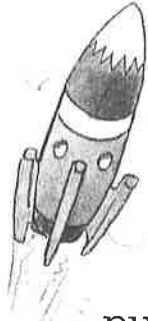


EQUAL AND OPPOSITE

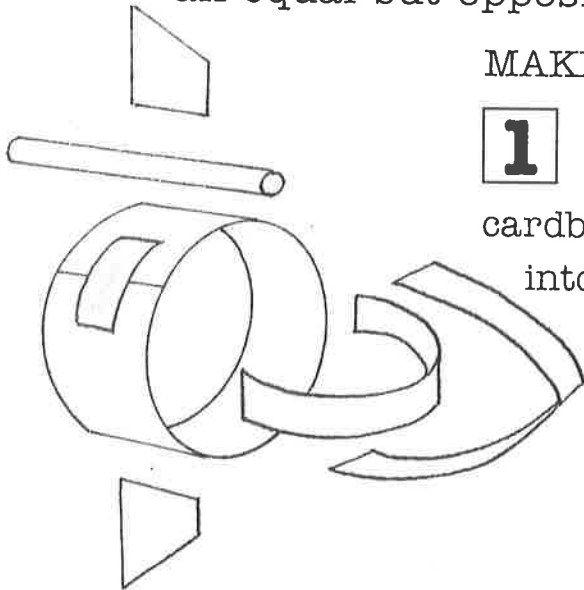


Forces always come in pairs. When a cannon fires a shell, the cannon itself recoils. The force pushing the shell FORWARD has an equal but opposite force.

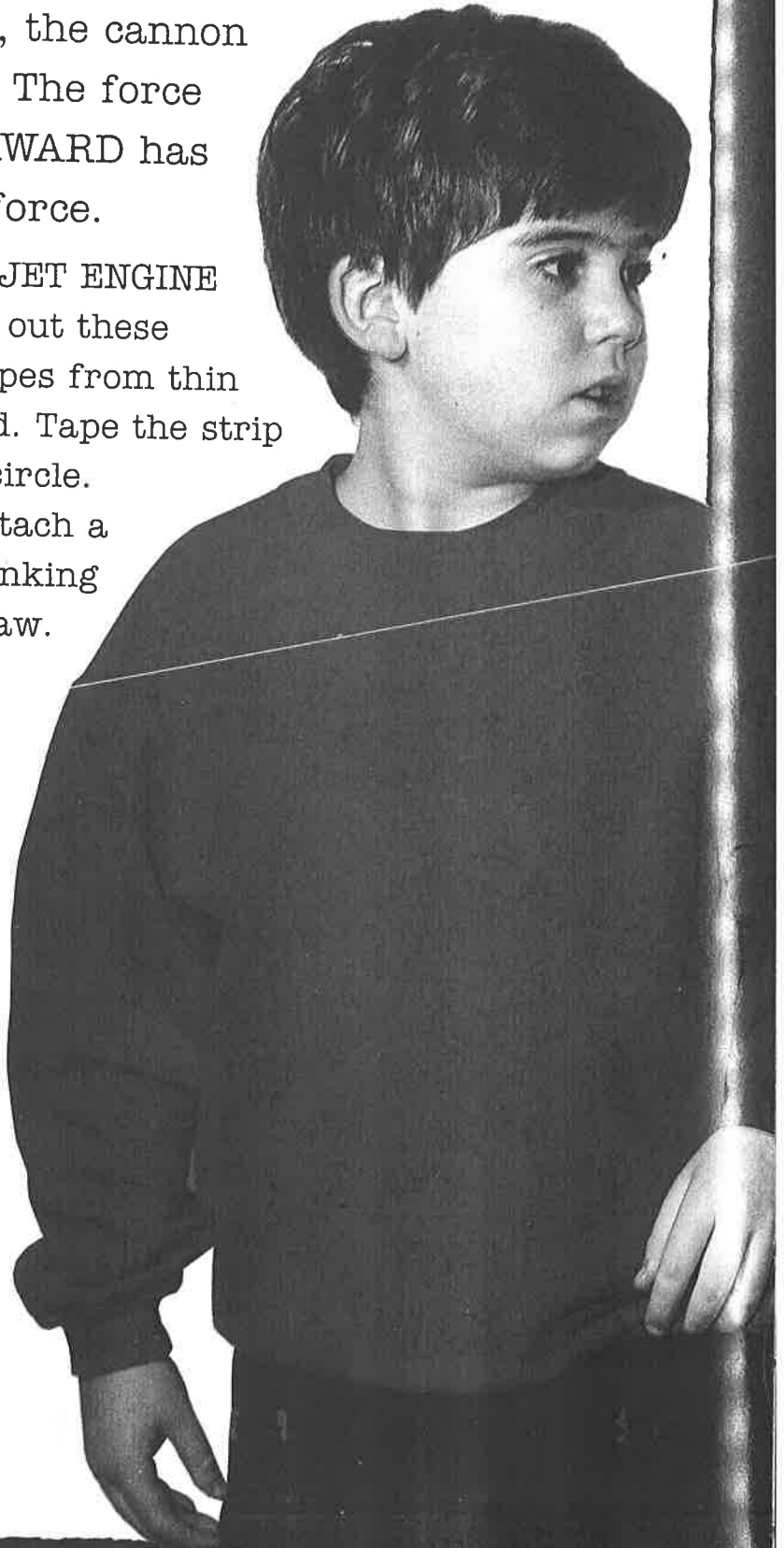
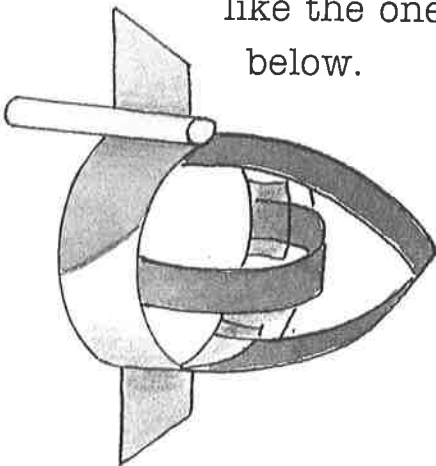
MAKE A JET ENGINE

1 Cut out these shapes from thin cardboard. Tape the strip into a circle.

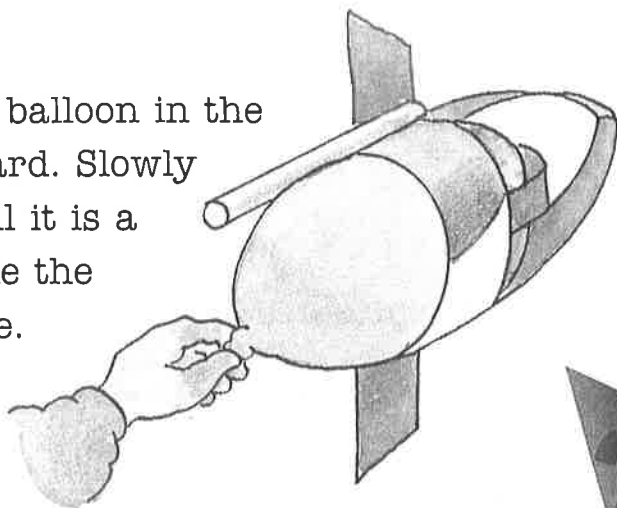
Attach a drinking straw.



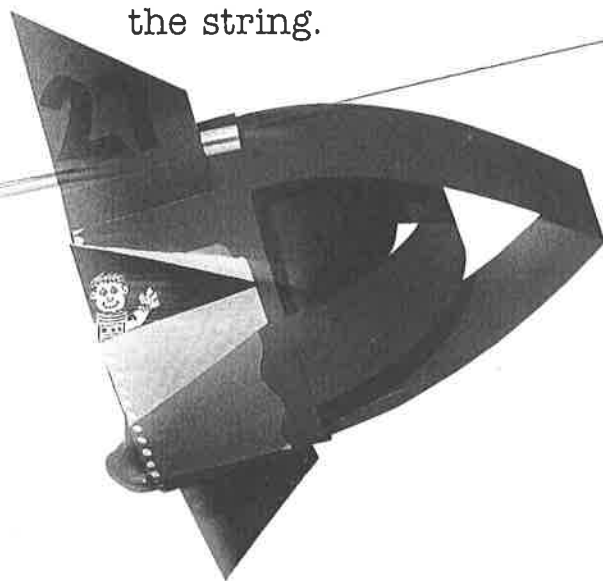
2 Tape together all of the shapes to make up the outline of a rocket like the one illustrated below.



3 Place a balloon in the cardboard. Slowly inflate it until it is a tight fit inside the rocket outline. Keep holding the neck of the balloon.



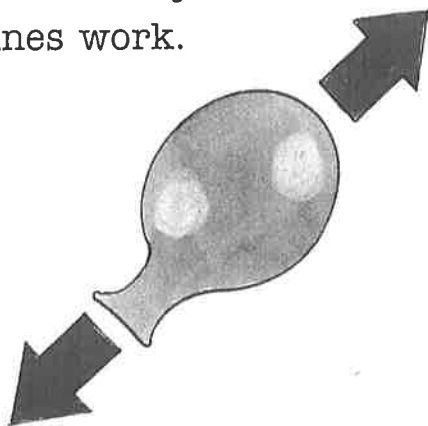
4 Thread string through the straw. Fasten the ends of the string across the room. Release the balloon to be jet-propelled along the string.



WHY IT WORKS

Over 300 years ago, Sir Isaac Newton found that every force has an equal but opposite reaction.

As the air rushes out of the back of your balloon in one direction, the balloon itself is pushed forward in the opposite direction. This is the principle on which all jet engines work.



FURTHER IDEAS

Sit in a chair with wheels, and hold a soccerball. Try to throw it without moving. The harder you throw it, the stronger is the opposite force that pushes you backward.

