flow to?</p> <p>A The Murray River</p>	<p>Q Name three impervious surfaces regularly found in towns</p> <p>A eg. Concrete, roofs, roads, footpaths and carparks.</p>	<p>Q What percentage of rainfall in towns can become urban stormwater</p> <p>A Up to 98%</p>
<p>Q How can pollution in urban stormwater drains be reduced?</p> <p>A eg. Use litter traps, install wetlands, pick up rubbish.</p>	<p>Q What types of surfaces reduce urban stormwater runoff?</p> <p>A eg. Parks, gardens, vegetated areas, wetlands.</p>	<p>Q Name one urban stormwater slogan</p> <p>A "From Your Street to Your Creek", "Roads to Rivers", "Only Rain Down the Drain", "The Drain is Just for Rain".</p>



Bits And Pieces - Task Cards

Scattegories:

Establish approximately 5 categories such as a pollutant, a source of pollution, an effect of pollution on waterways, a positive action that could be taken and an action / behaviour that should be avoided.

A letter of the alphabet is chosen at random and students have a specified time limit to brainstorm something for each category that begins with the chosen letter.

Points are awarded for original ideas not given by other students.



Twenty Questions:

One student is chosen to sit at the front of the class and must think of a mystery item. It might be a type of pollution, a source of pollution, a plant or animal that could be affected by pollution, etc.

The class only has twenty questions available with which to identify the item. Only yes / no answers can be given, therefore, questions must be phrased appropriately.

Alternatively, the class may know the identity of an item with a chosen student required to guess it.



Endless Chain:

Name a broad topic such as rivers / creeks, plants, animals, businesses, pollutants, etc.

Begin with an example. Students must add to the list with an example from that category that begins with the last letter of the previous word.

For example, 'Let's make an endless chain of aquatic animals'. Platypus, Snake, Egret, Trout, etc.



Mix Master:

Name two concepts or items that are related in some way. They could have things in common or be opposites. For example, Plastic Bags & Cigarette Butts, Fish & Detergent, Rubbish Bins & Rivers.

Students are to combine both concepts or items into one sentence.

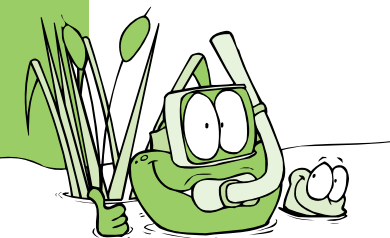
Can students create a variety of sentences using the same prompts?



Ticket Out The Door:

This is a good activity to utilise the few extra minutes at the end of a session or day and promotes meaningful processing of recent learning. It can be completed orally or written on scrap paper and handed in. Questions students might be asked to respond to as a 'ticket out the door' might be:

- What is one thing you learnt today?
- When you get home, what is one thing you might tell your parents about today?
- What is one reason why your learning today may help you in the future?
- Describe one thing you felt good about today.



Urban Stormwater Photos

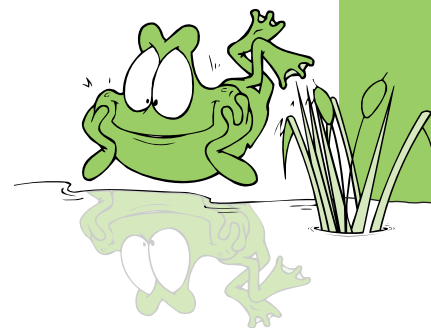
On the attached CD, open the file labeled 'Photos'.

Copy one or multiple photos on a colour printer. These can provide visual stimulation throughout the stormwater unit, or student comprehension activities.

Questions could include:

- What pollution can you see in the picture?
- What are some ways you can reduce the amount of pollution found here?
- Who do you think is to blame for this pollution?
- What messages could you give to consumers about this pollution?

Write a media article that exposes this pollution to the public.





CONGRATULATIONS

You have successfully
completed the
Urban Stormwater Program.
You are now armed with
the knowledge necessary to help
combat the pollution problem.

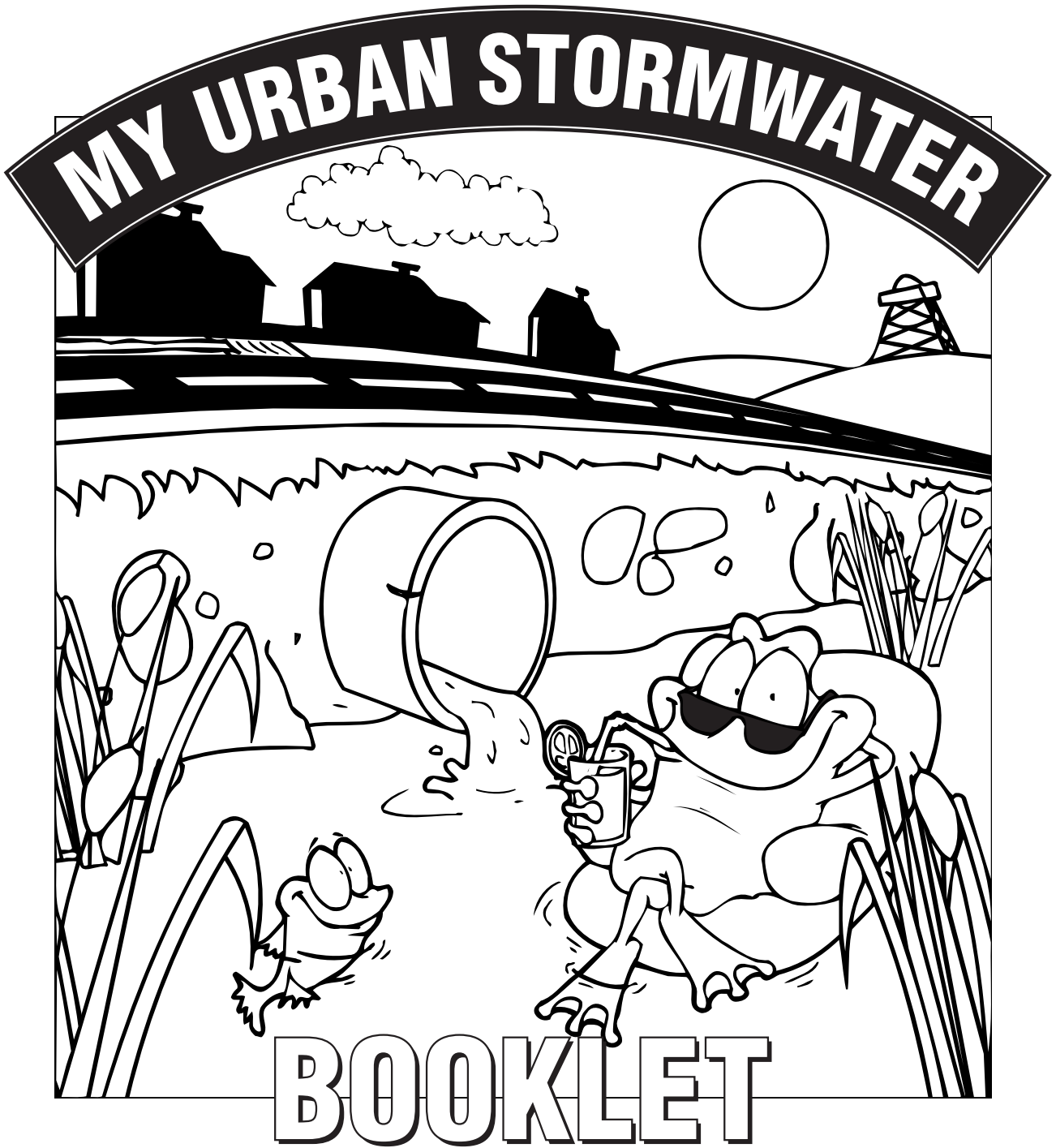


CONGRATULATIONS

You have successfully
completed the
Urban Stormwater Program.
You are now armed with
the knowledge necessary to help
combat the pollution problem.



Name: _____



Stormwater And Me - Student Worksheet

Name: _____



Things I know about Urban Stormwater

Things I feel about Urban Stormwater



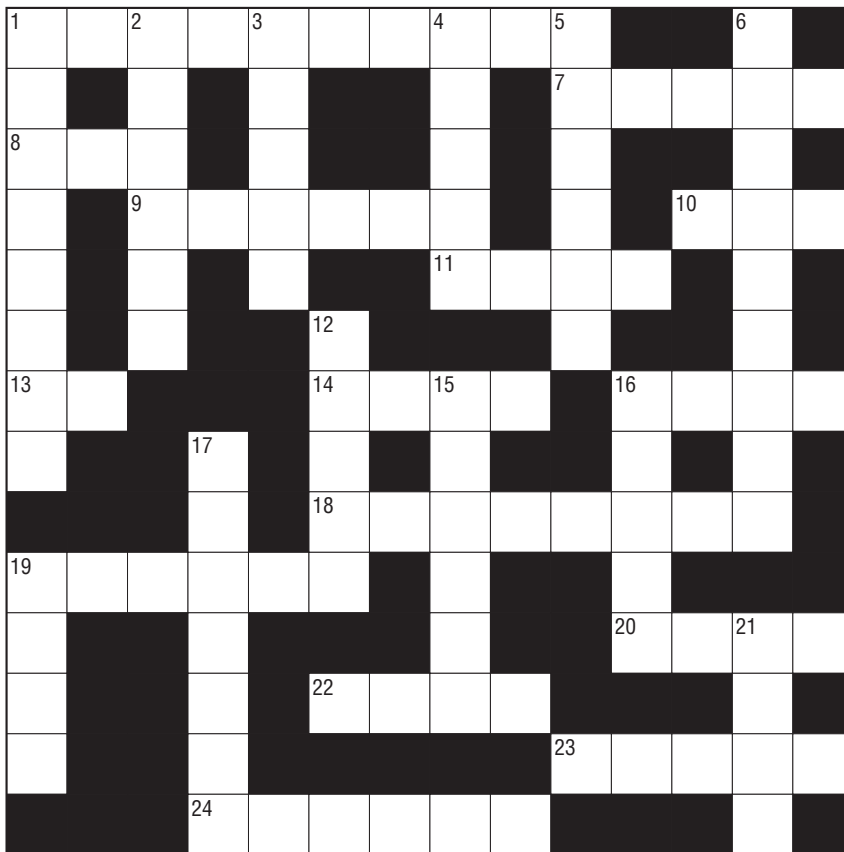
Things I want to find out about Urban Stormwater

Ways I could find out about Urban Stormwater



Stormwater Crossword

Name: _____

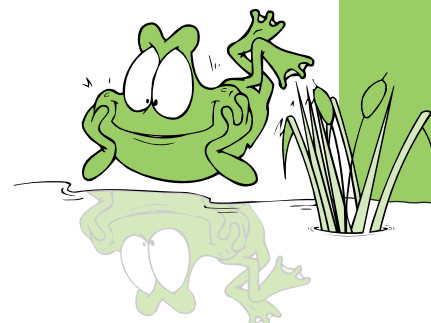


ACROSS

- 1 The water that runs from our streets to our creeks.
- 7 A town or a city is an _____ area.
- 8 400 000 cigarettes butts are discarded in Bendigo each _____.
- 9 Oils and _____ are washed from roads and into drains when it rains.
- 10 Should dog droppings be picked up?
- 11 Waters affected by blue-green algal blooms are not _____ to swim in.
- 13 Should cars be washed on concrete driveways?
- 14 There are many things we can all do to _____ stop stormwater pollution.
- 16 A litter _____ placed in a stormwater drain can catch pollution before it enters waterways.
- 18 Glass, paper, cans and _____ should all be recycled rather than put in the bin.
- 19 The _____ around your roof should be cleaned regularly to stop the build up of leaf litter.
- 20 Detergents, fertilisers, petrols and paints must be _____ out of drains and waterways.
- 22 _____ can become entangled in plastic bags.
- 23 Most rivers the pollution in them eventually ends up in the _____.
- 24 Only 10% of all _____ floats on the surface.

DOWN

- 1 Another term for soil and dust.
- 2 Garden clippings use vital _____ supplies as they decay in water.
- 3 Sediment _____ creeks muddy and prevents light entering the water.
- 4 Deciduous _____ drop large volumes of leaves in Autumn.
- 5 _____ from houses, roads and pavements washes pollution into drains.
- 6 Stormwater runs untreated into these.
- 12 Next time you buy a packet of _____, make sure you put the packet in the bin.
- 15 Fallen _____ should be raked, collected and composted.
- 16 Preventing stormwater pollution is easy if you stop and _____ about your actions.
- 17 The stormwater system is maintained by your local _____.
- 19 Exposed areas of _____ should be planted with vegetation to halt erosion.
- 21 Your local council may have a Stormwater Management _____.



Stormwater Find-A-Word

Name: _____



Circle each letter of the words below as you find them in the grid. Remember that words may be appear horizontally, vertically, diagonally or even backwards!!

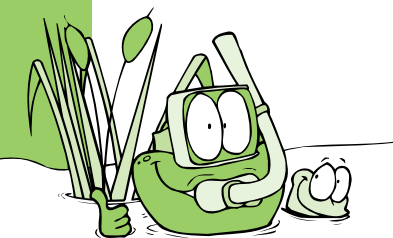
Did You Know . . . that cigarette butts are the largest single source of pollution littering our environment? They contain many toxic chemicals but the biggest problem is that a:

To find out, scan each row of the grid from left to right and list the uncircled letters.

Answer: _____

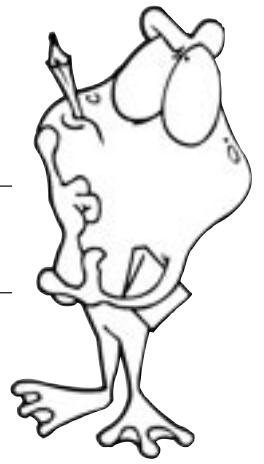
G	F	P	S	G	N	I	P	P	I	L	C	N	W	A	L
N	T	L	A	C	T	I	O	N	I	H	L	A	A	T	I
I	O	E	F	E	P	G	R	E	A	S	E	L	S	R	C
L	X	H	E	E	S	T	A	T	R	I	D	P	T	N	N
C	I	G	A	R	E	T	T	E	S	B	K	A	E	U	U
Y	C	E	E	R	O	S	I	O	N	B	S	A	O	T	O
C	B	V	O	S	E	I	R	T	S	U	D	N	I	R	C
E	I	U	T	F	S	U	O	I	V	R	E	P	M	I	H
R	I	F	N	I	A	R	P	A	R	T	L	O	S	E	E
E	U	G	L	Y	L	B	O	T	E	A	C	L	E	N	M
T	E	N	N	I	I	A	T	H	T	E	O	L	V	T	I
A	R	Y	O	R	E	N	S	Y	A	A	M	U	A	S	C
W	E	E	D	F	E	I	P	N	L	R	P	T	E	W	A
M	U	S	S	M	F	U	T	O	G	S	O	I	L	E	L
R	S	C	I	T	S	A	L	P	A	B	S	O	R	E	S
O	E	D	R	A	I	N	E	A	E	K	T	N	U	P	D
T	E	N	O	I	T	A	T	E	G	E	V	F	O	O	W
S	T	R	E	E	T	S	R	E	T	T	U	G	N	O	X

ACTION
DRAIN
INDUSTRIES
PLASTICS
ROADS
STREETS
ALGAE
EROSION
LAWN CLIPPINGS
PLATYPUS
RUBBISH
SWEEP
BIRDS
FISH
LEAVES
POLLUTION
RUNOFF
TOXIC
CHEMICALS
FUEL
NUTRIENTS
POO
SAFE
TRAP
CIGARETTES
GREASE
OCEAN
RAIN
SEDIMENT
UGLY
COMPOST
GUTTERS
OIL
RECYCLING
SOIL
URBAN
COUNCIL
HELP
PIPE
REUSE
STOP
VEGETATION
DIRT
IMPERVIOUS
PLAN
RIVERS
STORMWATER
WASTE
WEED



Acrostic Poem - Student Worksheet

Name: _____



U

R

B

A

N

S

T

O

R

M

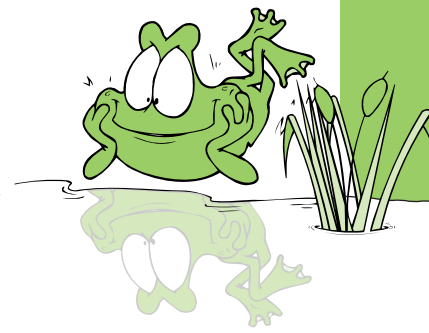
W

A

T

E

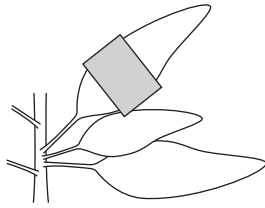
R



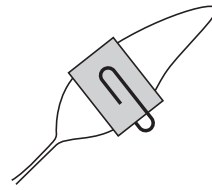
Stormwater Mini Tasks - Student Worksheet

Photosynthesis

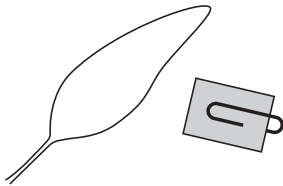
You will need: a leaf (still attached to a growing plant), 2 paperclips, a small strip of paper



1 Partly cover the leaf with the paper strip.



2 Hold in place with the paperclips.



3 Leave for a few days, then remove paperclips and paper.

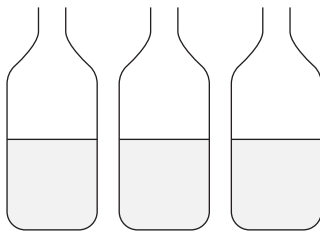


4 Compare it to the other leaves on the plant.

Where's the science? The green part of a leaf traps sunlight and uses it, together with water and air, to make food for the plant. This is called photosynthesis. By covering up part of the leaf, you have interrupted the process. The same thing occurs when sediment is washed into waterways with stormwater.

Water Bottles

You will need: 3 large plastic bottles with caps, 2 tablespoons silver glitter or dessicated coconut, 2 tablespoons cooking oil, half cup of polystyrene pieces (from supermarket meat trays), sticky tape.



1 Half fill the bottles with cold water



2 Pour the glitter or coconut into the first bottle, the oil into the second bottle and push polystyrene chips into the third bottle.



3 Screw the caps on the bottles and seal with tape.



4 Shake each bottle and compare what happens inside each one.

Where's the science? The glitter / coconut sinks because it is more dense than water. The oil seems to mix at first but gradually separates and floats to the top because it is slightly less dense than the water. The polystyrene floats because it is less dense than water. Litter in our waterways behaves in similar ways. The litter you see is only some of what is there.



Brain Boosters - Student Worksheet

The following activity ideas can be used at any time, for any length of time, by any number of students.

Your local council remove rubbish bins from all public places.
Think of **3 positive consequences** and **3 negative consequences** of this action.



Name 5 things that a **broom and a pet dog** have in common.



Think of **10 creative ways to reuse a plastic bag**.



What if all stormwater ran in open drains above the ground for everyone to see.
Give 10 different consequences.



A school of fish have been found floating dead on the surface of a local creek.
Give 3 possible explanations for this.



Design a mobile robot that rakes, collects and composts garden debris, lawn clippings and leaf litter.

Think of three advantages of such a robot that would convince others to purchase one.



Brainstorm 10 strategies to encourage students not to litter and use rubbish bins in your schoolyard.



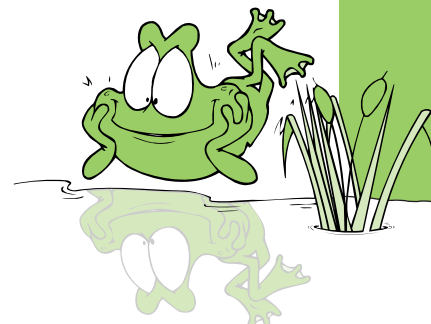
List a type of stormwater pollution for each letter of the alphabet.
Can you list a source of stormwater pollution for each letter of the alphabet?



List 5 things that you cannot do with polluted stormwater.



You own a take away food shop. **Work out 5 ways to eliminate the need for packaging** - for example milkshake cups, polystyrene hamburger containers, glad wrap, plastic bags cutlery and straws, etc.



Stormwater Cartoons - Student Worksheet

Name: _____



Colour in these four stormwater cartoons.



You Can Help Our Waterways



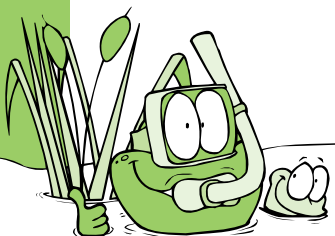
Only Rain Goes Down The Drain



Don't Rubbish Our Waterways



Help Keep Our Wetlands Wonderful



Spot The Difference - Student Worksheet

Name: _____



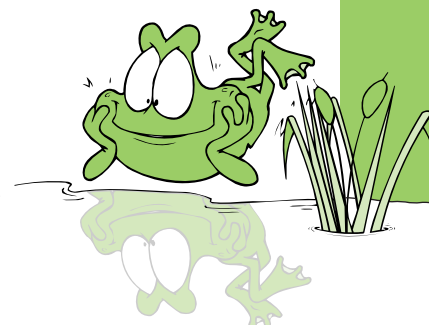
Both scenes below depict a typical school setting on any given day, however one town is much better at preventing stormwater pollution and keeping their waterways clean. List the differences you spot in the table provided. Maybe you could add more details to challenge a friend?



Litterville



Greentown



Spot The Difference - Student Worksheet

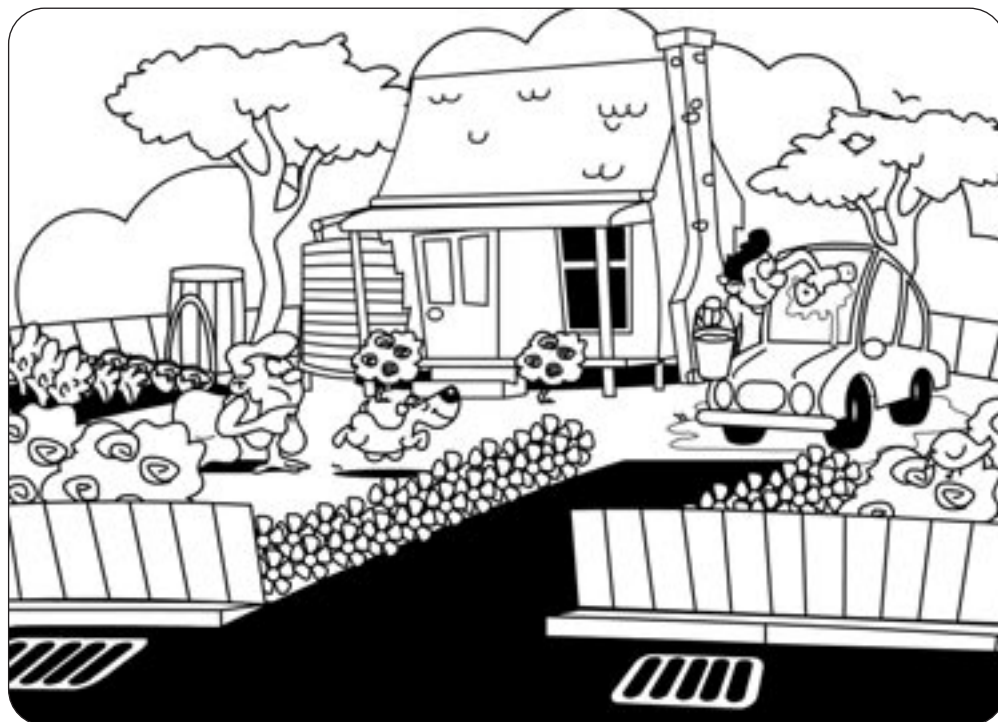
Name: _____



Both scenes below depict a typical household yard on any given day, however one town is much better at preventing stormwater pollution and keeping their waterways clean. List the differences you spot in the table provided. Maybe you could add more details to challenge a friend?



Litterville



Greentown

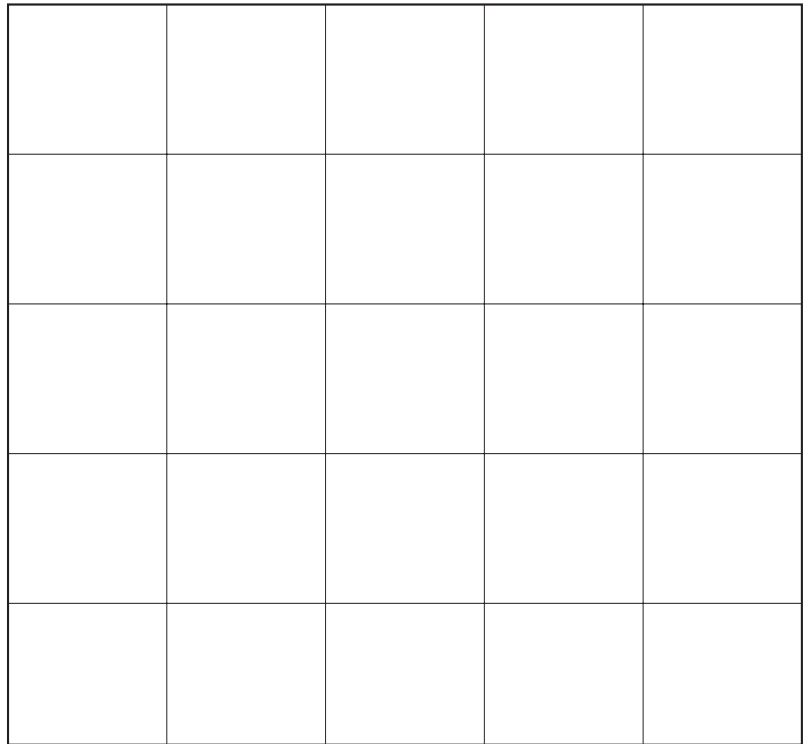
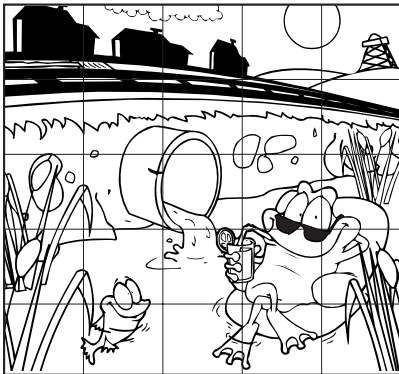


Stormwater To Scale - Student Worksheet

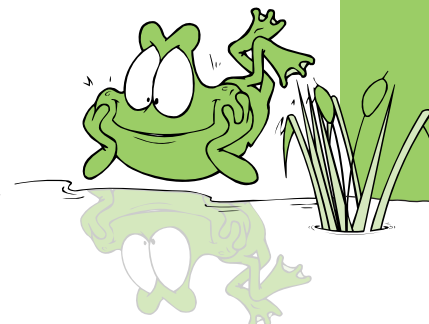
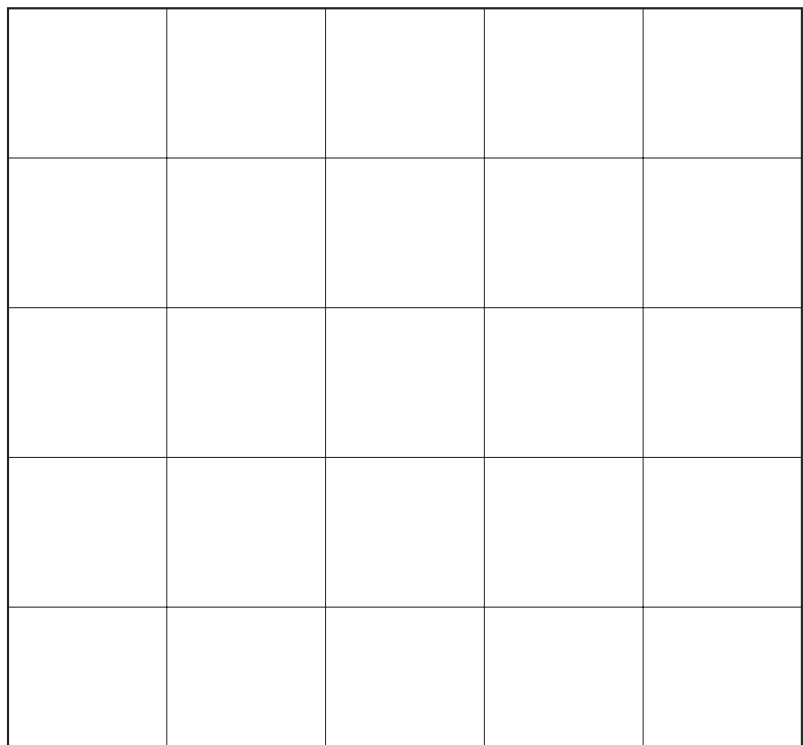
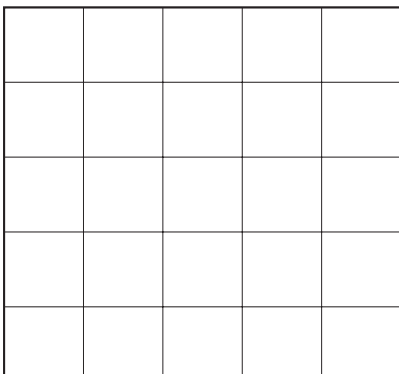
Name: _____



Use the grid below to help you enlarge this picture and draw it onto the grid to the right.



Draw your own design below and ask a friend to enlarge it.



Link It All Together - Student Worksheet

Name: _____



One important step in learning how to care for our waterways is understanding the link between cause and effect. Your actions today will affect what happens in the future. See if you can link the statements together from the two lists below to show cause and effect.

1/ Match each Today (cause) to the correct Tomorrow (effects). Use different coloured arrows for each pair.

Today (causes)

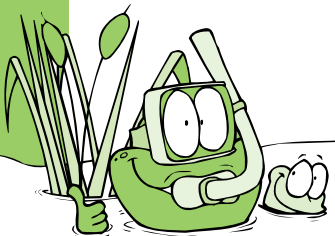
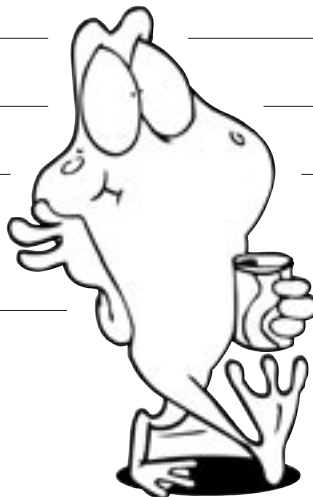
- Children throw empty soft drink cans onto paths
- Fallen leaves are raked, collected and composted
- People fail to clean up pet droppings
- Residents plant native plants in their gardens
- Shopping centres do not pick up plastic bags from their carparks
- You use natural alternatives to toxic pesticides
- Your car leaves oil patches on your driveway
- A local school replaces a large area of concrete with grass and mulched garden beds

Tomorrow (effects)

- The droppings flow with stormwater into waterways and contribute to blue-green algal blooms
- Fish and other aquatic animals become tangled and die because of plastic bags
- Aquatic animals and plants are able to live and grow in waters free of dangerous pesticides
- Unsightly litter is seen floating in a creek nearby caught in vegetation
- Native plants use less water. The plants provide shelter and food for native animals
- Rainfall is absorbed in the grassy and mulched areas and less stormwater runs off
- An oil slick forms on the surface of waterways and aquatic plants and animals cannot breathe
- Natural fertiliser is created for gardens

2/ Can you add some more causes?

3/ Can a friend list the effect of each cause?



Recycle City - Student Worksheet

The following website is a fantastic resource for teachers and students and offers a variety of interactive activities guaranteed to enthuse, stimulate and extend students' understanding of waste minimisation, recycling and sustainable use of resources.

<http://www.epa.gov/recyclecity>

Search the site, try the activities and develop ideas about tailoring tasks to meet the learning needs of your students.

Below are three ways you can use 'Recycle City' either in your classroom as a core or extension activity or as homework tasks.



Activity 1 - SCAVENGER HUNTS

- 1 Organise students into teams for scavenger hunts through 'Recycle City'. This works well if there are fewer computers than there are students. Each team works together to race to find all the items in a list.
 - You can also set scavenger challenges for individuals.
- 2 Create a list of items that need to be found, eg. Something made from recycled tyres, a way to use vinegar, a use for old bricks, something made from old milk containers, an electric car.
 - Your list can be customised to emphasise any topic that you are exploring in class.
- 3 Let students go through the site, looking for the items on the list. This will provide them with an incentive to browse around the site, and will spark team discussions.
- 4 Discuss findings with the class. Encourage students to talk about what they found, and about anything that they couldn't find . . . this can lead to interesting discussions.

Activity 2 - THE CLEAN UP DUMPTOWN GAME

'Clean Up Dumptown' is designed to be extremely flexible. In fact, there are no goals or winning conditions built into the game at all!

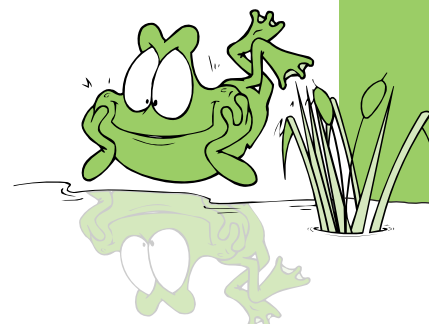
Goals can include reducing the amount of a particular waste by an amount, or by as much as possible. You can add budget caps, or restrict the programs that can be used. You can also set research goals - determining the impact of composting for example.

- 1 Reduce the amount of paper going into the landfill as much as possible, and spend as little money as possible.
- 2 Set an overall spending limit (eg. \$200,000) and find out which combination of programs in your budget achieves the greatest waste reduction.
- 3 How much waste can be removed from the waste stream using programs that have no cost city?

Task Cards:

Distribute the 'Recycle City' Task Cards to students. Students can complete in pairs, share their results with the class, or work through the whole sheet over the week.

- You could laminate the cards or glue them on to card.
- Students could put their results on display around the room.



Recycle City - Student Worksheet

Name: _____



Imagine you manage your own supermarket. What are some things you can do to reduce the amount of waste caused by the products you sell?

Visit Maria's Market in 'Recycle City' and see if she has any other ideas you can use.

Name three ways that each of these items can be reused, instead of throwing them away.

- Cardboard box - Wooden board
- Plastic milk carton- Plastic bag
- Glass jar - Newspaper

Find ways these are used in 'Recycle City'?

Visit any 'Recycle City' location you like. Before you go inside, try to figure out what you would do to reduce waste and energy use. Then, click on the site.

Did you miss anything? Did we?

Visit some houses in 'Recycle City' and look for examples of household hazardous waste. How many are there?

What are some safer, natural alternatives that could take the place of some of these things?

Gas stations aren't just places to fill up the tank.

Can you find six things that Shaq at the 'Recycle City' gas station does to help the environment?

Find the place in 'Recycle City' where you can get information on what to do with leftover cleaning products.

Is there a place to take those kinds of items in your town? Where is it?

Can you find out which recyclable item makes up the largest percentage of our rubbish (trash)?

Cruise around 'Recycle City' and find all the tips you can use to reduce pollution and waste that come from cars.

Make a list of things around your house that you could donate to a charity or a community warehouse instead of throwing out.

What are some ways you or your family could cut down on the amount of junk mail you receive at home?

Mayor Turner has been elected to State Government, and you are selected to replace her as the new mayor of 'Recycle City'. What kinds of things can you do to help citizens reduce, reuse, and recycle?

Find at least seven different ways to reduce or reuse paper.

Find at least three places in 'Recycle City' where books are resold or reused.

Identify three recycling activities in 'Recycle City' that students could use to help raise money for class projects.



Urban Stormwater Survey

Survey adults to find out what they know about urban stormwater issues and the way their current actions may be influencing stormwater pollution. You might ask your parents, relatives or neighbours to answer the following questions. Ask participants to read each question and circle the correct response(s).

1 Most of the litter you see in waterways downstream of a town is:

- a) thrown there by people
 - b) grows there
 - c) washes off streets and hard surfaces in urban areas
-

2 Urban stormwater is rain that falls on and runs off:

- a) roads
 - b) footpaths
 - c) house roofs
 - d) building sites
 - e) all of the above
-

3 In urban areas with many impervious surfaces, the percentage of rainfall runoff is:

- a) 50%
 - b) 75%
 - c) up to 98%
-

4 Urban stormwater is carried away in a system of drains and pipes that ends up:

- a) at a sewage treatment plant
 - b) in local creeks and rivers
 - c) at a waste water facility
-

5 Stormwater that enters local waterways is:

- a) untreated
 - b) treated
-

6 Urban stormwater can become polluted by:

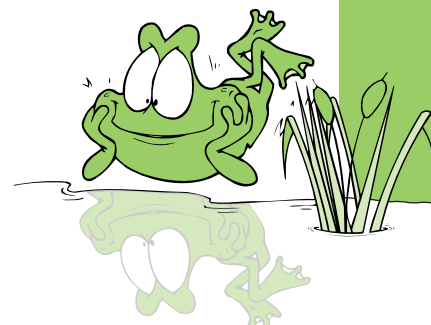
- a) litter such as cigarette butts, cans, papers or plastic bags
 - b) chemicals such as detergents, oil or fertilisers
 - c) natural items such as leaves, garden clippings or animal droppings
 - d) all of the above
-

7 Of all urban stormwater pollution, the majority consists of:

- a) natural items (eg. leaves, dirt)
 - b) chemicals (eg. oil, grease)
 - c) litter (eg. soft drink bottles)
-

8 Garden clippings washed into waterways (circle all correct responses):

- a) provide habitat for aquatic animals
 - b) use oxygen as they decay, affecting the survival of aquatic plants and animals
 - c) release nutrients that cause plants such as blue-green algae to grow to excess
 - d) help to revegetate creeks and rivers
 - e) cause non-native species to grow that are usually inedible for native animals
-



Urban Stormwater Survey

9 Of all litter, the percentage that floats and is therefore most visible is:

- a) 80%
- b) 10%
- c) 40%

10 Cigarette butts, although they seem small and insignificant are a huge problem in urban areas. How many are dropped each day in Bendigo alone?

- a) 10 000
- b) 400 000
- c) 1 million

11 Who is responsible for reducing urban stormwater pollution?

- a) Local council
- b) North Central Catchment Management Authority (NCCMA)
- c) Every member of the population
- d) All of the above

12 We can ALL do many positive things to reduce urban stormwater pollution. Do you . . .

Place a tick in the appropriate column.

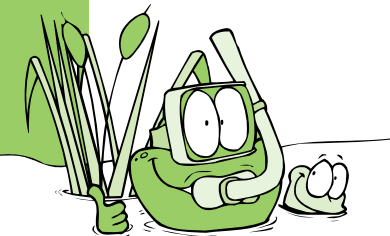
	NEVER	SOMETIMES	ALWAYS
a) Wash your car on paved / concrete surfaces using detergent?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Use rubbish bins to dispose of litter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Pick up litter in the park or on the street?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Clean up pet droppings and put them in the bin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Sweep gutters / driveways and rake up leaves and lawn clippings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Place them on the garden as mulch or in the compost?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Recycle items such as glass, cans, paper and plastics?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Plant native species in your garden?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Consider natural alternatives to pest control chemicals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Hose dirt off hard surfaces such as roads, paths and driveways, into gutters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Leave piles of sand or gravel uncovered where it could wash or blow into the gutter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Write a question that you would like to ask participants

Question:

Answer:

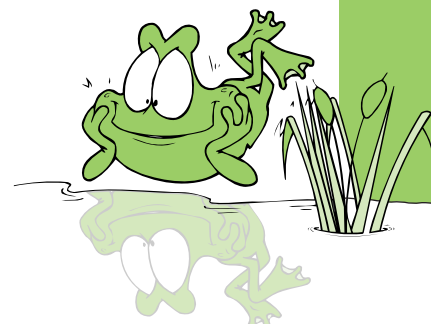
Thank you for helping me with this survey.



Urban Stormwater Survey - Answers

Answers

- 1 Most of the litter you see in waterways downstream of a town is:**
a) thrown there by people
b) grows there
c) washes off streets and hard surfaces in urban areas
- 2 Urban stormwater is rain that falls on and runs off:**
a) roads
b) footpaths
c) house roofs
d) building sites
e) all of the above
- 3 In urban areas with many impervious surfaces, the percentage of rainfall runoff is:**
a) 50%
b) 75%
c) up to 98%
- 4 Urban stormwater is carried away in a system of drains and pipes that ends up:**
a) at a sewage treatment plant
b) in local creeks and rivers
c) at a waste water facility
- 5 Most urban stormwater that enters local waterways is:**
a) untreated
b) treated
- 6 Urban stormwater can become polluted by:**
a) litter such as cigarette butts, cans, papers or plastic bags
b) chemicals such as detergents, oil or fertilizers
c) natural items such as leaves, garden clippings or animal droppings
d) all of the above
- 7 Of all urban stormwater pollution, the majority consists of:**
a) natural items
b) chemicals
c) litter
- Many people believe the litter they see has been deliberately placed there. It has washed into creeks from nearby streets and roads through the urban stormwater system.
- Rainfall cannot soak into the paved and solid surfaces in urban areas. Any water that runs off these surfaces and into gutters is referred to as stormwater.
- In the country about 10% of rainfalls become runoff. In an urban area, up to 98% of rainfall becomes runoff and 2% soaks into the ground.
- The water washed from our towns and cities flows directly into local creeks and rivers.
- Unlike wastewater from households that is treated through sewerage systems, urban stormwater is rarely treated before entering waterways.
- All three forms of pollution can be found in stormwater and impact on the health of local waterways.
- Natural items such as garden waste, lawn clippings and leaf litter make up approximately 70% of all urban stormwater pollution.



Urban Stormwater Survey - Answers

Answers

- 8 **Garden clippings washed into waterways** (circle all correct responses):
- a) provide habitat for aquatic animals
 - b) use oxygen as they decay, affecting the survival of aquatic plants and animals**
 - c) release nutrients that cause plants such as blue-green algae to grow to excess**
 - d) help to revegetate creeks and rivers
 - e) cause non-native species to grow that are usually inedible for native animals**
- 9 **Of all litter, the percentage that floats and is therefore most visible is:**
- a) 80%
 - b) 10%**
 - c) 40%
- 10 **Cigarette butts, although they seem small and insignificant are a huge problem in urban areas. How many are dropped each day in Bendigo alone?**
- a) 10 000
 - b) 400 000**
 - c) 1 million
- 11 **Who is responsible for reducing urban stormwater pollution?**
- a) Local council
 - b) North Central Catchment Management Authority (NCCMA)
 - c) Every member of the population
 - d) All of the above**
- 12 **We can ALL do many positive things to reduce urban stormwater pollution. Do you . . .**
- Explanation**
- a) Wash your car on paved / concrete surfaces using detergent?
- Yes!**
- Water falling on concrete surfaces runs straight off, carrying detergents into drains and waterways. Cars should be washed on lawn or gravel surfaces with a bucket and as little detergent as possible.
- b) Use rubbish bins to dispose of litter?
- Yes!**
- Litter left lying on the ground is blown and washed into urban stormwater drains eventually. Bins should always be used to dispose of it properly.



Urban Stormwater Survey - Answers

Explanation

c] Pick up litter in the park or on the street?

😊 **Yes!**

Imagine if everyone played their part and collected litter they see - what a difference it would make!

d] Clean up pet droppings and put them in the bin?

😊 **Yes!**

Pet droppings release nutrients and bacteria into waterways and cause weeds to grow to excess. Responsible pet owners clean up after their pet.

e] Sweep gutters / driveways and rake up leaves and lawn clippings?

😊 **Yes!**

Keeping gutters clear of debris reduces the amount entering the urban stormwater system and waterways.

f] Place them on the garden as mulch or in the compost?

😊 **Yes!**

Collecting and composting soil and garden waste will provide cheap, natural mulch and fertilizer.

g] Recycle items such as glass, cans, paper and plastics?

😊 **Yes!**

Much of what many people consider as rubbish can be reused or recycled, minimising waste.

h] Plant native species in your garden?

😊 **Yes!**

Native species require less water, shed less debris and provide food and shelter for native animals.

i] Consider natural alternatives to pest control chemicals?

😊 **Yes!**

There are many alternatives to toxic pesticides that are better for the environment and for the people and pets that come into contact with them.

j] Hose dirt off hard surfaces such as roads, paths and driveways, into gutters?

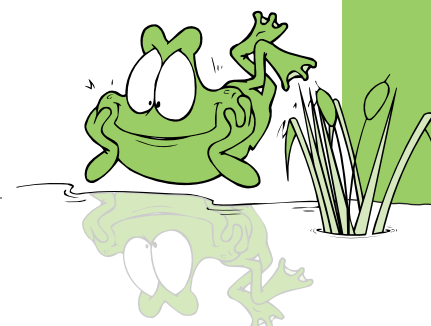
😊 **Yes!**

Hosing gutters wastes valuable water and adds to the debris washed into urban stormwater drains.

k] Leave piles of sand or gravel uncovered where it could wash or blow into the gutter?

😊 **Yes!**

Covering exposed sand or erecting barriers stops soil from entering waterways, causing silting and sedimentation.



3 R's Bingo - Student Worksheet

Name: _____



Students can complete this challenge with peers from within your class, school friends or as a homework task.

- Reducing** means not getting or using so much of something. It means there will be less to dispose of later.
- Reusing** means using the same object for the same or different purpose. You get maximum use from the one item.
- Recycling** means re-manufacturing something to make a new or different product. This saves resources.

- Your challenge is to go on a scavenger hunt, to find people who conserve resources and minimise stormwater pollution by reducing, reusing or recycling.
- You must find a different person for every action and write their name under each statement.
- When you fill the entire grid you will have achieved BINGO!!

Find someone who....

Reuses wrapping paper	Recycles aluminium cans	Uses a drink bottle rather than buying soft drinks/juices	Donates unwanted items to charity	Takes cloth or string bags to the supermarket for shopping
Composts fruits and vegetable scraps	Reuses cardboard boxes	Saves scrap materials for art and craft activities	Buys recycled paper products	Wears hand-me-down clothing
Uses both sides of a piece of paper	Recycles newspapers and magazines	Refuses the delivery of junk mail to their letterbox	Keeps chooks and feeds them kitchen waste	Returns bottles and cans for deposit refunds
Refuses plastic bags while shopping	Buys recycled toilet paper or tissues	Eats lots of fresh fruit rather than buying packaged snacks	Makes their own greeting cards from scrap bits and pieces	Borrows books from the library rather than buying them new
Considers packaging when making product choices at shops	Recycles glass bottles	Saves plastic containers to be used for meal leftovers	Buys items from opportunity shops	Buys fresh ingredients rather than pre-packaged meals

