18. $f(x) = (x - 3)^2(x + 2)$

19. $f(x) = (x + 6)(x - 1)(x + 2)$

20. $f(x) = (x + 2)^2(x - 1)$

21. $f(x) = (x + 1)^2(x - 1)(x - 4)$

Write the cubic function whose graph passes through the given points.

7. $(-3, 0), (-1, 0), (6, 0), (0, -18)$

8. $(-2, 0), (3, 0), (5, 0), (0, 30)$

1 blue

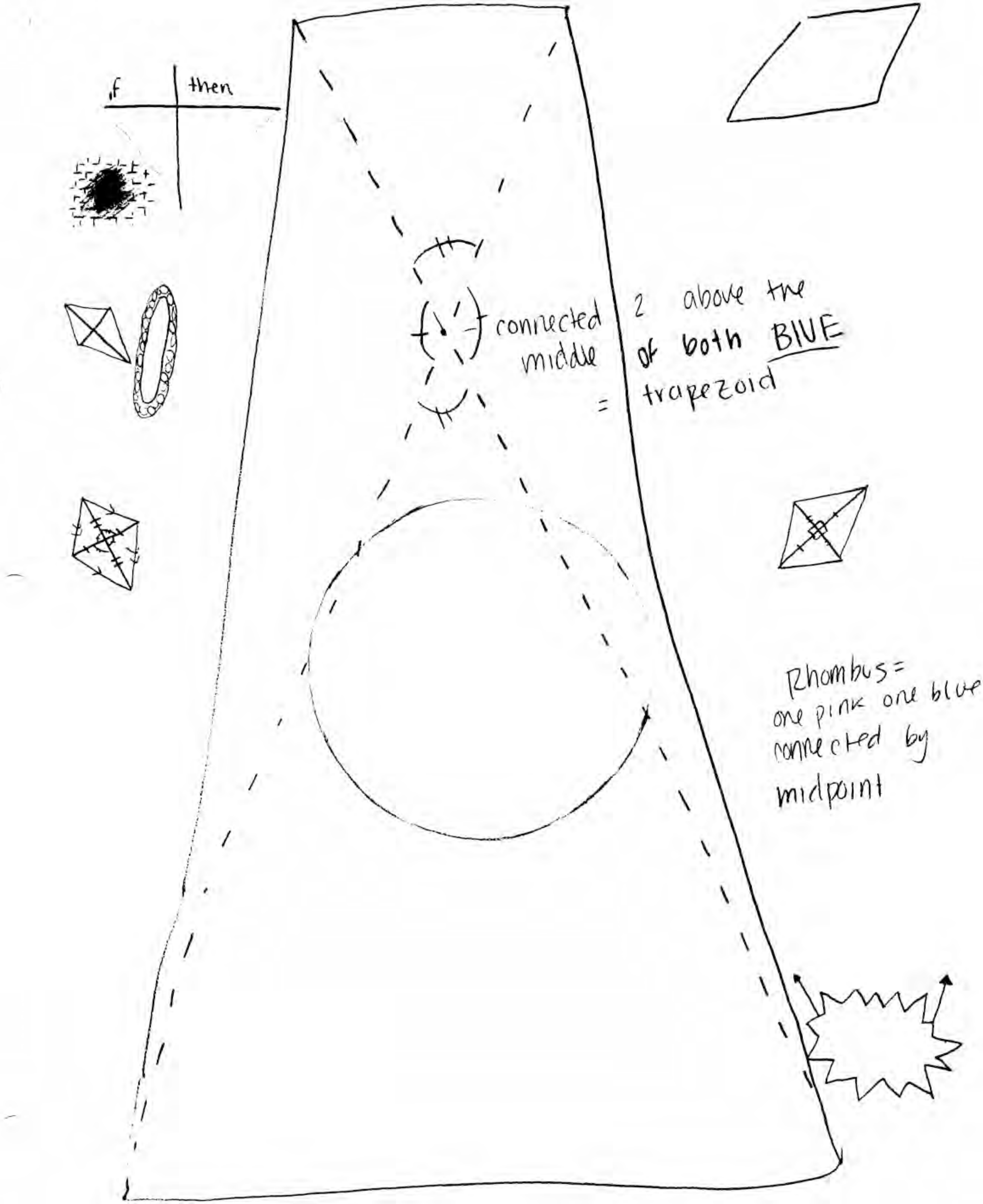
1 blue

intersect in the middle of both blue diagonals = rectangle

9. $(3, 0), (4, 0), (5, 0), (0, -60)$

10. $(-2, 0), (-1, 0), (6, 0), (0, -12)$

square = two blues, all 4 angles the same



This material accompanies a videotaped lesson on Inside Mathematics (www.insidemathematics.org): Decimal Place Value: Public Lesson. Austin, Texas: the Charles A. Dana Center at The University of Texas at Austin.

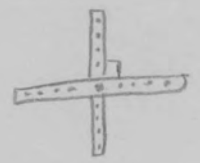
what distinguishes a normal trapezoid?

I labled what I did well, and put definitions of my way of making shapes

I could improve on writing more details.

Individual

SQUARE: 2 long sticks
Longstick, fastened at 5th hole
Longstick2 fastened at 5th hole
90° angles

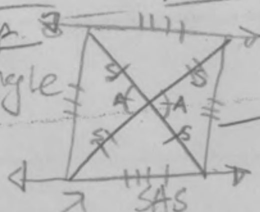


TRAPAZOID: 2 long sticks
Longstick, fastened at 2nd, 3rd, 4th, (6th, 7th, 8th)
Longstick2 fastened at same place as LS,
Angle doesn't matter.

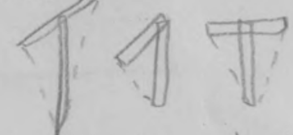
LS, SS
SAME # HOLE (NOT ENDS)

~~PARALLELOGRAM.~~

RECTANGLE - SQUARE w/Any Angle



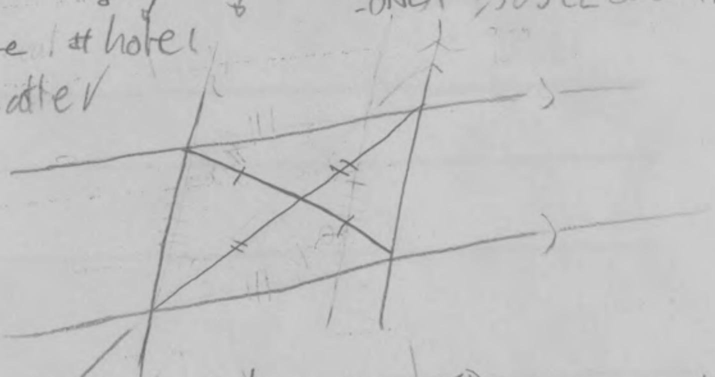
Group
OVERALL
- END HOLES CANNOT BE USED Because this creates a triangle



PARALLELOGRAM, SQUARE, RECTANGLE,
- Long stick SS,
LS center
SS center
Angle doesn't matter.

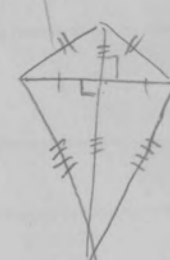
- STICKS can't coincide
- CAN'T USE 3 STICKS
- ONLY ISOSCELES TRAPAZOID

X square ≠ X perpendicular
~~TRAPEZIUM~~ - LS, SS (nonisoceles)
Fastened at same # hole
Angle doesn't matter
(Isosceles) 2(LS) ~~90°~~

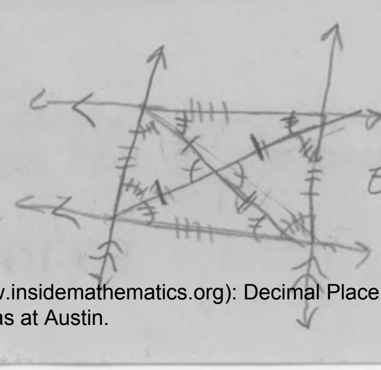


RHOMBUS: - SS, LS
90° center holes

KITE: - LS, SS
90°
Short stick center on any hole of longstick
EXCEPT END HOLES
- LS LS, center, doesn't matter
90°
LS1 Any hole except center or end,
LS2 Center.



Congruent triangles SAS



360° total
Each angle = ≢ + ≢
360 ÷ 4 = 90°

EXPONENT RULES

Block ___ Date ___

Write a simpler exponential expression for each of the following. Give the law or corollary which justifies each simplification.

1) $(s^5)(s^9)$ ____________________

2) $(a^{-7})(a^2)$ ____________________

3) $(y^{-5})(y^9)$ ____________________

4) $\frac{p^9}{p^5}$ ____________________

5) $\frac{1}{i^5}$ ____________________

6) $(g^3)^2$ ____________________

7) $(s^8)^9$ ____________________

8) $\frac{1}{a^{-3}}$ ____________________

9) $(r^4)(r^{-6})$ ____________________

10) $e^{-3} \div e^{-8}$ ____________________

11) $(t^4) \div (t^{-8})$ ____________________

12) $\frac{h^{-3}}{h^{-8}}$ ____________________

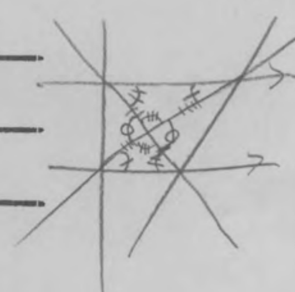
13) $\frac{1}{e^{-8}}$ ____________________

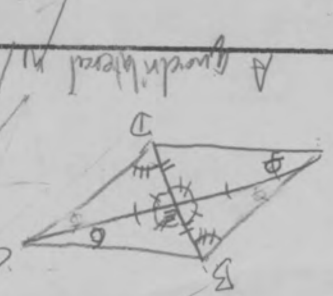
14) $(b^{-4})^5$ ____________________

15) $(e^7)^{-1}$ ____________________

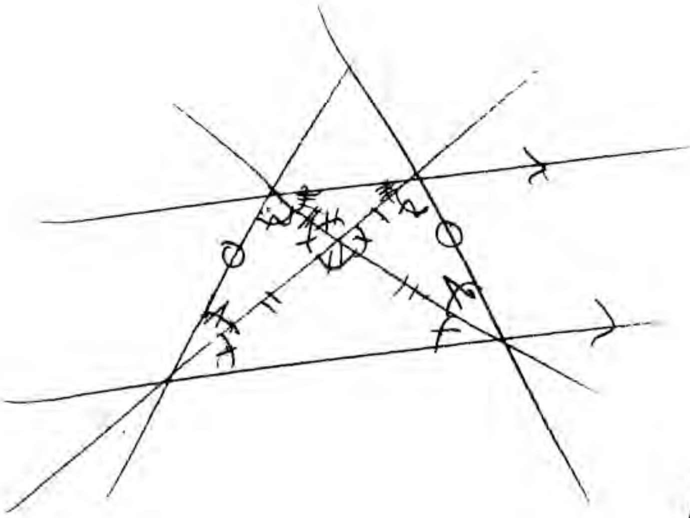
16) $s^2 + s^6$ ____________________

17) $\frac{(t^3)(t^{-5})}{t^{-2}}$ ____________________

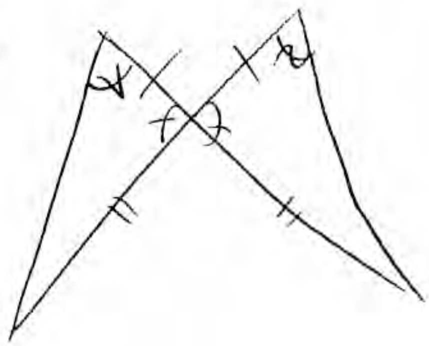




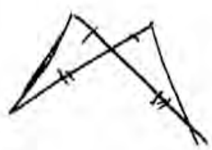
Isosceles



$180^\circ - \angle = 2(\angle)$

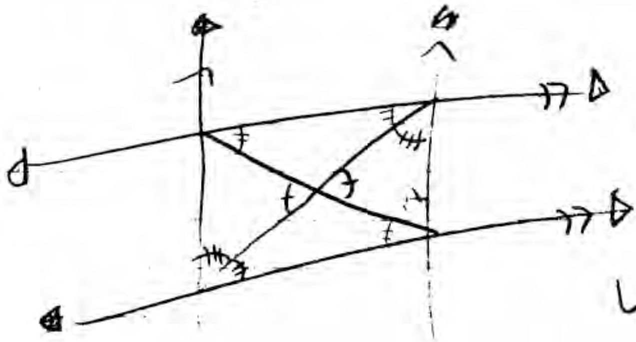


Statement	Proof
diagonals same length	Given
symmetrical parts of diagonal ≅	Given



If the diagonals are congruent and

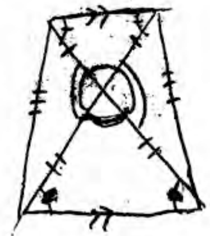
How can you prove the rectangle has 90° angles?



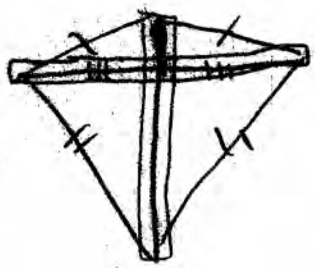
360° total
Each angle
360 ÷ 4 = 90°

I don't think I did very well at documentiry the investigative process, and showing where I was in it. Although, I am proud of my clear notes on each quadrilateral and "Overall" notes, which are general patterns seen. I could improve my tinkering skills and done more of a variety of fiddling around.

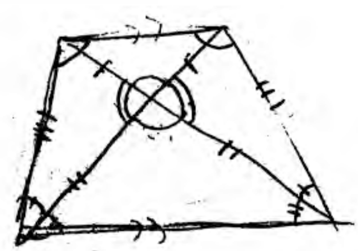
Short * long = parallelogram
(joint in middle)

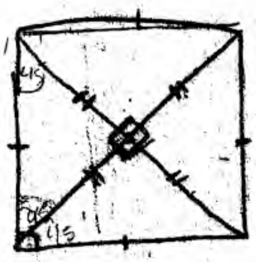


Short + Long = kite
or Long + Long
(joint in middle
of short)



Long + Long or Long + Short
could make
trapezium



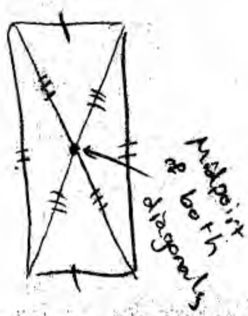


Diagonals are congruent in a square

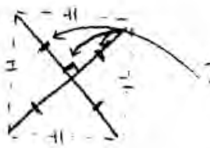
↖ Square

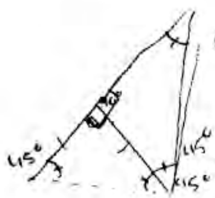
If two equal diagonals are intersecting in their midpoints, the 4 segments are equal

if the diagonals of a quadrilateral intersect at their midpoints and are not the same length and they are not perpendicula then they will create a parallelogram.



Square:

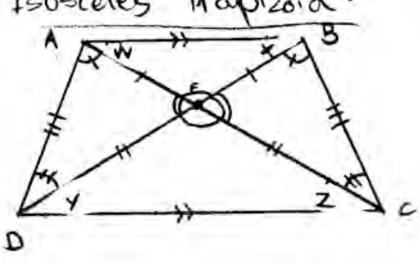




Statement	Reason
1) 4 congruent segments made of the diagonals	2 congruent diagonals intersect at their midpoint (midpoints split the segment in 2 congruent peices)
2) All diagonals make 90° angles	Both diagonals are perpendicular
3) All 4 triangles are congruent	SAS (1,2,1)
4) All 4 segments of the square are congruent	CPCTC
5) Each Side makes a right angle	A right iscosceles triangle has 2 base angles of 45° each 45° + 45° = 90° (right angle)

[A square is a quadrilateral with all 4 sides are equal and all 4 angles are congruent.]

Isosceles Trapizoid:



Statement	Reason
1) $\overline{AE} \cong \overline{BE}$ and $\overline{DE} \cong \overline{CE}$	1) Division Property
2) $\angle AEB \cong \angle CED$ and $\angle AED \cong \angle BEC$	2) Vertical Angles
3) $\triangle AED \cong \triangle BEC$	3) SAS
4) $\overline{AD} \cong \overline{BC}$ and: $\angle DAE \cong \angle CBE$, $\angle ADE \cong \angle BCE$	4) CPCTC
5) $\angle W \cong \angle X$, $\angle Y \cong \angle X$	5) Isosceles triangles have 2 congruent base angles
6) $\angle X \cong \angle Y$, $\angle W \cong \angle Z$	6) If two isosceles triangles share the same vertex angle then their base angles are congruent too.
7) $\overline{AB} \parallel \overline{CD}$	7) Step #6 shows that the angles in the steps are alternate interior angles, made by parallel lines and a transversal. ($\overline{DB}$

x = vertex angle

$\frac{180 - x}{2}$ = Base angle

1) I think that I did ok in the investigation. I don't have a lot of notes or tinkering, but I don't need them very much. Once I get the answer I'm looking for, it's not necessary to poke around any more.

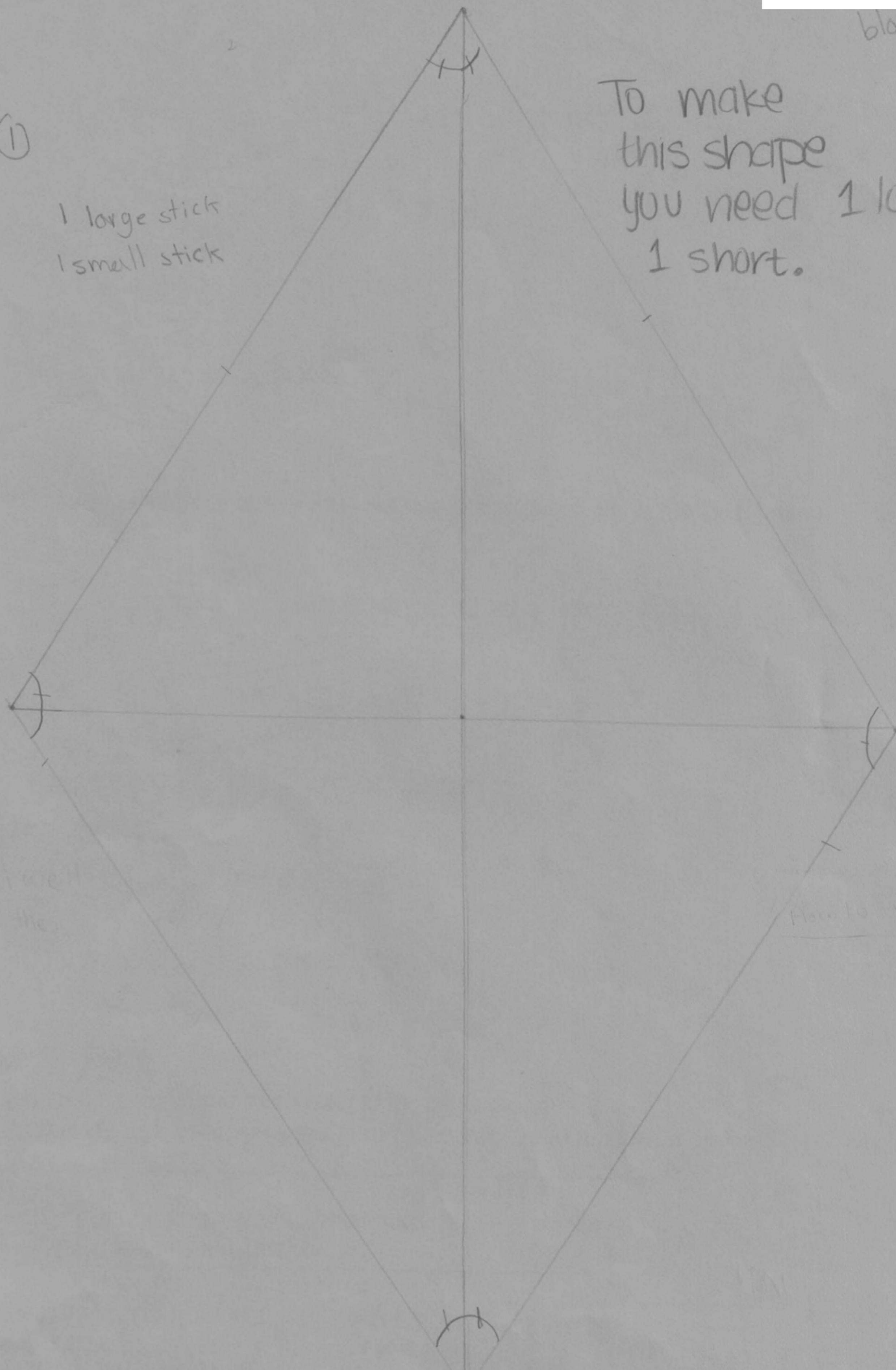
2) I will try to investigate a little bit more and make some more observations while tinkering and poking around.

Rhombus

block 1

(1)

1 large stick
1 small stick

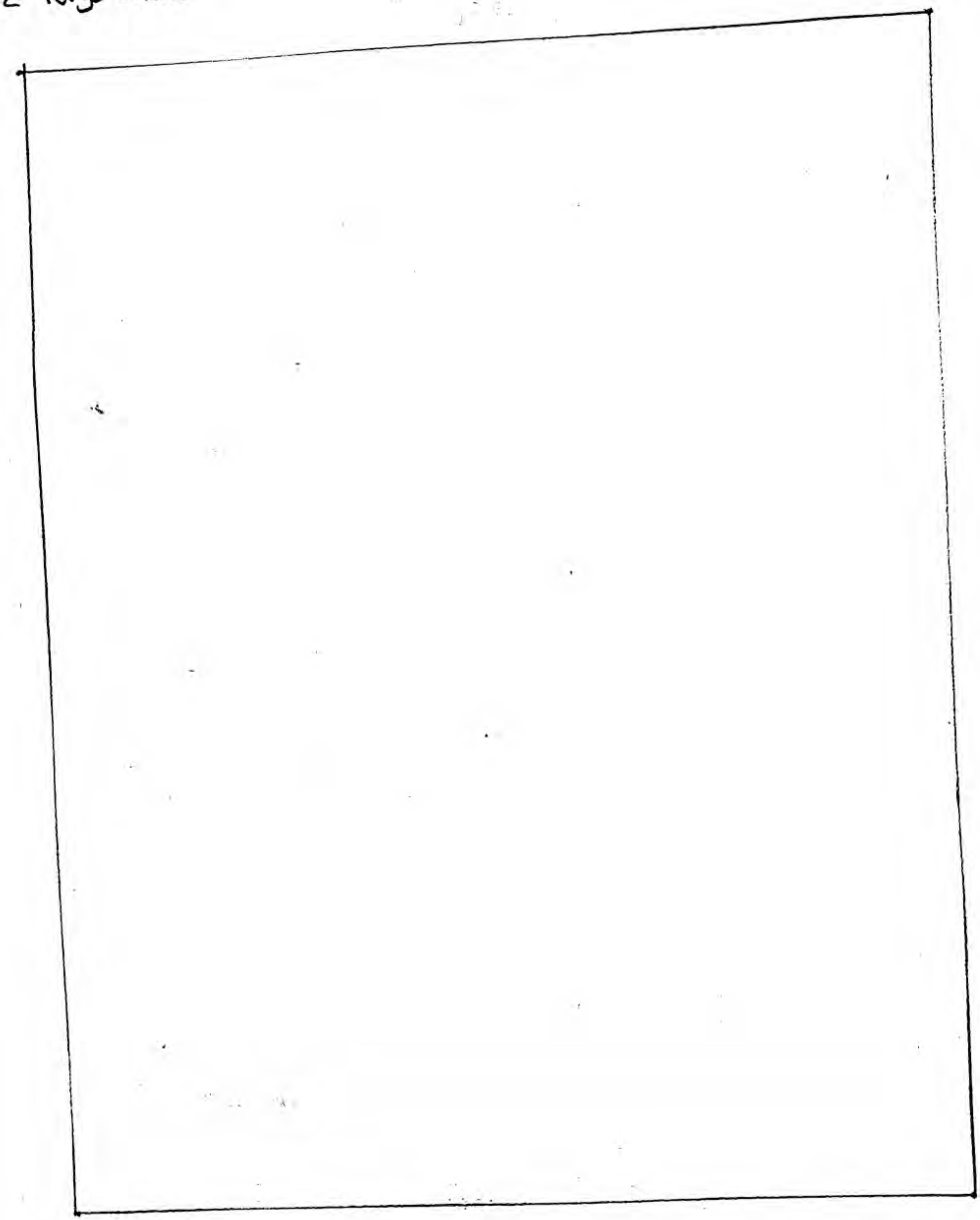


To make this shape you need 1 long & 1 short.

(2)

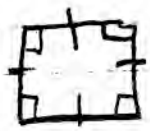
block 1

2 large sticks



I a[illegible] many different quadrilaterals can be categorized as other quadrilaterals.

ex.

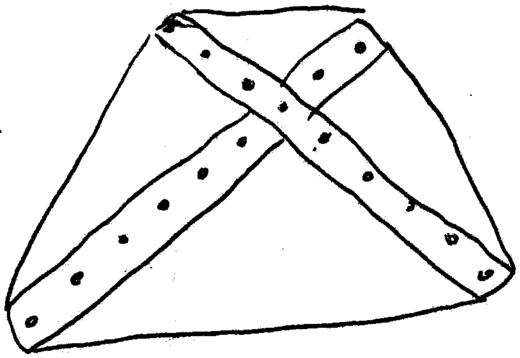
 - square, rectangle, Rhombus, parrellelogram

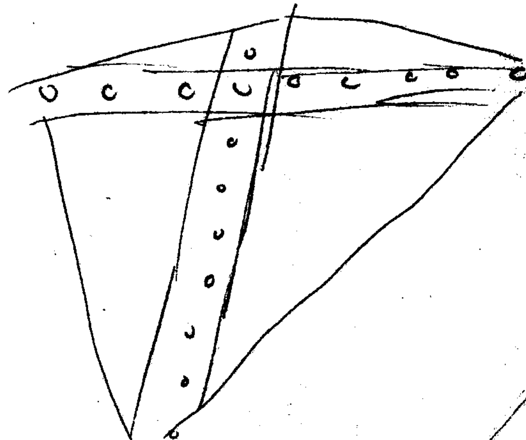
What I did well

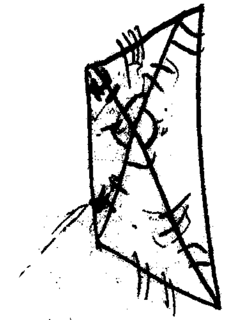
- I helped to contribute to groups work, organized our groups work, Catagorized what we have and what we need, I marked my shapes

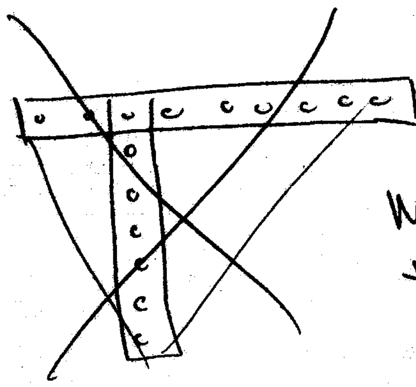
What to improve on

- Instead of only organizing the group I can contribute more, Also I could actually organize more.

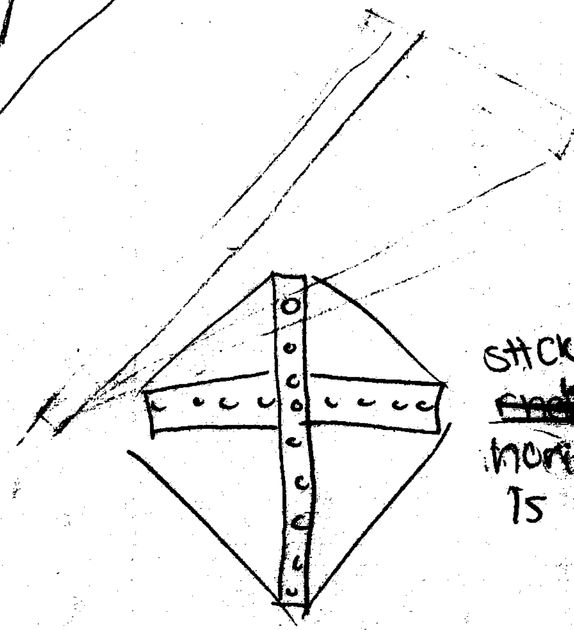








makes
triangle.



sticks make
kite when
horizontal stick
Is in the middu

[illegible] end of stick
cannot be on
the end of the
other stick
because it forms
a triangle.

~~rectangle~~
~~parallelogram~~
~~square~~
~~rhombus~~
~~kite~~
trapezoid
trapezium.

Square: 2 congruent diagonals (sticks) intersecting at their midpoints and making perpendicular angles.

If the diagonals intersect at the midpoint at a 90° ∠, the polygon made is a square.

Rectangle: 2 congruent diagonals (sticks) intersecting at their midpoints, not making perpendicular angles.

Kite: The horizontal stick is always intersecting at its midpoint at a 90° ∠ anywhere on the other stick.

Rhombus: 2 diagonals (sticks) intersecting at their midpoints, making perpendicular ∠s (do not have to be congruent).

Parallelogram: 2 non-congruent diagonals interse... , at their midpoint, and can't be perpendicular

trapezium: 2 diagonals intersecting anywhere but the end and the midpoints.

isosceles trapezoid: 2 congruent diagonals intersecting at the same point on each.

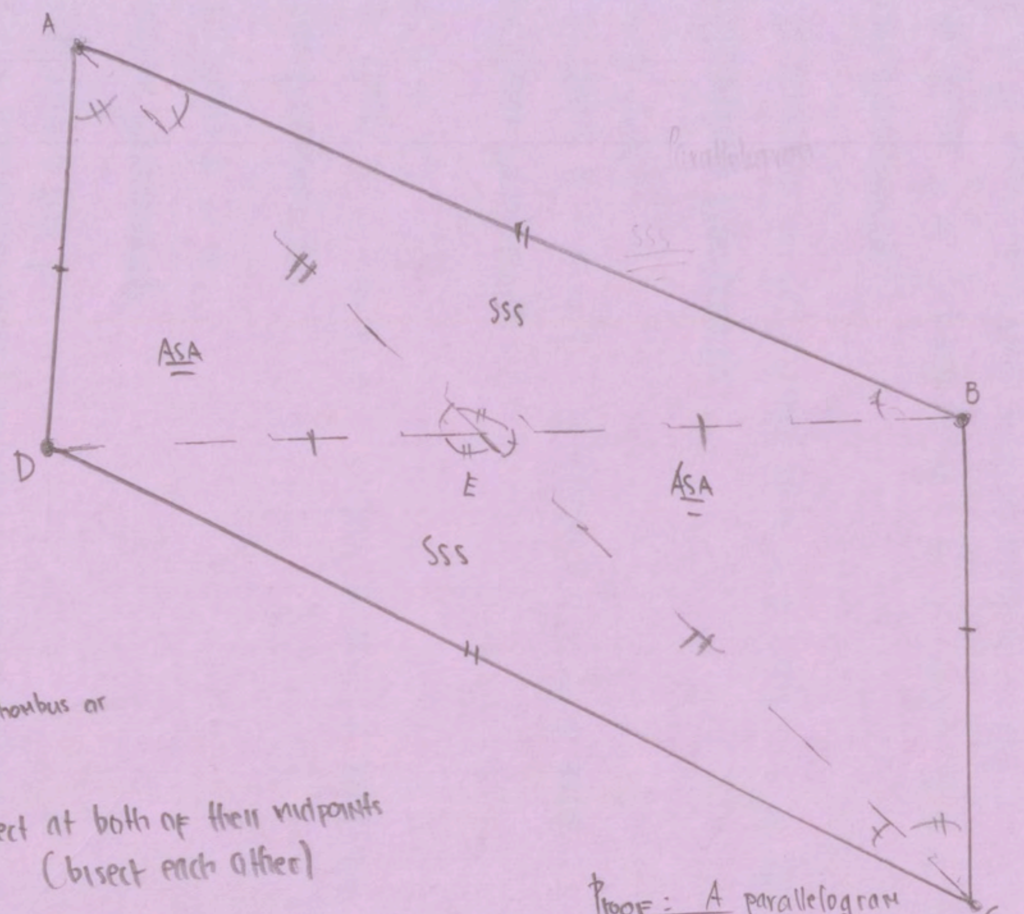
If the diagonals intersect at the same point and are the same length, and are not perpendicular, then the quadrilateral is an isosceles trapezoid.

1. what do you think you did well in documenting your process of investigation?

Organizing my thoughts was something I thought I did well on. I eliminated what you can not do.

2. What will you do better next time? why?

Next time I will focus more on what shapes can be made that fit the criteria. I will also start to prove earlier.



- Alternate interior angles
- Vertical ∠'s

Parallelogram: (generic: Not a rhombus or rectangle)

Conjecture: If the diagonals intersect at both of their midpoints (bisect each other)

and the diagonals cannot be perpendicular

and the diagonals are different lengths.

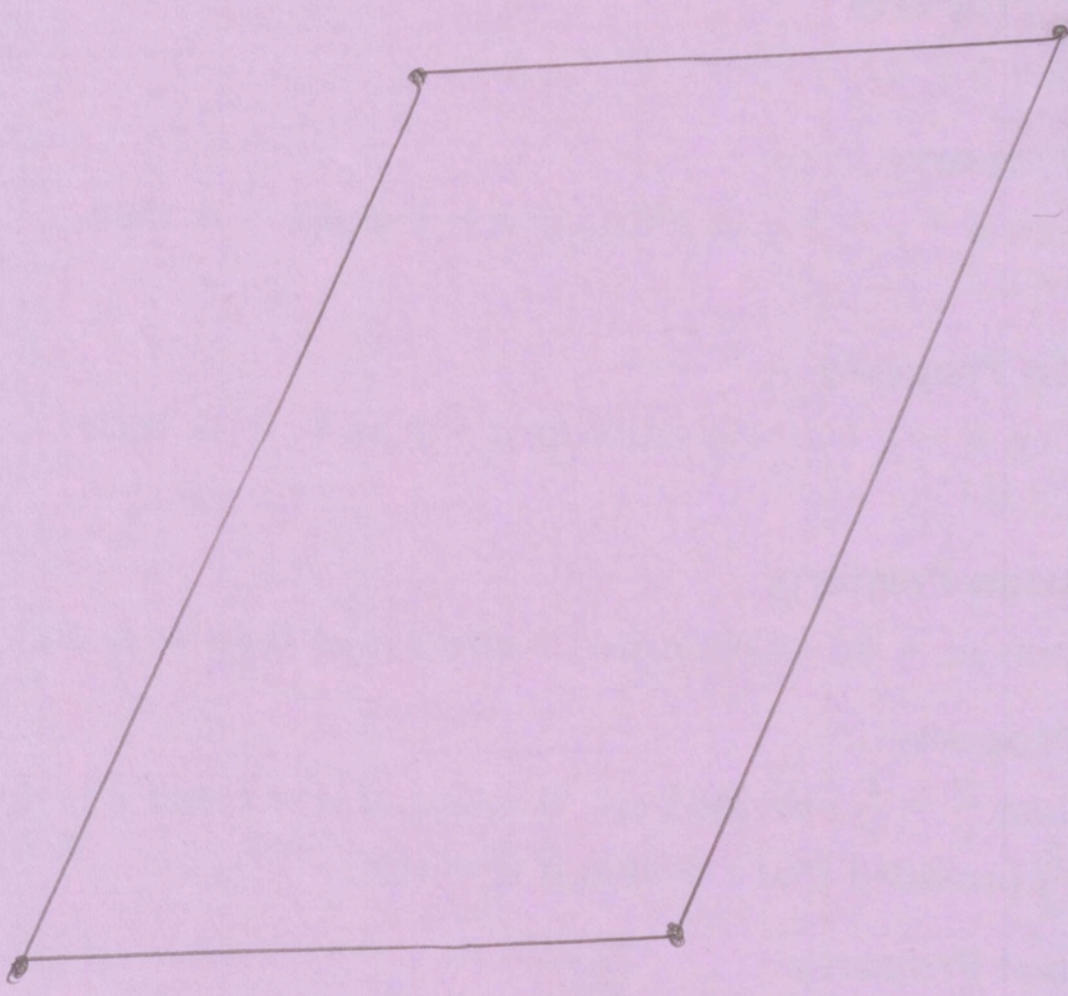
then the quadulateral is a parallelogram.

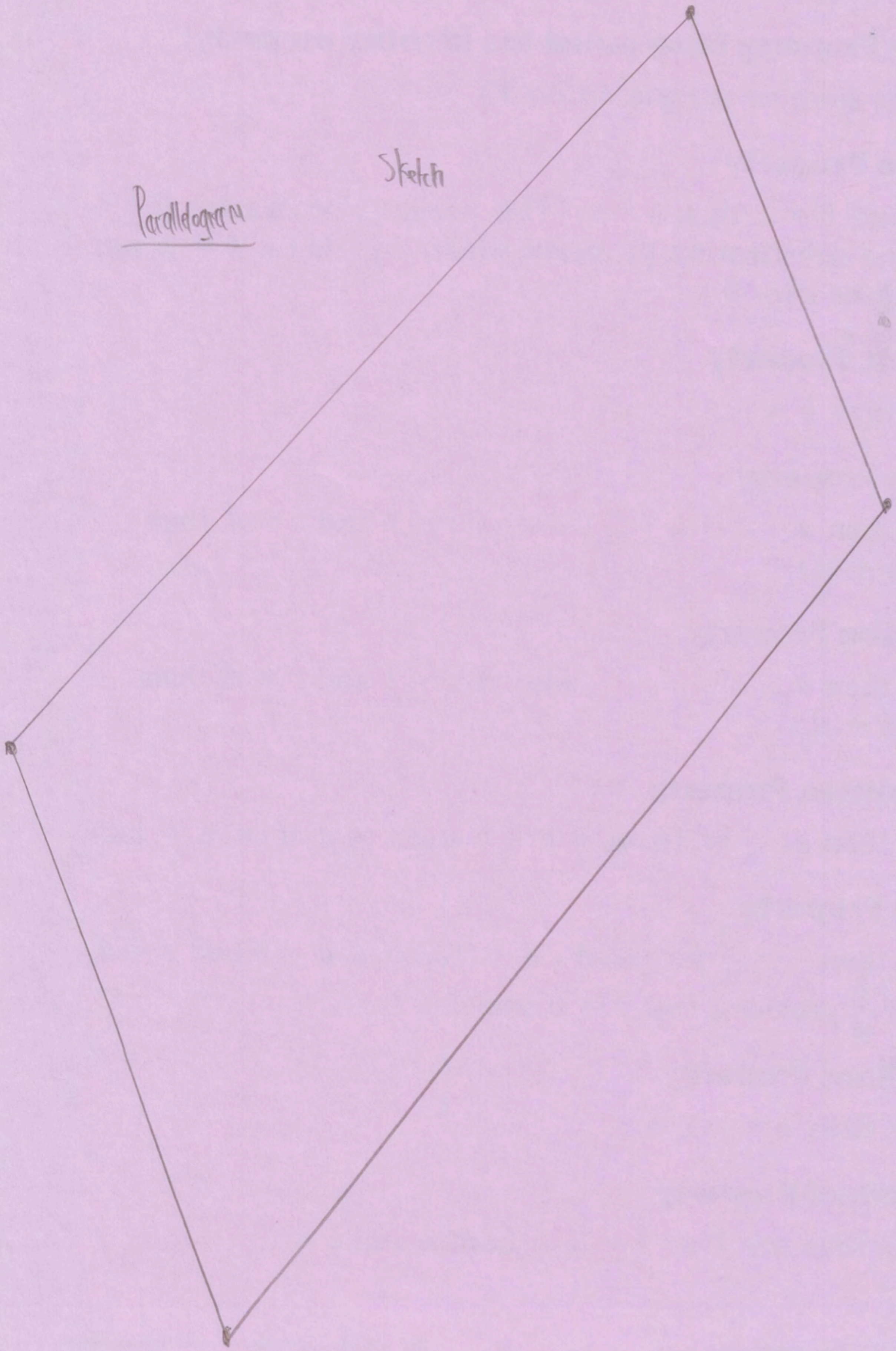
Proof: A parallelogram is a qudrilateral with two pairs of parallel sides.

- It can't be ⊥s because it would be a rhombus.
- They have to bisect each other, if not it would be a kite or a trapezuim.
- Different lengths

Sketch

Rhombus



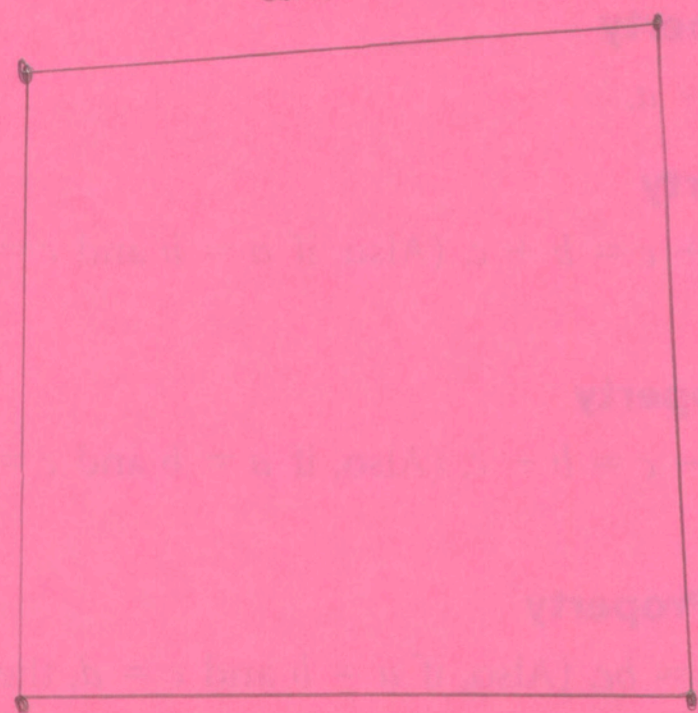

Sketch
Paralldogram

Rectangle

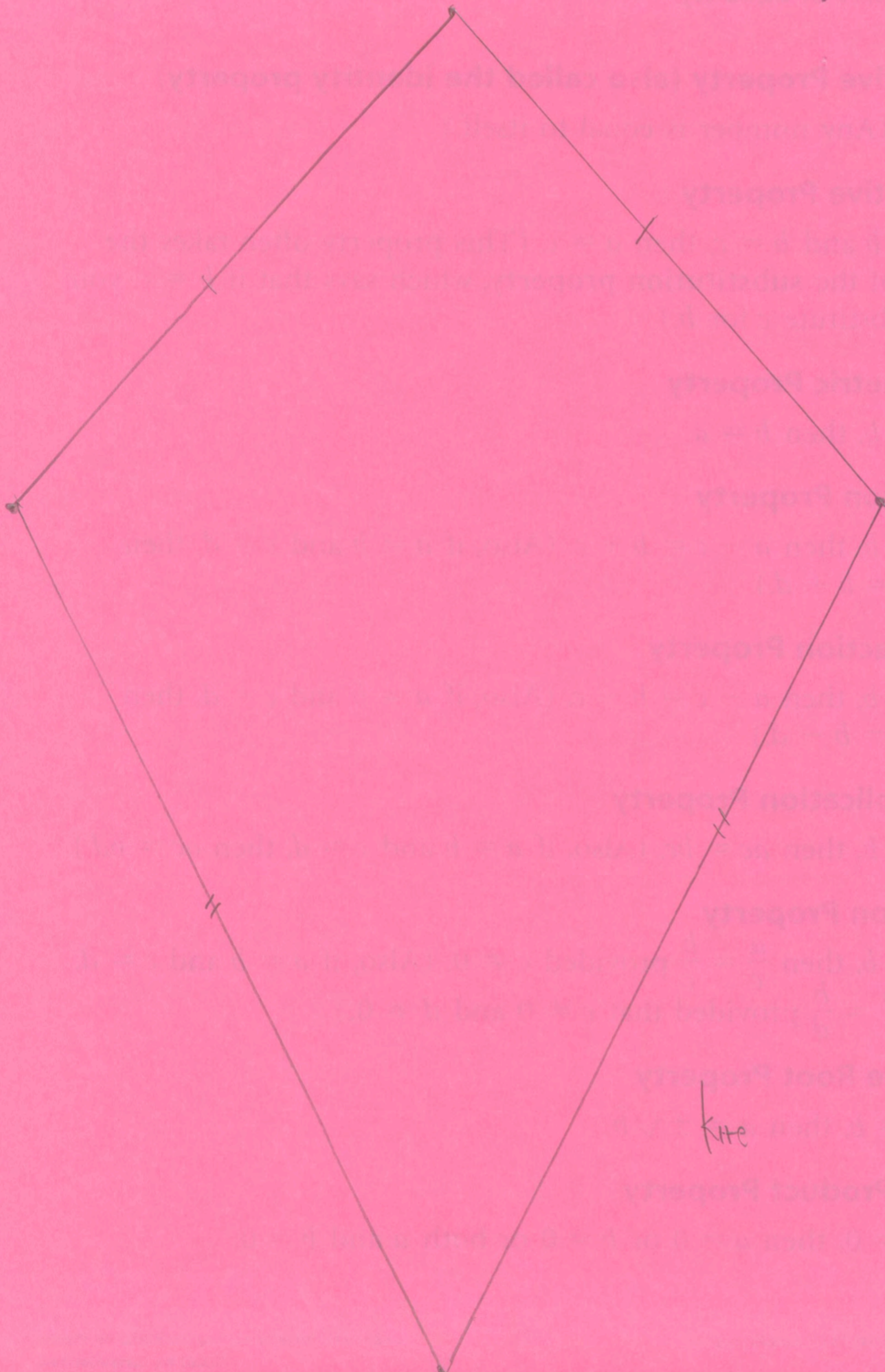
-Two large "diagonals" intersect

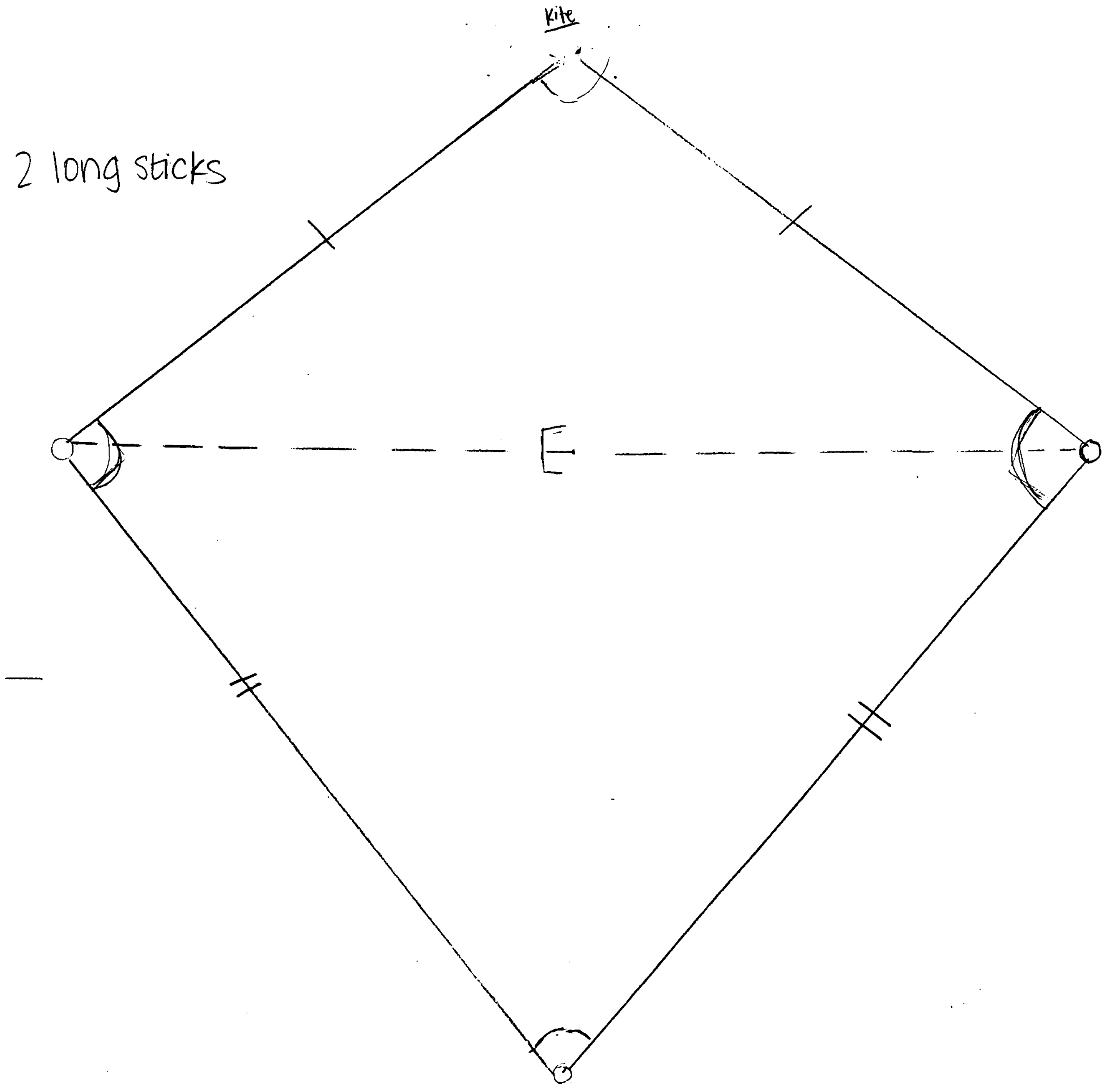
Sketch

Square

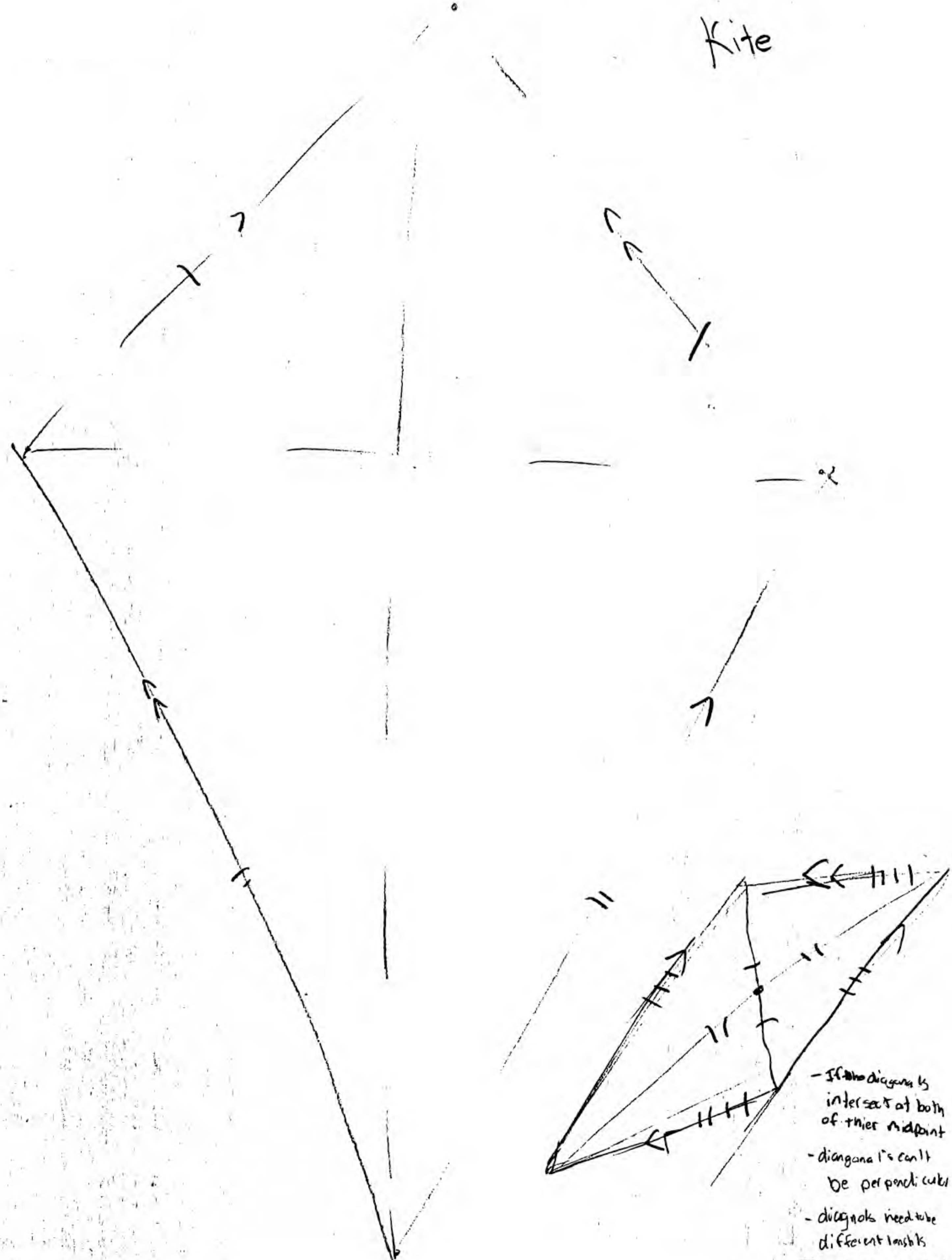



Trapezium

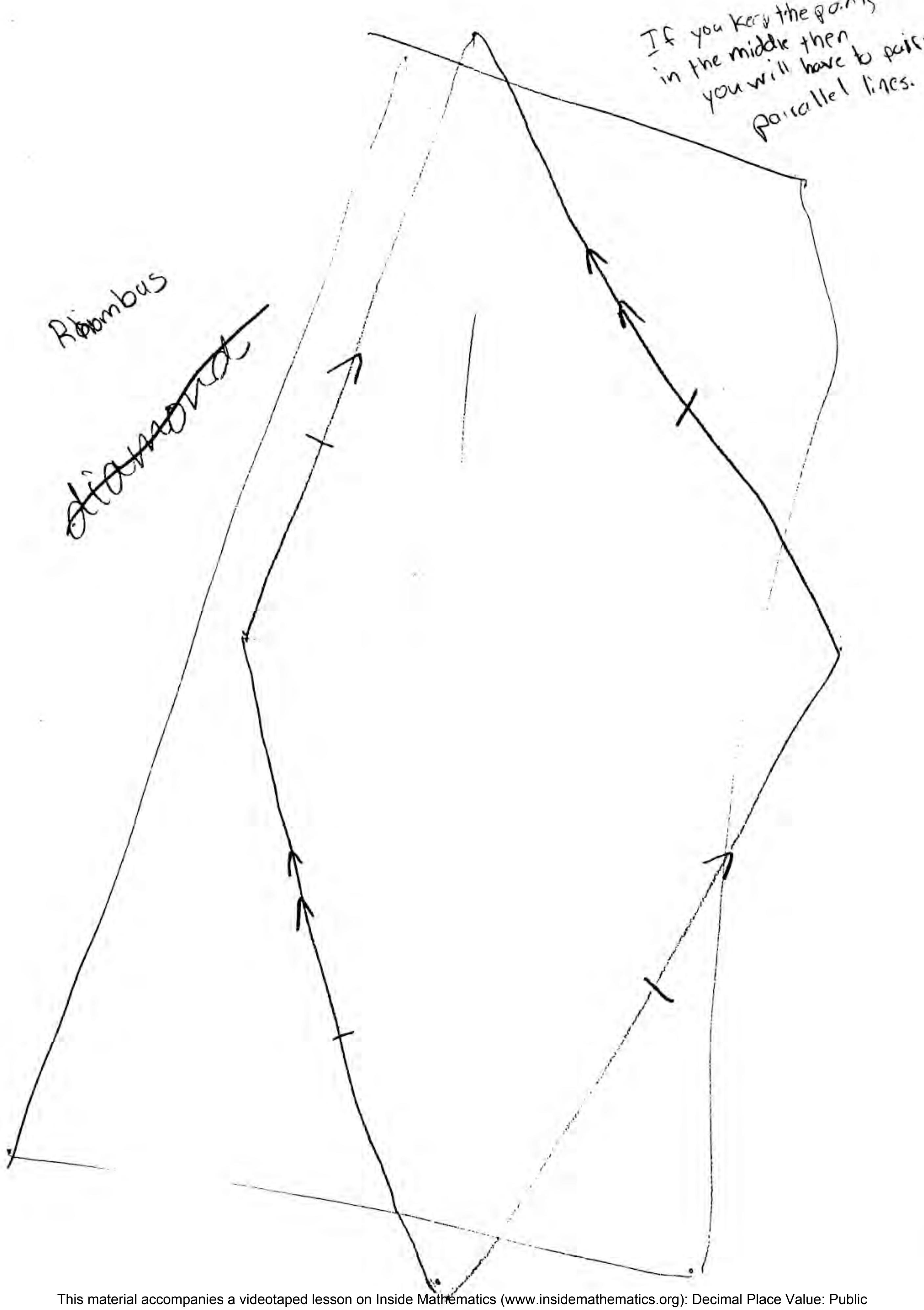

Kite


Kite
2 long sticks
E

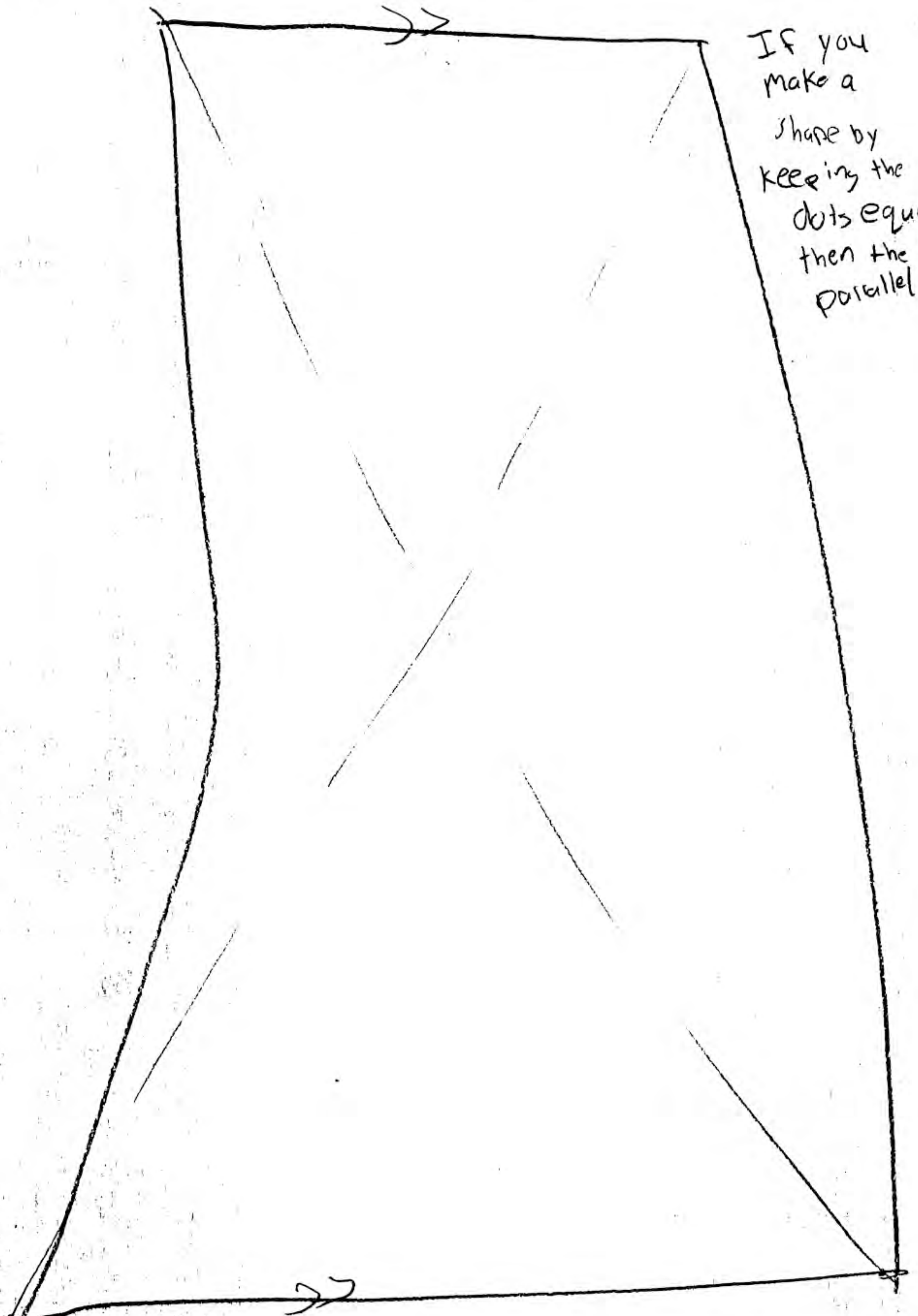
Kite



- If the diagonals intersect at both of thier midpoint
- diangonal's can't be perpendicular
- diagnols need to be different lenghts
- Then the quadrilateral is a parrallelogram



This material accompanies a videotaped lesson on Inside Mathematics (www.insidemathematics.org): Decimal Place Value: Public Lesson. Austin, Texas: the Charles A. Dana Center at The University of Texas at Austin.



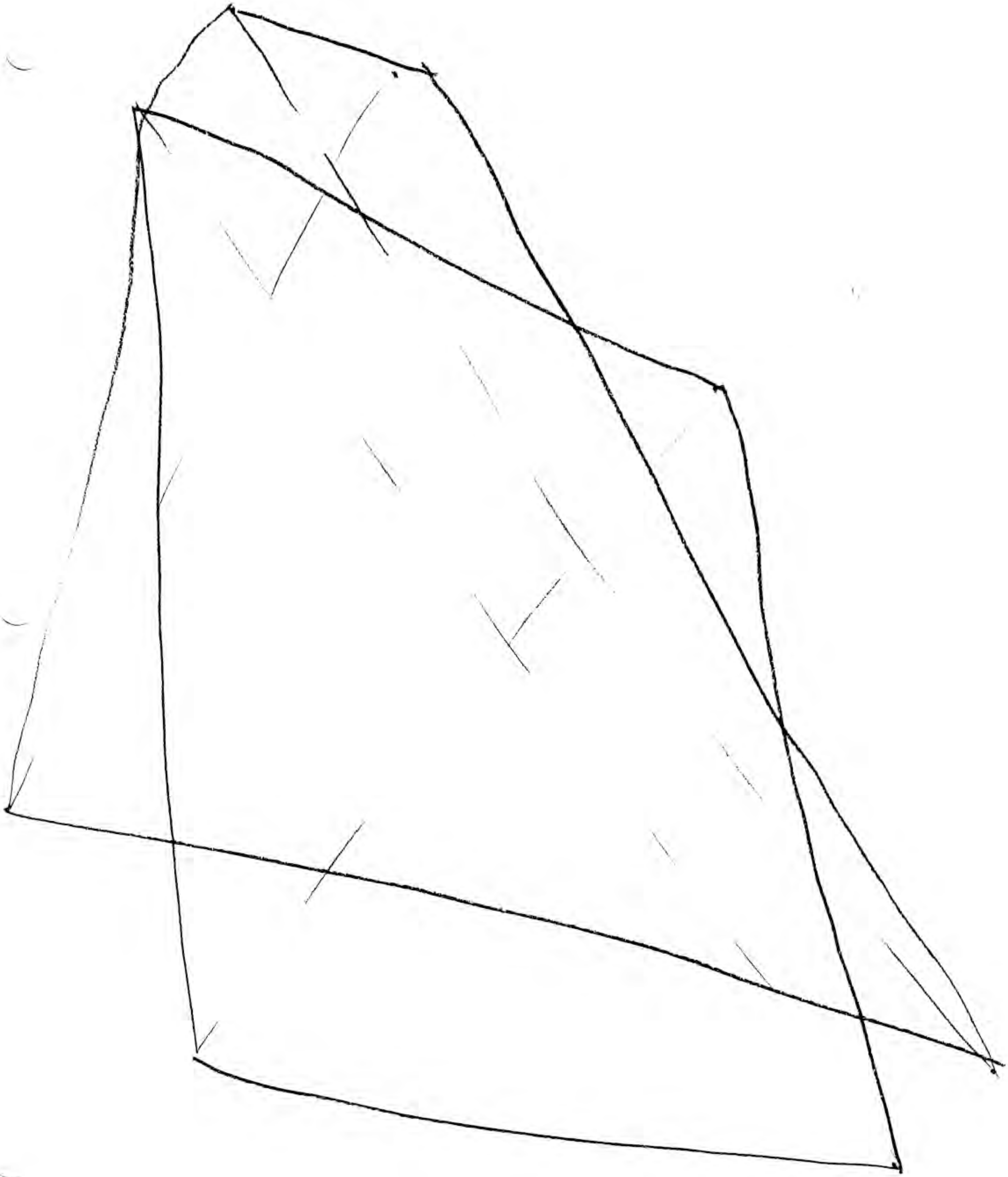
If you make a shape by keeping the dots equadistance then the top & bottom lines would b parallel.

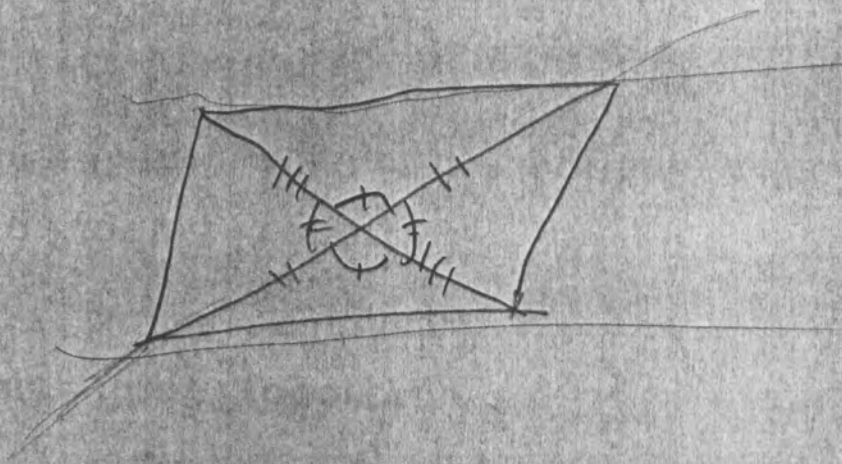
Conjectue

Square: Keep the dots equadistant from both sides and it should make 90°∠

Rectangle: The 2 long lines, have to intersect right at the center, but the measure of the angles, of the two lines don't matter

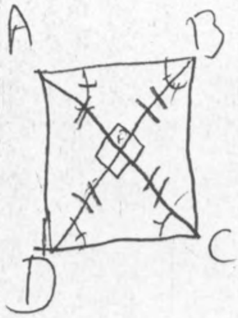
To prove that the lines are parallell we have to find if the alternate interior angles are congruent





Statment	Reason
~~1. Diagonals are not the same leaght~~	~~1. Given~~
2. Diagonals are not perpendicular	2. Given
3. The Diagonals are different lenghts	3. Given
4. Diagonals intersect at the midpoint	4. Given
5. The Diagram is a parrallegram	5. see step 2-4. fits the requirements needed to get a parralleogram.

Sqaure



parallel

sides congruent

If the diagonals bisect eachother

and the diagonals are congruent ✓

and the diagonals are perpendicular

then the quadrilateral is a square

1. diagonals bisect each other	1. Given
2. diagonals are congruent	2 Given
3. diagonals are perpendicular	3 Given
4 △DCE ≅ △ABE	4 SAS
~~5 ∠AEB ≅ ∠DEC~~	~~5 vertical ∠s~~
~~6) EAB ≅ ECD~~	6) CPCT
~~7)~~ △AED ≅ △BEC	7) SAS
~~8) AB ∥ DC~~	8)
~~9 ∠ABE ≅ ∠CDE~~	

△AEB, △BEC, DEC, AED

are isosceles triangles

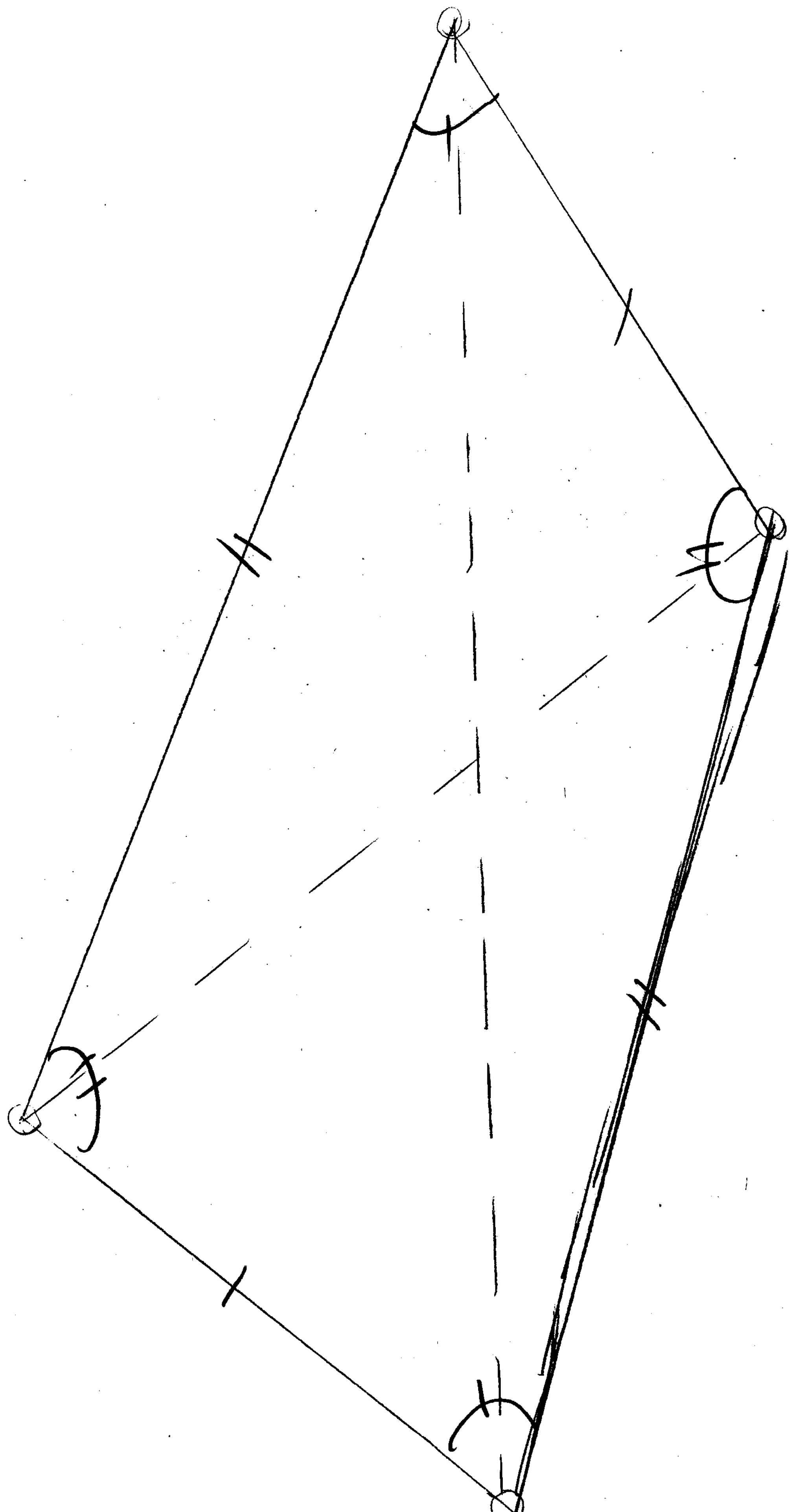
AB ∥ DC alternate interior

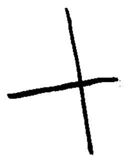
Why do the pair of lines become parallel when we Keep it equadistance?

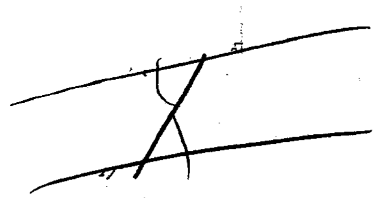
I think I did a good job explaining my thinking.

I could do a better job in showing my tinkering.

I

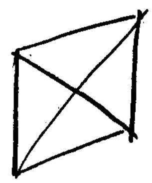






Rhombus

- opposite sides parallel
- 4 congruent sides
- 2 sets of congruent angles



Conjectures

Square oid 3 Rectangle

Parallelogram

cannot make with two sticks crossing. They have to be parallel to each other.

trapezoid - 2 long sticks, (no short)

parrellelogram - 2 long sticks, 1 long. 1 short

square - 2 long sticks (no short)

rectangle - - 2 long sticks (no short)

trapezium - 2 long sticks, 1 long 1short

Rhombus - 2 long stick, 1 long 1short

kite - 2 ~~long sticks~~ 1 long 1short

~~rectangle - 2 long sticks (no short)~~

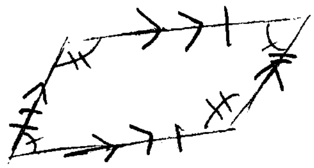
Do not work

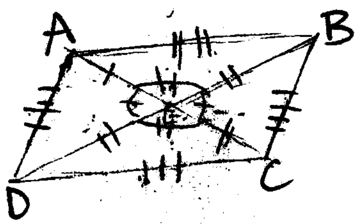
trapezoid - 1 long 1short

square - 1 long 1short, 2 short

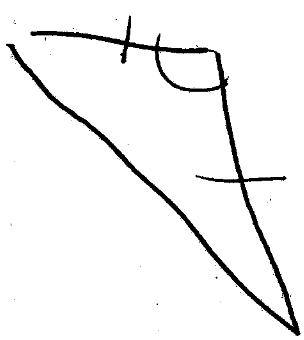
rectangle - 1 long 1short, 2 short

kite - 2 long sticks

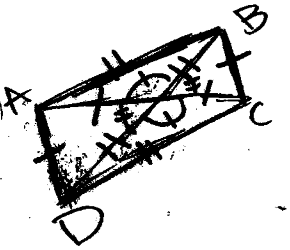


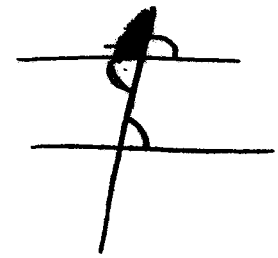


- SAS ($\triangle AEB \cong \triangle CED$)
- SAS($\triangle AED \cong \triangle CEB$)
- E is the midpt. of $\overline{DB}$ and $\overline{AC}$



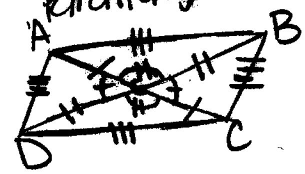
Prove:



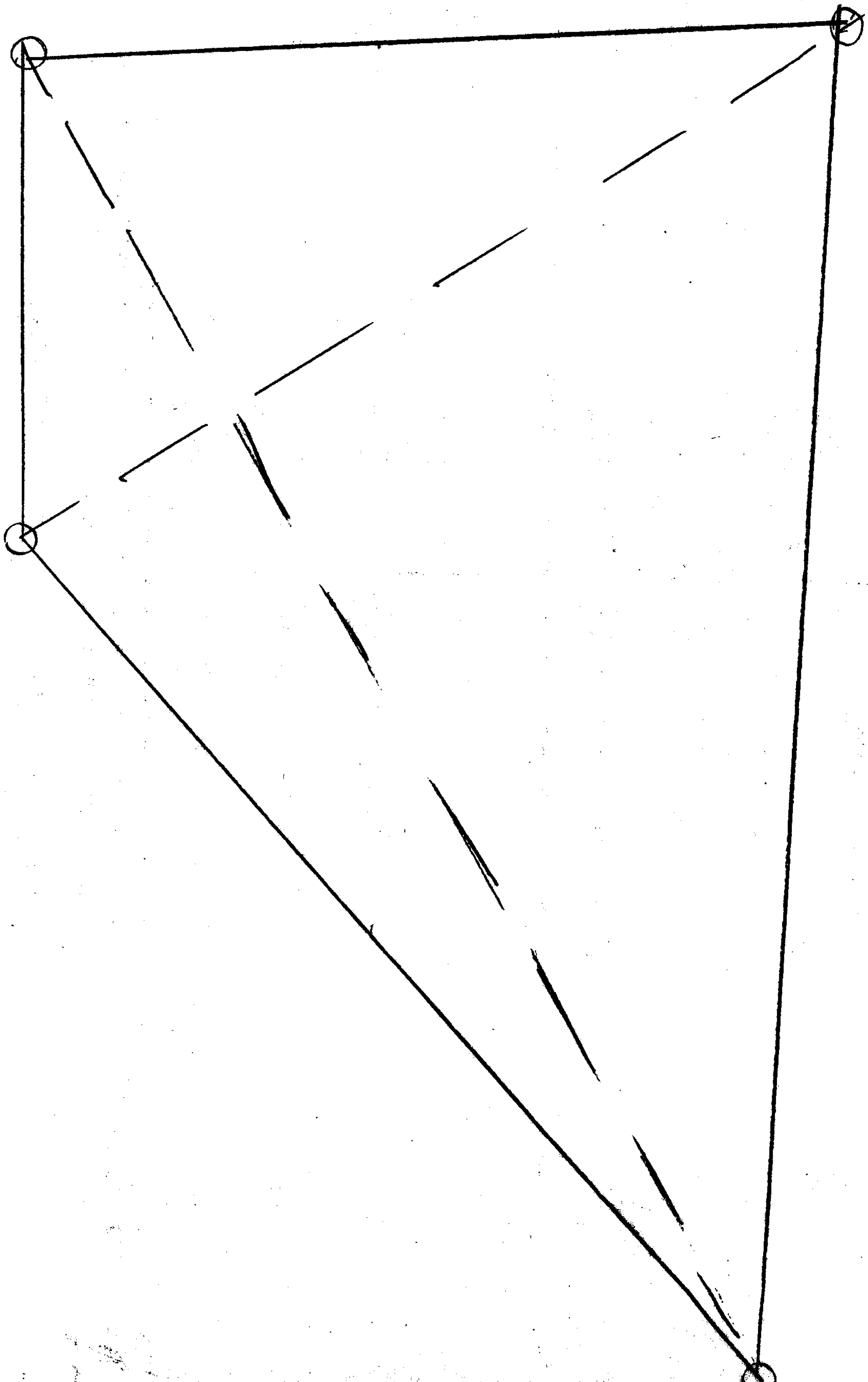


Statements	Reasons
Diagonals are not the same length	Given
2 sets of paral- ll sides	Given
2 sets of cong- ruent angles	
2 sets of cong- ruent lines	

Parallelogram



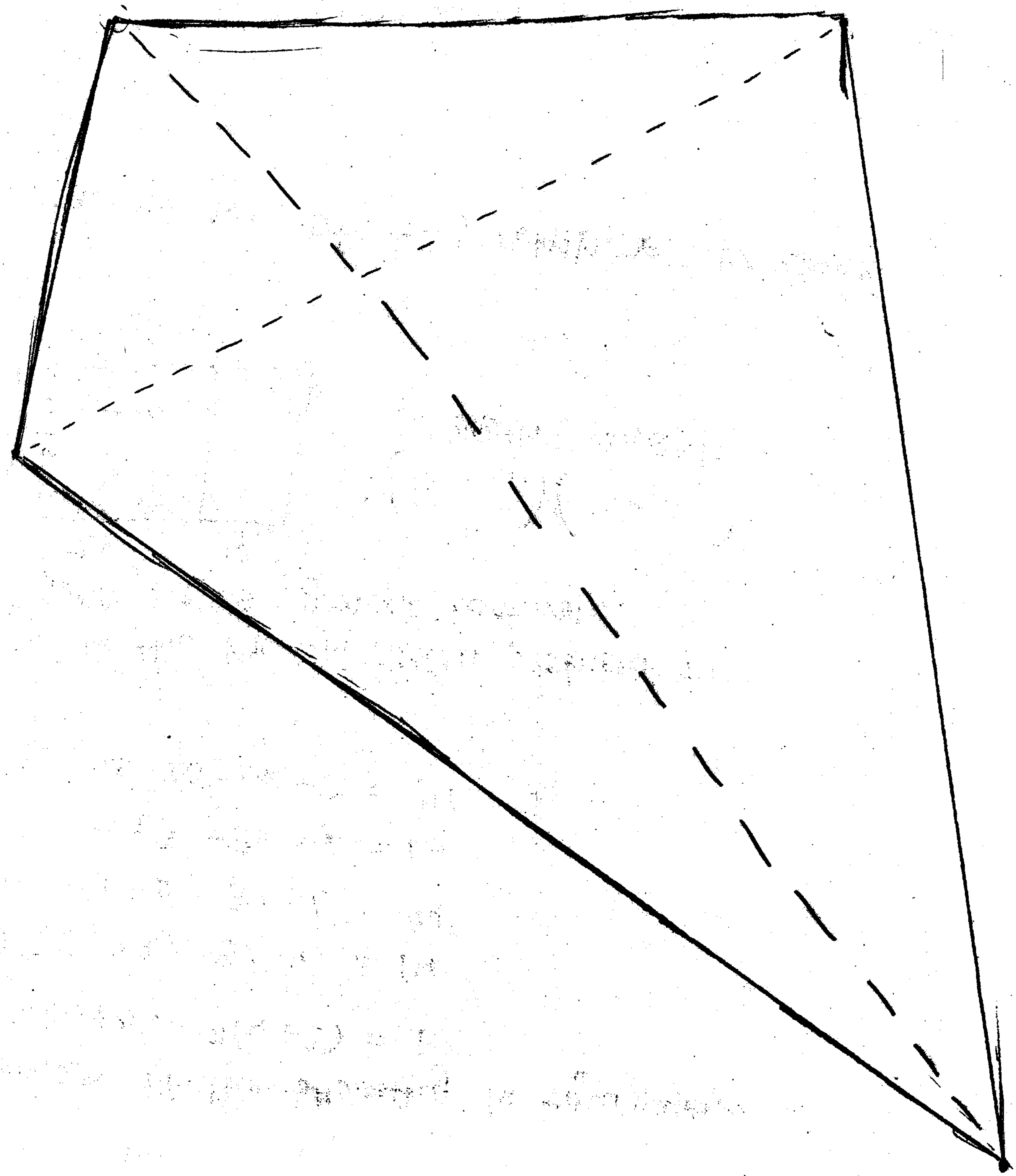
Statements	Reasons
1. △CED≅△AEB	1. SAS



Trapezium

1 long 1 short

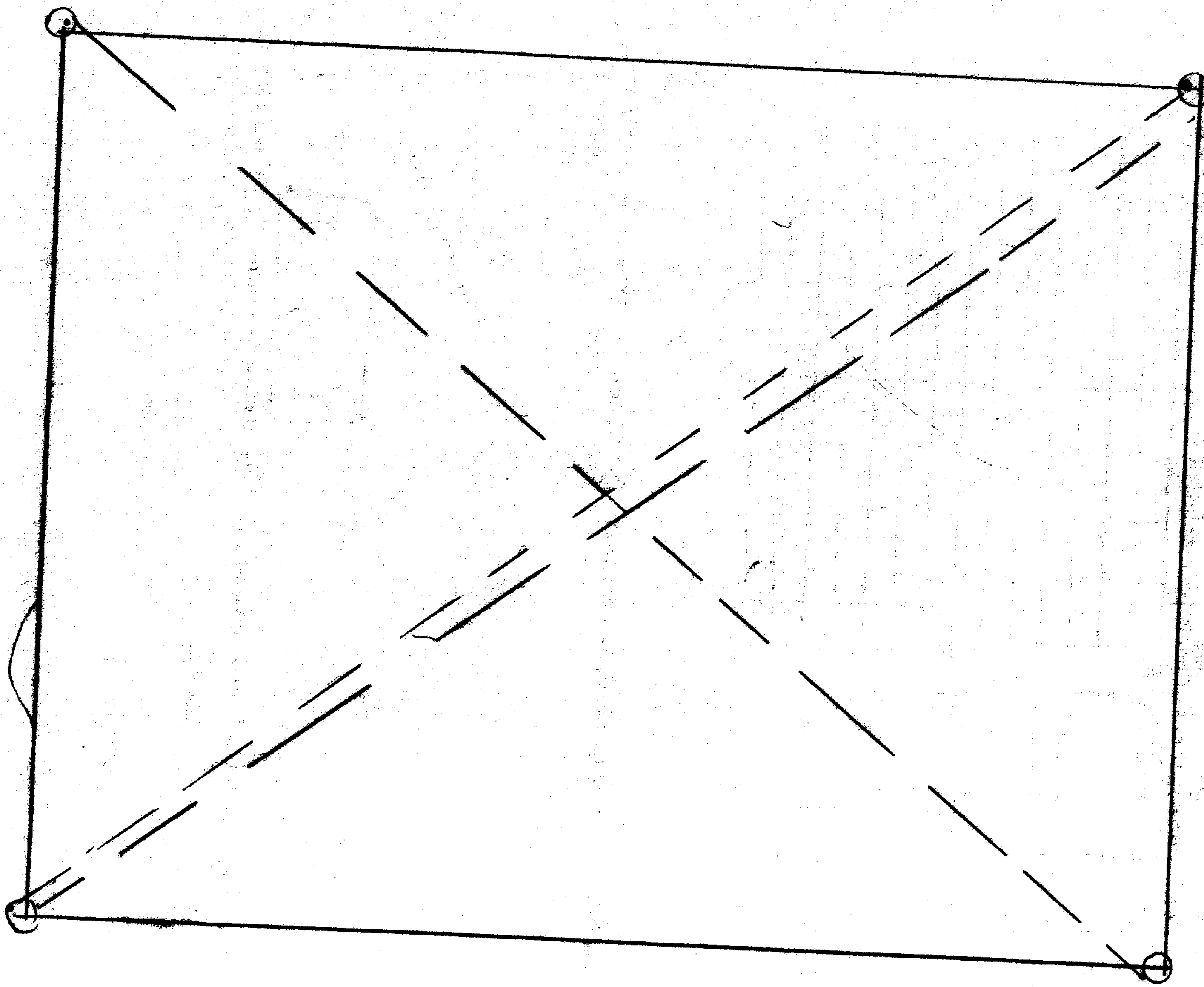
DIK. 1
3/3/09

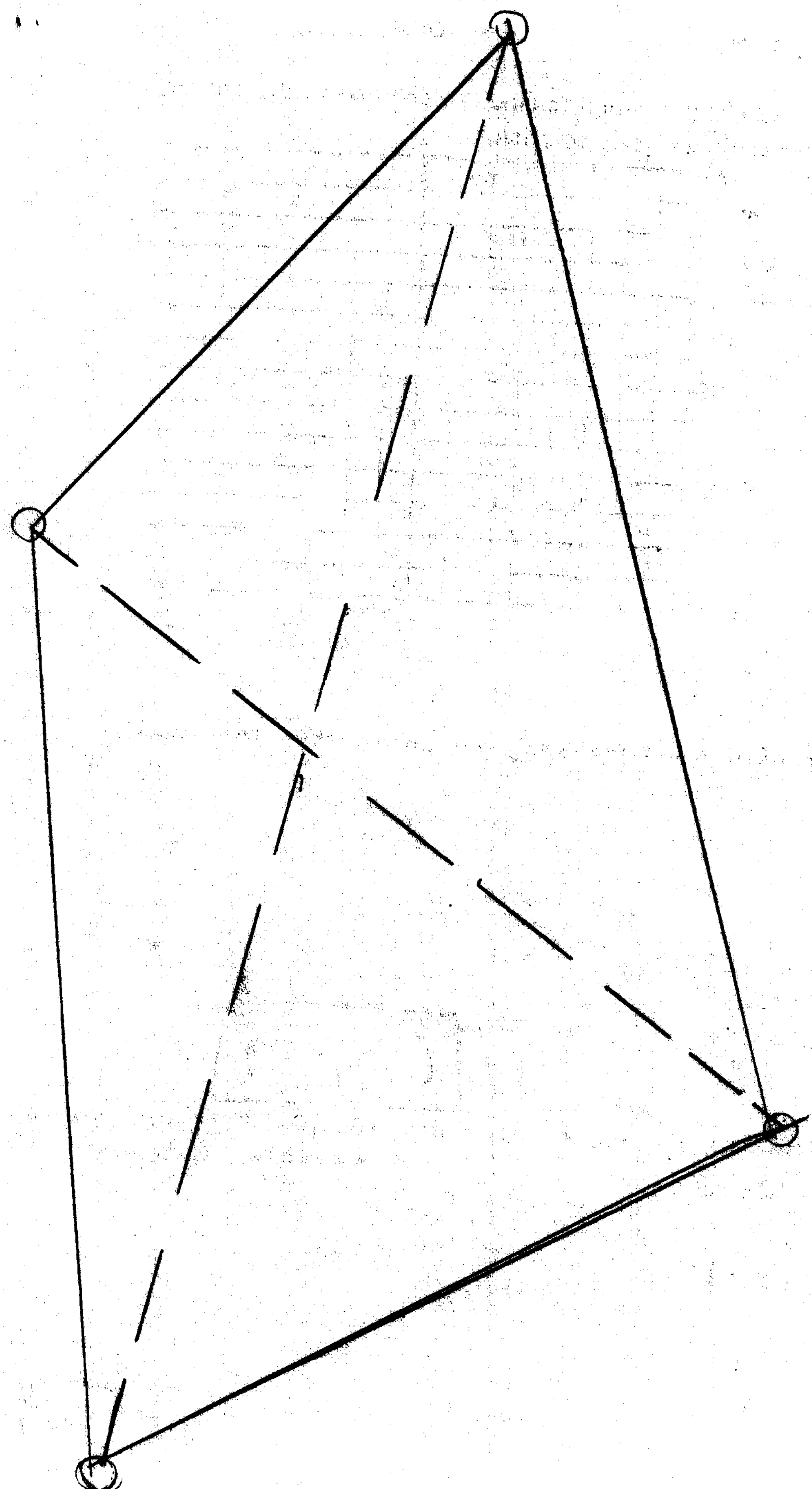


Rectangle ? Parrellelogram ? Rhombus

2 long sticks

3/3/09



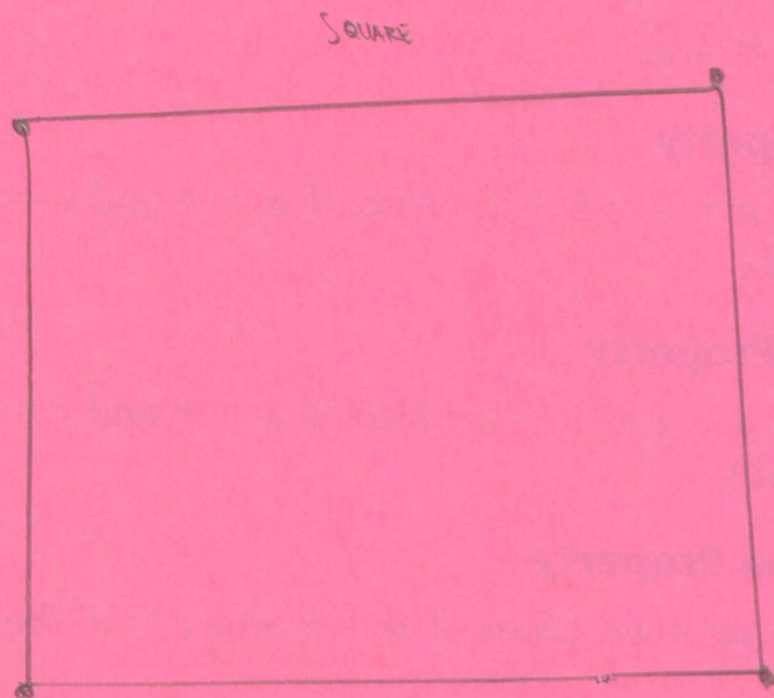


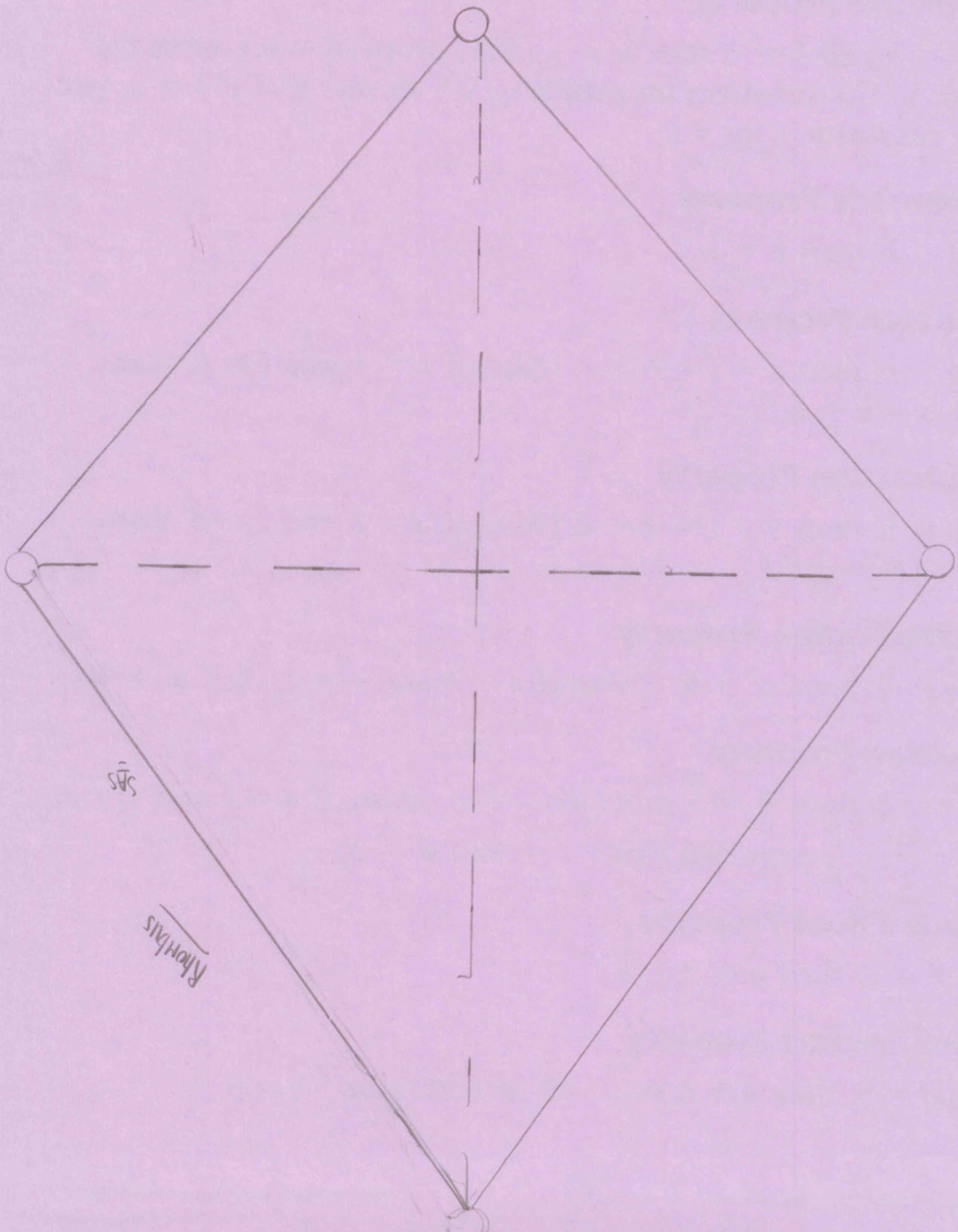
Why can't you make a rectangle with 1 long and one short sticks? DIK.1

What I think I did well.
I was tinkering with the sticks trying to find all the possible shapes the 2 sticks could make.

Where I think I could improve next time.
I needed to write more notes on the

papers.


SQUARE


SAS
Rhombus

- I think that what I did well was making a quadrilateral, not exactly like it, but almost exactly like it until I get the ≅ match.

- I think that I can improve by

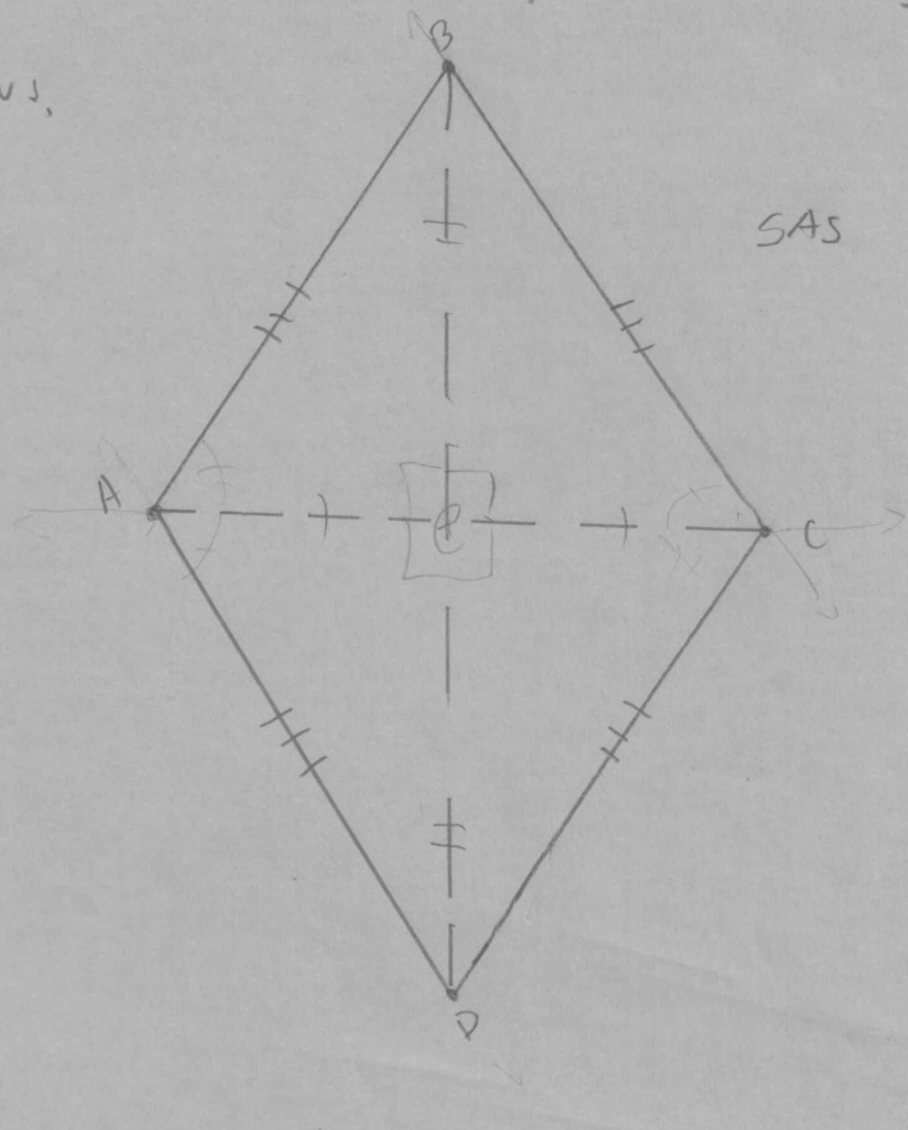
Block - 1

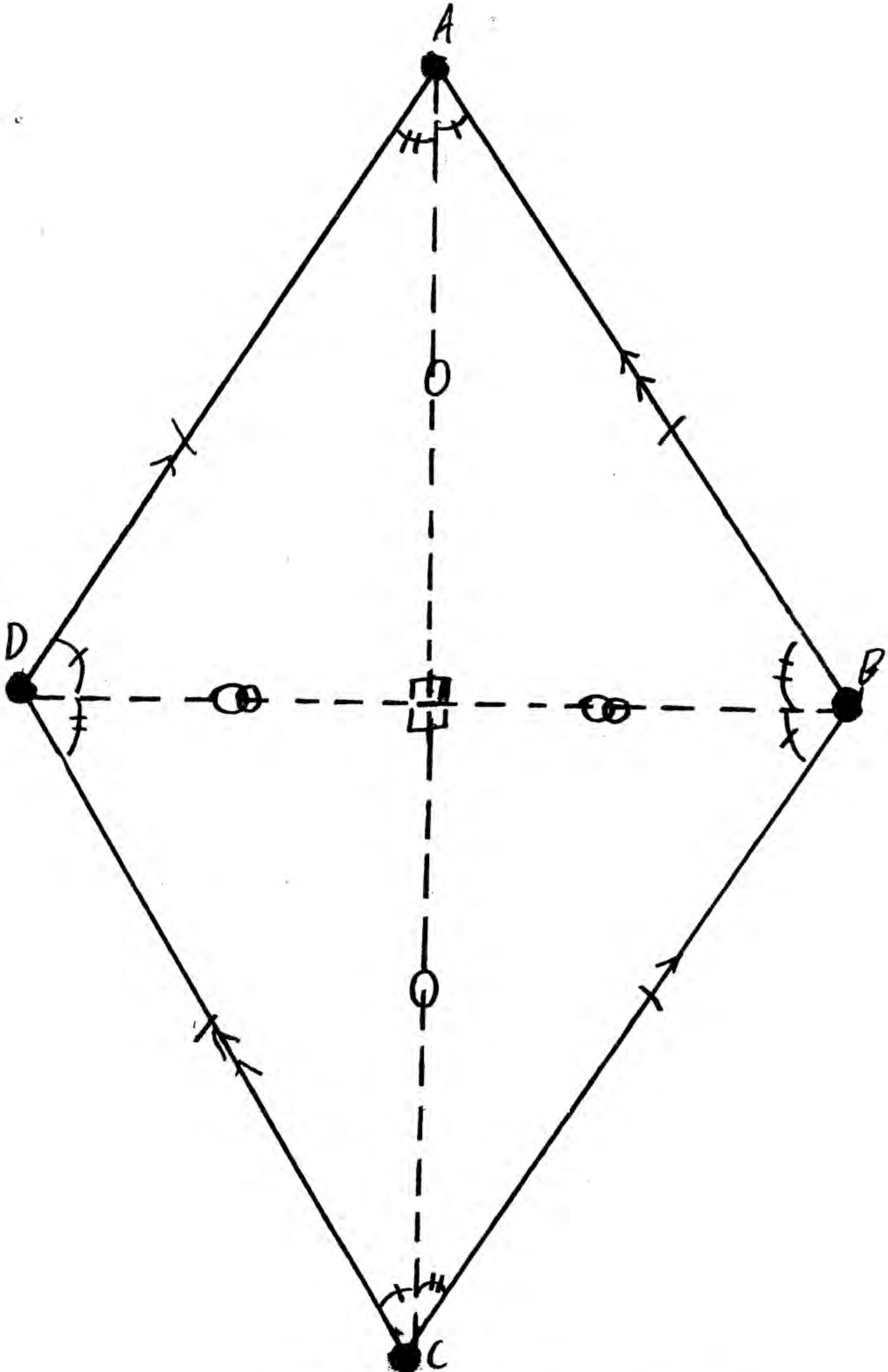
Group 4 Observations

- Crosses make rectangle, trapizoid, kite, rombus, trapezuim, rombus, paralleleogram, squares
- If endpoints are put together, they make a triangle
- Any diagonals make a trapizoid, can make a trapezium
- Can't make square without equal diagonals, but can make paralleogram
- From rombus, you can make a parallelogr
- Anything can make a trapezuim
- two different length diagonals can make every quadrilateral except a square and a rectangle.
- diagonals used to make a rombus can also produce a trapezoid, trapezium, or paralelogram but can not produces a square or rectangle
- You can not produce a quad by connecting the End points of any 2 diagonals (produces a tri.)
- A trapezium is constructed by using any two groups of [illegible]

Rhombus:

If the diagonals are at different Lengths, and they bisect each other at their mid point $ they are perpindicular to each other then the quadrilaterial is a Rhombus.




A
B
C
D

Statement	Proof (Reason)
1.) $\overline{AC} \perp \overline{BD}$	1.) Given
2.) ∠AEB, ∠BEC, ∠CED, ∠DEA are congruent	2.) They are all perpindicular to each other so they are all at 90°.
3.) $\overline{AE} \cong \overline{EC}$	3.) B/C E is the mp of $\overline{AC}$
4.) $\overline{BE} \cong \overline{ED}$	4.) B/C E is the mp of $\overline{BD}$
5.) △AEB ≅ △BEC ≅ △CED ≅ △DEA	5.) The SAS conjecture (1, 3, 4)
6.) $\overline{AB} \cong \overline{BC} \cong \overline{CD} \cong \overline{DA}$	6.) CPCTC
*.) $\overline{AD} \parallel \overline{DC}$ *) $\overline{BC} \parallel \overline{AD}$	*) B/C alternate interior ∠ are congruent using $\overline{BD}$ as a transversal.
7.) ▭ABCD is a rhombus	7.) By definition of a rhombus 2, 3, 4, 6