

# tallest tower!

USE THE PROVIDED MATERIALS TO BUILD A TOWER

RECORD IN A TINKER JOURNAL WHAT MATERIALS YOU USED, AND MEASURE HOW TALL IT IS

THEN, TRY SOMETHING NEW!

BUILD MORE TOWERS WITH A DIFFERENT MATERIAL OR COMBINE MATERIALS.

WHAT MATERIAL WORKED BEST? HOW DID YOU BUILD YOUR TALLEST TOWER? WERE THERE ANY PROBLEMS?

RECORD IN YOUR TINKER JOURNAL.

# tallest tower!

## MATERIALS:

- CUPS
- STRAWS
- TAPE
- BLOCKS
- YARDSTICKS

# Marble Run!

DESIGN A MARBLE RUN USING ALL OF THE PROVIDED MATERIALS.

MEASURE THE DISTANCE THE MARBLE WILL TRAVEL. RECORD IN YOUR TINKER JOURNAL

USE A STOPWATCH TO RECORD HOW LONG IT TAKES YOUR MARBLE TO TRAVEL. RECORD IN YOUR TINKER JOURNAL

DESTRUCT YOUR MARBLE RUN! BUILD IT AGAIN DIFFERENTLY!

RECORD THE DISTANCE AND TIME FOR EACH RUN YOU DESIGN.

WHICH MARBLE RUN WORKED BETTER? WAS ONE FASTER THAN THE OTHER? DID THE DISTANCE AFFECT THE TIME?

RECORD YOUR FINDINGS IN THE TINKER JOURNAL.

# Marble Run!

## MATERIALS:

- TOILET PAPER ROLLS
- PAPER TOWEL ROLLS
- MASKING TAPE
- MARBLES
- STOP WATCH
- YARD STICK

# Architecture and Engineering!

USING BOOKS RESEARCH DIFFERENT EXAMPLES OF ARCHITECTURE AND ENGINEERING.

TRY BUILDING ONE OF THE DESIGNS USING DIFFERENT MATERIALS. TAKE A PICTURE OF THE BUILDING YOU BUILT TO LOOK LIKE THE ONE YOU RESEARCHED.

EXPLAIN WHAT WORKED WELL AND WAS OBSTACLES YOU RAN INTO IN YOUR TINKER JOURNAL. WHAT PART OF THE STRUCTURE SUPPORTS THE WEIGHT?

DESIGN YOUR OWN STRUCTURE. TAKE A PICTURE OF YOUR BUILDING AND RECORD IN THE TINKER JOURNAL ABOUT YOUR DESIGN.

# Architecture and Engineering Materials:


- LEGOS
- KEVA PLANS
- ARCHITECTURE BOOKS
- K'NEX

# Reverse Engineering

CHOOSE AN ELECTRONIC STORED IN THE CUBE SEATS  
TO DECONSTRUCT.

FOLLOW THE REVERSE ENGINEERING GUIDE AS YOU  
TAKE IT APART.

### Reverse Engineering



**What is Reverse Engineering?** Engineering is the science of designing and creating. Reverse engineering is the science of taking things apart to see how they work. Have you ever wondered what makes devices work or what is inside them? Find a broken device/small appliance or one your parents don't want any more (toaster, cell phone, keyboard, mixer, etc.) and let's have some reverse engineering fun.

**Before taking the device apart...**

What device is being taken apart? \_\_\_\_\_

Draw the device. Label the parts.

What does the device do when in operation? \_\_\_\_\_

\_\_\_\_\_

How are you going to take it apart? What tools do you need? \_\_\_\_\_

\_\_\_\_\_

What kind of parts do you think you will find inside? \_\_\_\_\_

\_\_\_\_\_

TheHomeschoolScientist.com

What do you think the inside parts look like and what do you think they do? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Take the device apart**

Draw the inside of the device. Label any of the parts you know.

What inside parts connect with the outside parts? \_\_\_\_\_

\_\_\_\_\_

What do you think the parts do? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How far can you take the device apart further? \_\_\_\_\_

\_\_\_\_\_

TheHomeschoolScientist.com

Draw two inside parts of the device.

What do you think the parts do? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What of the inside parts surprise you? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**When taking apart more than one device....**

What inside parts are similar? Do they have the same function in the different devices?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TheHomeschoolScientist.com

What inside parts are similar? Do you think they have the same function in the different devices?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TheHomeschoolScientist.com

# Reverse Engineering Materials:

MEET IN THE TINKER LAB

- SCREWDRIVERS (FLAT HEAD AND PHILLIPS)
- REVERSE ENGINEERING GUIDE
- SAFETY GOOGLES
- SAFETY GLOVES
- OLD ELECTRONICS (VHS PLAYER, WATCHES, CELL PHONES, TOYS, FLASHLIGHTS, ETC.)



# Coding (Part One)

CHOOSE TWO DIFFERENT COLORS TO REPRESENT THE BINARY CODE.

USING THE PICTURE ON THE BACK, SPELL YOUR NAME ON THE BINARY CODE TEMPLATE. USE ONE STRIP FOR EACH LETTER OF YOUR NAME. THE LETTER GOES OUTSIDE THE BOX, AND THE COLORS GO IN

FOR EXAMPLE, IF MY NAME WAS SAM. I WOULD NEED:

S= BLUE RED BLUE RED BLUE BLUE RED RED



A= BLUE RED BLUE BLUE BLUE BLUE BLUE RED

M= BLUE RED BLUE BLUE RED RED BLUE RED

USING STRING MAKE A NECKLACE OF YOUR BINARY CODE NAME.

# Coding (Part One)

## Materials:

- STRING
- CRAYONS
- BEADS (REGULAR OR THE MELTING KIND)
- COPIES OF THE CODING OUTLINE

Letter	Binary	Letter	Binary
A	■□■ ■■■□	N	■□■ ■□□■
B	■□■ ■■□■	O	■□■ □□□□
C	■□■ ■■□□	P	■□■ ■■■■
D	■□■ ■□■ ■	Q	■□■ ■■■□
E	■□■ ■□■ ■	R	■□■ ■■□■
F	■□■ ■□□■	S	■□■ ■■□□
G	■□■ ■□□□	T	■□■ ■□■ ■
H	■□■ □■■■	U	■□■ ■□□■
I	■□■ □■■□	V	■□■ ■□□■
J	■□■ □■□■	W	■□■ ■□□□
K	■□■ □■□□	X	■□■ □■■■
L	■□■ □□■ ■	Y	■□■ □■■□
M	■□■ □□■ ■	Z	■□■ □■□■

# Coding (part two)

CHECK WITH THE TEACHER TO CHECKOUT ONE OF THE ROBOTS

(ONE) SPHERE

(TWO) PARROT MINI DRONE

USING THE TICKLE APP, PROGRAM THE DRONE OR SPHERE TO MOVE AROUND THE DESK AREA.

MAKE UP DIFFERENT CHALLENGES TO COMPLETE (FOR EXAMPLE LAND OR ROLL TO THE CHAIR).

# Coding (part two)

## Materials:

- IPAD
- SPHERO
- PARROT MINI DRONE

# Upcycle

COLLECT DIFFERENT RECYCLED MATERIALS TO DESIGN SOMETHING WITH.

MAKE SOMETHING WITH THE MATERIALS. IT CAN BE SOMETHING THAT FUNCTION OR A PROTOTYPE. WHAT DID YOU BUILD?

WHAT DOES IT DO OR WHAT IS IT FOR? WHAT CHALLENGES DID YOU FACE WHILE BUILDING? ANSWER THESE QUESTIONS IN YOUR JOURNALS.

# Upcycle Materials:

- RECYCLED MATERIALS SUCH AS:
- PLASTIC BOTTLES
- MASKING TAPE
- PAPER ROLLS
- BOXES
- SCOTCH TAPE
- EGG CARTONS
- MILK JUGS
- KERIG CUPS
- YARN
- GLUE (ELMERS, STICKY TACK)
- MARKERS
- CRAYONS
- OTHER STUFF :)

# Origami

USE LIBRARY BOOKS TO EXPLORE DIFFERENT THINGS YOU CAN MAKE WITH PAPER.

CHOOSE SOMETHING TO MAKE OUT OF PAPER.

FOLLOW THE DIRECTIONS CAREFULLY!

# Origami Materials:

- ORIGAMI PAPER
- ORIGAMI BOOKS



# Knitting and Sewing

USE NON FICTION LIBRARY BOOKS TO LEARN HOW TO KNIT.  
PRACTICE MAKING SOMETHING SIMPLE LIKE A SCARF!

TRY SEWING A STAR.

FIRST GRAB A STAR AND THREAD/ YARN.

THEN TREAD THE NEEDLE WITH A PIECE OF YARN.

TIE A KNOT AT THE END OF THE THREAD.

SEW BY GOING IN AND OUT OF DIFFERENT OPENINGS.

# Knitting and Sewing:

- KNITTING BOOK
- YARN
- KNITTING NEEDLES
- STAR
- NEEDLE
- SCISSORS