

## Hanging Centroid Mobile Project

You will be designing and creating a hanging mobile that will showcase your ability to calculate area and use proportions, find centroids of various shapes, meet given constraints, and be creative and artistic.

This project will be worth **75 points** and will be completed in 3 parts (POW and Exam grades).

The mobile will consist of 4 different geometric figures. They will balance so that the supports are centered and there is an even layout.

### Balancing:

Each shape must balance at its centroid. They must also be positioned along the supports so that the overall mobile will balance.

**Materials:** You may come up with your own type of materials as long as they still meet the requirements for size, durability and construction.

I will have the following supplies available for purchase if you are unable to get your own. Total cost for materials is \$3 and you must bring in \$3 and let me know by **Thursday April 4<sup>th</sup>**. Any extra funds will be donated to classroom supplies. I will have these available on Tuesday April 9<sup>th</sup>.

- 1 posterboard – white
- 3 dowel pieces
- string
- use of hot glue gun (during conference)

**Shapes:** Select 4 **different** shapes from the following list for your mobile. You must pick at least 1 shape from category 1. You may not pick more than one shape from category 3.

Category 1 Regular n-gon with $n \geq 5$	Category 2		Category 3
Pentagon	Irregular Quadrilateral	Triangle	Circle
<b>NO Hexagons!</b>	Trapezoid	L-shape	Square
Septagon	Isosceles Trapezoid	Ellipse	Rectangle
Octagon	Rhombus	Parallelogram	Hexagon
Etc...	Kite	Other? Plus sign?	

You must be able to determine the correct dimensions that will create the specified area and also show how you calculated the area with those dimensions.

Your selected shapes from the lists above

Shapes	Select your Shapes	Required Area
Small #1		135 cm <sup>2</sup>
Small #2		135 cm <sup>2</sup>
Medium		250 cm <sup>2</sup>
Large		520 cm <sup>2</sup>

## Schedule and Point Breakdown

**Part 1 Due Tuesday April 9<sup>th</sup>, 2019. (20 POW points)**

**Sketch of each Figure and Calculation of the Dimensions**

**Create a sketch of each of your shapes. Label the dimensions of each and clearly show the calculations for the area of each figure using these dimensions.**

- Pick your 4 different shapes and decide which shape will have each required area
- Determine the dimensions that will give each shape the required area
- Check that your dimensions are reasonable (they will make a good mobile shape)
- **No formulas for regular polygons from the internet or that we haven't used in class!**
- Clearly show the calculations that link area with the dimensions you have used
- Explain in complete sentences how you calculated the correct dimensions.

***You will be graded on the sketch, accuracy of calculations, and presentation of data***

**Part 2 Due Tuesday April 16<sup>th</sup>, 2019. (15 POW points)**

**Cutout of each Figure balanced on a string.**

**Cut out each figure and find its balance point then hang with a string.**

- Use a ruler/protractor/compass to draw your shapes
- Shapes should be on some type of cardstock (cereal box, cardboard, something rigid) No credit will be given if it is on floppy paper
- Cut out each shape
- Find the center of balance and hang it on a string so that it balances parallel to the floor.

***You must bring all four cutout figures to class and show that they balance with the string.***

**Part 3 Due Tuesday April 23<sup>rd</sup>, 2019. (40 Exam points)**

**Decoration and Construction of Mobile.**

**Decorate and assemble your mobile.**

- Decorate the **bottom side** of each cut out figure so you can see it when you look up at it
- It should be colored or patterned neatly. Scribbles in pencil are NOT okay.
- Be sure the designs are unique to you.
- Attach a string (material you choose) to each shape
- Make sure you can balance the shape so that it hangs parallel to the ground
- Adjust the figures so that your mobile all hangs in balance.
  - Balance your shapes from the bottom up (little shapes first, then attach these to the next up rod and make that balance, then continue to the uppermost piece)

**Your final project will be graded on the following:**

- Decorations (neatness/creativity)
- How well each shape balances
- How well the entire mobile balances
- Durability/construction quality

***If your mobile falls apart during the first 3 weeks it is hanging points will be deducted from your original score!!***

***\* Part 1 and part 2: NOT accepted late. Final Mobile: 10% of score deducted for each day the final mobile is late, including days we do not meet as a class. Please turn it in early if you will be absent.***

# MARCH 2019

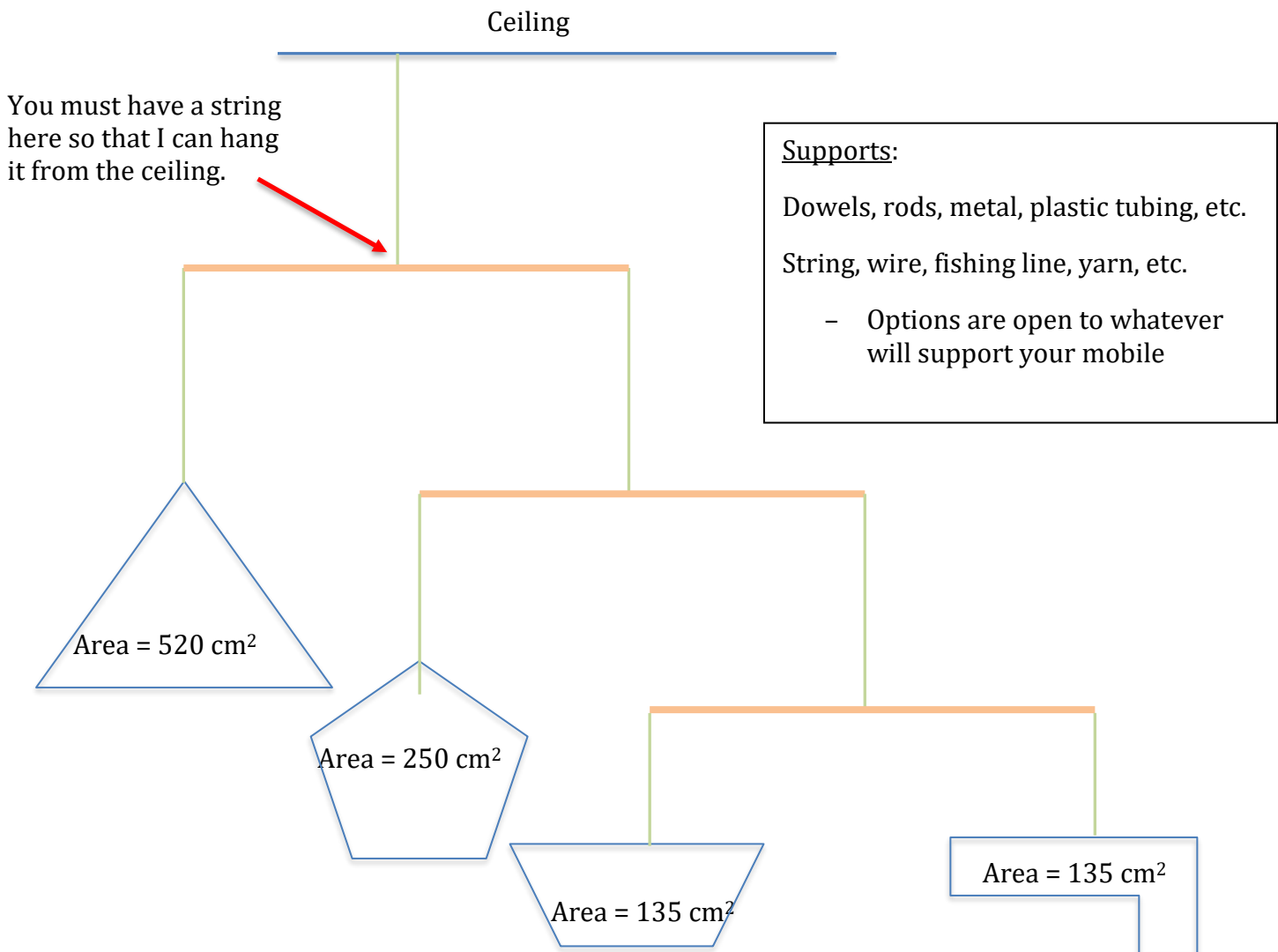
SUN	MON	TUE	WED	THU	FRI	SAT
17	18	19	20	21	22	23
-----SPRING BREAK !!!!-----						
24	25	26	27	28	29	30
					<i>Assembly Schedule 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> /assembly</i>	

# APRIL 2019

	1 Introduce Project	2 <i>ACT Testing Modified schedule</i>	3	4 \$3 for materials due	5	6
7	8	9 <i>Dimension Calculations Due</i>	10	11	12	13
14	15 <i>Friday Schedule BPH, Conference, 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup></i>	16 <i>Cutout and Balanced Figures Due</i>	17	18	19 No School Spring Holiday	20
21	22	23 <i>Final Mobile Due</i>	24	25	26	27
28	29	30				

Extra credit is possible but not guaranteed if you go above and beyond with the material selection or the decorations. This will be decided at the discretion of the teacher in comparison to other projects.

## Example Layout



### Dimensions:

**The dimensions for area must be exact!**

The length of each support should be the same

The length each figure hangs below the support should also match for each figure

### Figures:

Cardstock, cardboard, metal, plastic etc.

Make sure your material choice can be constructed and also supported by your other materials. (ie. Heavy materials will require stronger supports)