First Construction C1: Polygon Tiles

tools

- pencil
- pen
- ruler
- compass
- colored pencils
- packing tape
- scissors
- paper
- pencil sharpener

products

- equilateral triangle
- square
- golden rectangle
- pentagon
- Penrose tiles
- small pentagon
- hexagon

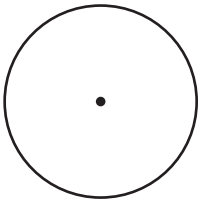
Begin with a point:

.

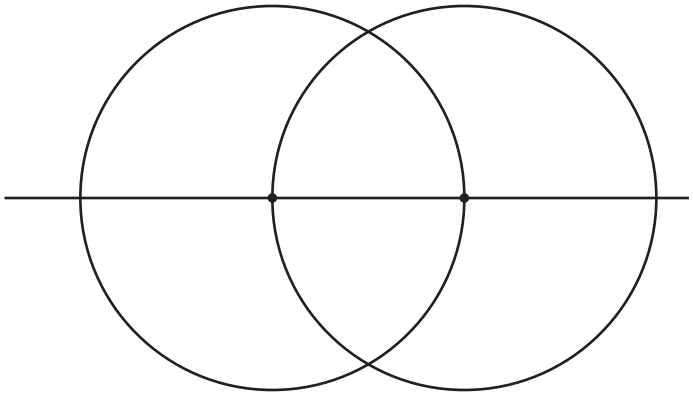
a single dot drawn with a pen.

Then draw two, and draw a line through them:

Now draw another point, draw a circle around it with the compass, and ink over it with a pen to make it dark:

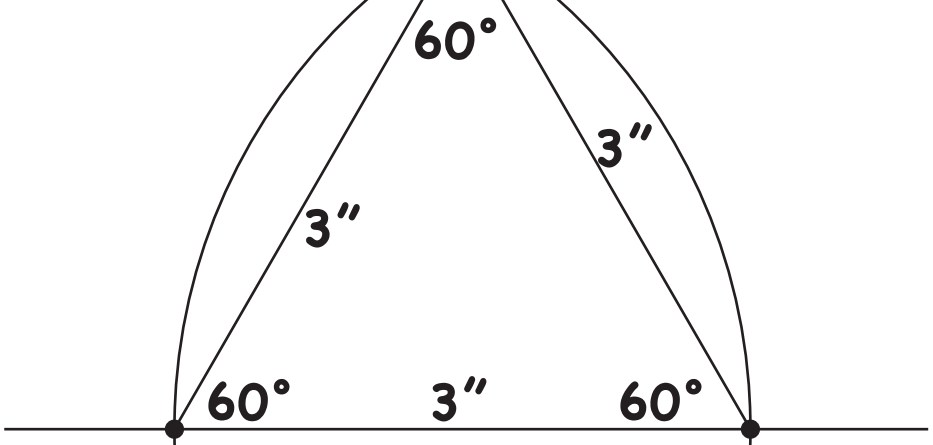


combine these
to make 2 circles that
intersect each others' centers



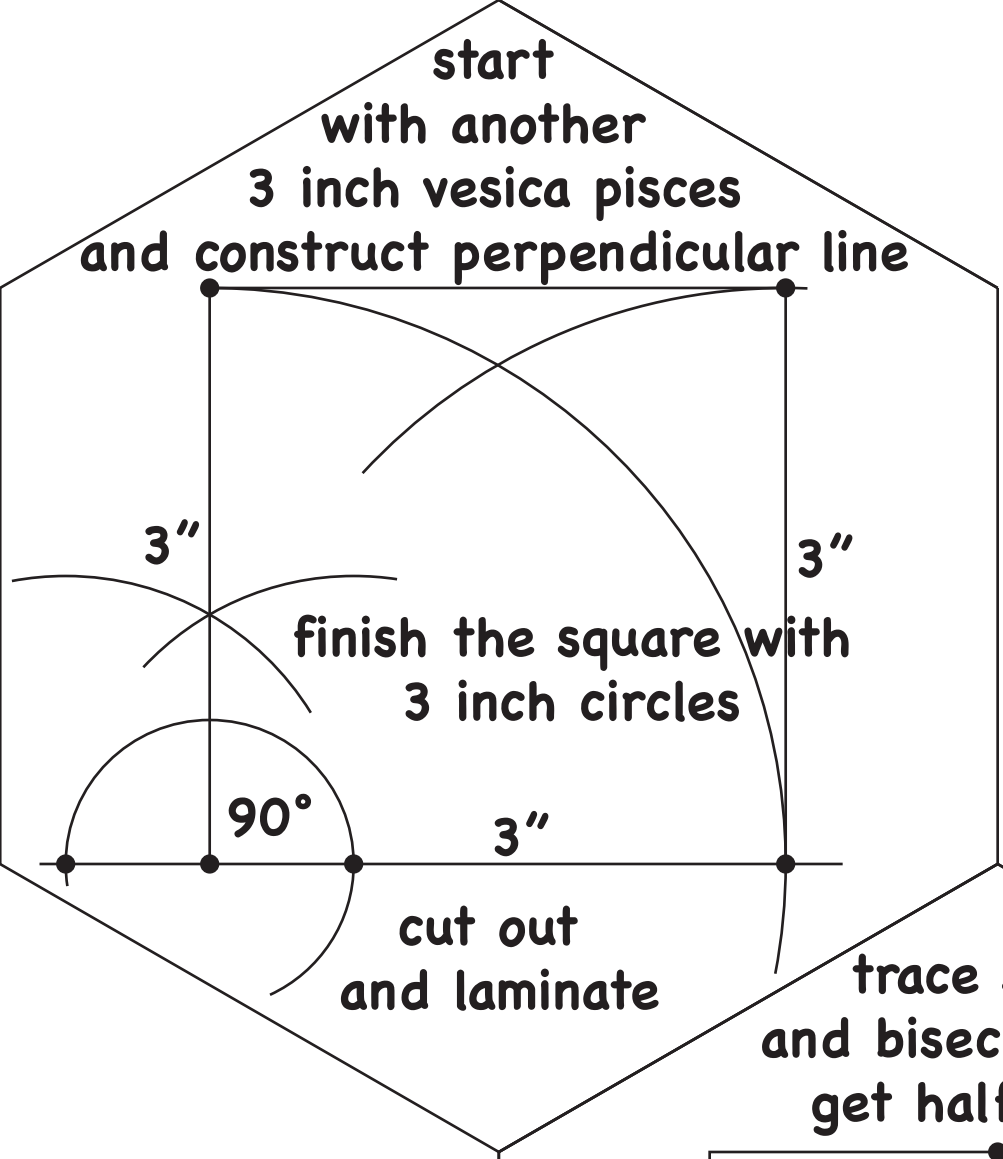
This is figure is called a vesica pisces,
and is both very useful
and of symbolic
significance

Construct
another vesica pisces,
now with exactly 3 inches
between center points:

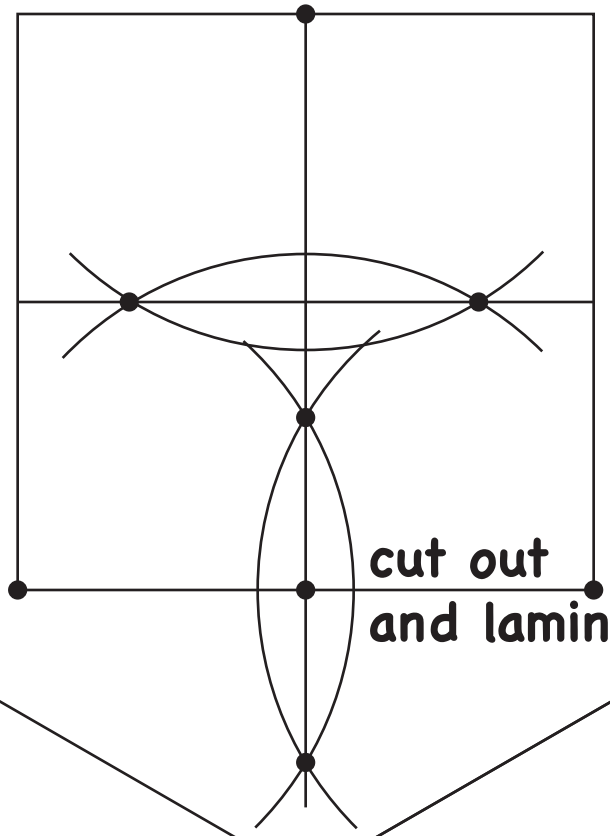


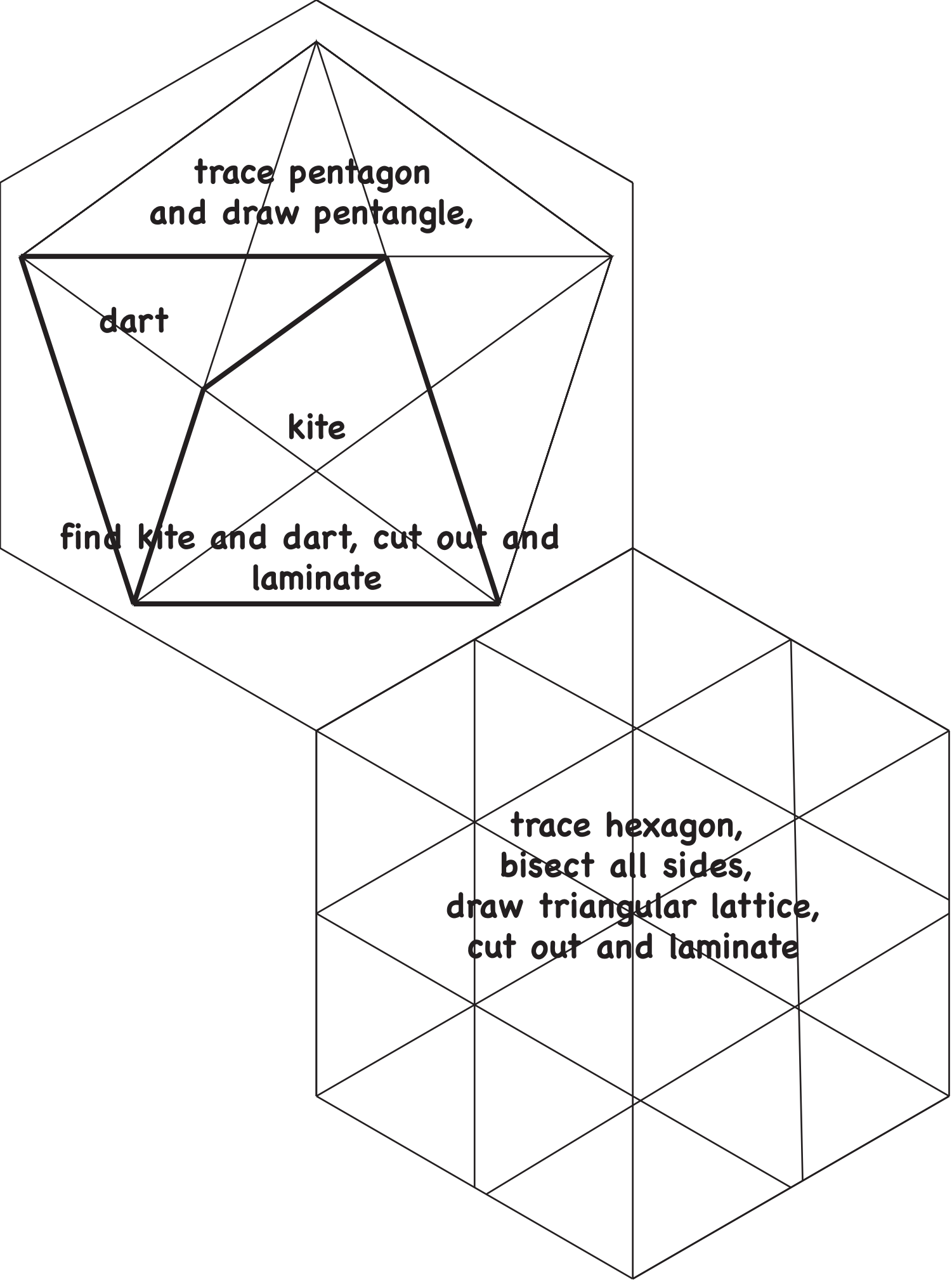
Then connect the top point with
the ruler, making a 3 inch
equilateral triangle
to cut out and
laminate

start
with another
3 inch vesica pisces
and construct perpendicular line



trace sqaure
and bisect twice to
get half squares




trace pentagon
and draw pentangle,
dart
kite
find kite and dart, cut out and
laminate
trace hexagon,
bisect all sides,
draw triangular lattice,
cut out and laminate

Second Construction C2: Platonic Solids

tools

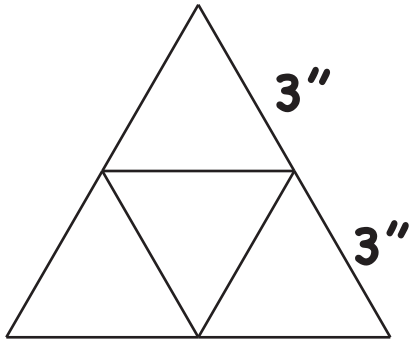
- pen
- ruler
- packing tape
- scissors
- paintbrush
- paint
- cereal boxes
- scoring point

products

- tetrahedron
- cube
- octahedron
- icosahedron
- dodecahedron
- templates for all

C2-1

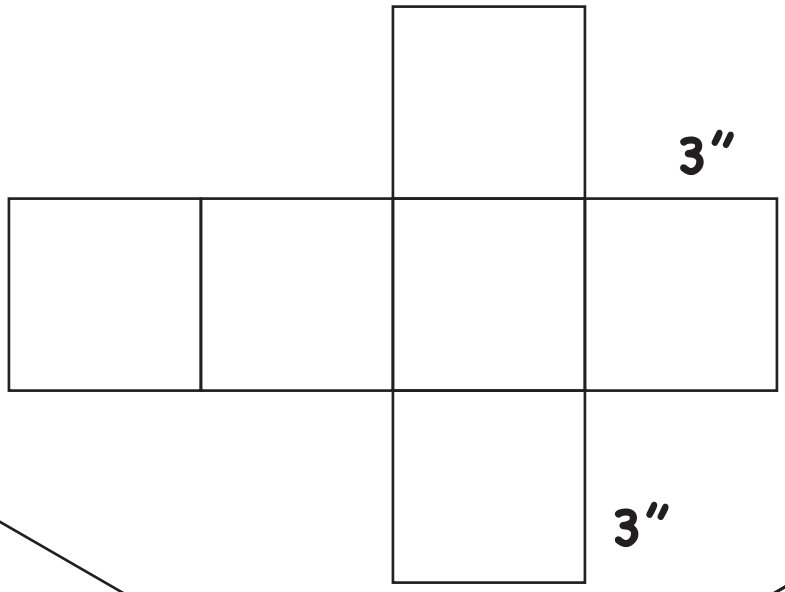
trace out tetrahedron net with 3 inch triangle, color, cut out and laminate



exactly 3 times the size of figure

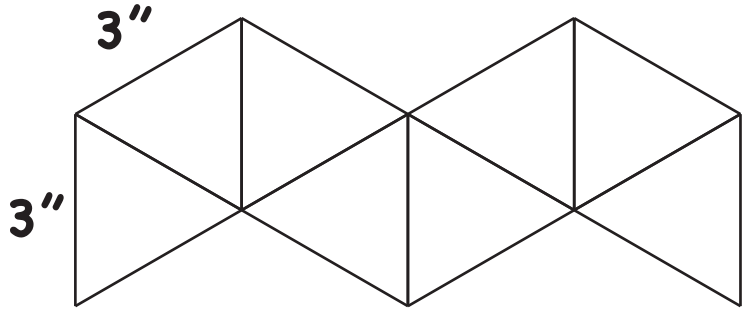
C2-2

trace out
cube net with
3 inch square, color, cut out,
and laminate



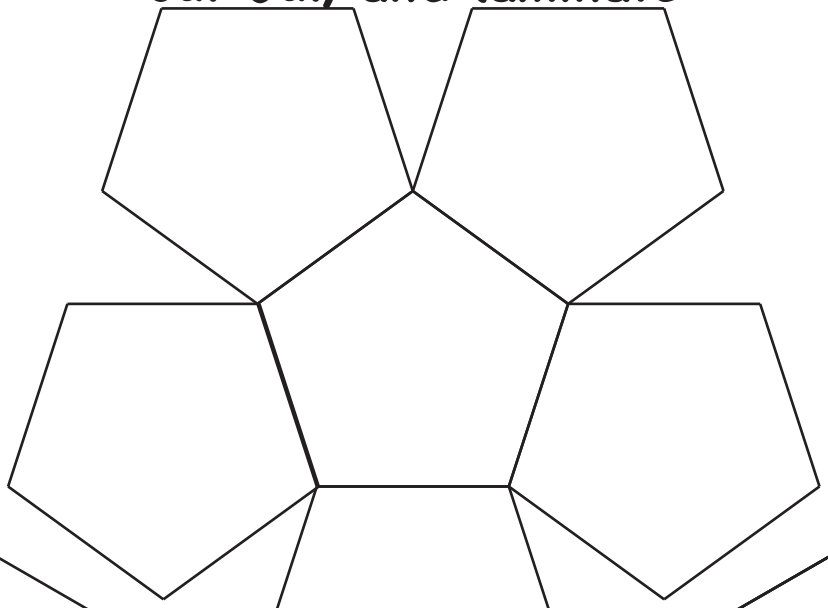
C2-3

trace out
octahedron net with
3 inch triangles, color,
cut out and laminate



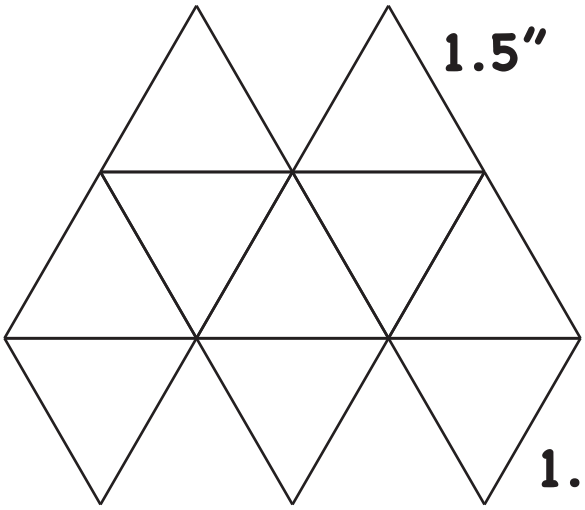
C2-4

trace out
dodecahedron 1/2 net with
inner pentagon from C1, color,
cut out, and laminate



C2-5

trace out
icosahedron 1/2 net with
1.5 inch triangles, color,
cut out and laminate



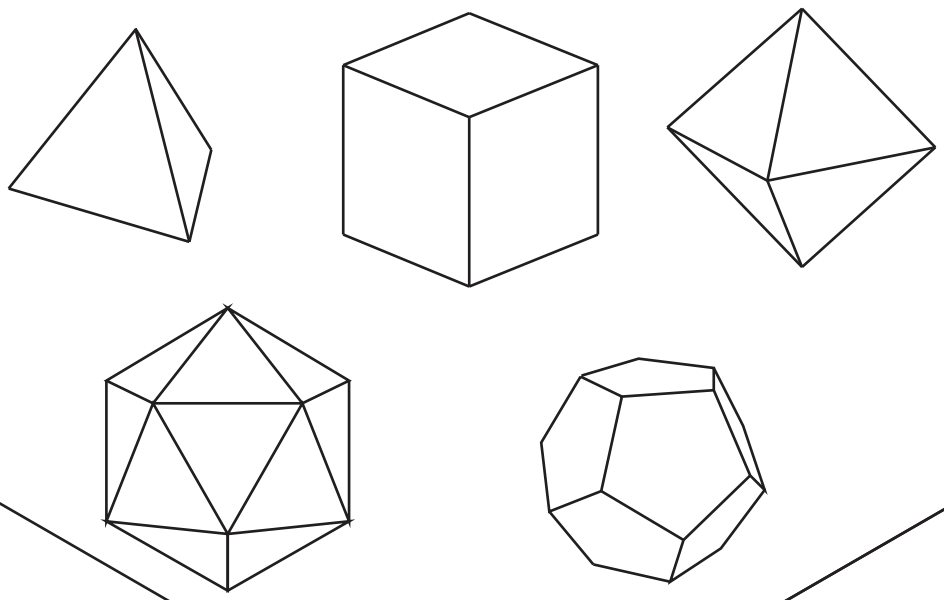
C2-6

trace all
five Platonic Solids onto
cereal boxes, cut out, score folds,
and paint

tetrahedron: red(fire)
cube: brown(earth)
octahedron: white(air)
icosahedron: blue(water)
dodecahedron: purple(aether)

C2-7

Fold all
five Platonic Solids up, seal
with packing tape



C2-8

Third Construction C3: Structure

tools

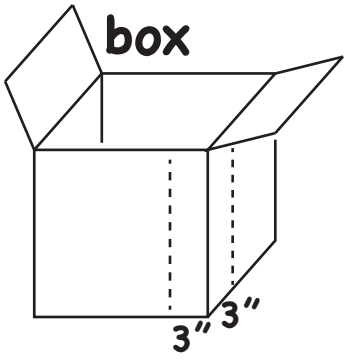
- pen
- ruler
- packing tape
- scissors
- corrugated box scoring point
- plastic milk carton
- candle and lighter
- tweezers

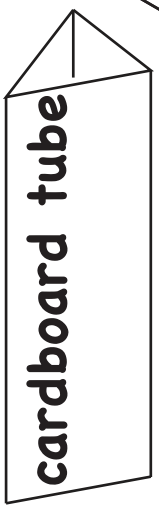
products

- Cardboard tube
- Plastic tube
- Book cover/case
- Plastic coil loop
- Construction sticks

C3-1

Thick corrugated box



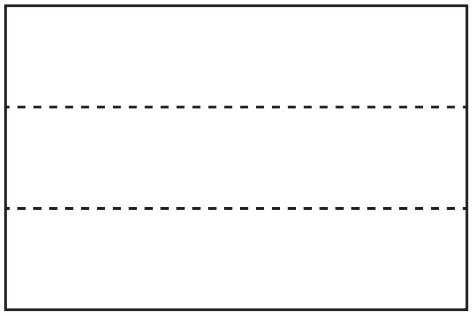


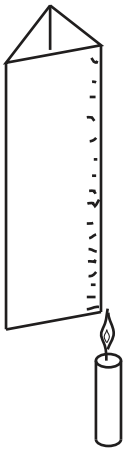
cut 3 inches in,
fold and cut other side,
then cut another 3 inch
strip and tape to first hinge,
making equilateral triangular tube.
Cut rope holes and windows

C3-2

HDPE
plastic tube

cut out 6x9 cm rectangle,
score lines on 2 cm interval



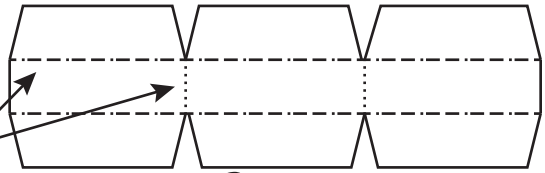


fold into tube, weld seam
with candle and tweezers

C3-3

HDPE
plastic loop

cut out 3X9 cm
rectangle, wedges,
score on opposite sides as shown



fold into toroid, weld seam
with candle and tweezers

C3-4

Book Cover
and case

corrugated
cardboard

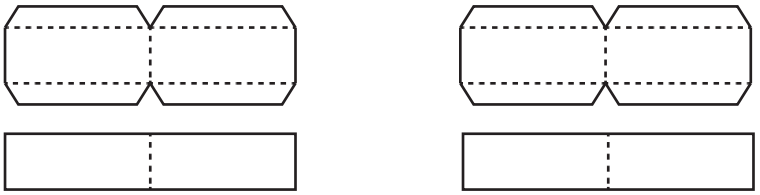
3″

3″

paper

paper

cereal box cutout



paper

paper

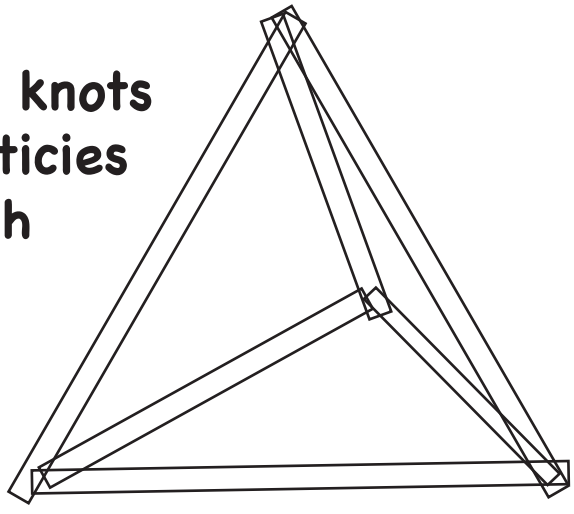
C3-5

Construction Sticks

1″

18″

square knots
on verticies
through
holes



C3-6

Fourth Construction C4: Parabolic Concentrator

find and cut aluminum beverage cans
construct parabola with tangent method on giant box
cut out several parabolas
cut up cans, unroll, and fasten to parabolas
add stick for alignment and burning

C4-1

C4-2

Fifth Construction C5: Tetrahedral Geography

build tetrahedron in space with chalk

C5-1

C5-2