

SCIENCE SPAZA

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AFRICA ON THE FAR SIDE OF THE MOON

YOH, THE MOON IS SO **BRIGHT** TONIGHT.

HAVE YOU NOTICED, THE MOON ALWAYS HAS ITS **BACK** TO US, I WONDER WHAT IT'S HIDING?

JUST THINK HOW **QUIET** IT IS ON THE FAR SIDE OF THE MOON, NO RADIO WAVES AND SIGNALS FROM EARTH. IT'S THE PERFECT PLACE FOR A **RADIO TELESCOPE**, EVEN BETTER THAN THE KAROO!

AND IT'S JUST THE FIRST STEP IN BUILDING A LARGE TELESCOPIC ARRAY ON THE FAR SIDE OF THE MOON. THIS WILL HELP US STUDY EVENTS IN SPACE...

...EVEN THE BEGINNING OF THE UNIVERSE!

THAT'S WHAT AFRICA'S FIRST MISSION TO THE MOON IS ALL ABOUT! AFRICAN SCIENTISTS ARE SENDING A TELESCOPE TO SPACE AS PART OF CHINA'S CHANG'E-8 MISSION.

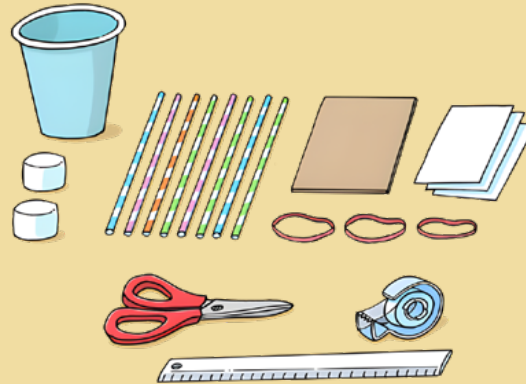
WOW, SO SOON WHEN WE LOOK UP AT THE MOON, WE WILL BE LOOKING AT AFRICAN RESEARCH TOO!

BUILD A MOON LANDER!

ANYTHING THAT GETS SENT TO THE MOON NEEDS TO BE ABLE TO **LAND SAFELY** WITHOUT DAMAGING ITS CARGO. CAN YOU BUILD A LANDER THAT CAN ABSORB THE SHOCK OF LANDING AND LAND RIGHT SIDE UP?



Picture credit: China News Service



YOU WILL NEED:

- 1 PIECE OF STIFF PAPER OR CARDBOARD ($\pm 10\text{CM} \times 13\text{CM}$)
- 1 SMALL PAPER OR PLASTIC CUP
- 3 PIECES OF THICK PAPER ($\pm 8\text{CM} \times 13\text{CM}$)
- 2 MARSHMALLOWS OR BALLS OF PAPER
- 3 RUBBER BANDS
- 8 PLASTIC STRAWS
- SCISSORS
- TAPE
- A RULER OR MEASURING TAPE

1

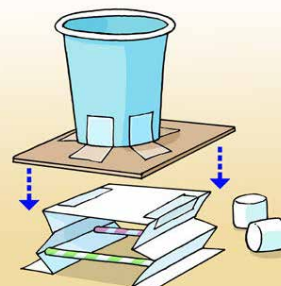
TAPE YOUR CUP TO THE THICK CARDBOARD PLATFORM.



2

DESIGN A SHOCK-ABSORBING SYSTEM THAT CAN GO BELOW THE PLATFORM. THINK ABOUT SPRINGS OR CUSHIONS. (REMEMBER YOUR LANDER NEEDS TO STAY UPRIGHT WHEN IT FALLS THROUGH THE AIR).

NOW ATTACH YOUR SHOCK ABSORBERS TO THE PLATFORM.



3

PUT YOUR CARGO INSIDE THE CUP (THE TWO MARSHMALLOWS OR PAPER BALLS).

NOW TEST! FIRST DROP YOUR LANDER FROM A HEIGHT OF 30 CM. THEN GO UP BY 10 CM EACH TIME.

4

ASK YOURSELF:

WAS IT A SMOOTH LANDING?
DID YOUR LANDER LAND RIGHT SIDE UP?

DID YOUR CARGO SURVIVE?
WHAT CAN YOU CHANGE TO MAKE YOUR LANDER BETTER?

5

TRY AGAIN! PREPARING FOR SPACE EXPLORATION IS ALL ABOUT TESTING UNTIL YOU GET A GOOD RESULT.

WHAT IS THE HIGHEST YOU CAN LET YOUR LANDER FALL WITHOUT LOSING ITS CARGO? COMPARE WITH YOUR FRIENDS.

TIPS:

IF YOUR LANDER TIPS OVER AS IT FALLS THROUGH THE AIR:

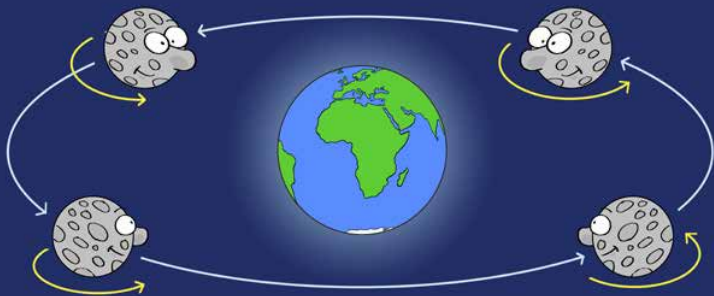
- MAKE SURE THE CUP IS IN THE CENTRE OF THE PLATFORM.
- CHECK THAT ANY WEIGHT IS EVENLY DISTRIBUTED.
- MAKE SURE IT'S LEVEL WHEN YOU RELEASE IT.

IF YOUR CARGO BOUNCES OUT OF THE CUP:

- ADD MORE SOFT PADS OR CHANGE YOUR SHOCK ABSORBERS.

FAR FROM THE DARK SIDE

WHY DO WE ONLY SEE
ONE SIDE OF
THE MOON?



THE MOON ROTATES AROUND ITS AXIS AT THE SAME RATE IT ORBITS AROUND EARTH. SO, WE ALWAYS SEE THE SAME SIDE FROM EARTH.

CAREERS

BENEFITS OF RADIO ASTRONOMY



Radio astronomy is an exciting field that combines research, engineering, science and computers. Important subjects are physics, mathematics and computer science.

Research in radio astronomy can also help us build technology that is important in our everyday life. For example, Wi-Fi, medical scanners that help us look inside the body, GPS and accurate maps wouldn't exist without developments in radio astronomy. As well as helping us to understand the universe that we live in, research in radio astronomy can also help us build technology that is important in our everyday life.

CURRICULUM LINKS

- *Natural Sciences Grade 4:*
- The Earth and the Sun
- *Natural Sciences Grade 6:*
- The movement of the Moon
- *Natural Sciences Grade 7:*
- The movement of the Moon
- *Natural Sciences Grade 8:*
- The Solar System
- *Physical Sciences Grade 10:*
- The electromagnetic spectrum (radio waves)
- *Geography Grade 11:*
- Africa's weather and climate

Other careers related to space:

- Mechanical, electrical or electronic engineer
- Earth observation scientist
- Space weather researcher
- Geoinformatics/GIS/remote sensing systems analyst
- Radio astronomer

ACTIVITY: KEEP A MOON JOURNAL

HAVE YOU NOTICED HOW THE MOON CHANGES OVER A MONTH? IT TAKES ABOUT FOUR WEEKS FOR THE MOON TO TRAVEL AROUND THE EARTH, WHICH MEANS DIFFERENT PARTS ARE LIT UP BY THE SUN AT DIFFERENT TIMES.

What to do:

Copy the blank calendar on an A4 page and draw the moon for a month.

1. Write down the date when you are looking at the moon.
2. Draw the moon as you see it in the sky.
3. If you can't see it, leave the space blank.
4. Do this every day, for at least 30 days. Can you spot a pattern?
5. At the end, you should be able to draw the moon even on the nights you don't see it.

 Date:	 Date:	 Date:	 Date:	 Date:	 Date:	 Date:
 Date:	 Date:	 Date:	 Date:	 Date:	 Date:	 Date:
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There are 8 moon phases in a month. Look up the names of the phases and write and draw them below. We've added the most famous one already.

				Full Moon			

WE WANT YOUR FEEDBACK!

WE WANT TO HEAR FROM YOU.
SEND A PICTURE OF YOUR
MOON JOURNAL TO
076 173 7130.



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