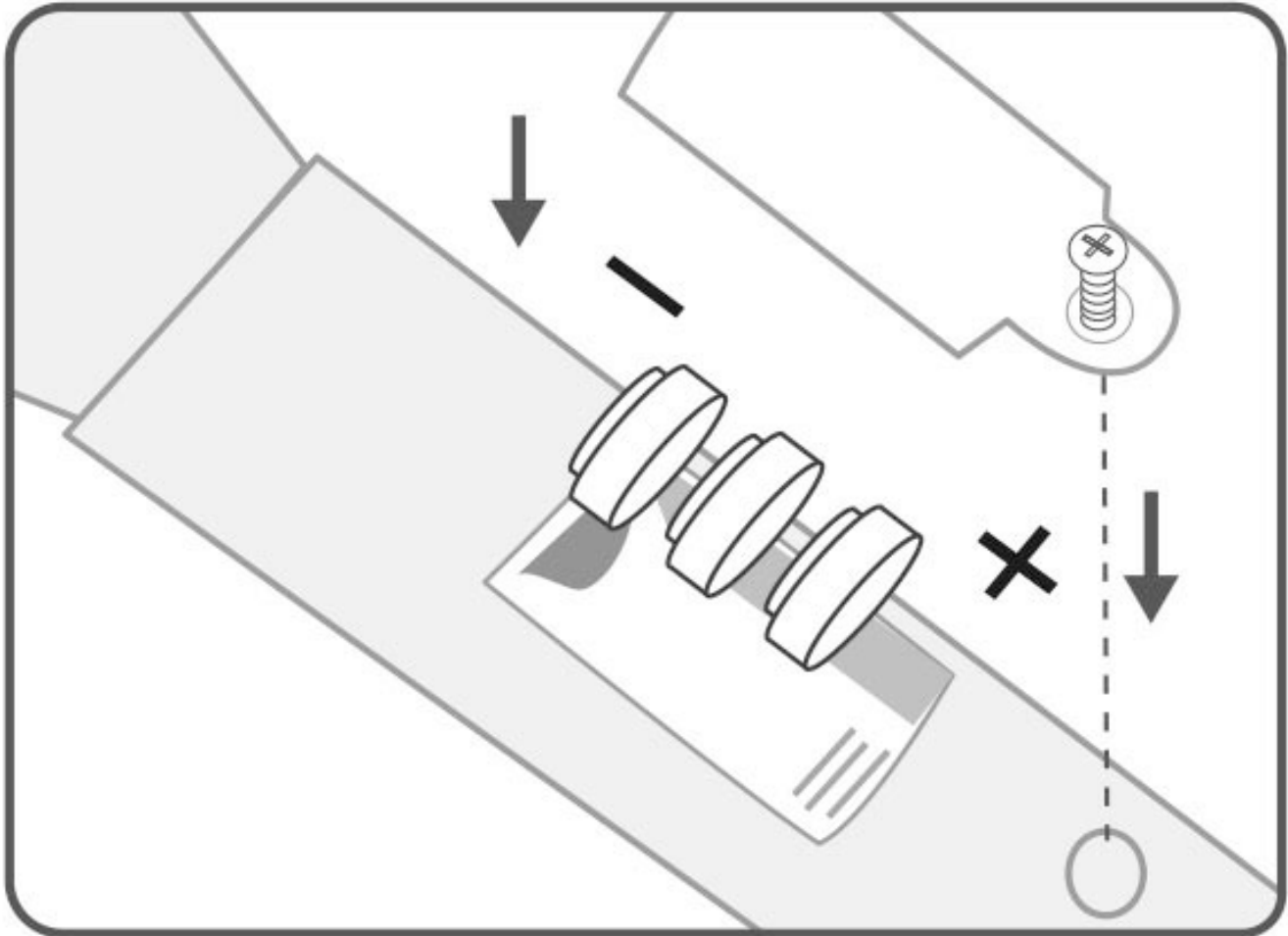


## **SUPER MOON TORCH**

**TO PARENTS:** Read all instructions before providing guidance to your children.

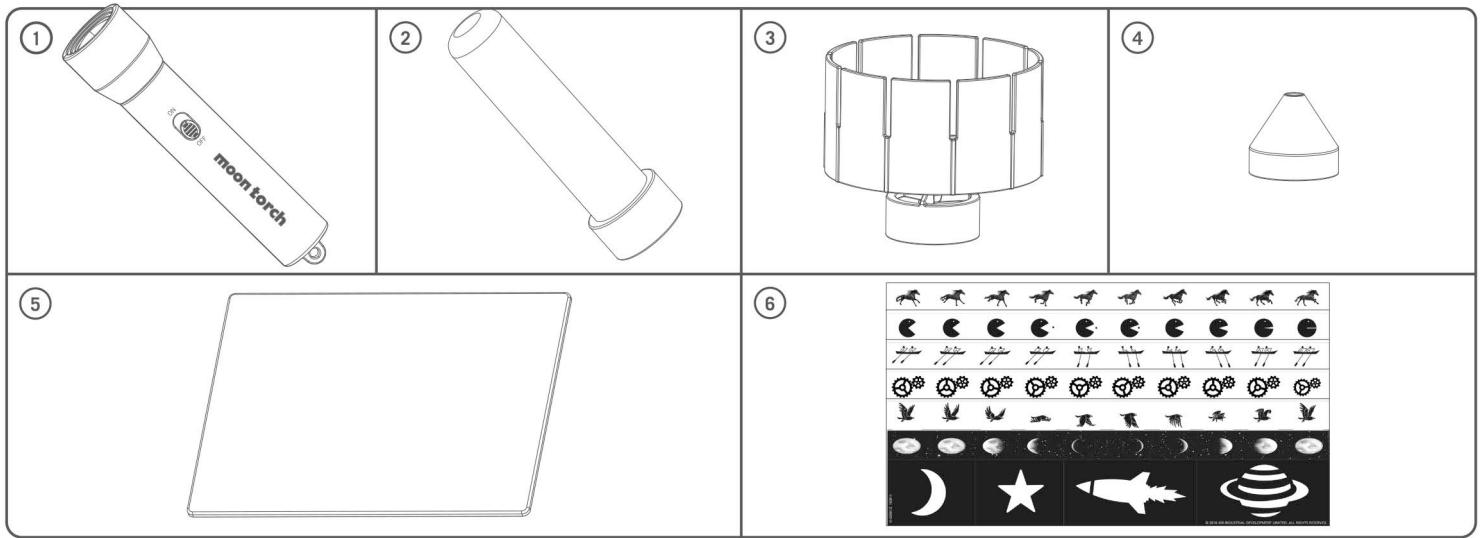
### **A. SAFETY MESSAGES:**

- 1. Please read these instructions carefully before using the product.**
- 2. Adult supervision and assistance are recommended at all times.**
- 3. This kit is intended for children over 8 years of age.**
- 4. This kit and the finished product contain small parts that present a choking hazard. Keep away from children under 3 years of age.**
- 5. Adult assistance and supervision are recommended when using scissors.**



### **B. USE OF BATTERIES:**

- 1. This kit requires three 1.5V AG13 button cell batteries.**
- 2. For best results, always use fresh batteries.**
- 3. Make sure you insert the batteries with the correct polarities.**
- 4. Remove the batteries from the product when it is not in use.**
- 5. Replace exhausted batteries straight away to avoid possible damage to the product.**
- 6. Rechargeable batteries must be removed from the product before recharging.**
- 7. Rechargeable batteries should be recharged under adult supervision.**
- 8. Make sure that the supply terminals in the battery case are not short circuited.**
- 9. Do not attempt to recharge non-rechargeable batteries.**
- 10. Do not mix old and new batteries.**
- 11. Do not mix alkaline, standard (zinc-carbon) and rechargeable (Ni-Cd) batteries.**
- 12. Unscrew the battery case cover to replace the battery. Adult supervision is required.**



### C. CONTENTS:

**Part 1: Torch x 1 (3 x 1.5V AG13 button cell batteries included),**

**Part 2: Lightsaber x 1,**

**Part 3: Zoetrope drum x 1,**

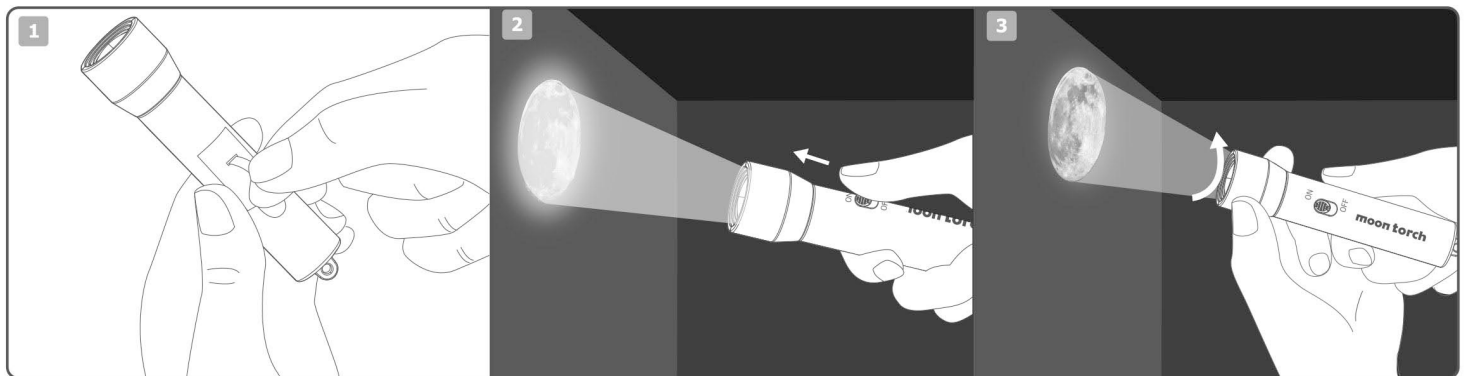
**Part 4: Night writer nib x 1,**

**Part 5: Glow board x 1,**

**Part 6: Sheet of animation strips with stencils x 1,**

**Detailed Instructions.**

**Also required, but not included in the kit: small crosshead screwdriver and a pair of scissors.**



### D. ACTIVITY 1: MOON TORCH

**Now you can watch the moon whenever you like!**

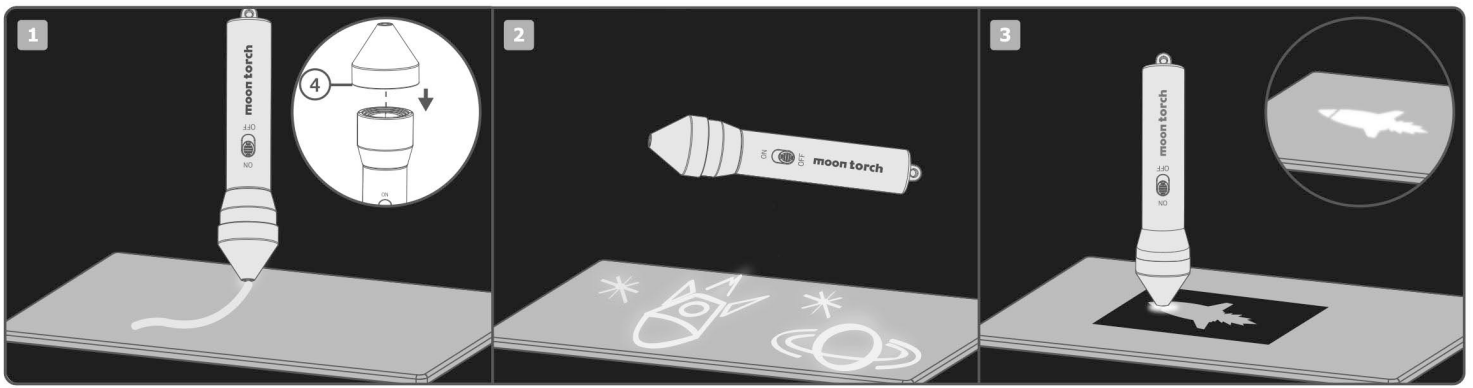
**1. Pull out the plastic insulation strip from the battery compartment.**

**2. Switch on the torch. You will see a beautiful image of the moon on the wall. You need to be in a dark room to use the Moon Torch. Aim the torch at a plain, light-coloured wall.**

**3. Focus the image by twisting the head of the torch. Move further from the wall to make the image larger (you will need to refocus the torch). If the torch brightness decreases, replace the battery (read the battery safety information above). A small crosshead screwdriver is required to remove and replace the battery compartment cover.**

#### HOW IT WORKS

The torch comes with a built-in LED that emits bright light. The light shines through a small transparent template of the Moon (like a photographic slide), and then through a lens. The lens focuses the rays of light to make an image of the moon. This is called projection. The focusing works by changing the distance between the lens and the moon template.

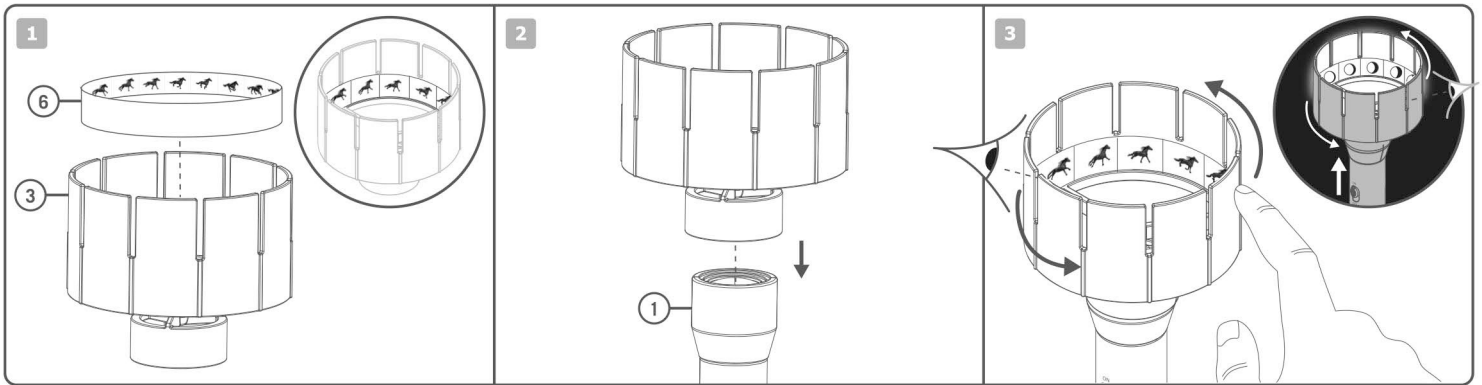


### E. ACTIVITY 2: NIGHT WRITER

1. Push the night writer nib onto the end of the torch, and then switch on the torch. A narrow beam of light will shine through the nib.
2. In a dark room, draw a picture with the pen on the glow board. Turn off the torch and your pen strokes will leave a spooky glow!
3. Place the stencil on the board and go over it with the moon torch. Take away the stencil and the shape will glow!

#### HOW IT WORKS

The glow board contains a material that is phosphorescent. That means that it stores the energy as light and then releases it slowly, also as light. When you shine the torch onto the board, the light energy from the torch is stored by the phosphorescent material, and then released again, which is why you see the glow for a few seconds.

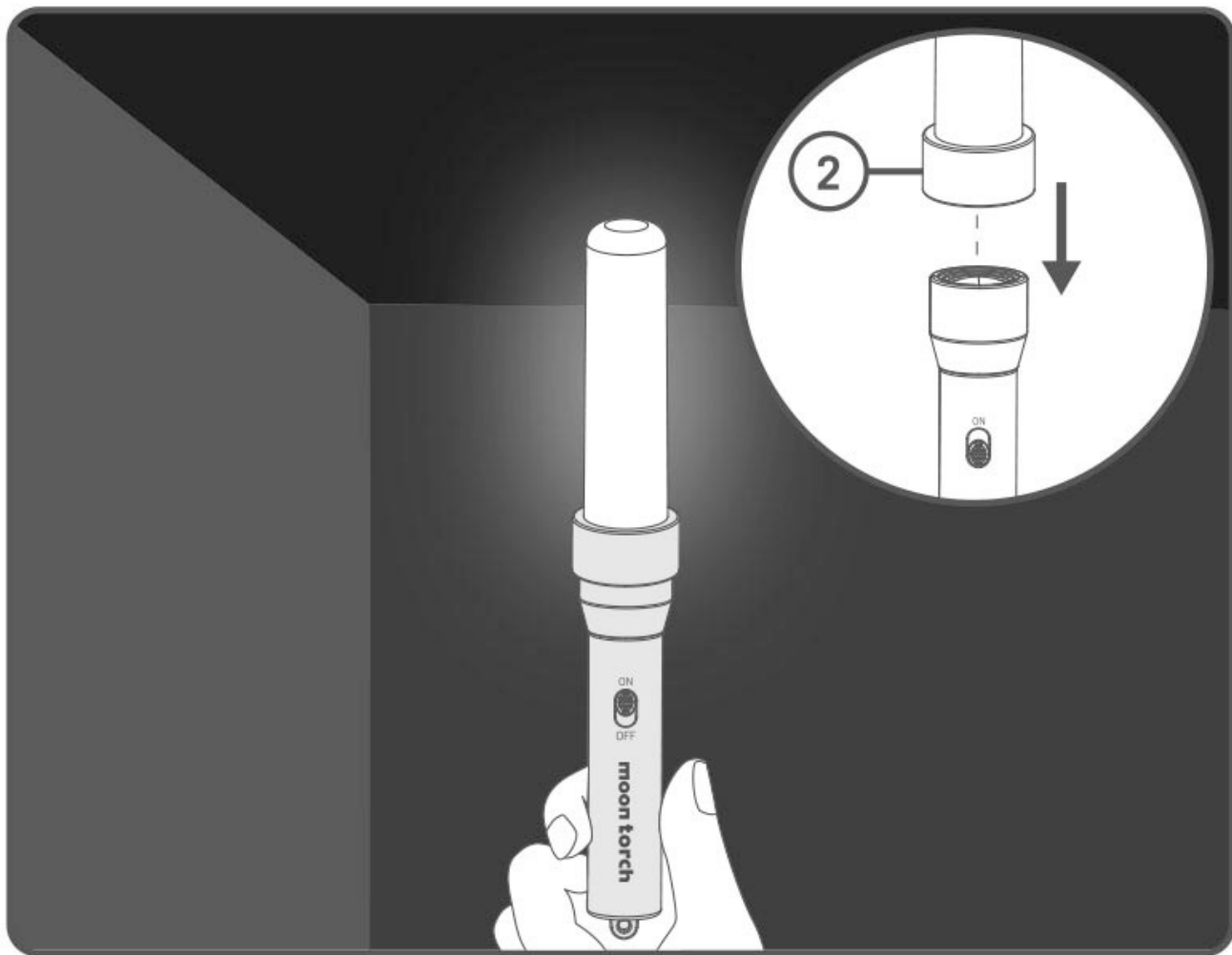


### F. ACTIVITY 3: LIGHT UP ANIMATED ZOETROPE

1. Cut out the strip containing the phases of the moon. Bend the strip into a ring with the images on the inside. Slot the strip into the zoetrope drum. The strip must slot into the channel in the bottom of the drum.
2. Push the base of the zoetrope onto the end of the torch.
3. Your zoetrope is ready for action! Hold the zoetrope upright in one hand about 20 centimetres from your eyes and spin it with the other hand. Look through the slots in the drum and you should see the images come to life! In dark rooms you can switch on the torch to light up your animations!

#### HOW IT WORKS

The zoetrope works by creating an optical illusion. Your eyes remember an image for a fraction of a second after the image has gone. This effect is called persistence of vision. When you look through the slits in the spinning zoetrope, your eye sees each picture in the strip momentarily. It remembers the picture until the next one appears. Your eyes are therefore fooled into seeing a moving picture.



#### G. ACTIVITY 4: LIGHTSABER

Insert the lightsaber onto the end of the torch. Switch on the torch to make the lightsaber glow! The lightsaber works best in a dark room.

##### HOW IT WORKS

Light from the torch hits the plastic and is then scattered, making the wand glow.

#### H. FUN FACTS:

- Moonlight is actually sunlight that reflects off the moon. Light takes about 1.3 seconds to travel the 384,400 kilometres from the moon to the Earth.
- The large dark patches on the moon's surface are called seas, because astronomers in ancient times thought they contained water. Today we know they are bone dry.
- The large crater with rays fanning out from it is called Tycho. It is 85 kilometres across and was formed when a huge meteorite smashed into the Moon about 100 million years ago.
- The different shapes that the moon appears in are called phases of the moon. They are caused by different parts of the moon being lit by sunlight as the moon orbits the Earth (once every 28 days).
- The side of the moon that the moon torch projects is called the near side of the moon. This side always faces Earth because the moon's rotation is locked to the Earth.
- The word zoetrope comes from the Greek words for 'life' and 'turning'.
- The zoetrope was invented in the early nineteenth century. It was one of many optical toys invented in Victorian times that displayed animated pictures before the invention of film and film projectors.
- The lightsaber is a fictional weapon that appears in the Star Wars movies. It was first wielded by Jedi knights in the 1977 film A 'New Hope'. The weapon has a metal hilt and a glowing energy blade!
- It's not possible to build a real lightsaber, because the glowing blade defies the laws of physics.
- Phosphorescence is one form of luminescence — the emission of light by a substance. The other form of luminescence is fluorescence, which is when a material produces light when it is hit by x-rays or ultra-violet rays.

#### QUESTIONS AND COMMENTS:

We treasure you as a customer and your satisfaction with this product is important to us. If you have any comments or questions, or if you find any parts of this kit are missing or defective, please do not hesitate to contact our distributor in your country, whose address is printed on the packaging. You are also welcome to contact our marketing support team via email: [infodesk@4M-IND.com](mailto:infodesk@4M-IND.com), fax (852) 25911566, telephone (852) 28936241, or our website: [WWW.4M-IND.COM](http://WWW.4M-IND.COM).