



KITES

PATHFINDER HONOUR

SKILL LEVEL: 2
CATEGORY: RECREATION
ORIGINAL HONOR: 1986





WHAT IS A KITE?

Requirements

1. When were kites first made and flown? Name at least three ways kites have helped in scientific research and tell how each has affected the world we live in. Tell the story of Benjamin Franklin and his kite.
2. Name some of the ways that kites might be used today.
3. Explain briefly how kites fly.
4. Define the following terms:
 - a. Spine
 - b. Spar
 - c. Vent
 - d. Bowstring
 - e. Cover
 - f. Frame
 - g. Trail
 - h. Keel
 - i. Flying line
 - j. Bridle
 - k. Reel



Requirements

5. What is a common cause of kite failure?
6. What should be done when a kite loops during flight?
7. Why is a tail sometimes needed on a kite?
8. Know at least three safety rules for kite flying.
9. Know how to correctly wind line on a stick. Know how to tie broken ends together with the fisherman's knot.
10. Make and successfully fly two of the following kites:
 - a. Sled kite
 - b. Flat kite
 - c. Two-stick diamond kite
 - d. Delta wing kite
 - e. Eddy or Malay kite
 - f. Fox kite
 - g. Tetrahedral kite



WHAT DO YOU THINK?

**WHAT IS THE HIGHEST A
KITE HAS EVER FLOWN?**



WHAT DO YOU THINK ?

**WHAT IS THE NUMBER OF THE MOST
KITES FLOWN SIMULTANEOUSLY ?**



INTERESTING FACTS

ROBERT MOORE (AUSTRALIA) IN COBAR, NEW SOUTH WALES, AUSTRALIA ON 23 SEPTEMBER 2014.

4,879.54 M



12350



THE MOST KITES FLOWN SIMULTANEOUSLY IS 12,350 28 JULY 2011 GAZA STRIP



DID YOU EVER FLY A KITE?



WHICH ONE DO YOU LIKE THE MOST?

REQUIREMENT 1

When where kites first made and flown? Name at least three ways kites have helped in scientific research and tell how each has affected the world we live in. Tell the story of Benjamin Franklin and his kite.

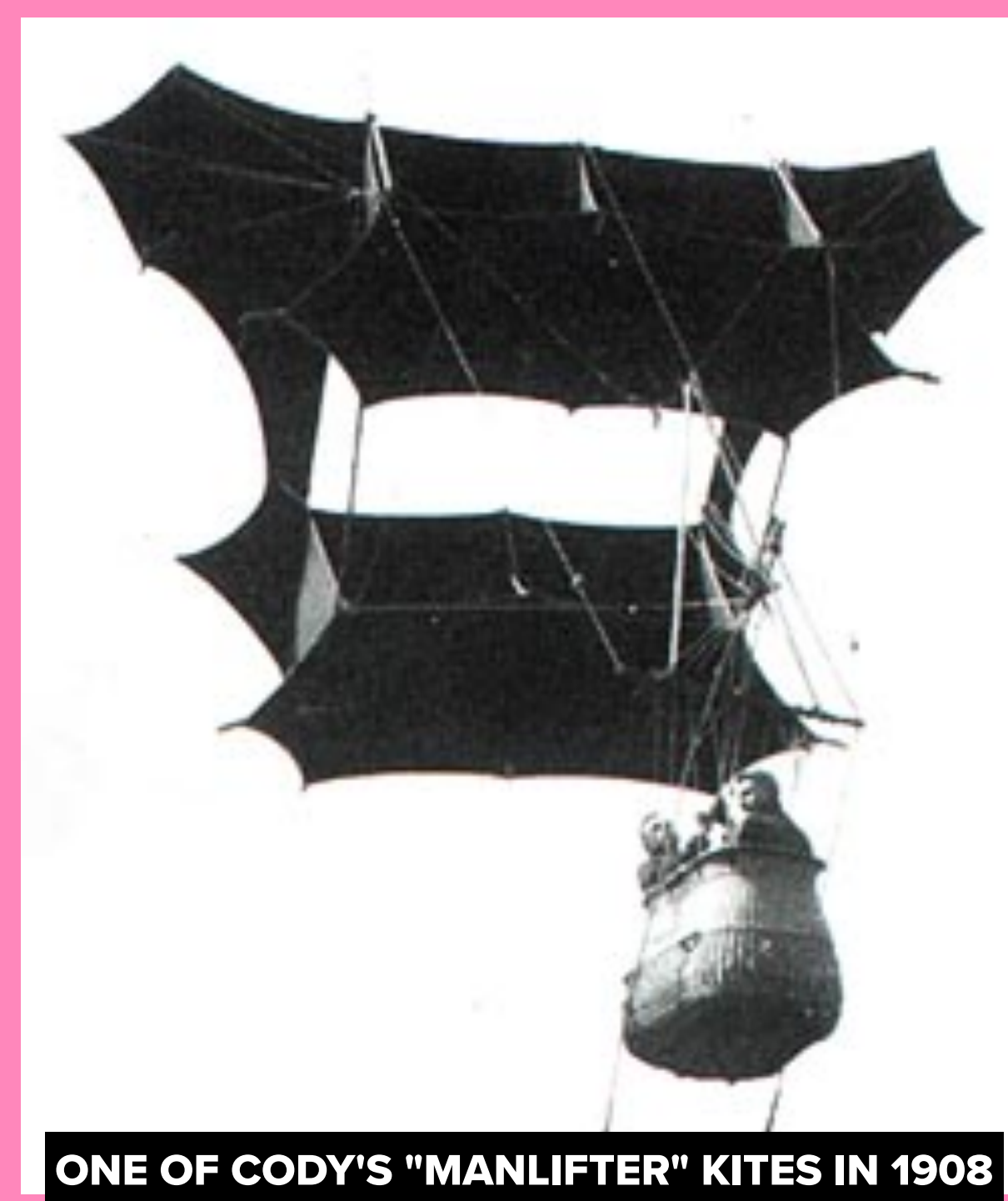




KITE FLYING 1766



KITE MAKER FROM INDIA 1845



ONE OF CODY'S "MANLIFTER" KITES IN 1908

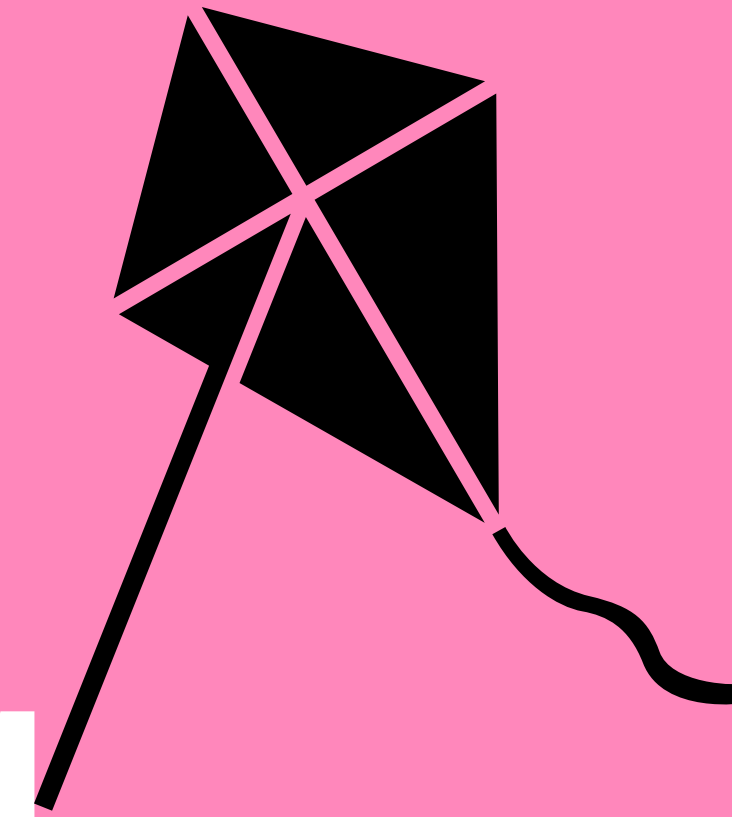


IT IS THOUGHT THAT THE EARLIEST USE OF KITES WAS AMONG THE CHINESE, APPROXIMATELY 2,800 YEARS AGO. THE KITE WAS SAID TO BE THE INVENTION OF THE FAMOUS 5TH CENTURY BC CHINESE PHILOSOPHERS MOZI AND LU BAN. BY 549 AD, PAPER KITES WERE BEING FLOWN — IN THAT YEAR A PAPER KITE WAS USED AS A MESSAGE FOR A RESCUE MISSION.

WHAT DO YOU THINK?

DID JESUS FLY KITE?

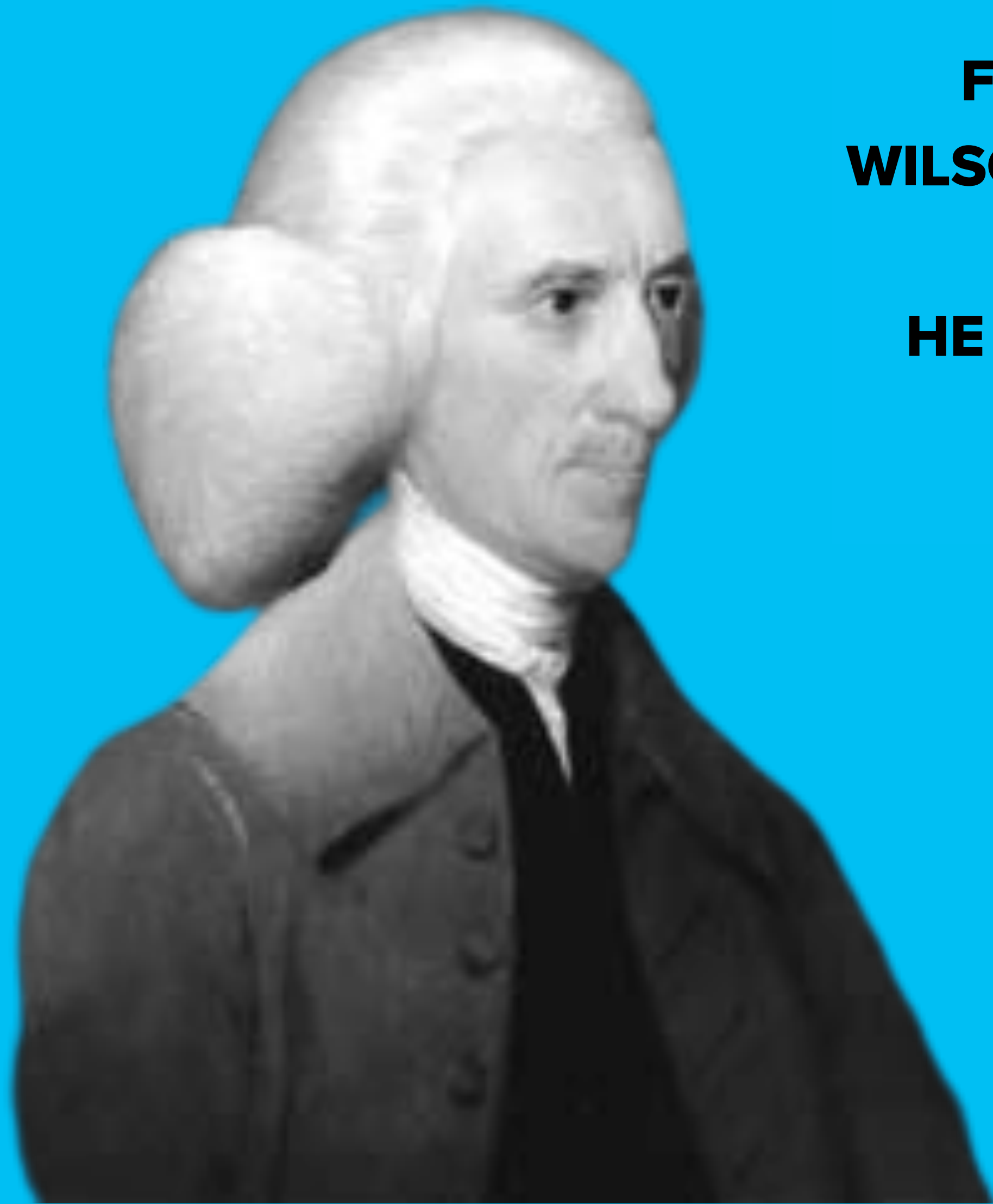
REQUIREMENT 1



WHEN WERE KITES FIRST MADE AND FLOWN?

NAME AT LEAST THREE WAYS KITES HAVE HELPED IN SCIENTIFIC RESEARCH AND TELL HOW EACH HAS AFFECTED THE WORLD WE LIVE IN. TELL THE STORY OF BENJAMIN FRANKLIN AND HIS KITE.

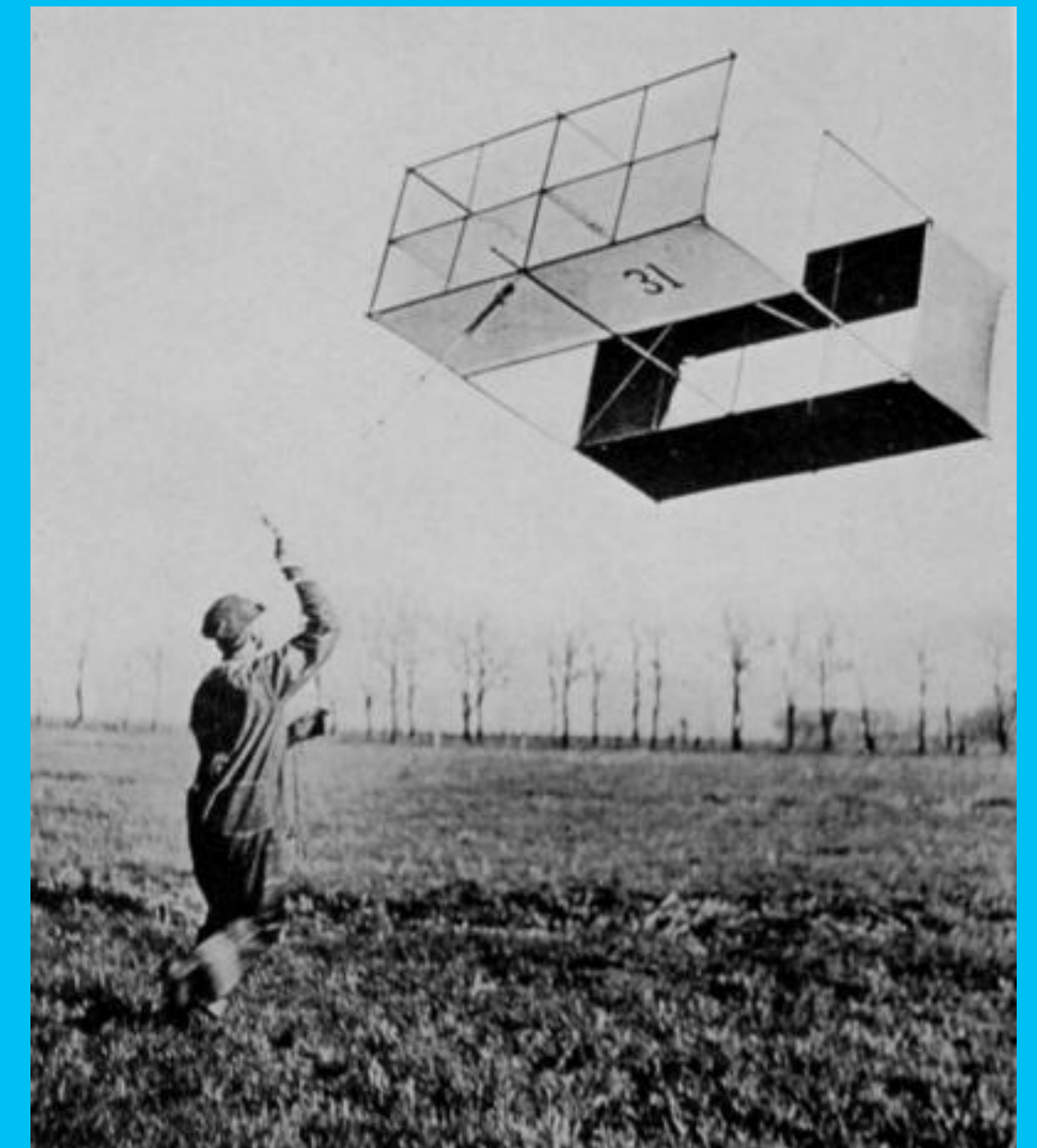
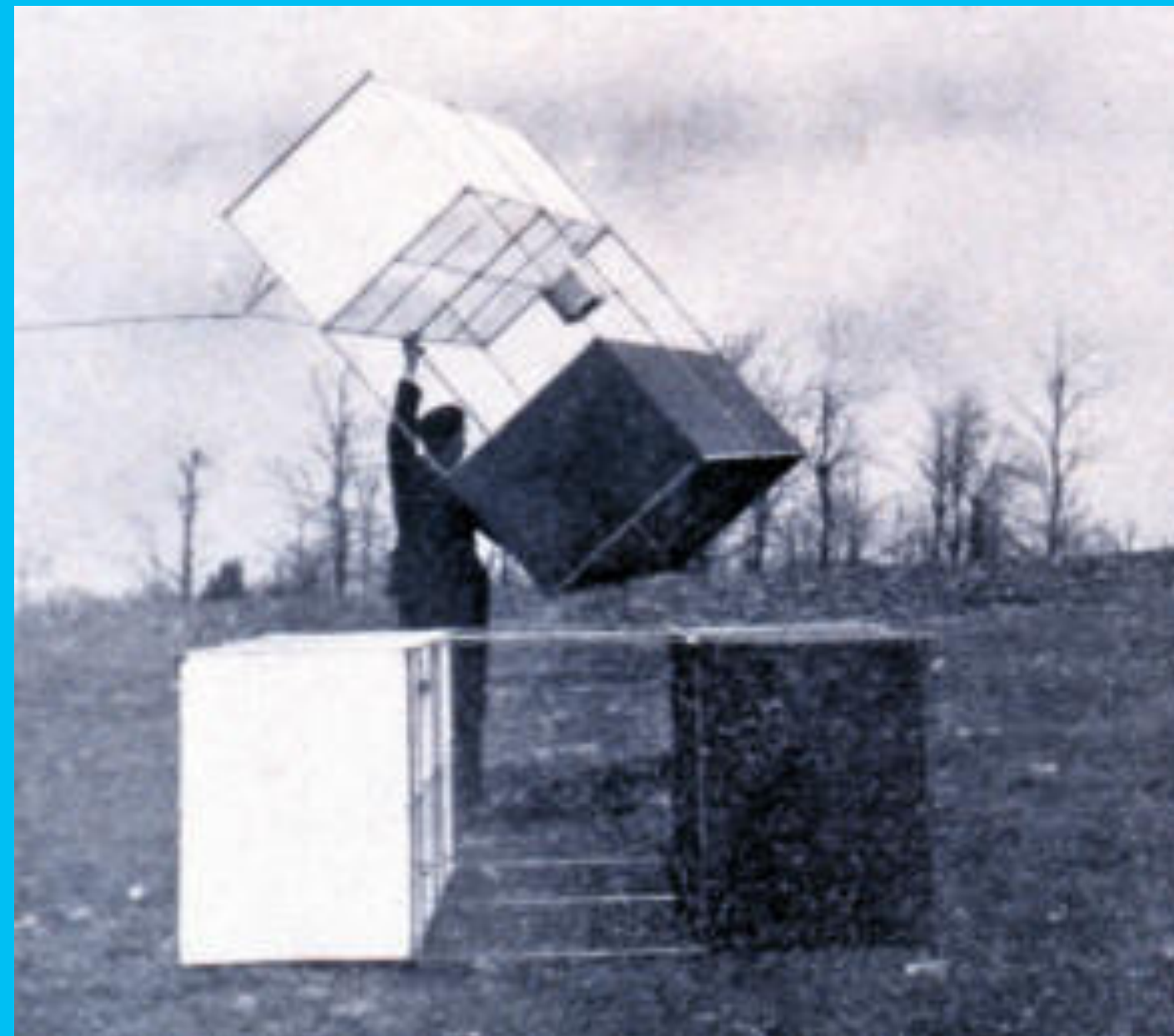


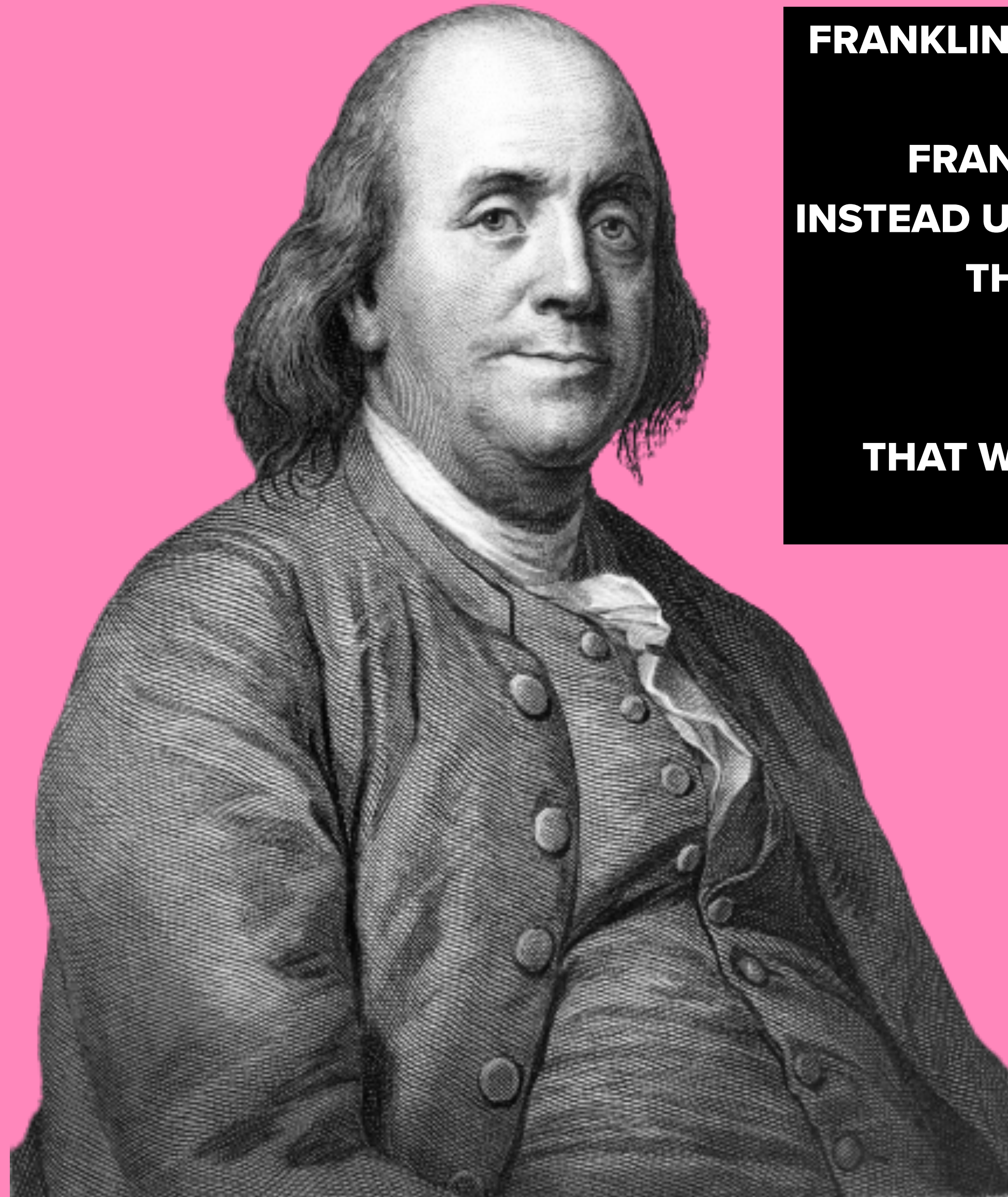


PROF ALEXANDER WILSON

1714 – 16 OCTOBER 1786

IN 1749 ALEXANDER WILSON USED A KITE FOR METEOROLOGICAL EXPERIMENTS IN SCOTLAND. WILSON ATTACHED THERMOMETERS TO A NUMBER OF KITES IN A TRAIN FLOWN FROM A COMMON LINE. HE WAS ABLE TO DETECT VARIATIONS OF TEMPERATURE AT DIFFERENT ALTITUDES. HE FLEW HIS KITES AS HIGH AS 3,000 FEET.





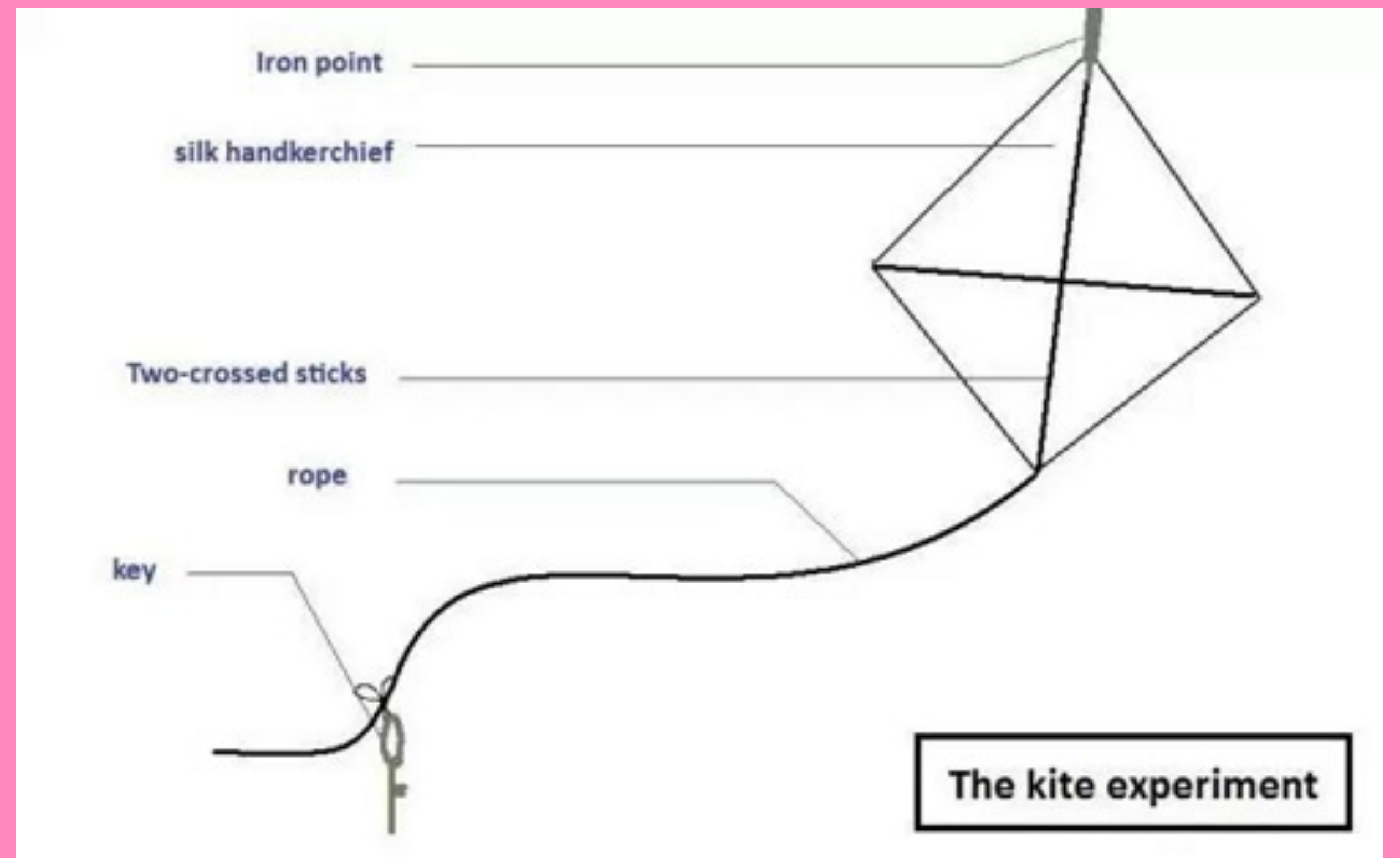
BENJAMIN FRANKLIN

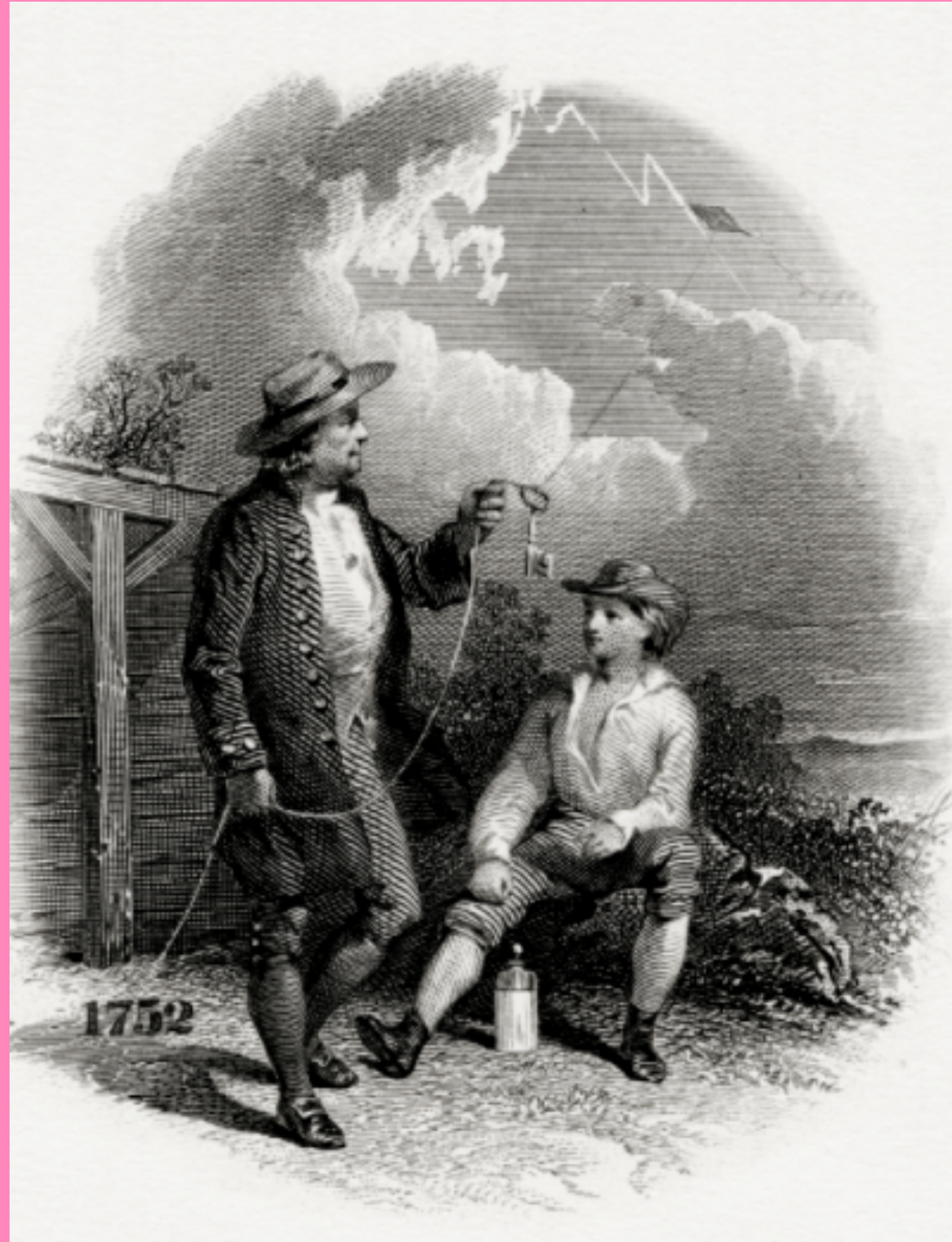
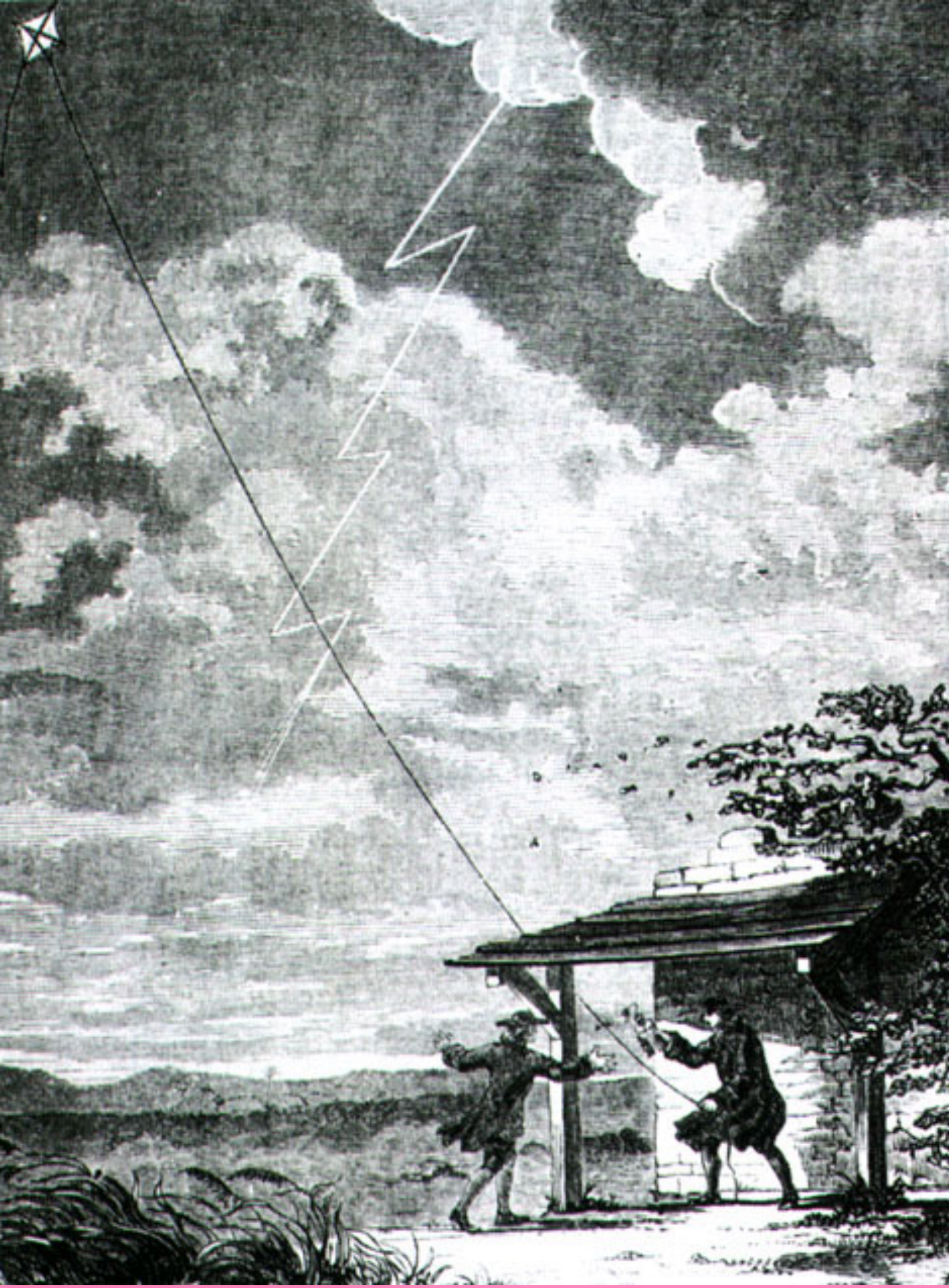
6 JANUARY 1706 – 17 APRIL 1790

FRANKLIN'S KITE EXPERIMENT WAS PERFORMED IN PHILADELPHIA IN JUNE 1752, ACCORDING TO THE ACCOUNT BY PRIESTLEY.

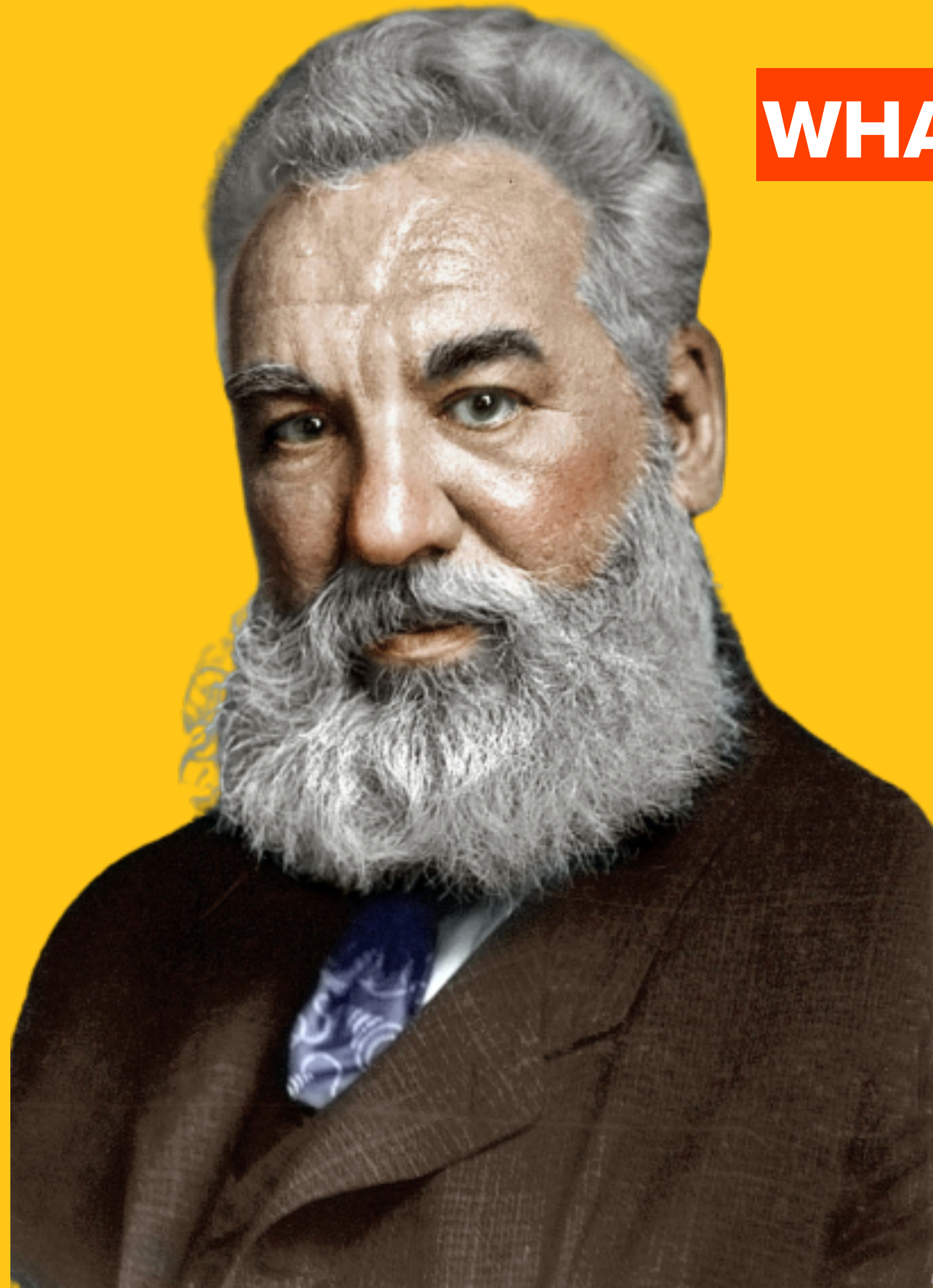
FRANKLIN REALIZED THE DANGERS OF USING CONDUCTIVE RODS AND INSTEAD USED THE CONDUCTIVITY OF A WET HEMP STRING ATTACHED TO A KITE. THE KITE WAS NOT STRUCK BY VISIBLE LIGHTNING; HAD IT BEEN, FRANKLIN WOULD ALMOST CERTAINLY HAVE BEEN KILLED.

HE MOVED HIS HAND NEAR THE HOUSE KEY THAT WAS ATTACHED TO THE STRING AND OBSERVED AN ELECTRIC SPARK, PROVING THE ELECTRIC NATURE OF LIGHTNING.



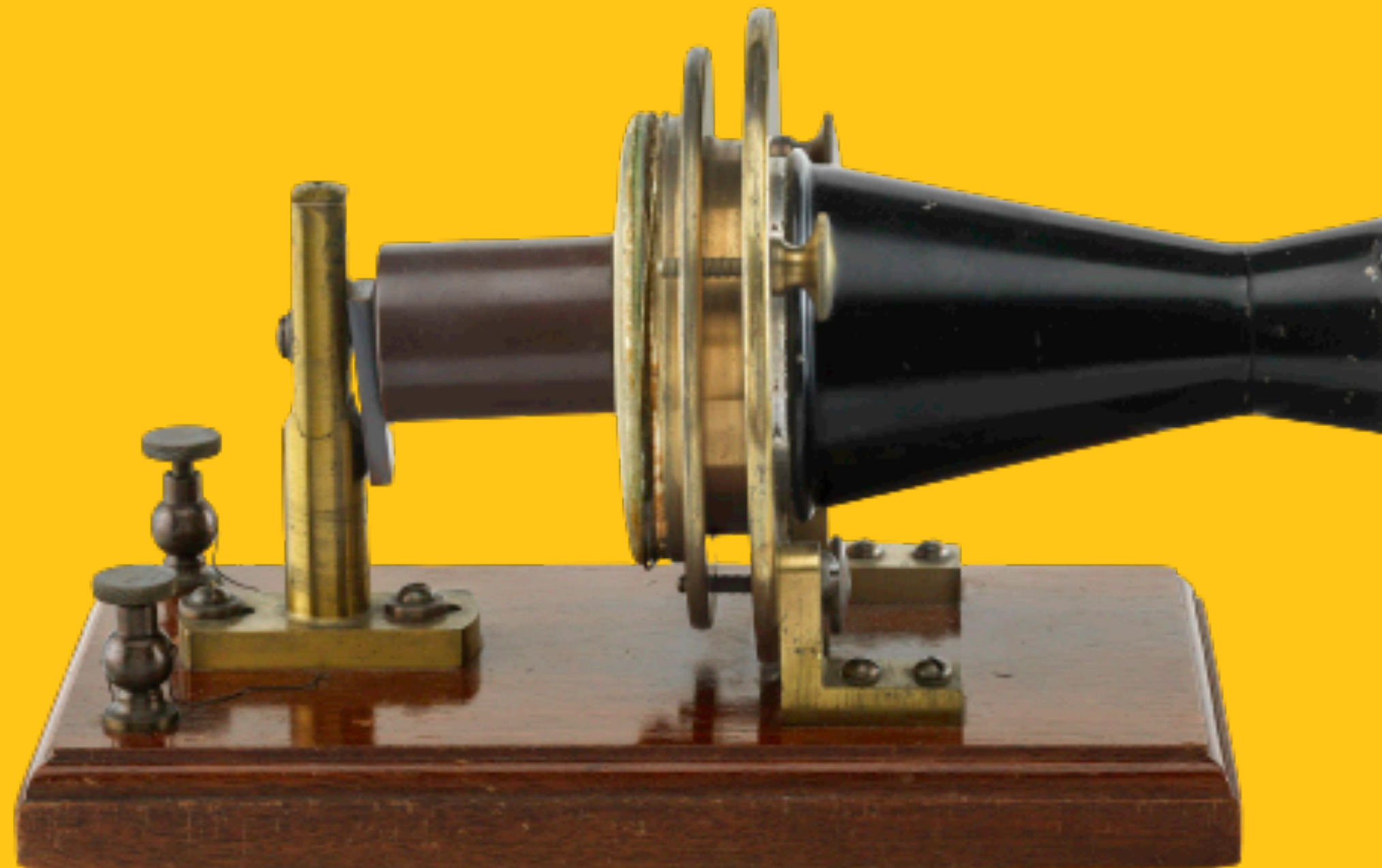


WHAT IS THIS GUY DOING HERE?

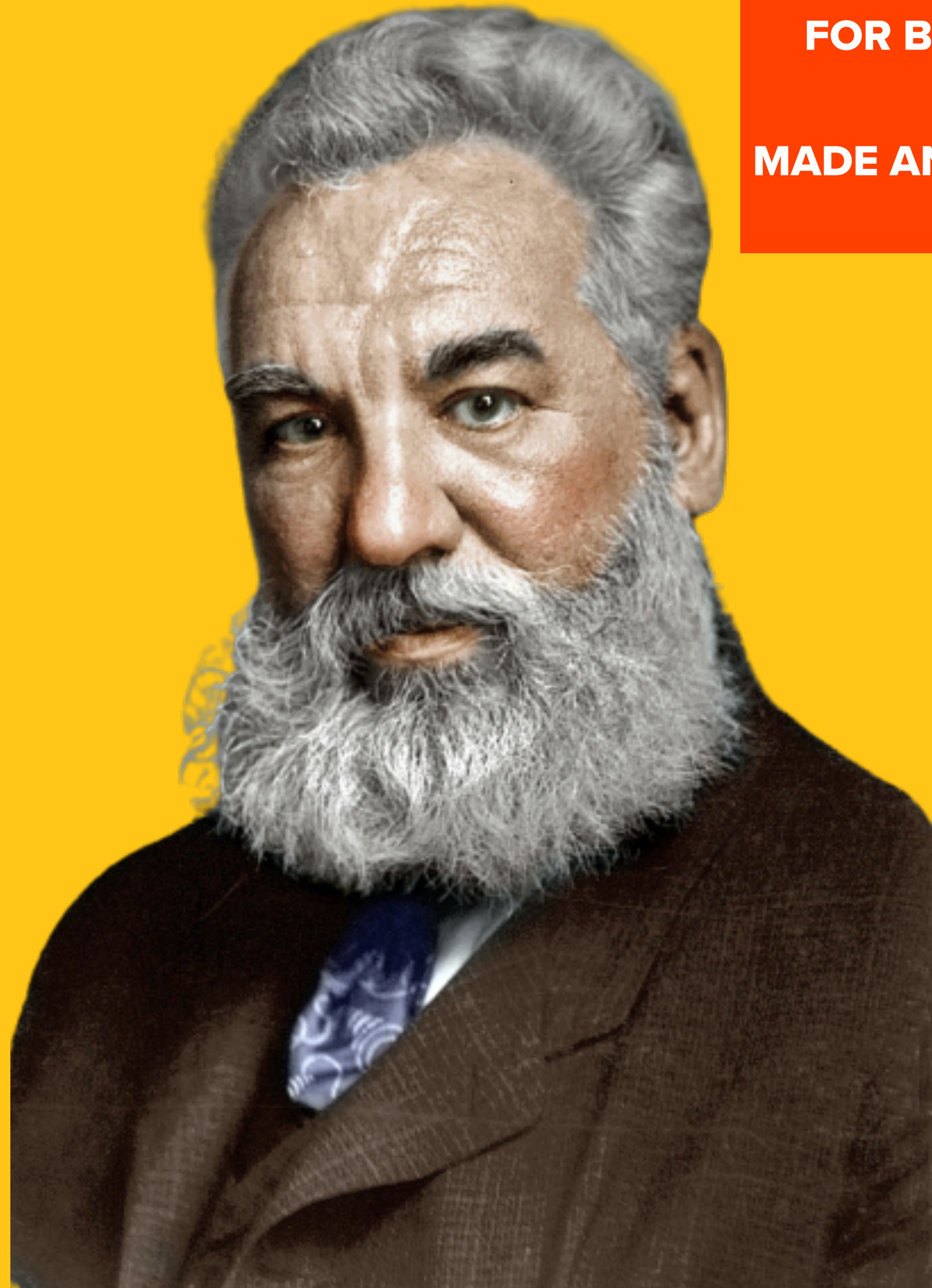


DR. ALEXANDER GRAHAM BELL.

(1847-1922)

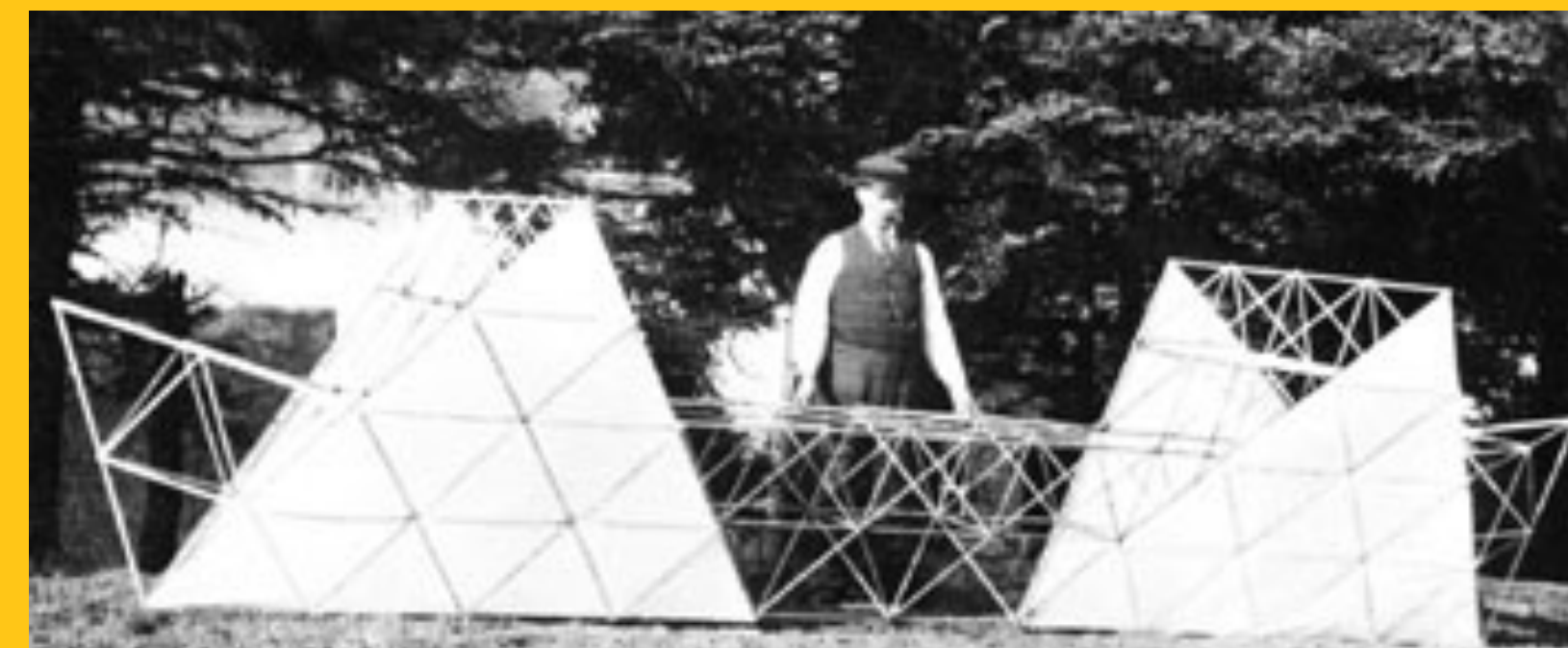
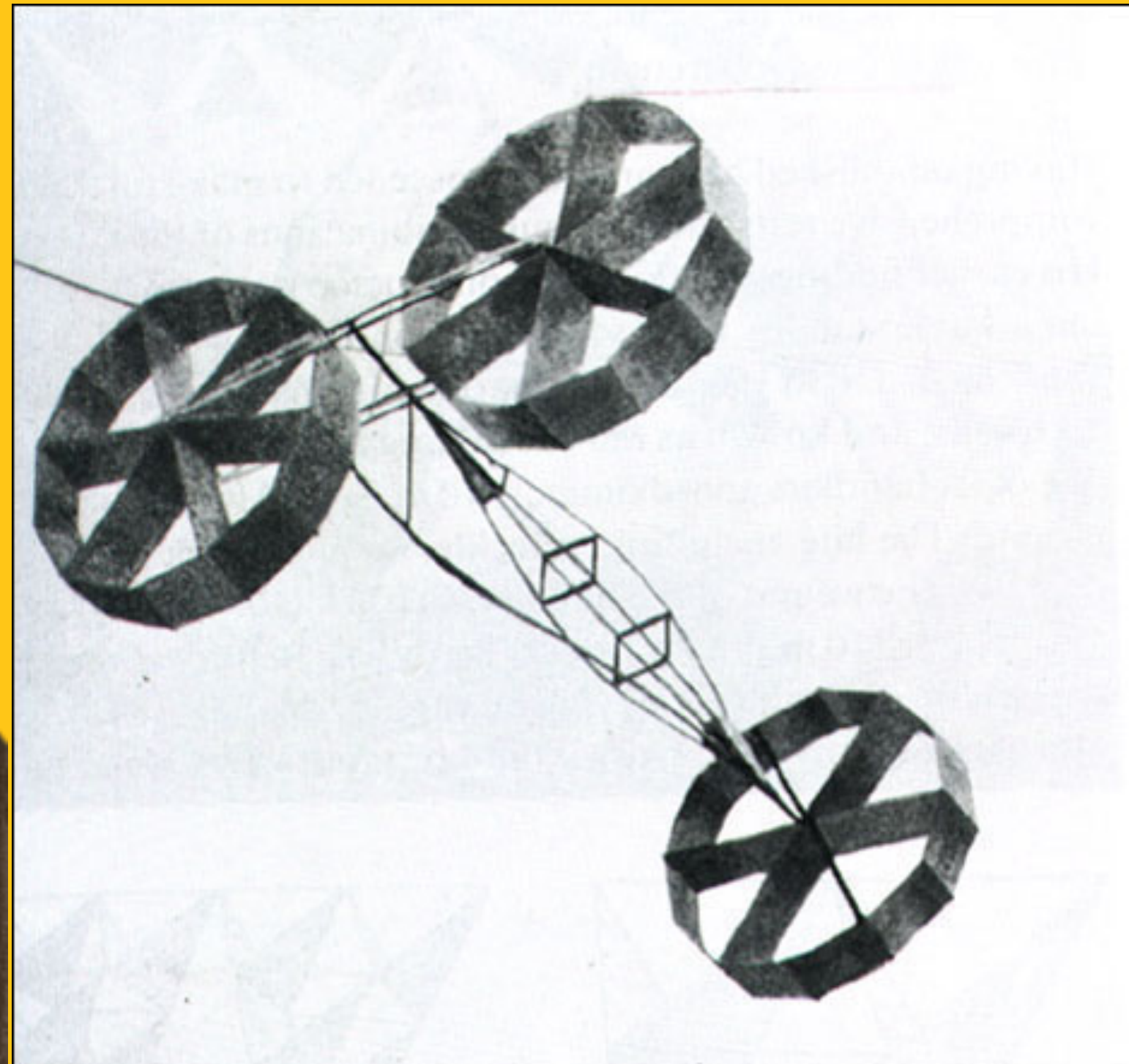


VERY FEW PEOPLE REALISE THAT BELL HAD A GREAT PASSION FOR BOTH AERONAUTICS AND KITES. HE USED KITES TO FURTHER HIS KNOWLEDGE OF MAN ASSISTED FLIGHT. BELL DESIGNED, MADE AND TESTED MANY OF HIS OWN MAN-CARRYING KITES HIMSELF. SOME OF THESE WERE ABLE TO REACH A HEIGHT OF MORE THAN 150 FEET. (45,7 M)

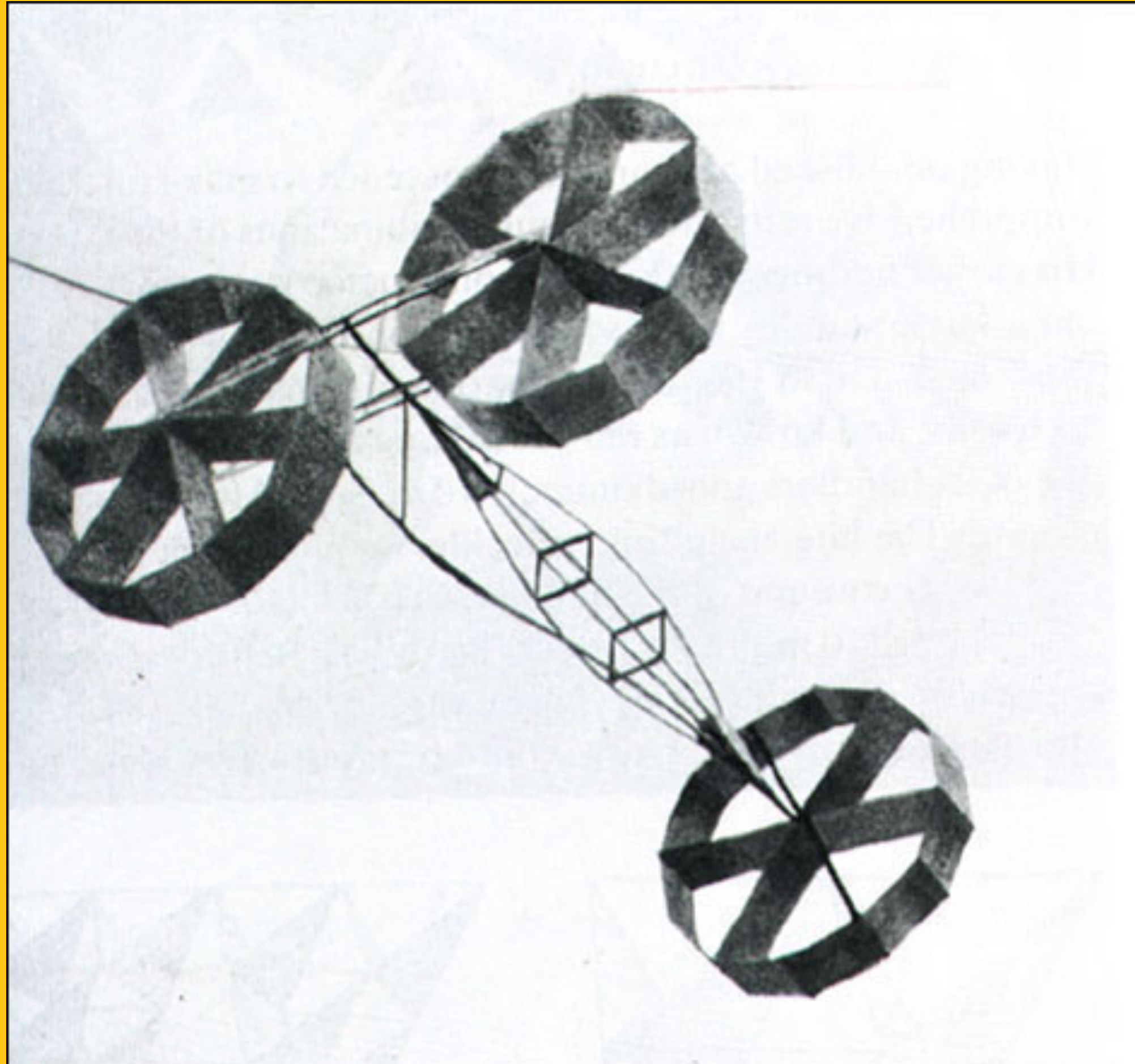


DR. ALEXANDER GRAHAM BELL.

(1847-1922)



ON WHICH KITE WOULD YOU GO ?

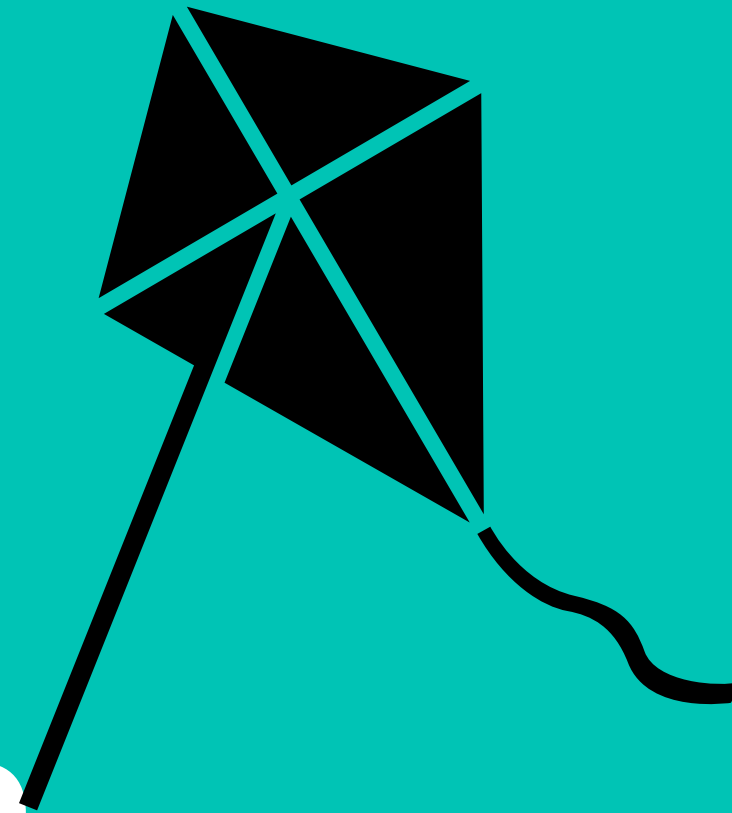


OPTION 1



OPTION 2

REQUIREMENT 2



NAME SOME OF THE WAYS THAT KITES MIGHT BE USED TODAY



KITES USED TODAY

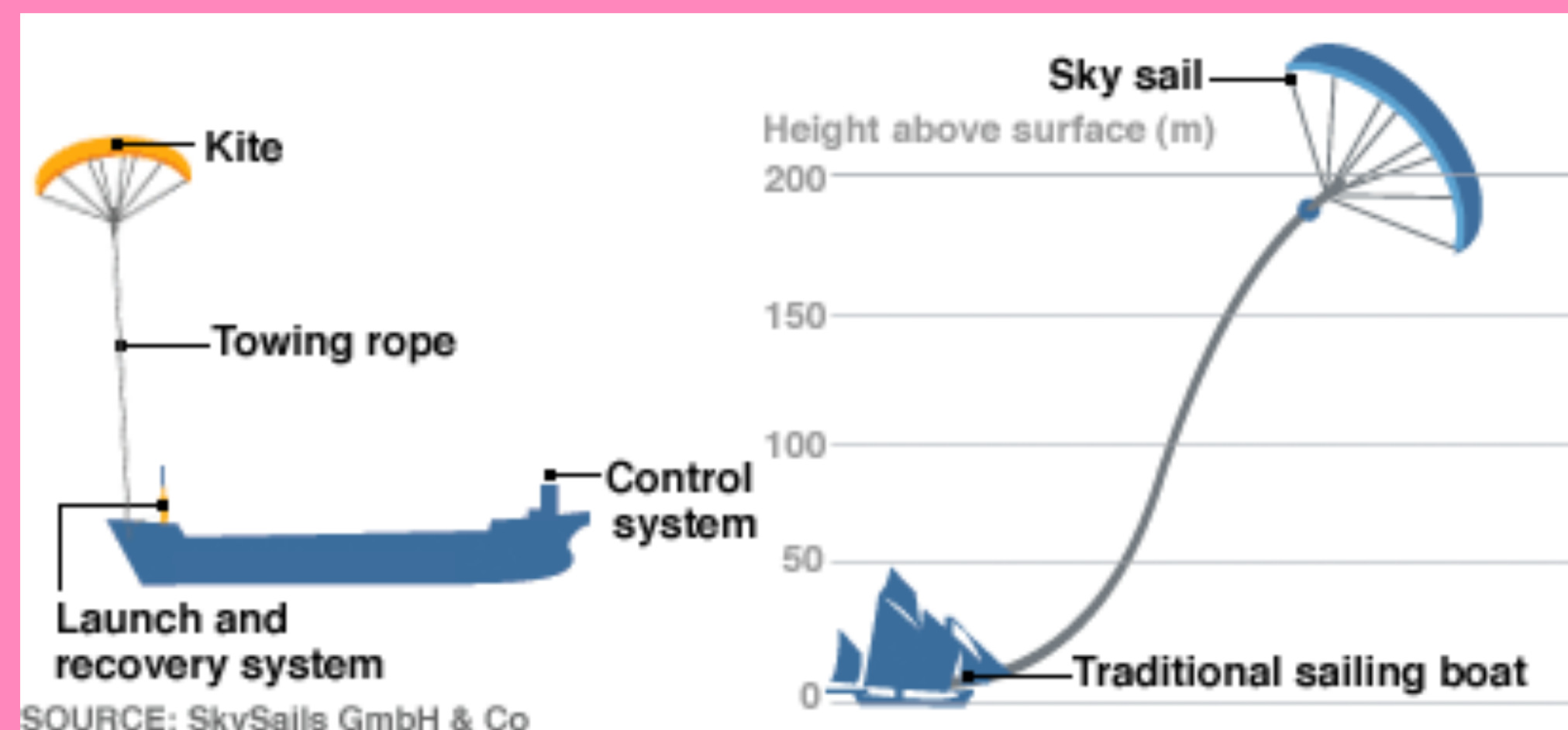


© Juergen Braker
MarineTraffic.com

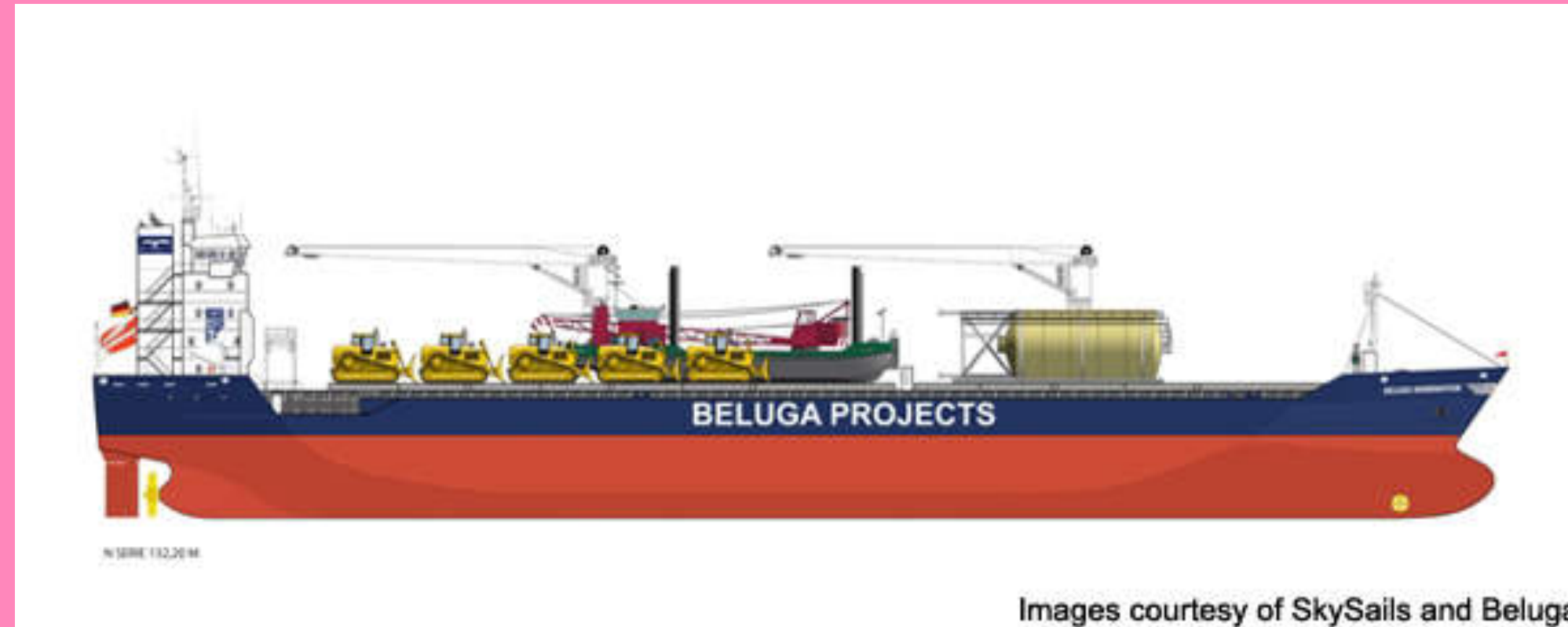
© Juergen Braker



Images courtesy of SkySails and Beluga



BENEFITS OF USING KITES FOR TRANSPORT



**“WITH LARGER SAILS OF UP TO 600M²,
FUEL SAVINGS OF BETWEEN 10% AND 35% ARE POSSIBLE.”**

**WITH THE PRICE OF OIL SO HIGH,
AN AVERAGE 87M CARGO SHIP COULD SAVE NEARLY £270,361 A YEAR.**



KITES USED TODAY

WIND ENERGY KITES





Karmøy, Norway
August 2019

KITES USED TODAY

RECREATION







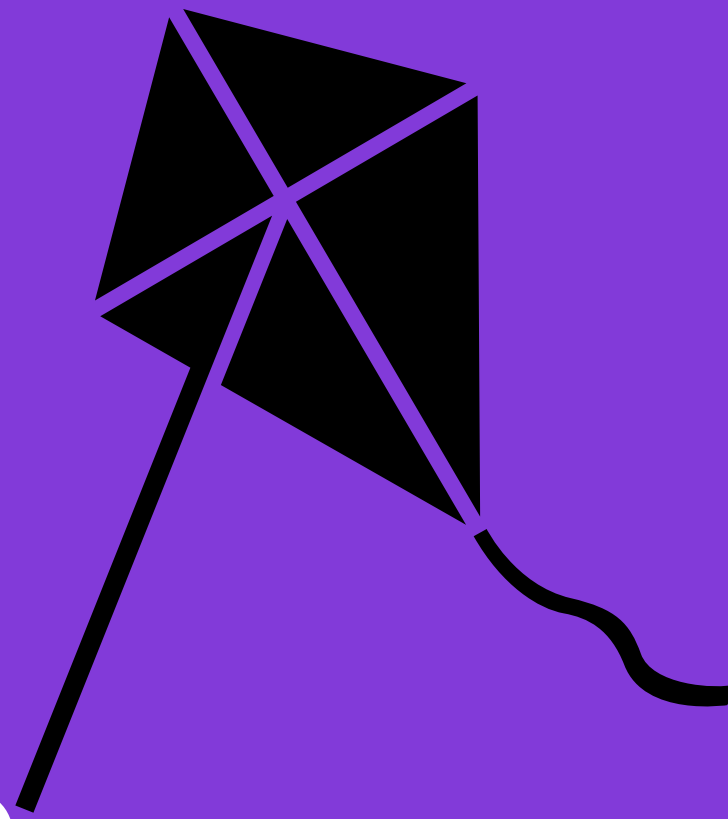
SNOW KITING





KITE SURFING

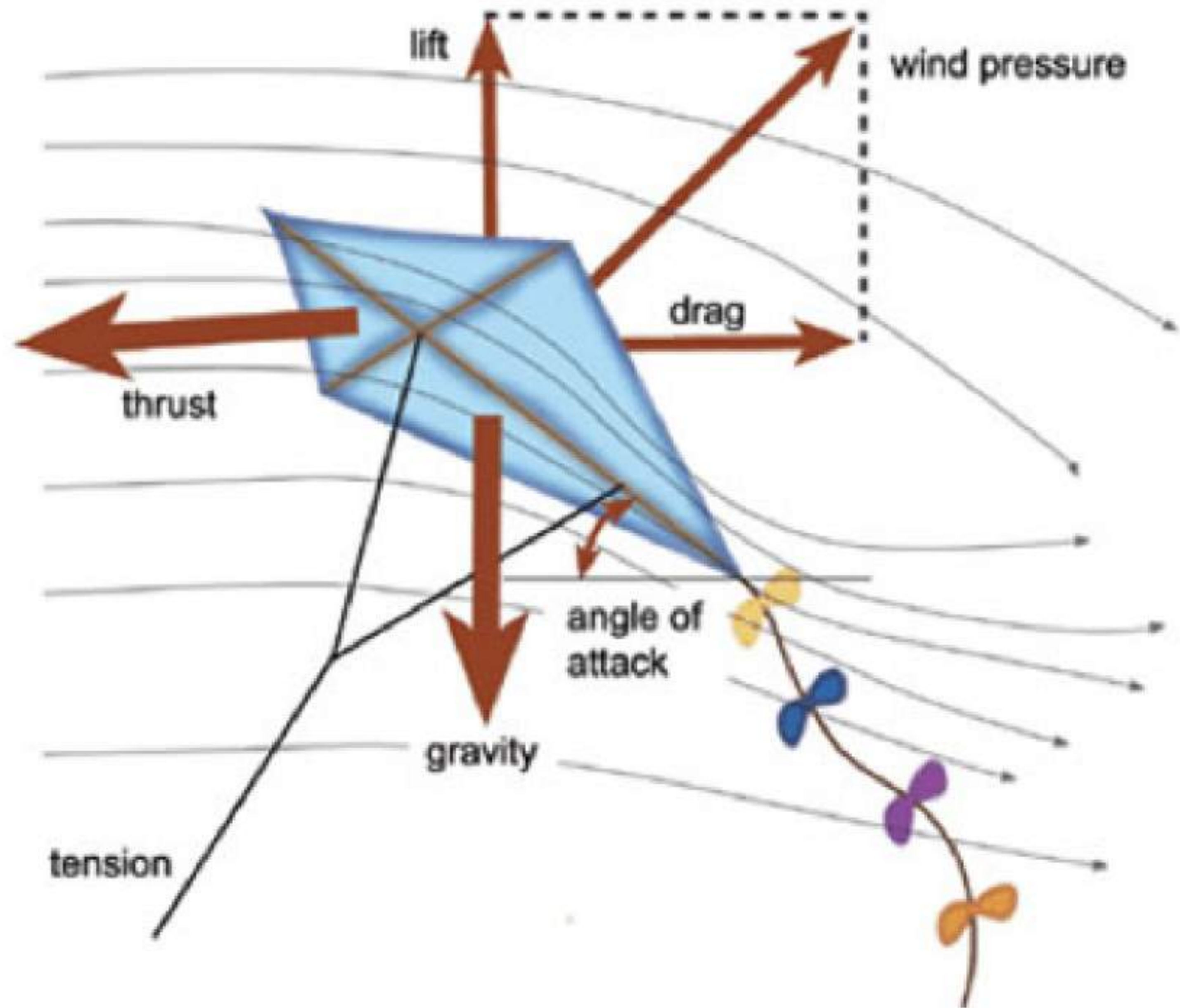




REQUIREMENT 3

EXPLAIN BRIEFLY HOW KITES FLY



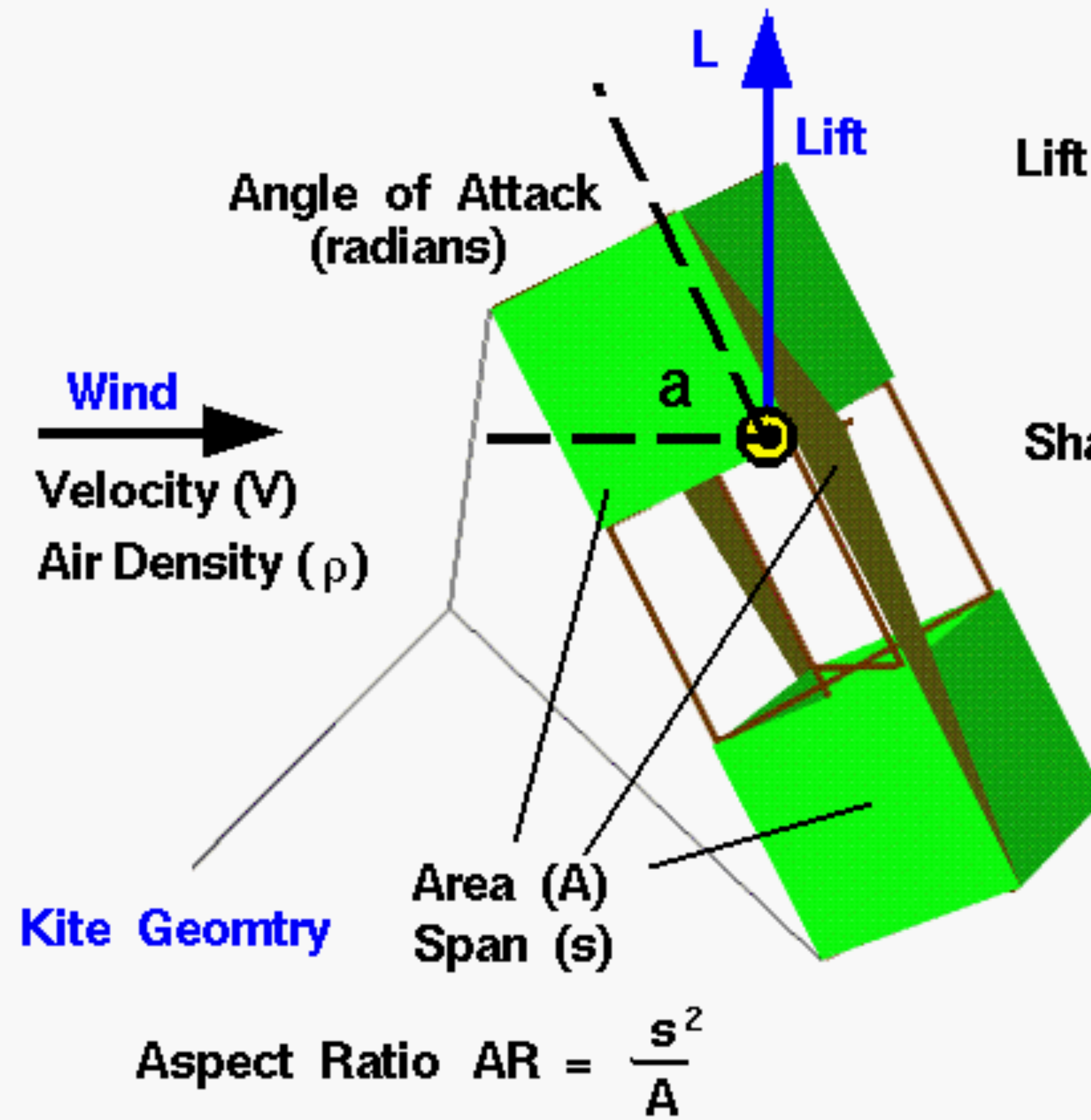






Kite Lift Equations

Glenn
Research
Center



Lift Equation:

$$L = C_l A \rho \frac{V^2}{2}$$

Shape and Inclination Effects:

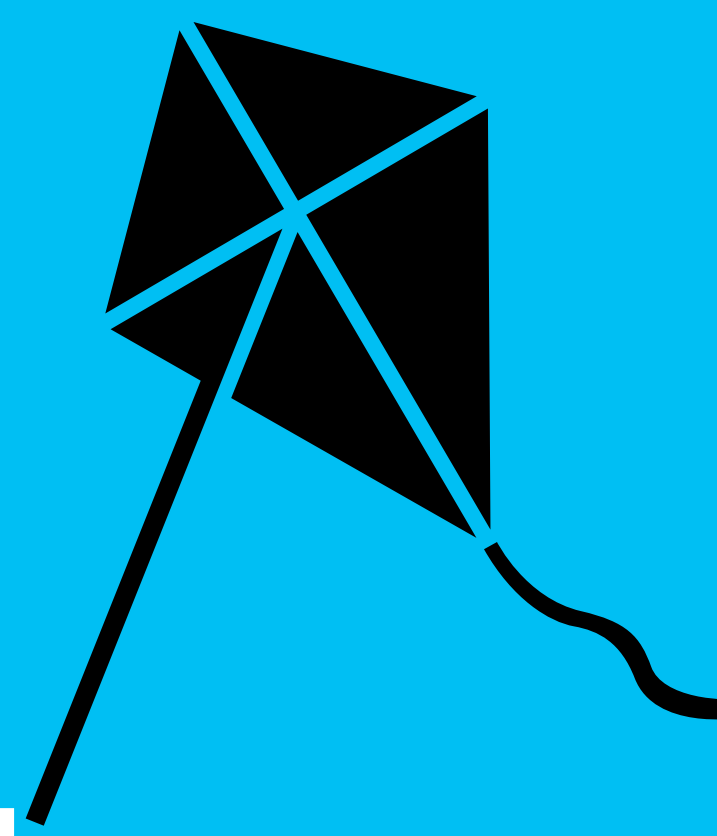
$$C_{l0} \sim 2 \pi a$$

Downwash Effects:

$$C_l = \frac{C_{l0}}{1 + \frac{C_{l0}}{\pi AR}}$$



REQUIREMENT 4



DEFINE THE FOLLOWING TERMS:

SPINE

SPAR

VENT

BOWSTRING

COVER

FRAME

TRAIL

KEEL

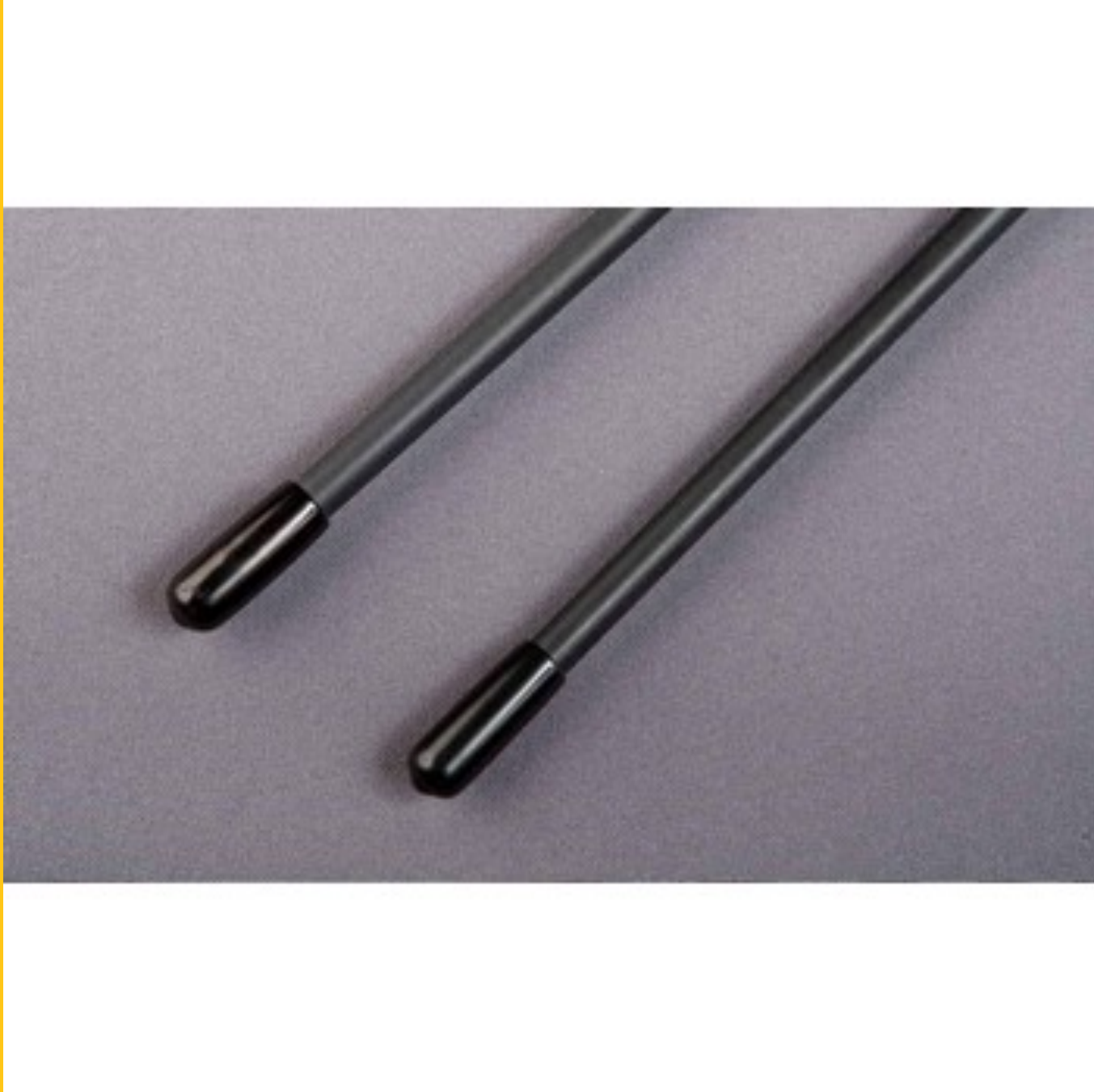
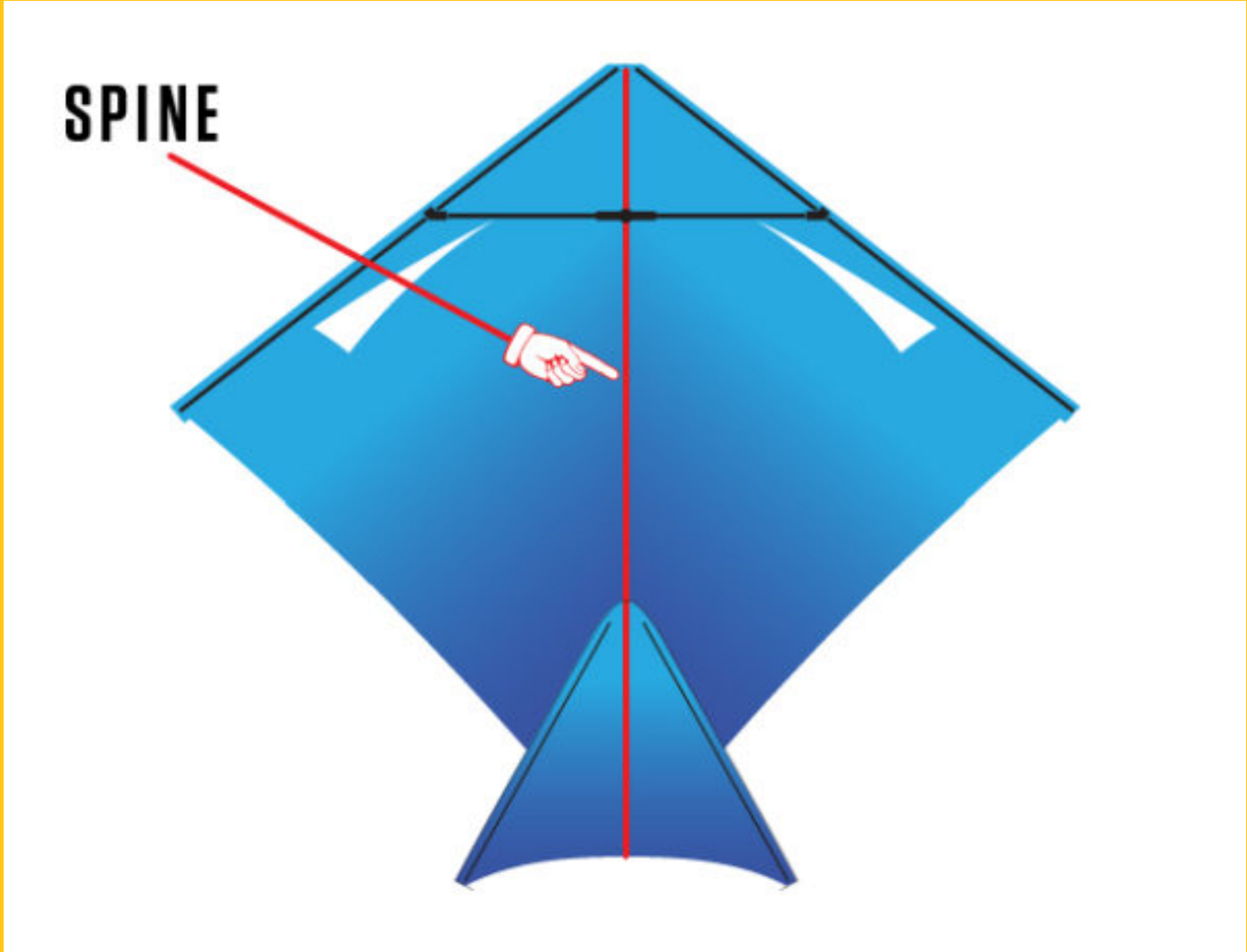
FLYING LINE

BRIDLE

REEL



KITE SPINE



SPAR

COVER

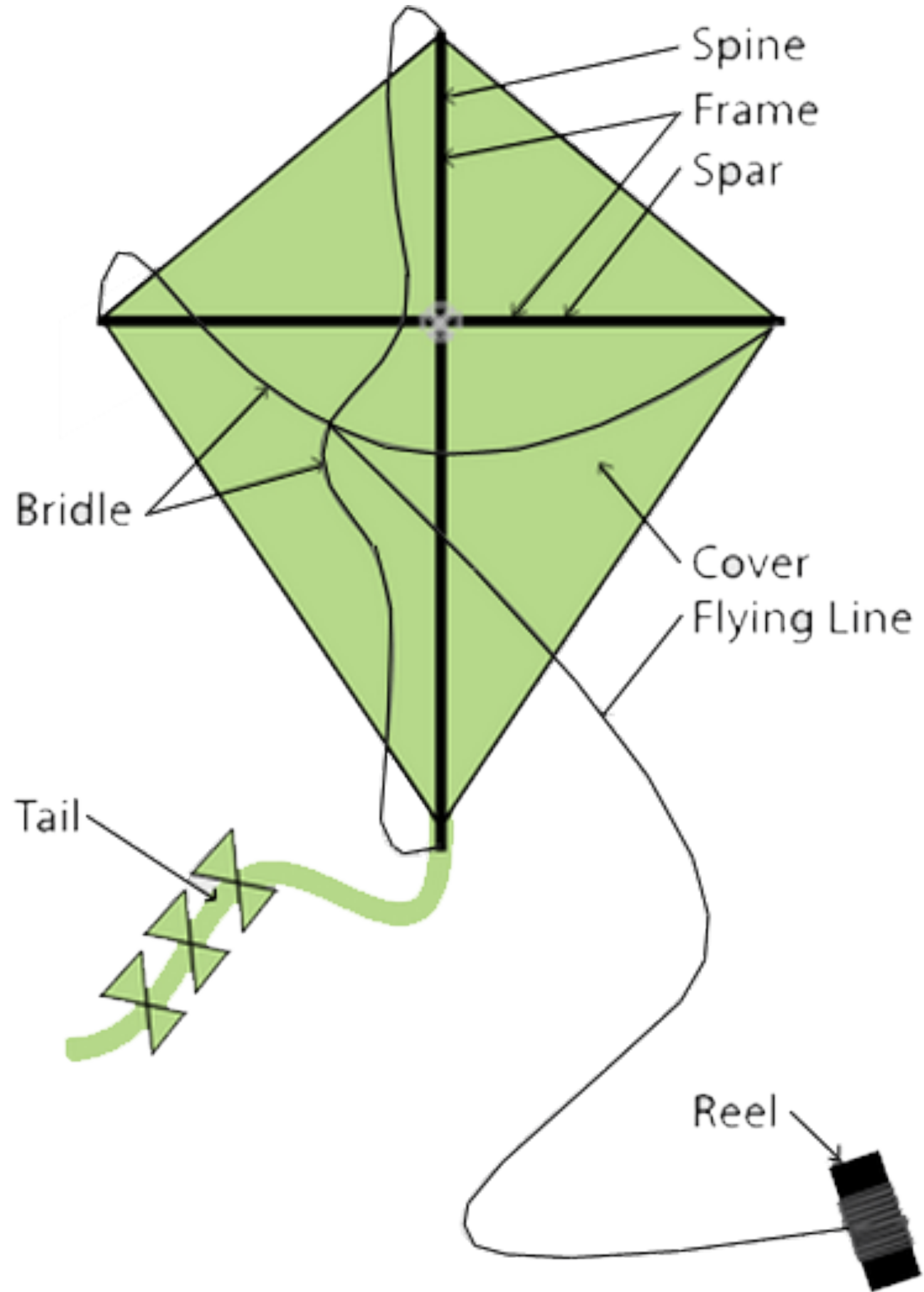
FRAME

TRAIL

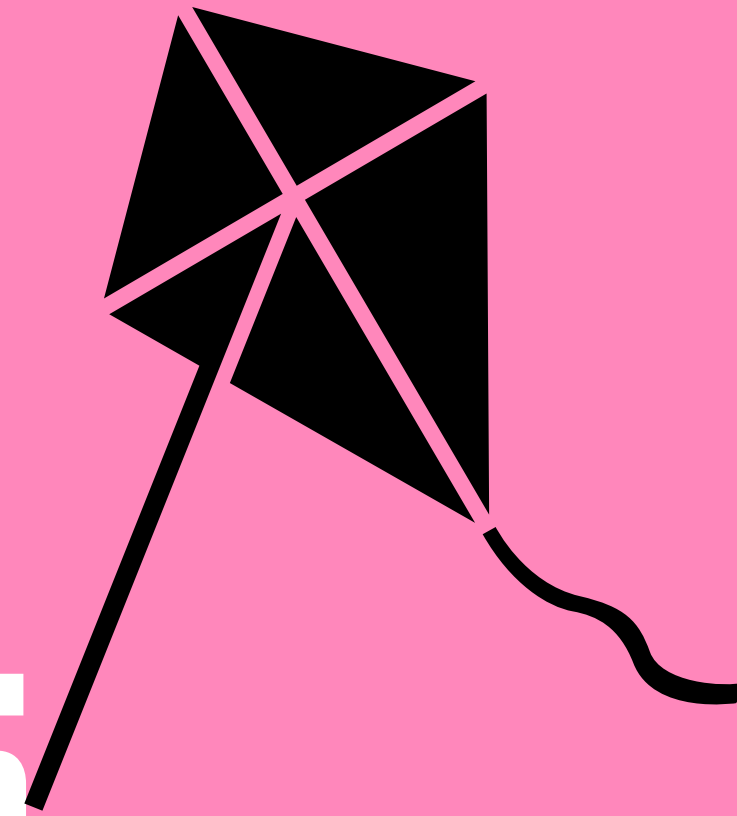
BRIDLE

REEL

FLYING LINE



REQUIREMENT 5



WHAT IS A COMMON CAUSE OF KITE FAILURE?

WRITE IT IN THE CHAT OR COMMENTS SECTION



1.LACK OF WIND

2.TOO STRONG A WIND

**3.TREES OR OTHER
OBSTACLES CAUSING TURBULENCE**

**4.ESSENTIAL PARTS OF THE KITE OR LINE
BREAKING**

HUMAN FACTOR



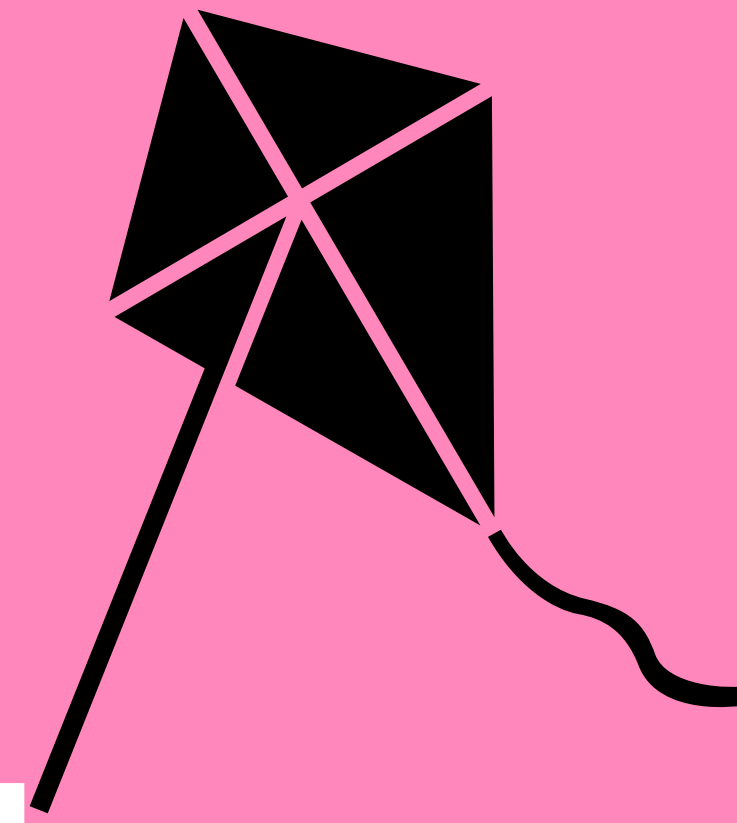
REQUIREMENT 6



WHAT SHOULD BE DONE WHEN A KITE LOOPS DURING FLIGHT?

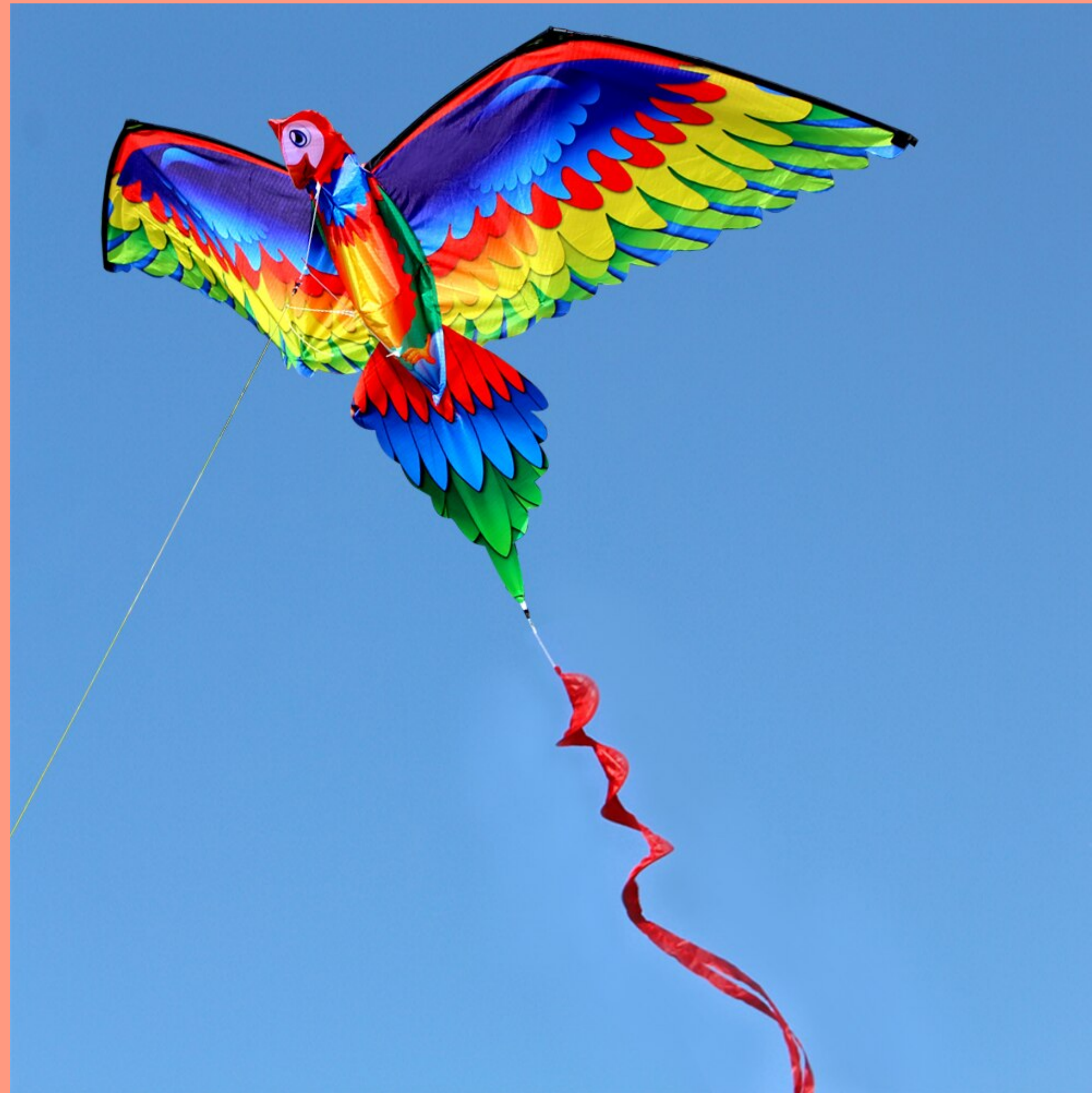


REQUIREMENT 7



WHY IS A TAIL SOMETIMES NEEDED ON A KITE?







TRYING TO FLY A KITE WITHOUT A TAIL MAY RESULT IN THE KITE SPINNING AND ROLLING A LOT BECAUSE THE KITE IS UNSTABLE. ADDING A TAIL TO A KITE HELPS MAKE IT FLY MORE STABLY BY ADDING SOME NEEDED WEIGHT AND DRAG TO ITS LOWER END



REQUIREMENT 8

KNOW AT LEAST THREE SAFETY RULES FOR KITE FLYING



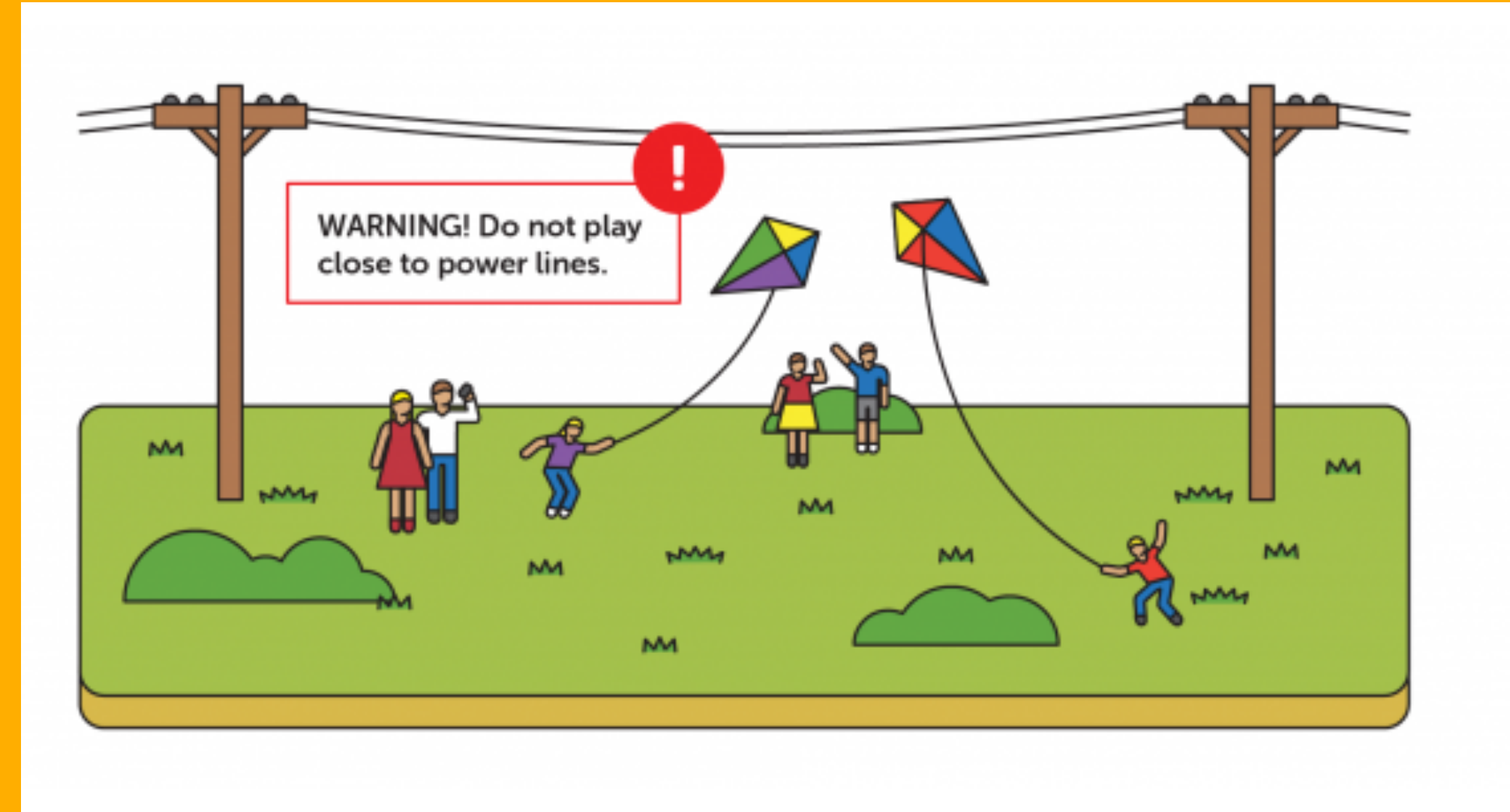


DO:
BE AWARE OF WHERE YOU ARE. IF THERE IS EVER ANY QUESTION OF SAFETY, FLY THE KITE IN ANOTHER LOCATION OR ON ANOTHER DAY.

ALWAYS KEEPS A SAFE DISTANCE BETWEEN OTHER FLIERS.

IF YOUR KITE BECOMES TANGLED IN POWER LINES, LEAVE IT THERE. NOTIFY THE UTILITY COMPANY OF THE SITUATION.

AVOID KITE EATING TREES.



DON'T:

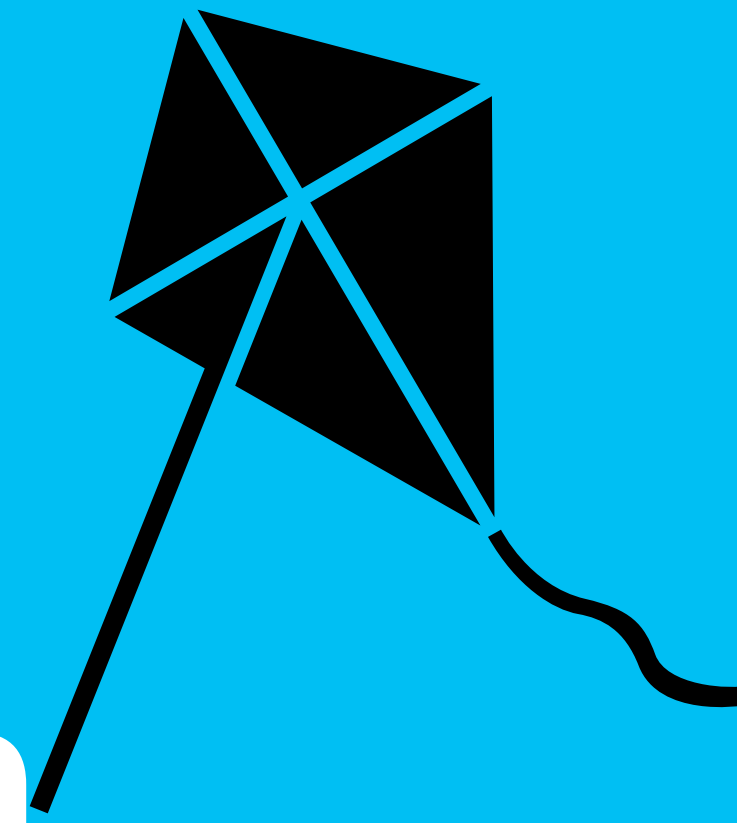
FLY NEAR POWER LINES.

FLY NEAR CARS.

FLY NEAR AIRPORTS.

FLY IN STORMY WEATHER OR WHEN A STORM IS APPROACHING

REQUIREMENT 9



**KNOW HOW TO CORRECTLY WIND LINE ON A STICK.
KNOW HOW TO TIE BROKEN ENDS TOGETHER WITH THE
FISHERMAN'S KNOT.**







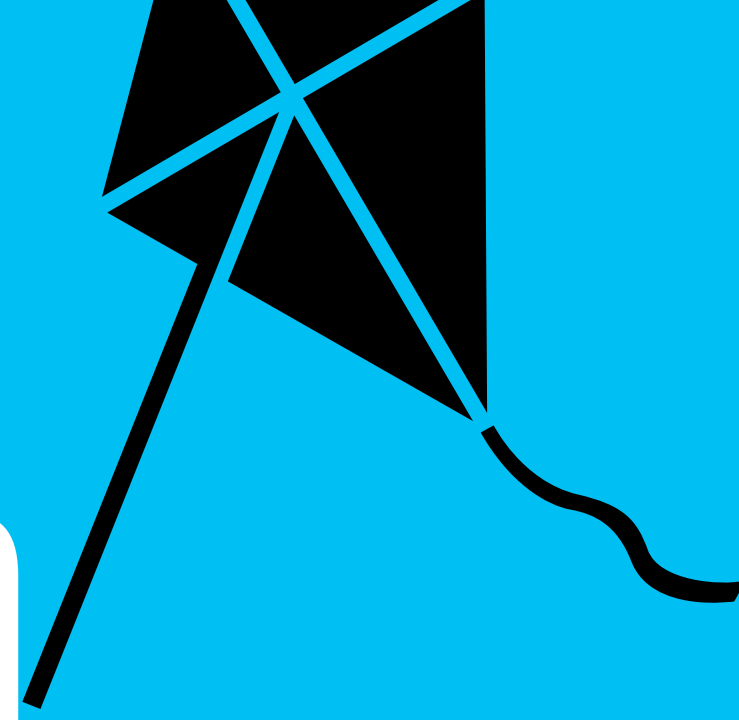
**FLYING LINE SETS ARE MADE FROM HIGH QUALITY DYNEEMA.
WOVEN WITH A TIGHT,
SQUARE BRAID AND TREATED WITH A SPECIAL HEATING PROCESS,
THIS LINE IS HIGHLY RESISTANT TO ABRASION**



ROCK CLIMBING

HOW TO TIE A DOUBLE FISHERMAN'S KNOT

REQUIREMENT 10



MAKE AND SUCCESSFULLY FLY TWO OF THE FOLLOWING KITES

TETRAHEDRAL KITE

EDDY OR MALAY KITE

SLED KITE

FLAT KITE

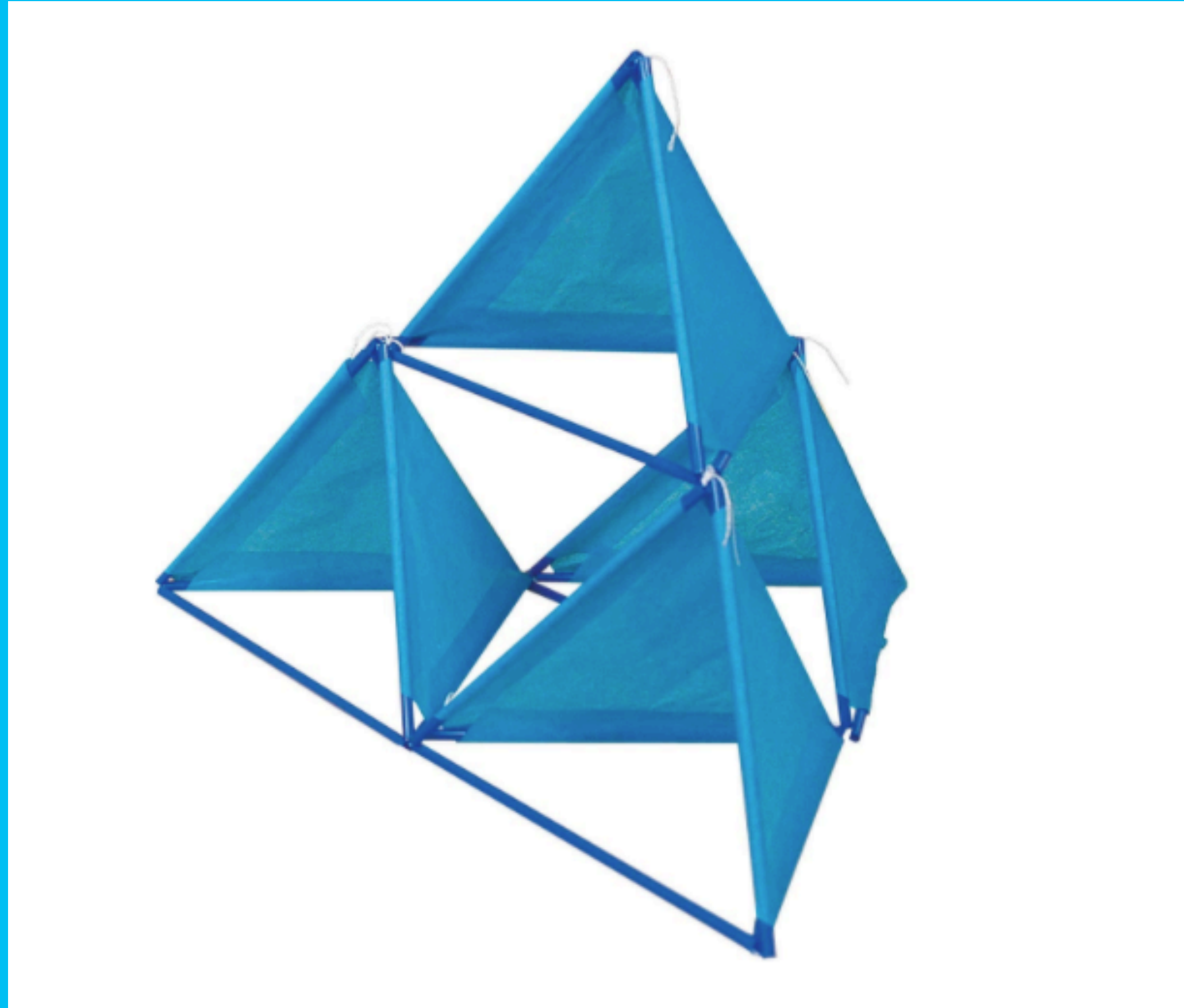
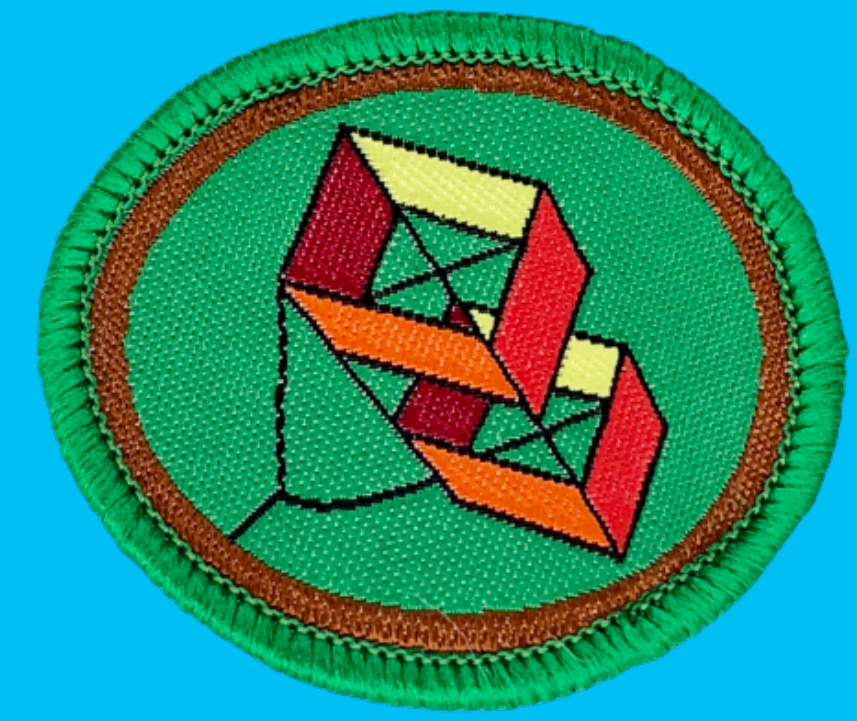
TWO-STICK DIAMOND KITE

DELTA WING KITE

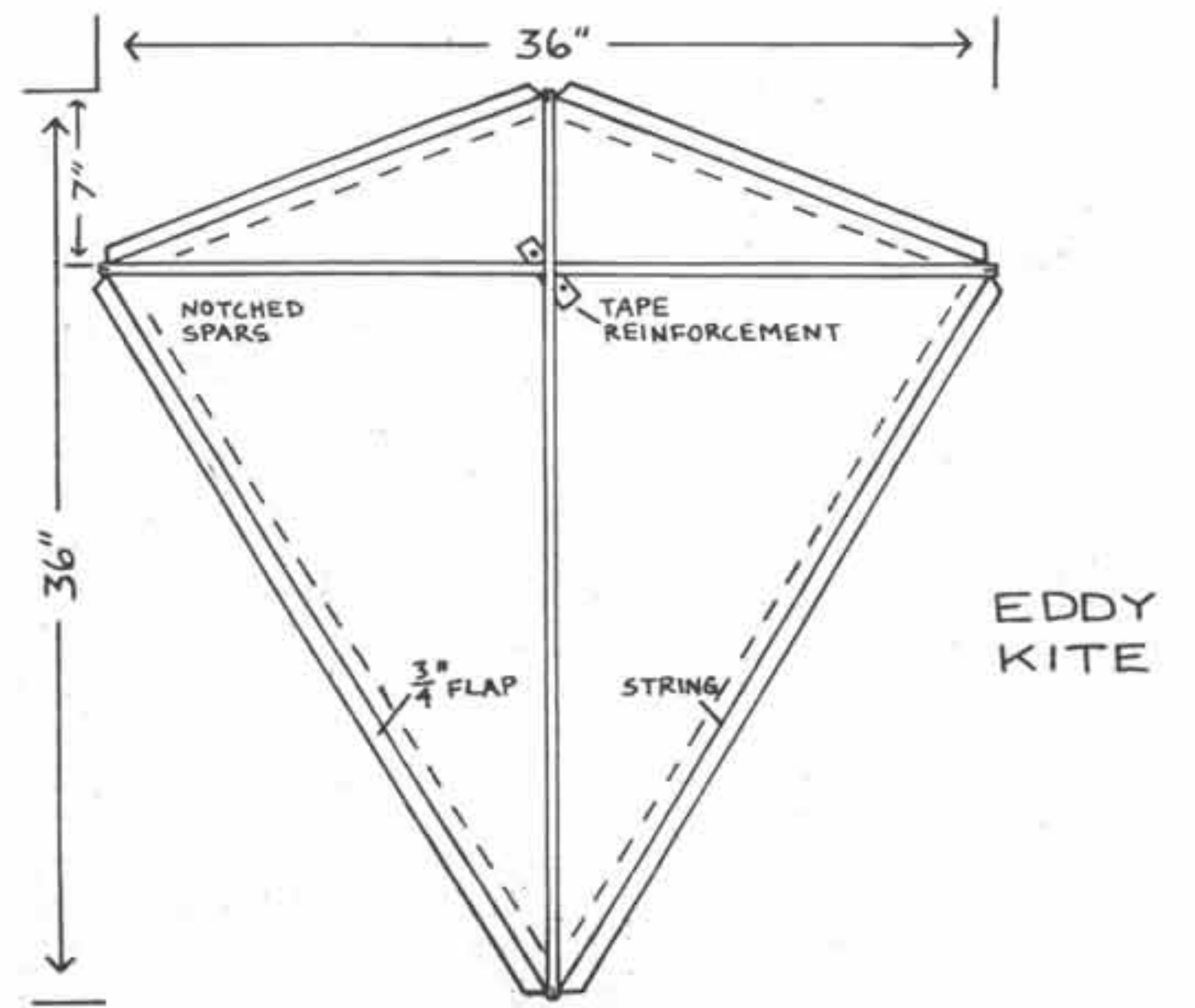
FOX KITE



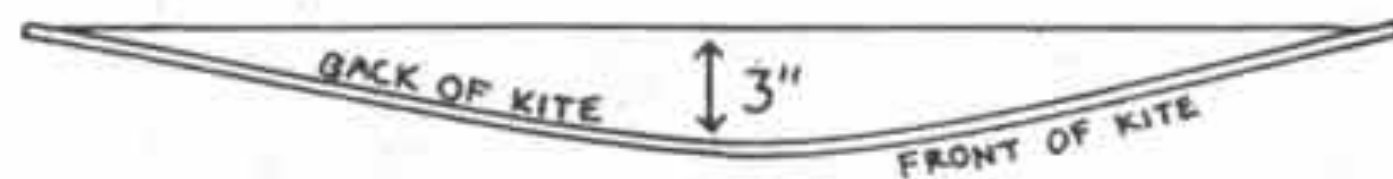
TETRAHEDRAL KITE



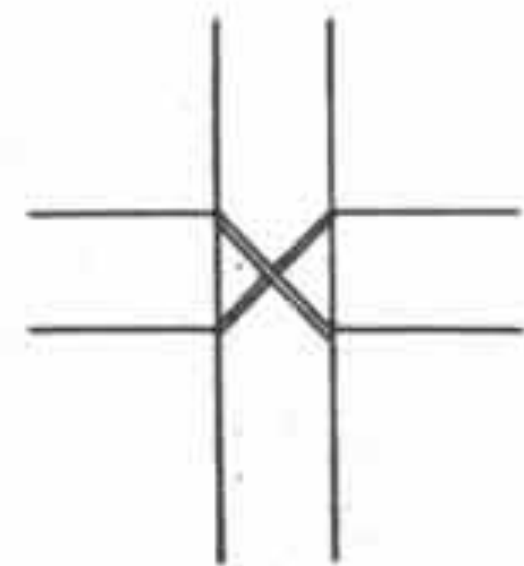
EDDY KITE



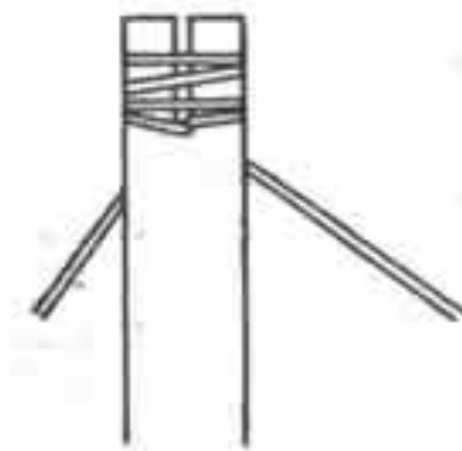
① KITE PATTERN



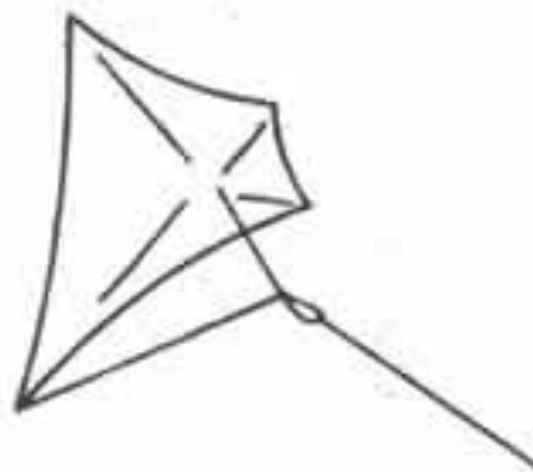
② BOWSTRING



③ INTERSECTION DETAIL



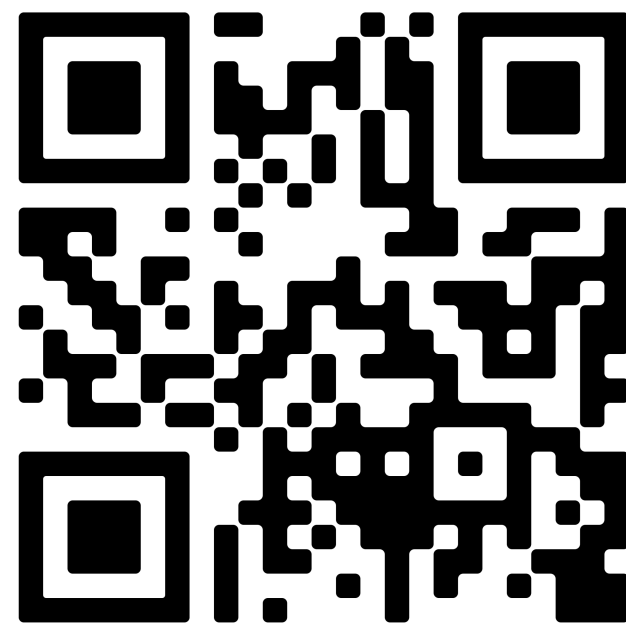
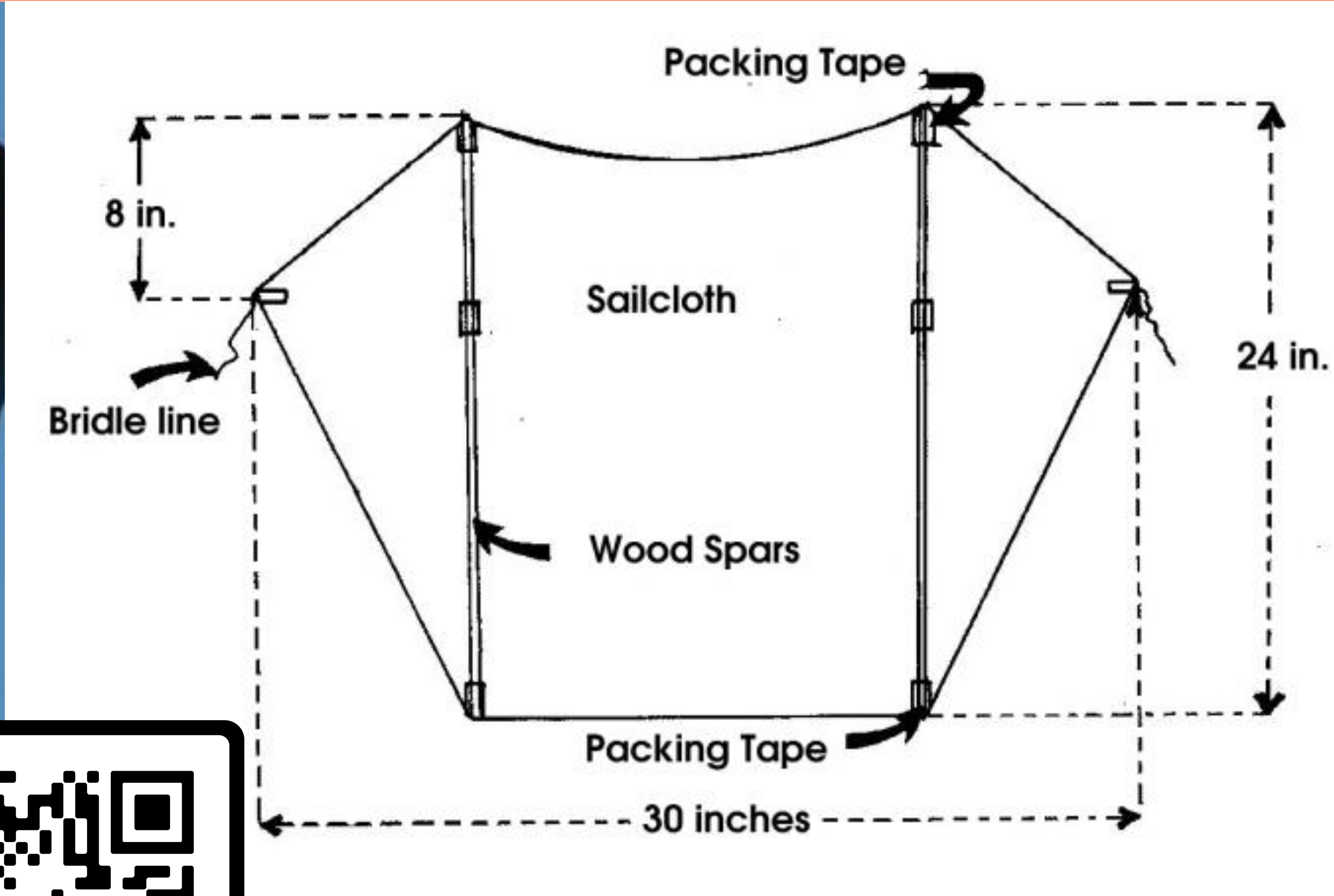
④ NOTCHED SPAR DETAIL



⑤ BRIDLE

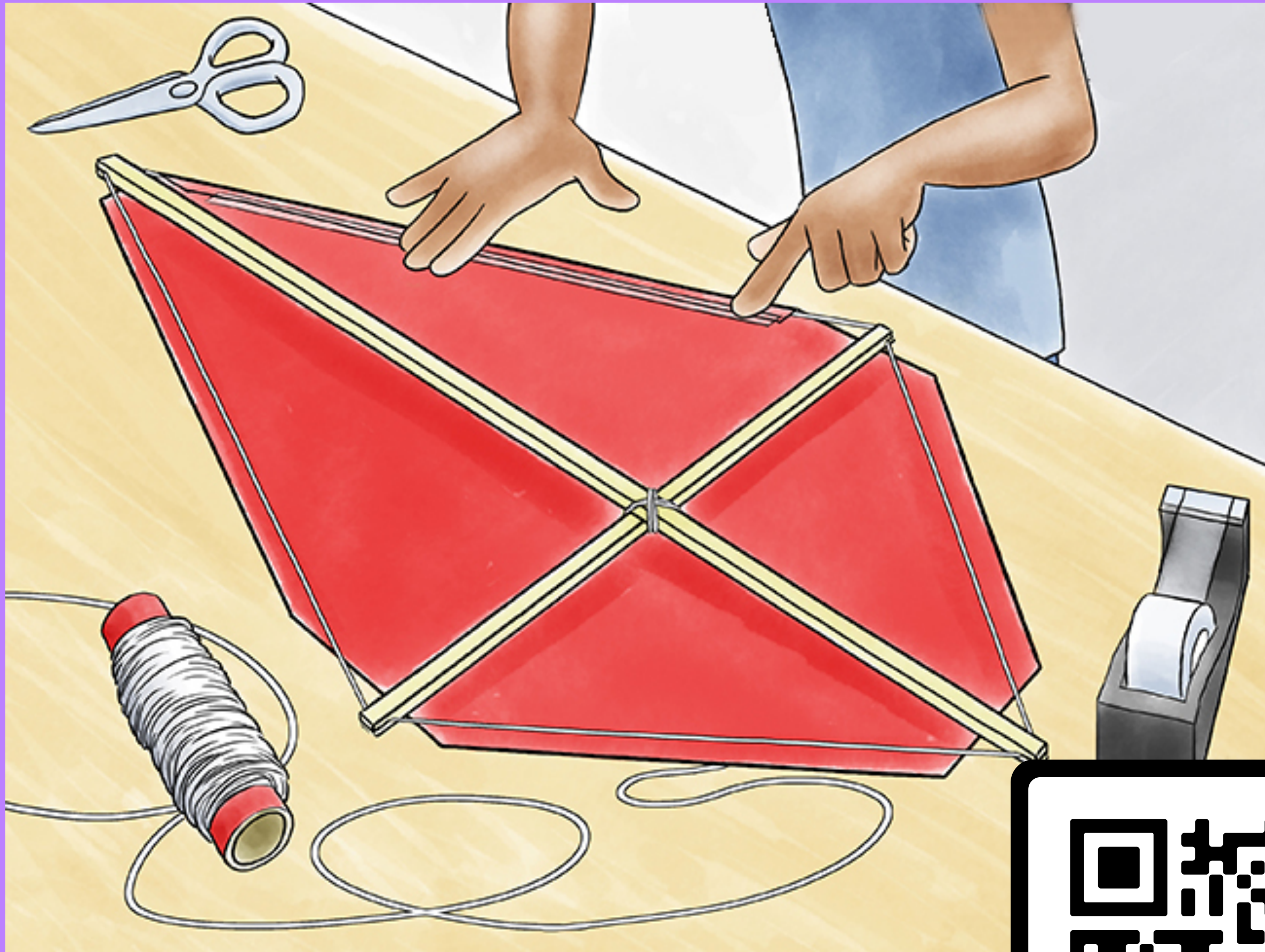


SLED KITE

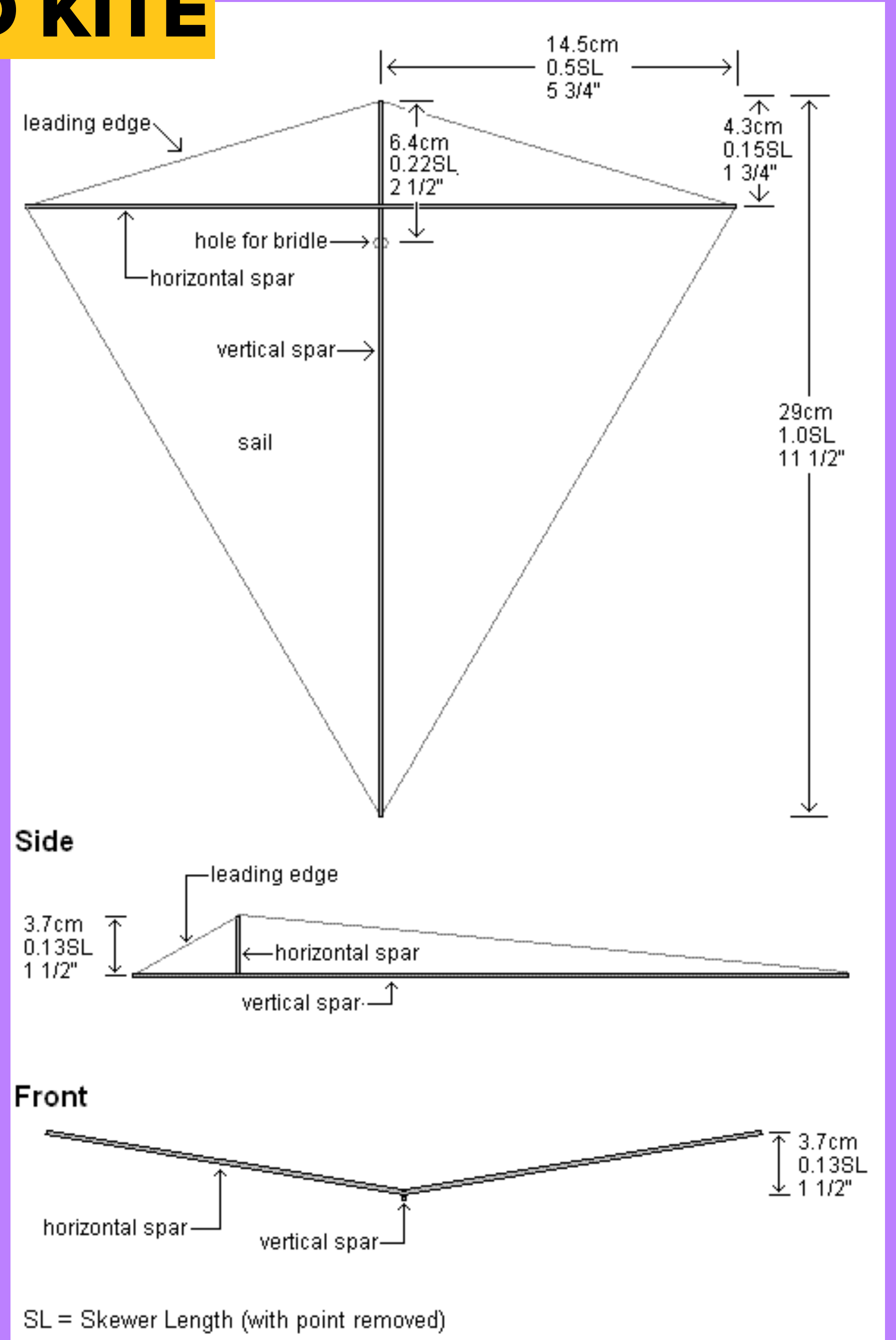


SCAN ME

TWO-STICK DIAMOND KITE



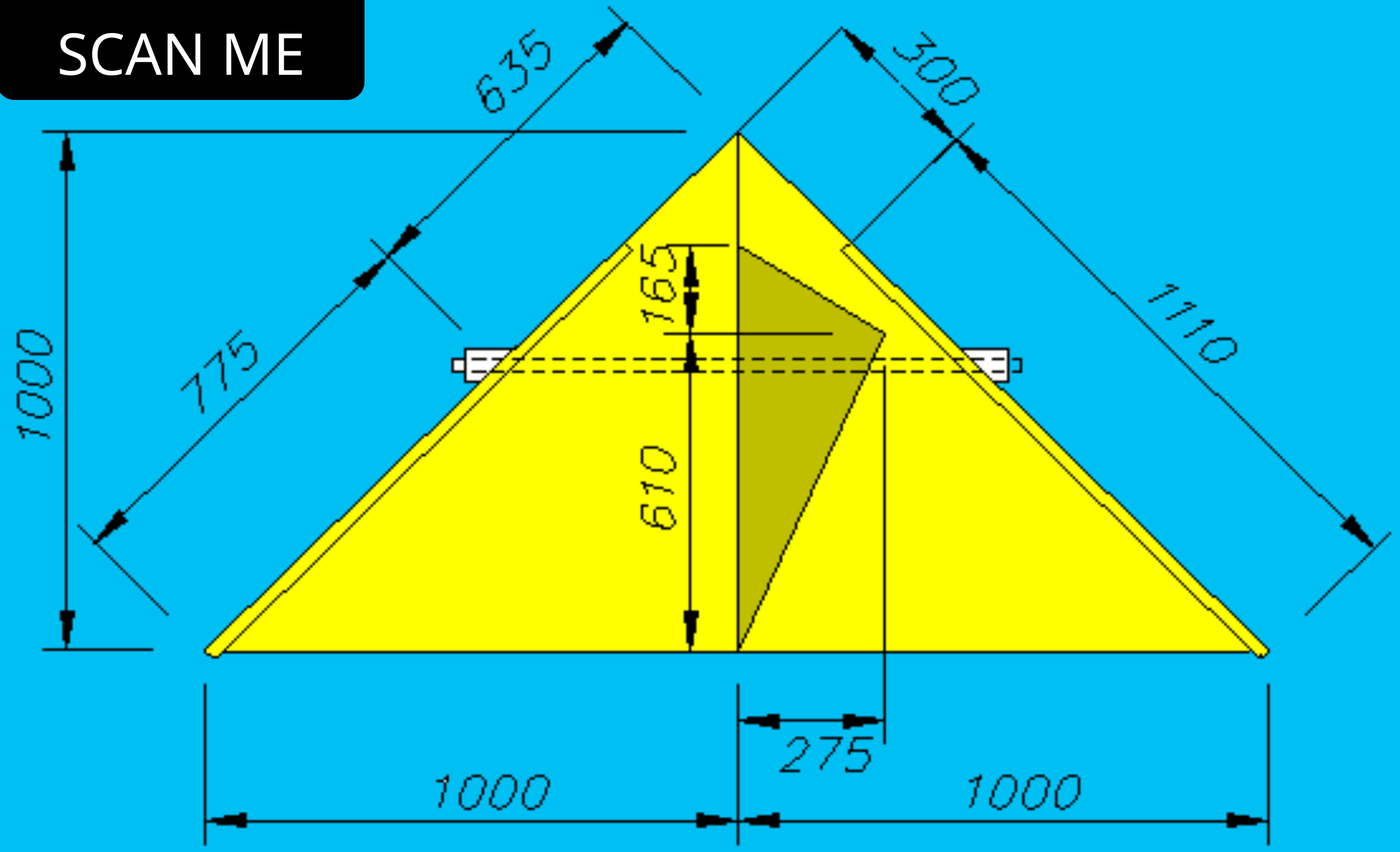
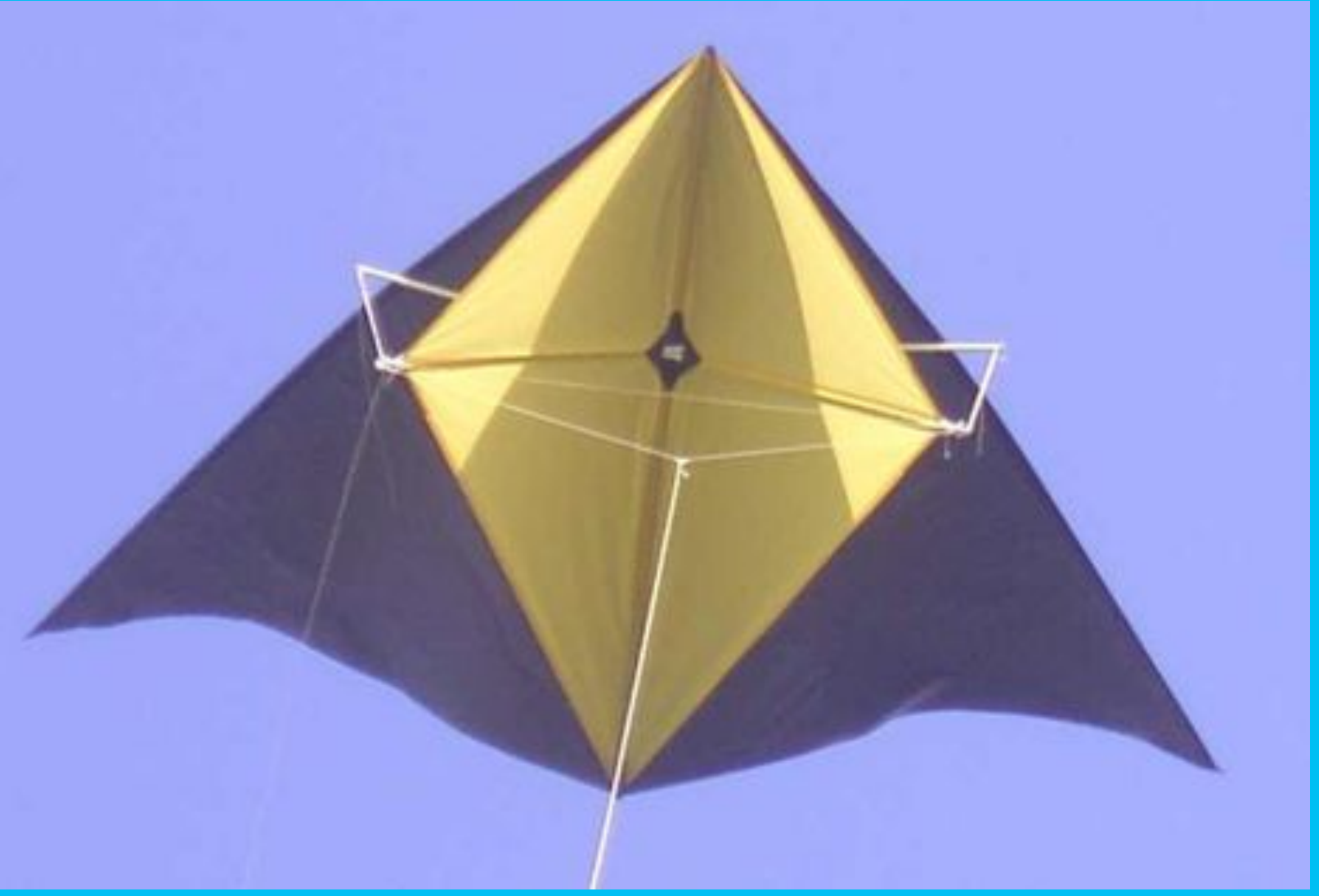
SCAN ME



DELTA WING KITE



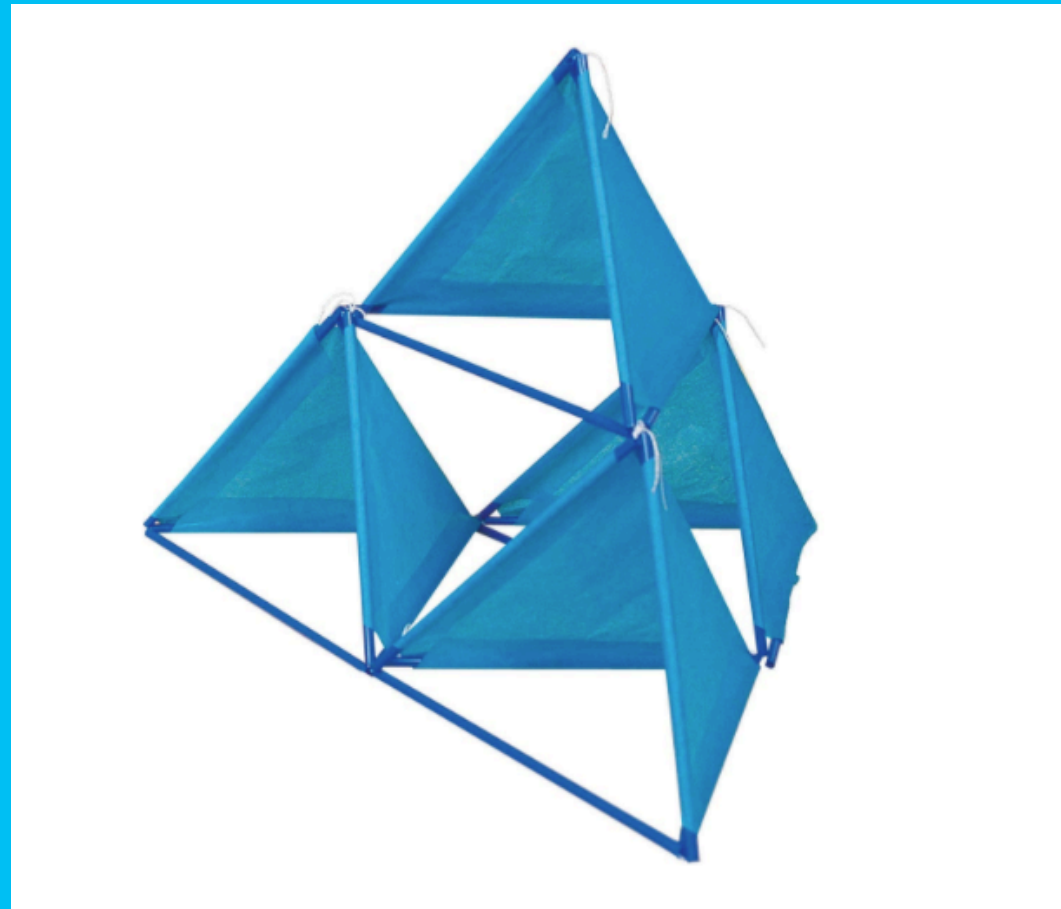
SCAN ME



FOX KITE



WHICH ONE WOULD YOU LIKE TO MAKE?



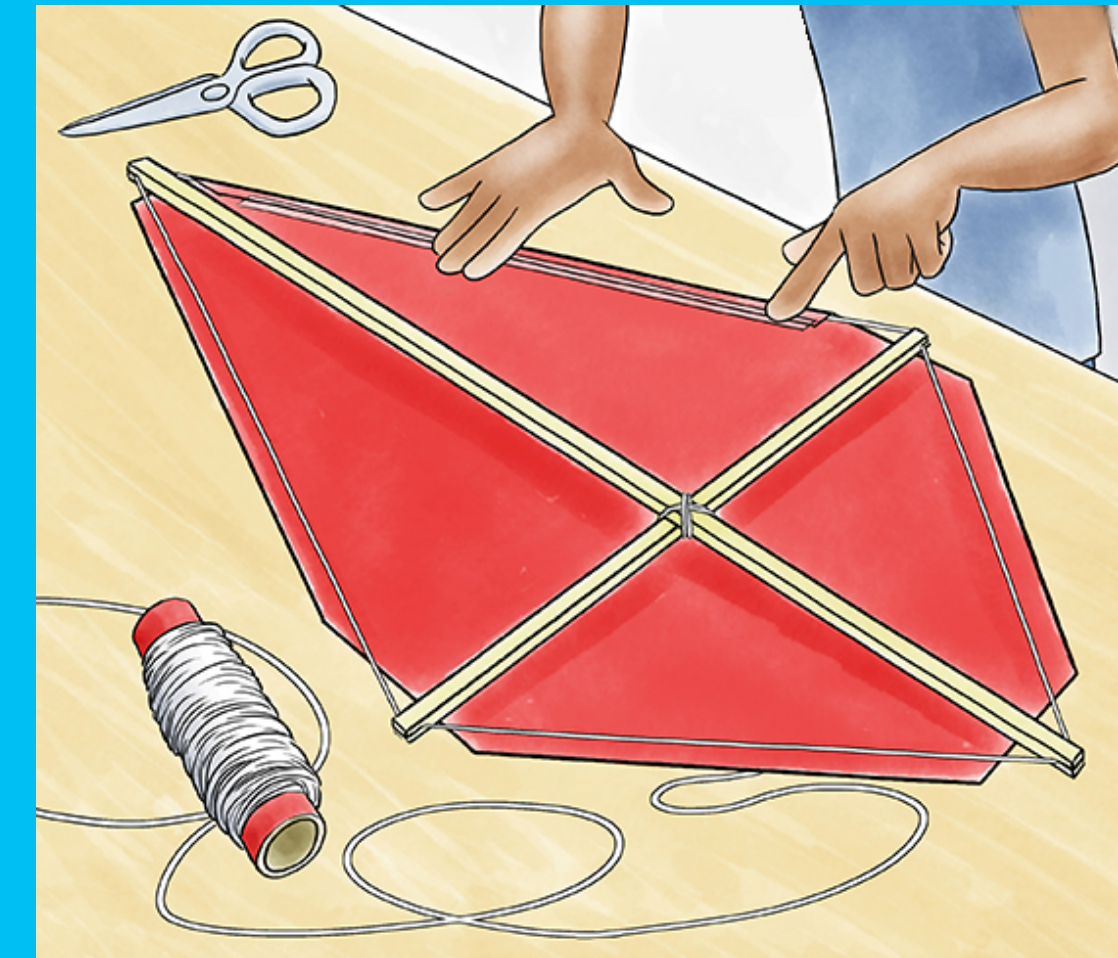
TETRAHEDRAL KITE



EDDY KITE



SLED KITE



**TWO-STICK
DIAMOND KITE**



DELTA WING KITE



FOX KITE



Requirements

1. When were kites first made and flown? Name at least three ways kites have helped in scientific research and tell how each has affected the world we live in. Tell the story of Benjamin Franklin and his kite.
2. Name some of the ways that kites might be used today.
3. Explain briefly how kites fly.
4. Define the following terms:
 - a. Spine
 - b. Spar
 - c. Vent
 - d. Bowstring
 - e. Cover
 - f. Frame
 - g. Trail
 - h. Keel
 - i. Flying line
 - j. Bridle
 - k. Reel



Requirements

5. What is a common cause of kite failure?
6. What should be done when a kite loops during flight?
7. Why is a tail sometimes needed on a kite?
8. Know at least three safety rules for kite flying.
9. Know how to correctly wind line on a stick. Know how to tie broken ends together with the fisherman's knot.
10. Make and successfully fly two of the following kites:
 - a. Sled kite
 - b. Flat kite
 - c. Two-stick diamond kite
 - d. Delta wing kite
 - e. Eddy or Malay kite
 - f. Fox kite
 - g. Tetrahedral kite





KITES

PATHFINDER HONOUR

SKILL LEVEL: 2
CATEGORY: RECREATION
ORIGINAL HONOR: 1986

