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Opening extract from

This is Not a Science Book: A Smart Art Activity Book

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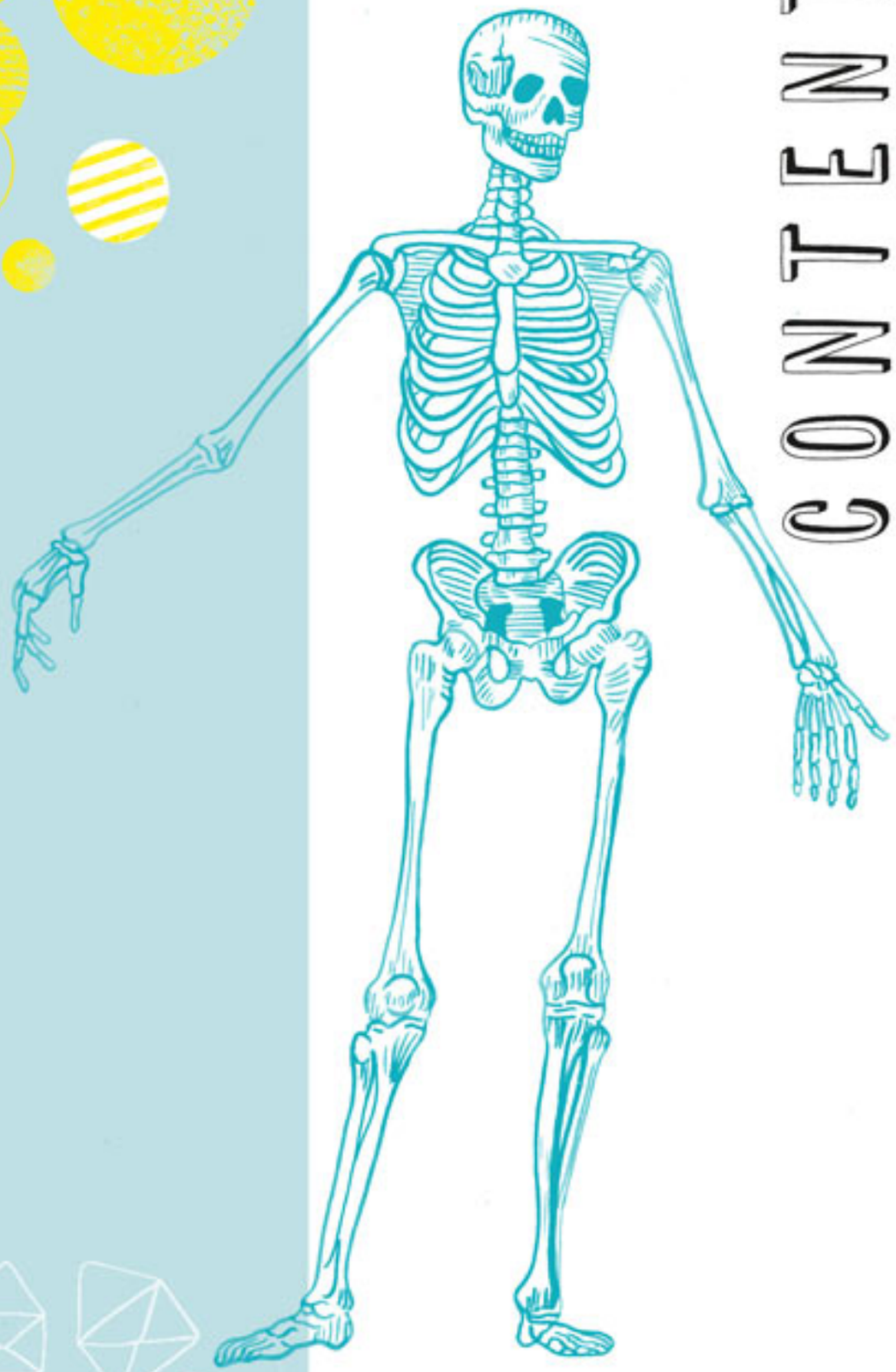


CONTENTS

MOON MONITOR

The Moon travels on a path around Earth called an orbit. Just like the Earth, half of the Moon is lit by the Sun while the other half is in darkness.

AS THE MOON TRAVELS AROUND THE EARTH, THE AMOUNT OF THE MOON WE CAN SEE ON EARTH CHANGES. THESE ARE CALLED PHASES AND EACH HAS A NAME.

The Moon takes 29½ days to go through all the phases. This is what the phases look like when seen from Earth.

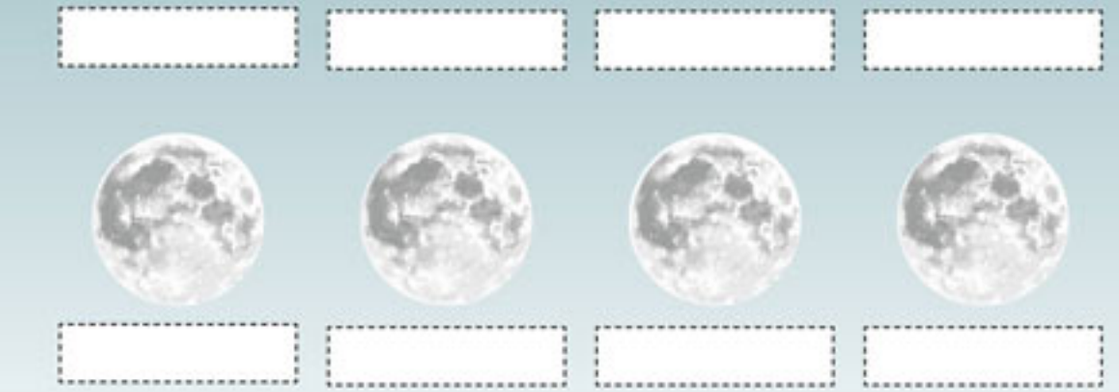
Only 12 people have stood on the Moon. They were all astronauts in Apollo spacecraft between 1969 and 1972. What might a Moon lander spacecraft look like in the future? Design your own here. Add a flag.

Chart the Moon's Phases

FOR ONE MONTH, EVERY TWO OR THREE DAYS TAKE A LOOK AT THE MOON AND RECORD WHAT YOU SEE BELOW.

Using a black pen, block out the part of the Moon you cannot see.

Add the date here.



The Moon's gravity is about one-sixth of that on Earth. This means that if you could jump 1 metre high on Earth, you'd be able to jump 6 metres high on the Moon!

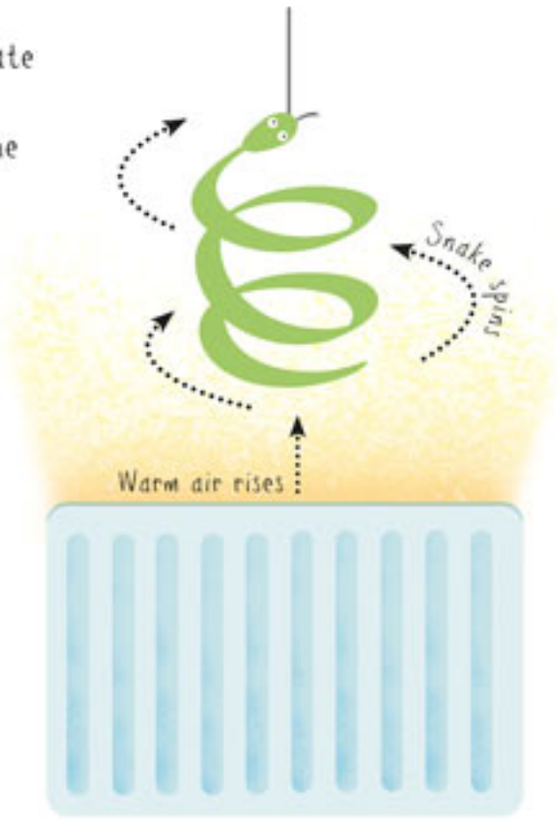
HEATING UP

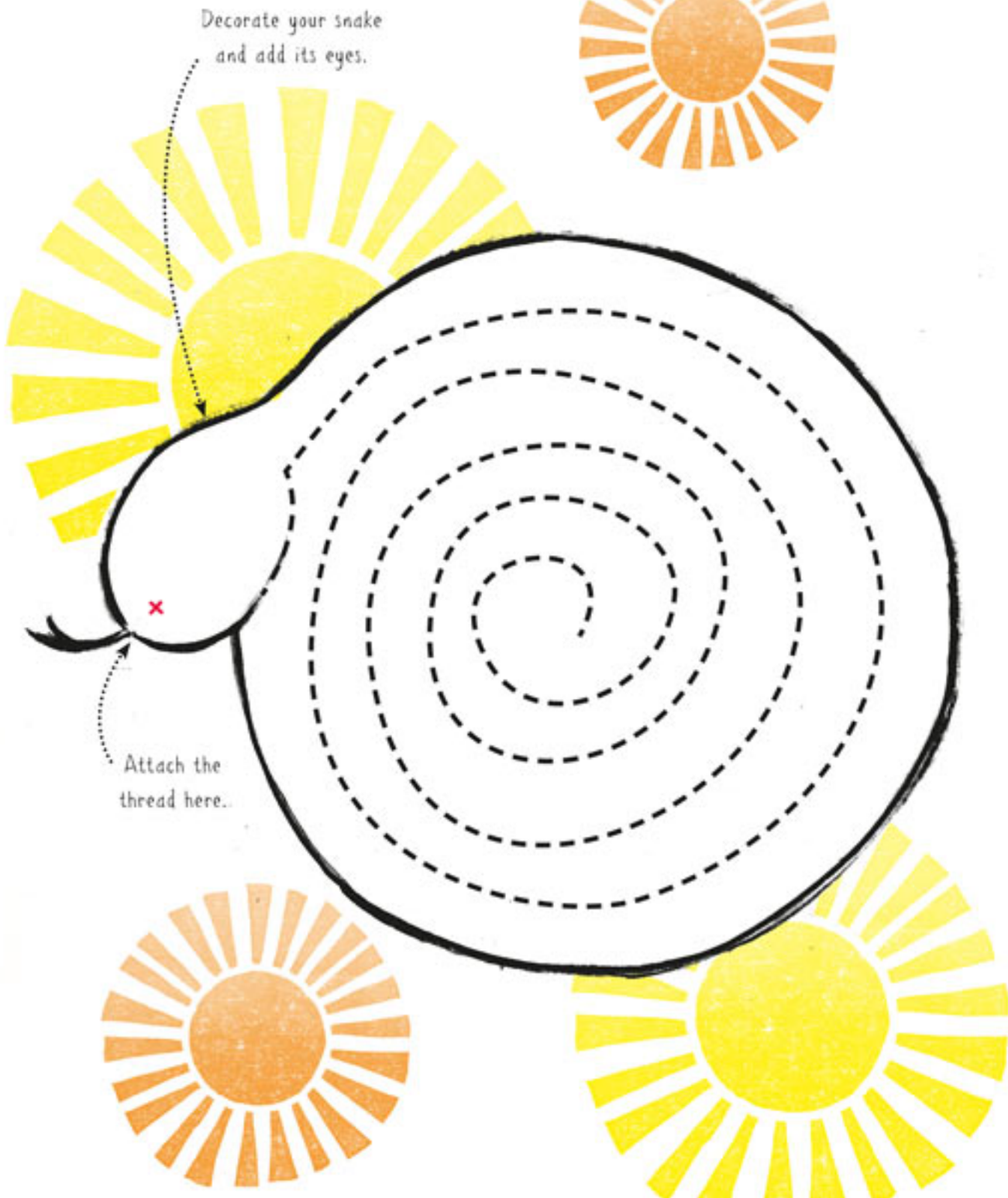
HEAT IS A FORM OF ENERGY. HEATING SOMETHING UP GIVES IT MORE ENERGY.

Spinning Snake

HEAT MOVES INTO COOLER PLACES. THIS IS WHY RADIATORS WORK TO HEAT YOUR HOME. AIR HEATED BY A RADIATOR RISES, AND COOLER AIR MOVES IN TO TAKE ITS PLACE. THIS CREATES A FLOW OF MOVING AIR CALLED A CONVECTION CURRENT. YOU CAN SEE CONVECTION IN ACTION WITH THIS AMAZING SPINNING SNAKE!

1. Copy or trace the snake template onto thick white paper or thin card, or use the template at the back of this book.
2. Cut carefully around the spiral and attach a piece of thread to the snake's head.
3. Hang your snake above a warm radiator and watch it spin.





THE LIGHT STUFF

Light is a form of energy and is made up of different colours, called the colour spectrum. It travels in straight lines and fast – 300,000 KM EVERY SECOND!

When light hits an object, some of these colours are absorbed. Other colours reflect or bounce off and it's these colours that give the object the colour your eyes see!

All of these colours are absorbed by the lemon...

... but yellow light bounces off, making the lemon appear yellow to us.

White light from the Sun is a mixture of the different colours of the spectrum. When this light passes through drops of water in the air, it bends and its colours separate out, creating a RAINBOW!

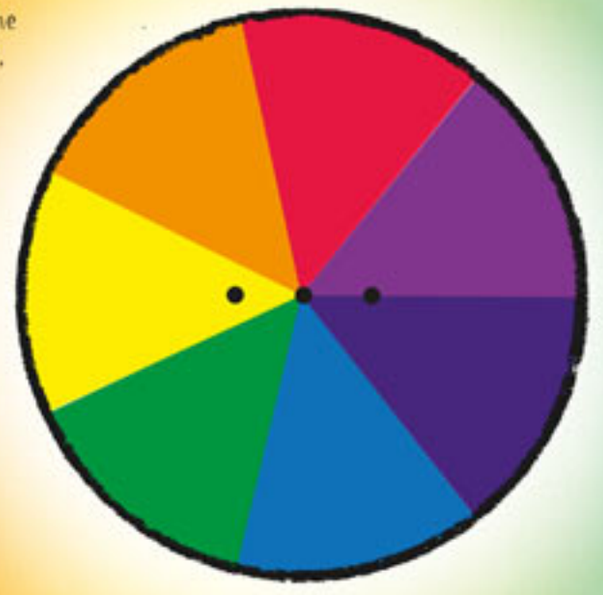
Colour in these bands in order: red, orange, yellow, green, blue, indigo (dark blue) and violet (purple).

Make a Colour Spinner

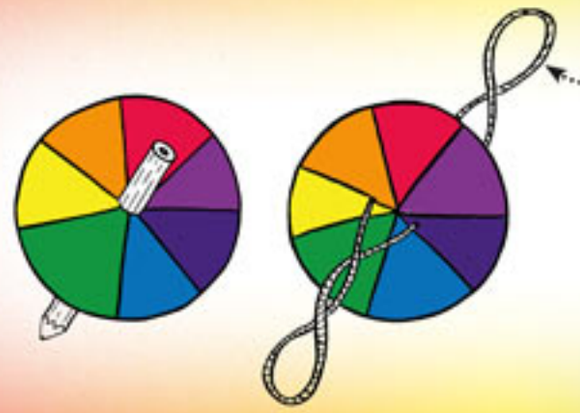
WE'VE SEEN HOW WHITE LIGHT CAN BE SPLIT UP INTO ITS INDIVIDUAL COLOURS. WITH THIS CLEVER SPINNER YOU CAN RECOMBINE THE COLOURS TO MAKE WHITE AGAIN!

1 Trace this circle onto thin white card and then colour it in with the different colours of the spectrum, or use the template at the back of this book.

2 Cut your circle out. With an adult's help, either poke a small hole through the middle and push a small pencil stub through the hole, or make two small holes in the centre and thread a large rubber band or a length of elastic or string through the holes.



3 Spin your disc nice and fast. The colours should all merge and disappear, and the disc will appear white. Magic!



Place your index finger through the loop at each end of the elastic, and flip the disc over in a circular motion until the elastic is twisted. Then pull the elastic tight to make the disc spin!

AFTERIMAGES

Afterimages are pictures you can still see after you've stopped looking at them. Here you can create some afterimage illusions, which also make your eyes see colours that aren't even there. Crazy!

Apple of Your Eye

1 Colour in this apple using a bright light-blue pen, with bright pink for the leaf.

2 Stare at it for 45 seconds. Try to concentrate and do not let your eyes wander at all.

3 Turn away and look at a blank piece of white paper. WHAT DO YOU SEE?

A RED APPLE WITH A GREEN LEAF!

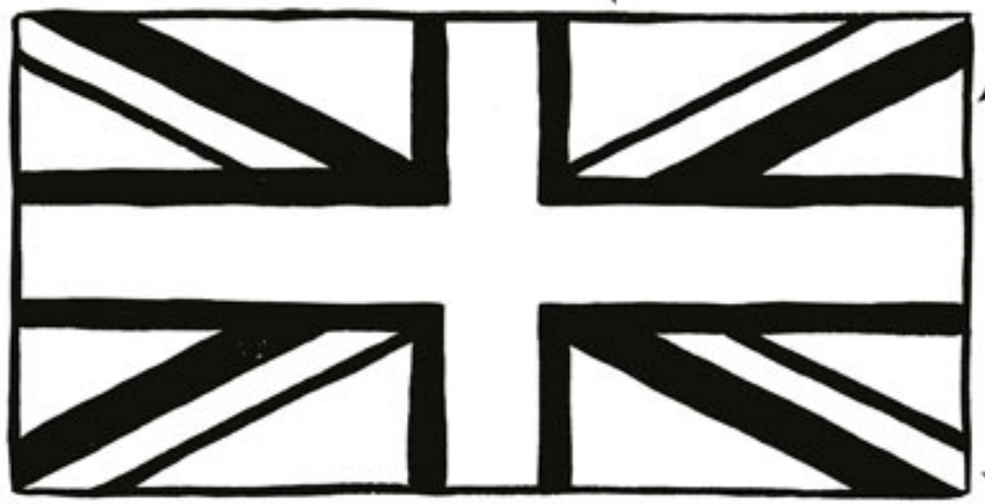
HOW COME?

SPECIAL CELLS (CALLED RODS AND CONES) AT THE BACK OF YOUR EYES HANDLE THE DIFFERENT COLOURS OF LIGHT THAT REACH THEM. WHEN THEY GET TIRED OF STARING AT THE SAME COLOUR FOR A LONG PERIOD OF TIME, OTHER CELLS NEAR THEM SEND SIGNALS TO THE BRAIN BUT FEATURING AN ALTERNATIVE COLOUR (SEE OPPOSITE).

Changing Colours

Using pens, colour in this Union Jack flag (the flag of the United Kingdom).

Colour the eight triangle shapes bright yellow.



Colour the remaining white spaces light blue.

Stare at your completed image for 45 seconds, then look at a blank piece of white paper.

YOU SHOULD SEE THE UNION JACK NOW IN ITS CORRECT COLOURS OF RED, WHITE AND BLUE.

WHY DID THE TRIANGLES YOU COLOURED YELLOW APPEAR BLUE, AND THE AREAS YOU COLOURED LIGHT BLUE APPEAR RED?

Scientists call these pairs of colours 'complementary colours', and they appear opposite each other on a colour wheel. In an afterimage, you will see the complementary colour to the colour you were first staring at.

You can use a colour wheel to draw your own afterimage flags or different pictures.