CONICS ART PROJECT

You will be creating your own piece of artwork incorporating conic sections. Your artwork must be a “picture” rather than simply a “design,” and it must be school appropriate! Your picture will include circles, ellipses, hyperbolas, parabolas, and lines. Each group of two will turn in one design. It will count as a 25 POINT QUIZ GRADE

Part 1: Create Your Drawing (15 pts)
Create a drawing on graph paper (cartoon character, sports object/mascot, or design a scene—BE CREATIVE!!). You must include the following 10 graphs, or pieces of graphs, in your creation:

- 2 circles
- 2 ellipses (both horizontal, both vertical, or one of each)
- 1 horizontal parabola
- 1 vertical parabola
- 1 horizontal OR 1 vertical hyperbola
- 2 lines
- At least 1 additional conic shape

Your drawing must be done neatly on graph paper and must include the following:
- Each conic shape, or line, must be numbered.
- The axes must be visible and clearly labeled. Use one set of axes for the entire design.
- All key graphing components must be accurate (vertices, co-vertices, centers, asymptotes).

Part 2: Calculate Your Equations (10 pts)
- On a separate sheet of paper you must include the following for each conic section/line in your drawing:
  - Circle: radius, center, and equation
  - Ellipse: center, vertices, co-vertices, foci, and equation
  - Hyperbola: center, vertices, foci, point on graph, asymptotes, and equation
  - Parabola: vertex, point on graph, focus, directrix, value of “p”, and equation
  - Line: slope, y-intercept, and equation

- All equations must be in standard form on an “equation page,” with work shown, written neatly, clearly labeled, and organized. The work should be numbered to correspond with the numbers on the drawing. Include the name of each partner on the paper.

Due Date: ________________________________
Conic Equations in Standard Form

**Line:** \( y = mx + b \)

**Circle:** \((x - h)^2 + (y - k)^2 = r^2\)

**Parabola:**
- **Horizontal:** \((y - k)^2 = \pm 4p(x - h)\)
- **Vertical:** \((x - h)^2 = \pm 4p(y - k)\)

**Ellipse:**
- \(\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1\)
- \(\frac{(y-k)^2}{a^2} + \frac{(x-h)^2}{b^2} = 1\)

**Hyperbola:**
- \(\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1\)
- \(\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1\)

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**Sample of a Drawing**

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