



Growing
Under Glass

PLANT ID



TBG Kids



peace lily *Spathiphyllum*



golden barrel cactus *Echinocactus*



angel's trumpet *Brugmansia*



flamingo lily *Anthurium*



donkey's tail *Sedum*



pitcher plant *Nepenthes*



agave *agave*



foxtail fern *Asparagus*



swiss cheese plant *Monstera*



elephant ears *Alocasia*



madagascar velvetleaf *Kalanchoe*



chrysanthemum *chrysanthemum*



Here are some of the plants your class saw on their visit to Allan Gardens.
The **common name** is in **bold** and the *latin name (genus)* is in *italics*.

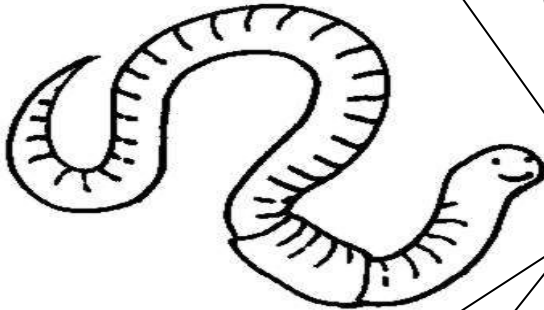


Name: _____ Date: _____

MEETING THE WORM

Hello, my name is _____

I am a VERY sensitive WORM. Please colour me



When the light shines on me what do I do? _____

Fill in the missing letters

I am a “decomposer” which means that I eat dead ORG ____ C stuff and I poop out amazing S__ _ L

My skin needs to be (choose one)

- a) dry
- b) moist
- c) wet
- d) REALLY dry

I think the most amazing thing about worms is that they:

SEEING IS BELIEVING! A Worm Experiment

Worms do not have eyes as we do. Scientists who study earthworms know that worms do not like light and can sense if there is light around them even without eyes. Try this experiment to find out if worms can really sense light.

Question

Do worms sense light?

Materials

You will need the following materials to do your scientific study:

- Shallow container with a lid (shoebox)
- Towel
- Moist paper
- A flashlight
- Live worm (at least 1)

Directions

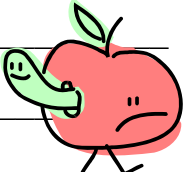
1. Cut a hole in the lid just big enough for the flashlight.
2. Place moist paper towel in shallow container.
3. Put worm in the uncovered portion of the container.
4. Shine the flashlight on the worm.
5. Observe what the worm does.

Record your observations in the box below and answer the question.

What did you observe? _____

Does a worm sense light? _____ Yes _____ No

How do you know? _____



BREATHING BASICS! A Worm Experiment

Worms breathe through their skin. A worm's skin must be moist to allow it to breathe. If a worm's body dries out, it dies because oxygen cannot get into its body and carbon dioxide cannot get out. Try this experiment to find out what worms will do to keep their bodies moist.

Question

Do worms like moisture?

Materials

You will need the following materials to do your scientific study:

- 2 paper towels
- Water
- Live worm
- Timer/Clock
- A shallow bin

Directions

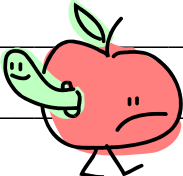
1. Dampen one paper towel. Place both paper towels in a shallow bin.
2. Place a worm in between the damp and dry paper towel.
3. Make sure the shallow bin is in a dark location (cupboard or underneath a sweater).
4. Wait for fifteen minutes and record the worm's location.

Record your observations in the box below and answer the question.

What did you observe? _____

Does a worm like moisture? _____ Yes _____ No

How do you know? _____



Doing your part

Vermicomposting

Composting is a natural process where kitchen and yard wastes decompose into a dark, nutrient-rich, sweet-smelling soil conditioner. Perhaps you've considered composting but live in a highrise or don't relish the thought of tramping through your garden in the middle of a winter blizzard. If this sounds like you, vermicomposting is the answer.

What is vermicomposting?

Vermicomposting is simply composting with worms. The best kind of earth worm to use is the red worm (also known as the red wiggler). These worms are incredible garbage eaters! They eat and expel their own weight every day, so even a small bin of red worms will produce many kilograms of rich, sweet-smelling compost. Finished compost can be harvested in as little as two or three months. Red worms are extremely prolific. It takes about three weeks for an egg to develop and as many as twenty youngsters can be hatched from one egg. In three months the worms are sexually mature and will start breeding. Within a year you will be able to give worms away to get a friend started!

build your own. Worms are available from stores selling fishing bait or from vermicomposting suppliers.

How do I set up the bin?

Make sure eight to ten holes (approximately 1 cm or 1/4") are drilled in the bottom of the bin for adequate drainage. Place the bin on blocks with a tray underneath. Now you need to think about bedding for the worms. Red worms can survive and breed in many kinds of bedding materials. Remember that the red worm is a manure worm and will eat its own bedding. Materials such as straw, grass clippings, dried leaves, chopped plants, dampened peat moss, aged animal manures, ground cardboard or shredded paper can all be used. Bedding can be mixed (e.g. half straw, half dried leaves). The important thing is to keep the bedding as moist as a well-wrung sponge. Now comes the fun part...putting in the worms!

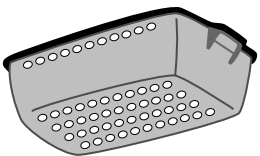
What do I feed worms?

Worms will eat just about any type of kitchen waste. This includes vegetable and fruit wastes, coffee grounds, tea bags and finely-crushed egg shells. Avoid putting starches, meats and fats into your composter. Always dig the waste into the bedding.

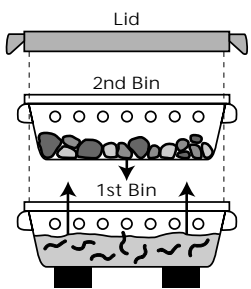
Where can I get a worm bin and worms?

To start a vermicomposter for one or two people, you will need a plastic bin. Make sure the bin has a lid. For four to six people there is a design sheet, available from the Recycling Council of Ontario, that shows you how to

.....
Vermicomposting can transform your kitchen waste into rich compost in just a few months.

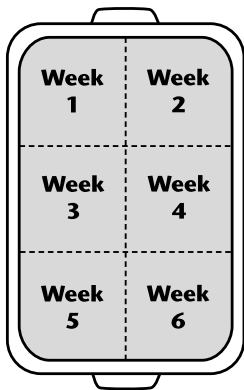


Worm Bin



The worms will crawl up through the holes into the new bedding

# of People	Quantity of worms	Bin size (h x l x w)
1 or 2	0.5 kg (1 lb.)	45 x 60 x 30 cm (1.5' x 2' x 1')
2 or 3	1.0 kg (2 lbs.)	60 x 60 x 30 cm (2' x 2' x 1')
4 to 6	1.5 to 2.0 kg (3 to 4 lbs.)	60 x 105 x 30 cm (2' x 3.5' x 1')



Place the food in a different section of the bin each week

Can worms live outside during colder months?

Worms prefer temperatures between 4 and 27 degrees Celsius (40° - 80°F). They can live quite happily out of doors until temperatures drop to 4°C (40°F). After that they should be taken indoors or kept well insulated. Insulated bins are available from some garden and hardware stores, or from some of the companies that supply vermicomposting materials.

How can I harvest the finished compost?

After about three months you will notice that the volume of materials has dropped substantially and the original bedding is no longer recognizable. At this point the finished compost and worms can be moved over to one side of the bin and new bedding added to the vacant side. Put new food wastes into the fresh bedding only so the worms will move from the finished compost in search of new food. After about a week, remove the lid under a bright light source. The worms are sensitive to light and will burrow away from it. Scoop out the finished compost a few layers at a time and place in a plastic bag until you are ready to use it.

How can I use the finished compost?

Vermicompost will provide nutrients to your plants and will help the soil hold moisture. It can be used in a number of ways:

- Sprinkle into a seed row when planting.
- When transplanting, add a handful to the hole you have dug for the plant.
- Use as a top dressing, sprinkling the compost around the base of your plants.
- Mix with potting soil (half and half) for house plants.

Adapted from Vermicomposting, a fact sheet produced by the Recycling Council of Ontario.

For more information contact:

Toronto Works and Emergency Services
Station 1180 - 19th floor
Metro Hall
55 John Street
Toronto, ON
M5V 3C6

Order line:
Tel: (416) 392-9573
Fax: (416) 392-4754

Help line:
Tel: (416) 392-4686

Recycling Council of Ontario
489 College Street
Suite 504
Toronto, ON
M6G 1A5

Tel: (416) 960-1025
Fax: (416) 960-8053

TEACHER RESOURCES

For Teachers

Last Child in the Woods. Richard Louv (Algonquin Paperbacks, 2006)

I Love Dirt!, Jennifer Ward (Trumpeter, 2008)

Classroom Activities for a Better Environment: Worms Eat our Garbage. Appelhof, M; Fenton, M.F.; Loss Harris, B. (Flower Press 1993)

Jumbo Book of Gardening. Morris, Karyn. (Kids Can Press, 2000)

Roots, Shoots, Buckets and Boots: Gardening Together with Children, Sharon Lovejoy (Workman, 1999)

Go Outside: Over 130 Activities for Outdoor Adventures, Nancy Blakey (Tricycle Press, 2002)

Sharing Nature with Children, Joseph Cornell (Dawn Publications, 1998)

Nature with Children of All Ages. Edith A. Sisson (Prentice Hall Press, 1982)

Math in the Garden: Hands on Activities that Bring Math to Life. Jennifer M. White et al (National Garden Institute, 2006)

For Students

Diary of a Worm. Doreen Cronin. (Harper Collins Children's Books, 2003)

Bob and Otto. Robert O. Bruel (Roaring Book Press 2007)

Two Old Potatoes and Me. John Coy (Random House Inc 2003)

Oliver's Vegetables. Vivian French (Orchard Books, 1995)

The Tiny Seed. Eric Carle (Picture Book Studio 1987)

The Lorax. Dr. Seuss (Lark Books 1971)

Websites

www.kidsgardening.com

www.davidsuzuki.org/kids

www.wormwatch.ca