

SUNFLOWER GROWING COMPETITION - 2023



Student resource book





Sunflower Growing Competition

Dear Parent or Guardian,

For the last few weeks your child has been learning about plants, how they grow and how important they are in the environment. To reinforce their learning, they have taken part in the Sunflower Growing Competition organised by Leicester City Council in partnership with the school.

After germinating the seed and watching the seedlings grow in class, your child has brought theirs home to grow over the summer. This guide can help assist you with finding a suitable place to plant and grow the sunflower. This could be in your garden or in the garden of someone you know.

Like all living things the sunflower will need to be looked after. It will need to be watered on warm days over the summer until the seeds form in the autumn. As it grows it may require to be tied to a stake or fence to prevent it from falling over.

If your child wishes to be included in the competition, they will need to have the flower heads weighed. Pupils (or staff) will be required to weigh their sunflower heads and send photographic evidence to growyourowngrub@leicester.gov.uk between October 1st and October 31st 2023

The winning school will be notified after the October break.

The harvesting of the sunflower heads is described later in this booklet.

Growing plants can be very rewarding and I hope you can encourage your child to look after the sunflower until October.

Yours faithfully,



Sunflower Growing Competition

Setting up using a cup

Place compost in a cup, pot or container and make a small hole in the top with a pencil, about 1 centimetre deep. Put in one sunflower seed and gently push the compost together to close the hole. By planting one seed per pot there is no competition between seedlings, and this should make growing the sunflower easier.

So that the pots can be identified, students can label their pots using small flags made from cocktail sticks (not provided) or draw a labelled map of the pots in the tray.

After 7-10 days the sunflowers will start to grow. Not all seeds will germinate, and some will germinate faster than others.

The pots will then need water each day. Do this by putting water into the bottom of the tray. The water will be soaked up by the pots and will help the sunflowers to grow.

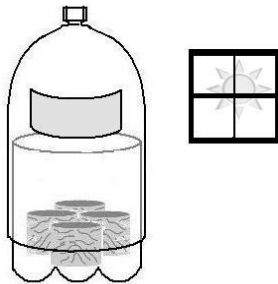
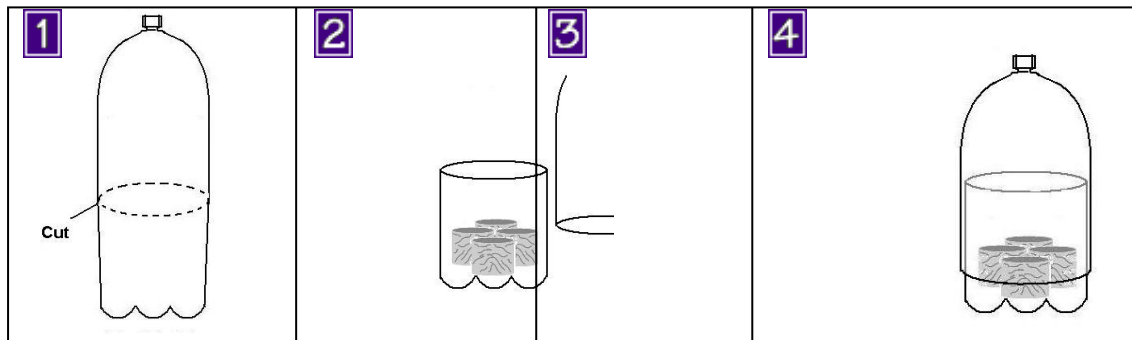



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Setting up a mini greenhouse

The easiest way to create a mini-greenhouse is to use a smooth sided plastic 1.5 or 2-litre juice bottle. Each bottle should easily support between 2 to 4 pots. Smaller 500 millilitre bottles can be used and would support a single pot.

Bring to school an empty plastic juice bottle with the label removed. The bottle should be rinsed thoroughly before use.



- 1** Arrange to cut below mid height of the bottle all the way around using sharp scissors or preferably a sharp craft knife. Remove the lid to make cutting easier. Replace lid once cut is complete.
-  Sharp scissors or craft knives can leave a ragged cut edge on the bottle that may scratch fingers and hands. Care should be taken at all times.
- 2** Carefully place the pots with the planted seeds on the bottom portion of the bottle and add a little water, as the pots should still be moist after planting.
- 3** Place the top part of the bottle back on, overlapping the base or vice versa depending on the shape of the bottle, to create a snug fit.
- 4** Add a label and place somewhere light but not in direct sunlight. Frequently check that the mini-greenhouse has not begun to dry out. After about a week the seedlings should appear, then remove the cap and keep moist. The mini-greenhouse can be used to let the students carry their sunflowers home.

Keep an eye on the mini-greenhouses! They should mist up a little, but if there is too much moisture you can remove the cap of the bottle and let some evaporate naturally and replace the cap once the sides are clear. Make sure the pots do not dry out.



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Potting on

As the seedlings continue to grow, you will notice roots appearing around the edge of the pot. This is an indication that the plant is ready for “potting on”. This is the process of moving the seedling into a bigger pot. The additional compost will provide extra food and water for the young plant to continue to grow.

You can use a variety of recycled containers to pot your seedlings into. Yogurt pots, plastic cups and pop bottles (cut in half) all make ideal plant pots. However, you must ensure that you make a few drainage holes in the bottom of your containers first. An alternative is to make origami pots using old newspaper. Full video instructions can be found on YouTube at the following website:

http://youtu.be/_gTyAmH1LAK

To pot on your Sunflower, partly fill your container with compost allowing room to sit your compressed peat pot on top. Carefully fill the gaps around the edge of the compressed peat pot with more compost until the level of the fresh compost matches the top of the peat pot.

Acclimatisation

When the sunflowers have a set of four leaves they need to be “Hardened-off”. This is the process of making the plants used to the weather outside. This can be done by putting them outside in the day and bringing them back inside at night. After two weeks the sunflowers can then be taken home and planted in the garden. Take care not to damage the small stems and leaves otherwise the sunflower may not survive.



Sunflower Growing Competition

Planting your sunflower seedlings

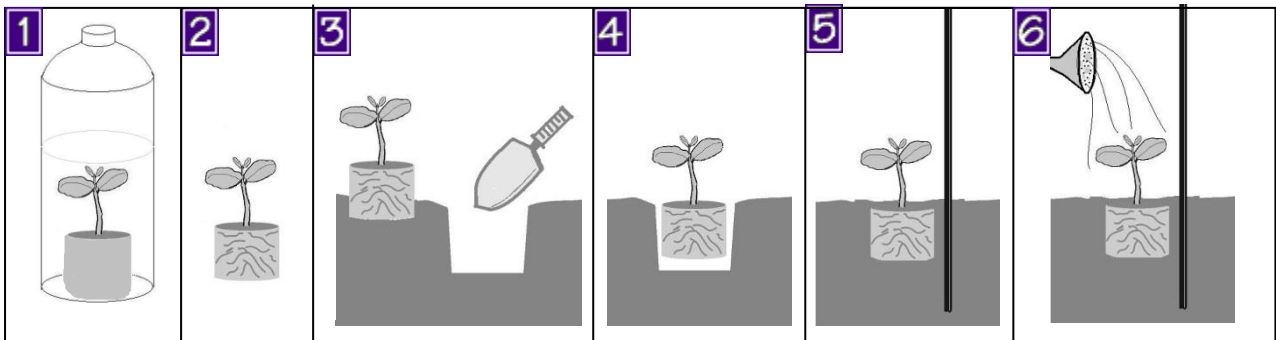
Well done, you have successfully grown your sunflower from seed and can now take it home.

Choosing somewhere to plant your sunflower

Choose where you want to plant the sunflower in your garden. Sunflowers will grow in almost any type of soil. Once you have chosen somewhere, ask your parent or guardian if it is suitable place. If you do not have a large enough garden or space in your own garden to plant the sunflower, you may be able to ask a relative if you can plant it in their garden.

Plant your seedling

Once you have picked a spot, you are ready to plant the seedling.

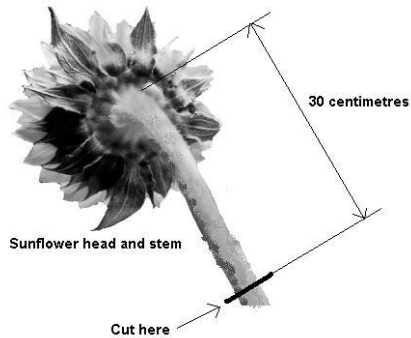


- 1** Take care in moving your seedling. Keep it in your protective wrapping or mini-greenhouse until you are ready to plant it.
- 2** Carefully take it out of any wrapping or your mini-greenhouse you used to bring it home. Make sure your seedling is still in one piece.
- 3** Use a trowel to dig a hole a bit bigger than the size of the pot.
- 4** Sit the seedling into the hole and make sure that the surface of the compost is in line with the surface of the soil around it. Gently put some of the soil back around the plant and press it down with your fingers. To stop the plant from drying out, cover with about one centimetre of soil but be careful not to damage the sunflower.
- 5** Your seedling will grow tall and will require support. You can do this by pushing in a stake close to the plant but not through the pot. Tie the sunflower to the stake as it grows making sure you do not tie it too tight otherwise you could damage the sunflower and stop it from growing.
- 6** Do not forget to water your seedling after you have planted it.



Sunflower Growing Competition

Harvesting the sunflower head for the weigh-in



Sunflowers are ready to harvest between September and October as the seeds become exposed. The time to harvest sunflowers is when the back of the sunflower head turns from green to yellow. This change in colour means the seeds are maturing and the sunflower head is drying out.

Ask your parent or guardian to cut off the head with 30 centimetres of stem to weigh at home or school

After the weigh-in

After the 'weigh in' you can hang the sunflowers by their stems in a light and airy place. This will allow the seeds to dry and stop them from rotting.

When the seeds have dried, they can be rubbed off the seed head with your hand. A sunflower can produce up to 1,500 seeds – you may wish to count your seeds and see how many yours has?

The seeds can then be stored in an airtight container to keep them fresh so that you can use them later. The harvested sunflower seeds can be planted in the spring out in the garden or used in the feeding of small pets such as hamsters and mice or you could put them out on a bird table in the winter.



Sunflower Growing Competition

Student Activity Sheet 1

Many plants are grown from seed.

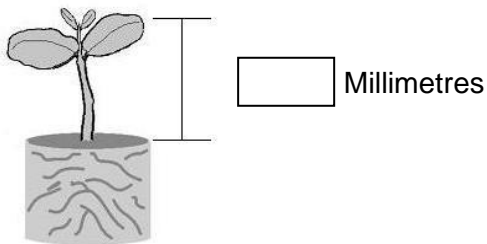
A young plant or 'seedling' looks a lot different to a fully grown plant.

You have been watching seeds grow, a process called 'germination'.

So that you can keep track of your own sunflower you might like to take some measurements and information about the seedling.

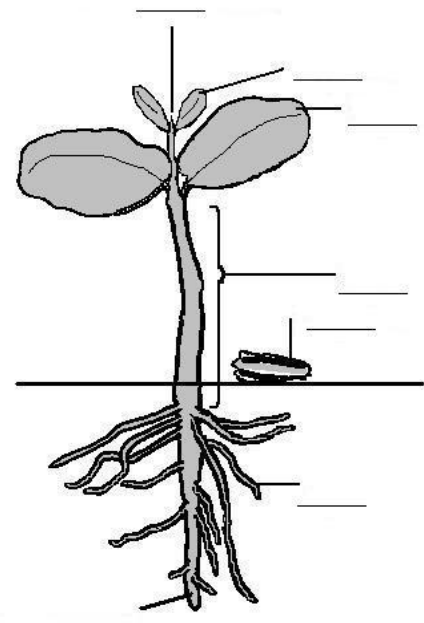
Your teacher will discuss the material with you.

- 1) Measure your seedling before you plant it. How tall is it (from the soil to the shoot tip)?



- 2) Name parts of the seedling, using the following words:

1. Growing Tip
2. True leaves
3. Seed Leaves
4. Stem
5. Seed coat
6. Side Roots
7. Tap root







- 3) What does a plant need to help it to grow?

- 4) Plants create their own food. This process is called _____



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Student Activity Sheet 2

	Keep a rough diary of a year in the life of a sunflower.
	Start with including information about the seedling, how you grew it and draw pictures or 'sketches' of what it looked like.
	When you get the sunflower home provide information about where you chose to grow it and what happens to it over the summer. Include information about the weather when the flower buds appear and when they bloom. This information is called 'observations'. Draw sketches of leaf shapes or insects.
	Write about any animals or insects that get attracted by your sunflower.

Example layout of a diary

Date	Observations	Sketches



Sunflower Growing Competition

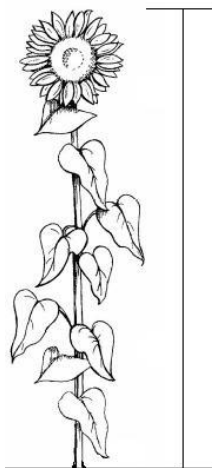
Student Activity Sheet 3

After choosing where you want to plant your seedling, you now have a natural and living plant to look after. Nature will do its best but you can help by making sure your sunflower is watered on dry days and supported using stakes and ties to stop it blowing over.

So you can keep track of your own sunflower you might like to take some measurements and information about the plant as it grows.

You may need to ask for help to help with measuring the sunflower.

- 1) Measure your sunflower each month. How tall is your sunflower in:



May centimetres

June centimetres

July centimetres

August centimetres

September centimetres

October centimetres

- 2) How many flowers does your sunflower have? _____
- 3) What was the average growth rate of your sunflower in centimetres per month?

(Hint: Divide the total height of your sunflower in centimetres in September or October by the number of months your sunflower has been growing.)

Your answer: _____ centimetres per month



Sunflower Growing Competition

Useful vocabulary

- Chlorophyll - A green substance that gives leaves their colour. Chlorophyll absorbs energy from sunlight that a plant uses to make food.
- Chloroplast - A plastid that contains chlorophyll and is the site where photosynthesis and starch formation occur.
- Cytoplasm - The fluid surrounds the nucleus and other organelles inside the cell.
- Photosynthesis - The formation of carbohydrates in the chlorophyll-containing tissues of plants exposed to light.
- Plastid - Any of various small particles in the cytoplasm of the cells of plants containing pigments, starch, oil or protein.
- Stomata - A very small hole in the surface of a leaf, usually on the lower side. Oxygen and carbon dioxide from the air enter through the stomata; oxygen, carbon dioxide and water vapour leave through the stomata.
- Tropism - The turning or bending movement of an organism or a part toward or away from an external stimulus, such as light, (heat, or gravity).



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Fantastic Sunflower Facts

The wild sunflower (Latin name - *Helianthus annuus*) from which all the different varieties have been descended from grows naturally in almost all North America from central Canada to northern Mexico. It grows in the Prairies and dry, open areas, and is sometimes a weed in cultivated fields and pastures. Sunflowers are widely grown commercially for the oil that is extracted from the seeds.

Sunflowers are supposedly 'allelopathic' which means that their roots give off a chemical that inhibits the growth of other nearby plants. See if you notice this in your garden?

- 50% of the world's sunflowers are grown in the Ukraine.
- A fully developed, large sunflower head may yield anywhere from 1,000 to 1,500 seeds.
- By 1616 it was considered to be a common plant in English gardens.
- Colonial American settlers believed that sunflowers planted around their house would help ward off Malaria.
- British Nuclear Fuels Ltd used dwarf sunflowers in their search for plants that could draw radioactive toxin out of contaminated land.
- Each mature flower yields 40% of its weight as oil. They are high in polyunsaturated fat and contain no cholesterol. The seeds are a good source of protein, starch and (especially) calories.
- Each sunflower head is made up of around 4,000 individual tiny flowers.
- Experiments during 1861 showed that a sunflower plant lost 850g (1lb 14oz) of water every 12 hours.
- In Peru the Aztecs worshipped sunflowers.
- In the late 1800's Vincent Van Gough, the impressionist painter, produced the first of his 'Sunflowers'. In 1987, Christies sold one of these paintings for £24,750,000.
- North American Indians used to grow sunflowers for food and medicinal use. They also used the seeds and petals for dyeing as well as pressing the seeds to make hair oil.
- Sunflower cultivation in South-west America has been dated as far back as 3000 BC.
- Sunflower seeds are now used for oil, birdseed, and snacks.





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- Sunflowers became popular as a food source in Russia because sunflowers were not on the Russian Orthodox Church's list of oil-rich foods (such as butter) that were forbidden during the Lenten period.
- Sunflowers come from the south and west of the United States of America
- The botanical name for sunflowers is Helianthus. The Greek word 'helios' means sun and 'anthos' means flower.
- The largest and plumpest sunflower seeds for eating will be found near the edge of the flower ring.
- The largest recorded sunflower head measured 82cm (32.5 inches) in diameter and was grown in Canada.
- The seeds are a rich source of calcium plus 11 other minerals.
- The shortest recorded mature sunflower was just over 5cm (2 inches) tall and was grown using the bonsai technique in Oregon, USA.
- The Spanish brought sunflower seeds back to Europe around 1510.
- The stems of sunflowers were used to fill lifejackets before man-made materials.
- The sunflower is the national flower of Russia.
- The French word for sunflower is 'tournesol' or literally "turn with the sun".
- In the peak growing period, sunflowers can grow as much as 30cm (12 inches) per day.
- The world record sunflower, grown in 1986 by M. Heijmf from Oirschot in the Netherlands stood at 25ft 5 1/2in; the British record is 23ft 6 1/2in and has been held by F. Kelland of Exeter since 1976.
- Around 600 tons (300 to 400 hectares) of sunflowers are grown in Britain.



Sunflower Growing Competition

COMPETITION TIMETABLE

