WHIZZ POP BANG!

AWESOMELY AMAZING SCIENCE FOR KIDS!

Make MAGICAL DRAGON EGGS!

Create a squashy egg!

Easter Eggs-periments

FREE DOWNLOADABLE BOOKLET

- CRAFT A BUNNY BOOKMARK
- PLAY EASTER BASKETBALL
- CREATE AN EASTER CHICK SPINNER

GET EXPERIMENTING! Grow crystal eggshell geodes!

WHIZZPOPBANG.COM FREE EASTER DOWNLOAD

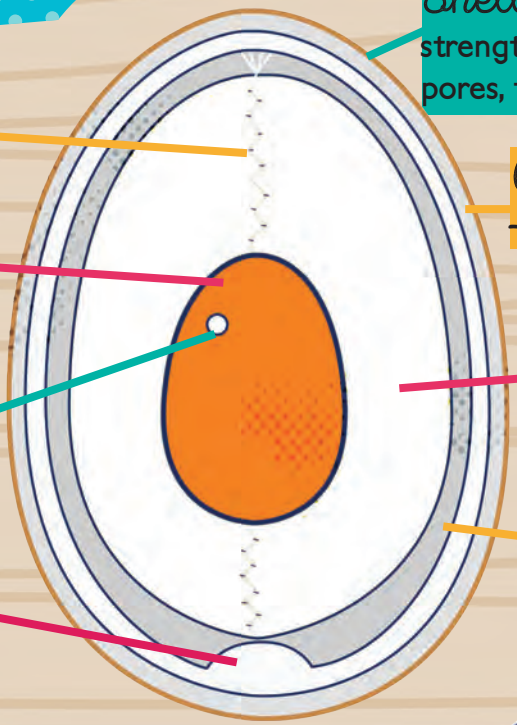
EXPERIMENTS GAMES RIDDLES SCIENCE FACTS

Eggs-traordinary Eggs

An egg is an amazing package that contains everything necessary to grow from a speck into a chick in a matter of days.

By our eggspert, Alister Jones, from the Domestic Fowl Trust

Inside an egg



Shell – gives the egg its strength and has tiny holes, called pores, to let gases through

Chalaza – holds the yolk in place

Outer membrane – holds the air

Yolk – made of fat and protein

Albumin or egg white – made of water and protein

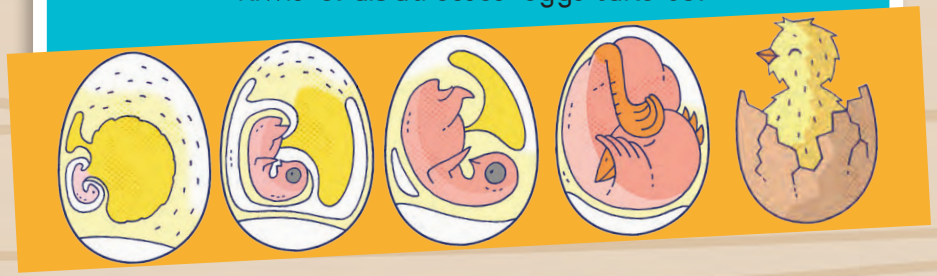
Germinal disc – white spot that develops into a chick if the egg is fertilised

Inner membrane – holds the inner contents of the egg

Air sac – supplies the developing chick with oxygen

Growing a chick

A fertile egg only develops if it is kept at body temperature, usually 37.7°C. Hens' eggs take 21 days to hatch. Finches' & cuckoos' eggs take only 11 days, but kiwis' & albatrosses' eggs take 85!



Why do we celebrate Easter with eggs?

Traditionally, during Lent, Christians weren't allowed to eat eggs. Lent ends on Easter Sunday and so this is the customary day to enjoy eggs.

Easter also coincides with the beginning of spring, when the weather is warm enough for birds to start to brood their eggs.

Fry's and Cadbury made the first factory-produced hollow chocolate Easter eggs in the 1870s.

Why are eggs egg-shaped?

TRY THIS

What you do: Take a ball and roll it from one end of a room to the other. Now take an egg and do the same.

You should notice... The ball rolls right across the room, but the egg rolls round in a circle.

But why? This rolling pattern stops eggs from rolling off cliff edges. Seabirds have eggs that are even less spherical than hens' eggs, so they roll in even smaller circles. The egg shape may also help birds to pack the eggs more tightly together and keep them warm as they sit on them.

Animal eggs

Most animals produce eggs, but not all eggs have a hard shell. Some eggs develop inside their mothers' bodies.

Viviparous animals give birth to live young. Almost all mammals, some reptiles and a few fish are viviparous.

Oviparous animals lay eggs. All birds and most fish, amphibians, arthropods and reptiles are oviparous.

TRUE / UNTRUE

The following animals lay eggs... (circle your answer)

1. Hammerhead Shark (fish) - TRUE / UNTRUE
2. Goldfish (fish) - TRUE / UNTRUE
3. Adder (reptile) - TRUE / UNTRUE
4. Grass snake (reptile) - TRUE / UNTRUE
5. Dolphin (mammal) - TRUE / UNTRUE
6. Duck-billed platypus (mammal) - TRUE / UNTRUE
7. Emu (bird) - TRUE / UNTRUE
8. Butterfly (arthropod) - TRUE / UNTRUE
9. Scorpion (arthropod) - TRUE / UNTRUE
10. Frog (amphibian) - TRUE / UNTRUE

Check your answers on the last page!

Gaak's baby photo

Egg-Shell-ent!

Try these three cracking egg experiments!

TRY THIS

1 Eggshells are designed to protect the growing chick. Although you may think of eggs as delicate, they are actually surprisingly strong...

- *Wrap an uncooked egg in cling-film so it's completely covered.*
- *Put it in the palm of your hand and squeeze the egg all over as hard as you can.*

The egg shouldn't break because the pressure is spread over the whole surface. Watch out though, if you squeeze the middle of the egg between two fingers, it will break and it could be messy!

2 If you are *very* careful and you have your parents' permission you can actually stand on eggs without breaking them!

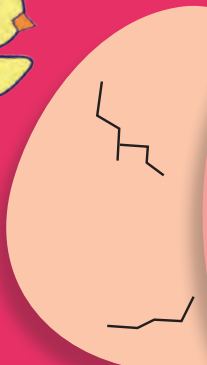
- *You will need to protect the floor from any accidents with a plastic sheet, or go outside.*
- *You will need 2 boxes (each containing 6 eggs); one for each foot.*
- *You will need a friend to steady you as you gently move your foot down onto the egg box as evenly over the six eggs as possible.*

If you do this very carefully, then the eggs shouldn't break because you are spreading your weight over all of the eggs.

3 Eggshells are made of calcium carbonate. It's strong stuff but it can be dissolved away with an acid.

- *Place a raw egg in a cup full of vinegar.*
- *Notice bubbles as carbon dioxide gas is given off.*
- *Keep an eye on your egg over the next three days and top up with more vinegar if the bubbles stop.*
- *Remove the egg and gently rub the remains of the shell away with your fingers.*

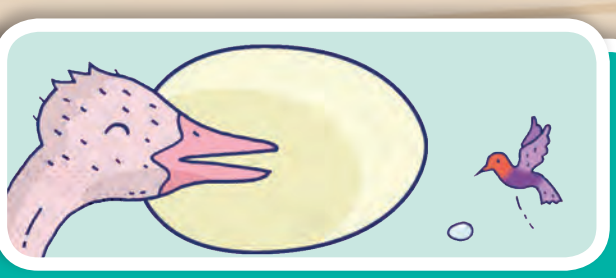
You will be left with a soft, squishy egg. Use a torch to see the yolk floating around inside!



Caution:
Raw eggs can contain or be covered by bacteria, for example salmonella. These bacteria are destroyed by cooking, but you must wash your hands after experimenting with raw eggs.

Little & large

The smallest birds in the world are bee hummingbirds and they lay eggs that are only around 7 mm long and weigh around 0.4 grams. The largest living birds are ostriches. They lay eggs that are around 15 cm long and weigh around 1,400 grams.



Wow! You'd need 3,500 bee hummingbird eggs to make one ostrich egg-size omelette!

Did you know?

Calcium carbonate is white but different kinds of birds lay eggs that are different colours: pinks, oranges, blues and greens. The colour doesn't affect what's inside the shell!

It's all white!

NEED TO KNOW

Egg white, or albumin, is mostly water with 10% protein. Each protein molecule is folded in a very special way and is separate from the others. Proteins can be "denatured" by heating them. This means that they become unfolded and tangle up together. This is an irreversible process that changes the albumin from being clear to becoming white. Watch someone fry an egg to see this happen.

Make magical dragon eggs!

MAKE THIS

- *Ask a grown-up to hard-boil some eggs.*
- *Let them cool and then roll them on the work-surface to crackle the shell all over.*
- *Half-fill some cups with water and mix in a good dollop of food colouring into each cup (the gel pastes work best). Pop an egg into each cup and leave in the fridge overnight.*
- *Peel off the shell and you'll see that the dye is taken up wherever the shell is cracked.*
- *Now gobble them up!*

To tell if an egg is raw or hard-boiled, spin it! If the egg spins smoothly, it is cooked, but if it wobbles, it is raw. This is because the liquid inside a raw egg moves around, throwing it off balance.

Find out more about eggs at **www.domesticfowltrust.co.uk / pages/education**

Crystals can form in hollow rocks called geodes

TRUE UNTRUE

Painite can be taken to cure pain.

TRUE ☐ ☐ UNTRUE

Answer on page 34

TRUE UNTRUE

Oakstone is a gem that looks like wood.

TRUE ☐ ☐ UNTRUE

Answer on page 34

Check your answers on the last page!

AWESOME FACT

In 2017 two US students made chocolate geodes with sugar crystals in them. The crystals took six months to form.

MAKE EGGSHELL GEODES

Adult supervision needed.

You will need:

- Eggs plus egg box
- Glue
- Paintbrush
- Salt (table salt, Epsom salts or alum) or sugar
- Food colouring
- Newspaper

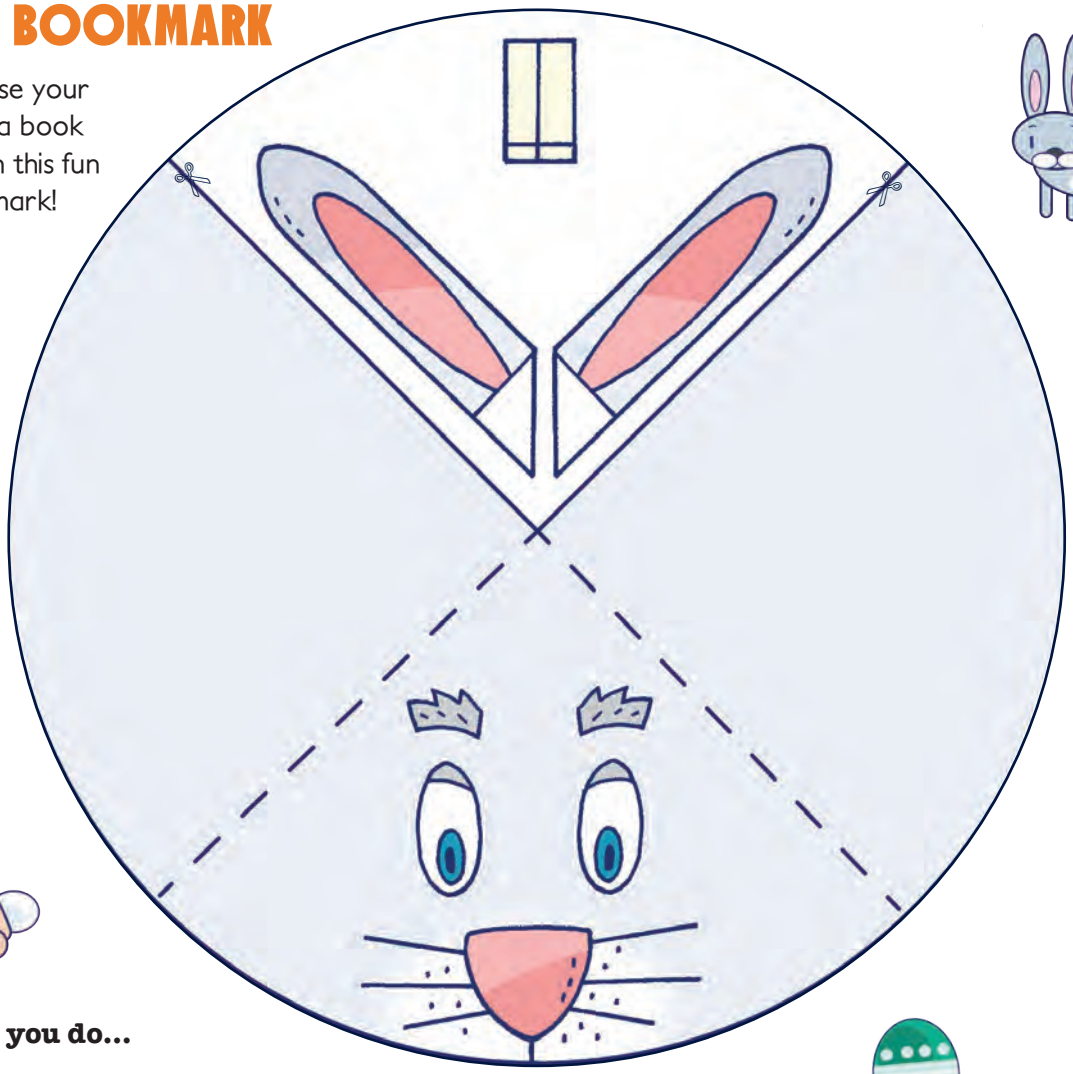
1. Crack the eggs, leaving the bottom half of the shell intact. Poor out the insides (scrambled eggs for tea!). Carefully wash out the shells and leave to dry.
2. Paint the inside of the egg with a thin coating of glue and coat with salt or sugar. Leave to dry.
3. Ask an adult to help you mix food colouring into a small jug of boiling water.
4. With the help of your adult, carefully pour salt or sugar into the hot coloured water, stirring all the time, until no more will dissolve (you'll see solid grains at the bottom of the container that refuse to dissolve). Leave your supersaturated solution to cool.
5. Place your eggshells in the egg box to keep them upright. Pour pure or coloured water into one eggshell and then carefully fill the remaining shells with your supersaturated solution. You can compare the results later.
6. Place the egg box on some newspaper and leave in a warm, safe place, checking on the eggs every day. If the solution isn't evaporating quickly enough, pour some out.

As the water evaporates, the salt or sugar is left behind and attaches itself to the small crystals that you glued to the inside of the shell. These grow into large crystals, just like the inside of a real geode! Experiment with different salts to compare different crystal shapes.

MAKE THIS

EASTER BUNNY BOOKMARK

Never lose your place in a book again with this fun bookmark!



What you do...

1. Cut around the circular template.
2. Cut along the lines, as indicated, to remove the quarter with the ears and teeth and set aside.
3. Fold along the dotted lines and glue one flap over the other to make the back of the bunny's head.
4. Cut out the ears and teeth and attach to the face with glue stick and leave to dry.
5. You can now slip your Easter bunny over the corner of a page to mark your place in a book.

RIDDLES

1) I'm a box without hinges, key, or lid, yet golden treasure inside is hid. What am I?

2) What grows up while growing down?

Check your answers on the last page!

Rabbits are herbivores (they only eat plants).

Rabbits use their big ears to pick up the tiniest sounds of danger.

Rabbits' eyes are on the sides of their heads, so they can see nearly all the way around in almost a full circle.

Rabbits can sniff out approaching predators with their highly sensitive sense of smell.

JOKES

What did the Easter Bunny use after he got wet in the rain?
A hare-dryer!

How does the Easter Bunny stay fit?
With plenty of eggs-ercise

EASTER BASKET BALL

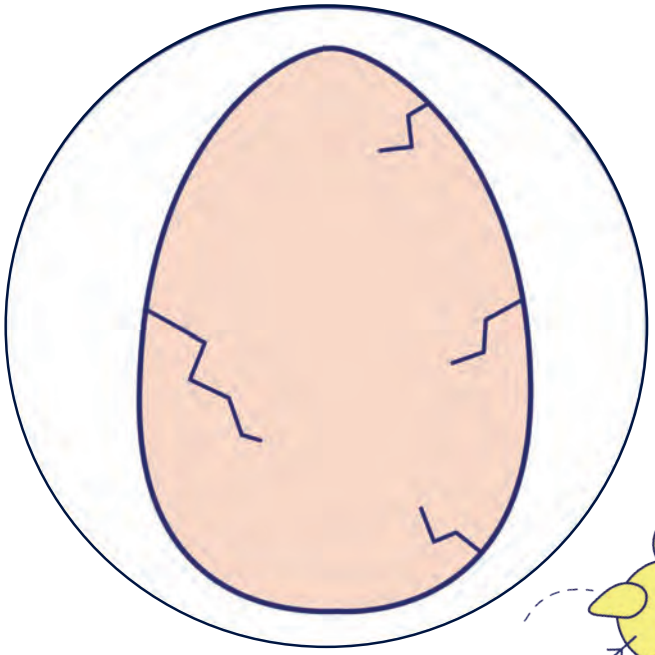
What you do...

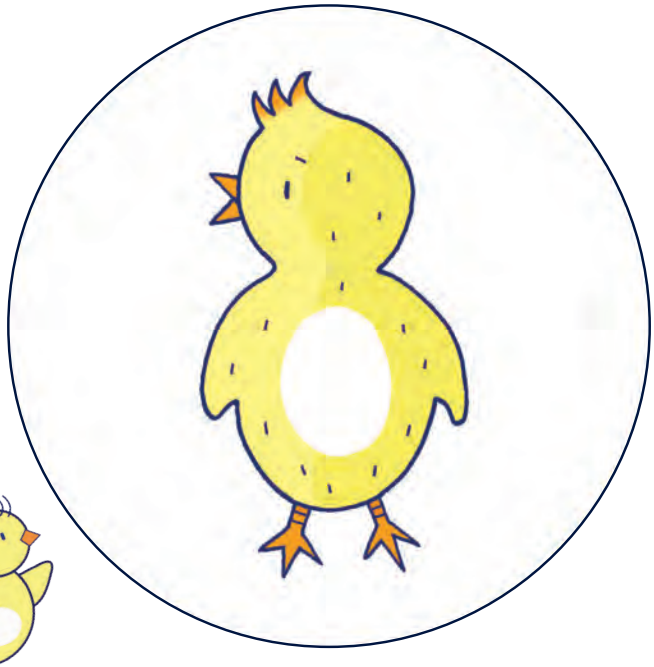
1. Cut out the Easter basket and the hole inside the handle. Cut the slots in its base, cut out a 2 x 12 cm strip of thick card and, bending the card round, slot it through both slots, so that the basket stands upright.
2. Cut out the grey strip, fold along the dotted lines, and glue or tape the flap to the other end of the strip to make a launching ramp.
3. Use sticky tack to hold the ramp in place a short distance away from the basket.
4. Scrumple up some small balls of paper. Place them at the bottom of the ramp, take aim, and use your fingertip to flick the ball up the ramp and through the hole in the basket.
5. Experiment with how far away you can move the ramp and still hit the target. What happens if you make a steeper ramp – how far away can you move the target now? Try scrunching up your paper balls more tightly. Does this make it easier or harder?

GLUE

WARNING!

Before you assemble the ramp on the left, make sure that you've noted the instructions for the Easter spinner on the other side.





Why not design your own spinner on some blank paper? You could merge a bunny into a magician's hat!

EASTER CHICK SPINNER

Trick your own eyes with this Easter spinner (templates above)

What you do...

1. Cut out the two circles and cover the backs in glue.
2. Place a pencil or chopstick in the middle and sandwich them together, making sure that both the egg and chick are vertical.
3. Spin the pencil between the palms of your hands and watch the chick appear in the egg!

What's happening?

The spinner rotates so quickly that your brain can't process the two separate images. They appear as one image merged together!

ANSWERS

Egg laying TRUE/UNTRUE

1) Hammerhead shark (fish) - UNTRUE
2) Goldfish (fish) - TRUE
3) Adder (reptile) - UNTRUE
4) Grass snake (reptile) - TRUE
5) Dolphin (mammal) - UNTRUE
6) Duck-billed platypus (mammal) - TRUE
7) Emu (bird) - TRUE
8) Butterfly (arthropod) - TRUE
9) Scorpion (arthropod) - UNTRUE
10) Frog (amphibian) - TRUE

Riddles

1) An egg
2) A duckling

Gems TRUE/UNTRUE

UNTRUE: It's named after its discoverer, Arthur Pain.
TRUE: If you cut oakstone, the inside looks like tree rings.