



# A new spin on gravity...

## What you need:

SMALL BALL  
WIDE-MOULTHED JAR  
PIECE OF CARDBOARD



## What to do:

CAN YOU PICK UP A BALL WITH AN OPEN JAR? LET'S SEE...  
PLACE THE CARDBOARD ON A TABLE.  
PLACE THE BALL ON THE CARDBOARD AND COVER IT WITH THE MOUTH OF THE JAR.  
MOVE THE JAR IN A CIRCULAR MOTION AROUND THE BALL WHILE SLIDING IT ACROSS THE CARDBOARD.  
THE BALL WILL MOVE ALONG THE RIM OF THE JAR. INCREASE YOUR SPEED AND THE BALL WILL MOVE UPWARDS INTO THE JAR.  
KEEP SWIRLING THE JAR AND REMOVE IT FROM THE CARDBOARD. THE BALL WILL REMAIN IN THE JAR!

## What's going on?

SPINNING THE JAR CAUSES THE BALL TO MOVE IN A CIRCULAR MOTION. THE JAR IS KEEPING THE BALL FROM FLYING AWAY FROM YOU BY PUSHING ON THE BALL AS IT TRAVELS AGAINST ITS SURFACE. THIS "PUSHING" IS CALLED CENTRIPETAL FORCE AND IS PRESENT IN ANY OBJECT THAT CONSTANTLY MOVES IN A CIRCULAR PATH. AS LONG AS YOU KEEP SPINNING THE BALL AT A CONSTANT RATE, IT WILL REMAIN SPINNING IN THE JAR BECAUSE THE CENTRIPETAL FORCE IS GREATER THAN THE FORCE OF GRAVITY. IF YOU SLOW DOWN, HOWEVER, GRAVITY WILL TAKE OVER AND THE BALL WILL FALL OUT OF THE JAR!