Angry Birds Quadratics Project

Red Bird, Yellow Bird, Blue Bird and Black Bird are angry with the pigs. The pigs stole the bird's eggs. The birds want their eggs and will stop at nothing to get them back! The flight path of the birds can be modeled with a parabola. Use "x" as the distance and "y" as the height.

Step 1: The data for each bird is attached. For each bird, you need to determine the following:

1) The maximum height
2) The axis of symmetry
3) The distance traveled

Step 2: Create a graph representing each bird's trajectory. Include the pigs on the graph.

Step 3: Answer the following questions:

1) Which bird flew the highest?
2) Which bird flew the longest?
3) Which bird hit which pig?

Step 4: Present your information any way you wish. Make sure that your project includes all parts (**with your calculations)** and is neat.

Grading Rubric for Angry Birds Project

Points	Calculations (x2)	Graph (x2)	Questions	Presentation
4	All calculations are accurate.	Graph is accurate. All parts of the graph are labeled. Each bird and pig is included.	All questions are answered correctly.	Professional looking, no grammatical errors. Neat and colorful.
3	Most calculations are accurate.	Graph is mostly accurate. Most parts are labeled. Each bird and pig is included.	Most questions are answered correctly	Nice execution, may have minor errors. Neat and colorful.
2	Some calculations are accurate.	Some of graph is accurate. Some parts are labeled. Birds or pigs may be missing.	Some questions are answered correctly.	Pretty rough, lots of errors. Neat or colorful.
1	None of the calculations are accurate	Graph lacks accuracy. Not labeled, Birds or pigs missing.	None of the questions are answered correctly.	Amateur hour, errors distract from information. Neatness is lacking.

A: 22 – 24 B: 17 – 21 C: 12 – 16 D: 7 – 11 F: 0 – 6

These scores will be converted to a grade out of 50 points

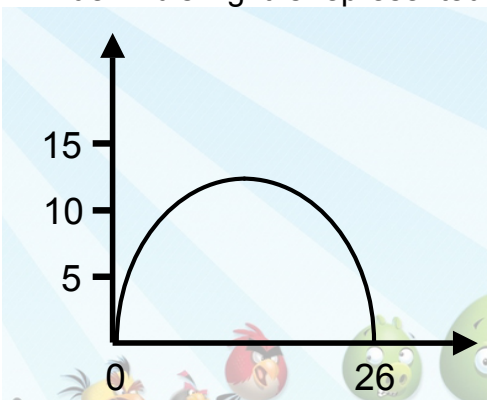
Version 1:

Red Bird starts his flight from point (10, 0). His flight path reaches a maximum height of 18 yards and lands at point (38,0)

Yellow Bird's flight path can be modeled by the quadratic equation

$$y = -x^2 + 14x - 24$$

Blue Bird's flight is represented by the graph below.



The table below contains partial data points of Black Bird's trajectory.

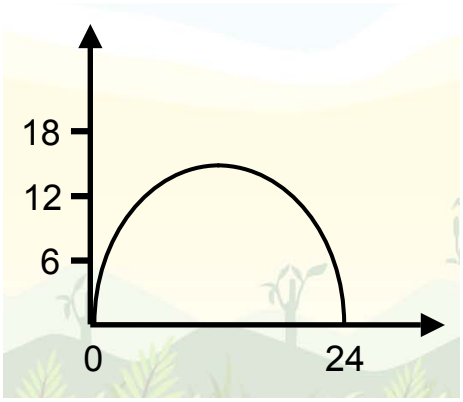
x	8	9	10	11	12	13	14	15	16	17	18
y	0	7.5	14	19.5	24	27.5	30	31.5	32	31.5	

King Pig is located at point (21, 19.5)

Moustache Pig is located at point (9, 21)

Version 2:

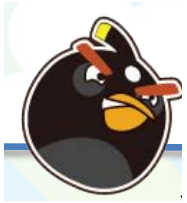
Red Bird's flight is represented by the graph below.



The table below contains partial data points of Yellow Bird's trajectory.

x	12	13	14	15	16	17	18	19	20	21	22
y	0	11	20	27	32	35	36	35			

Blue Bird starts his flight from point (6, 0). His flight path reaches a maximum height of 22 yards and lands at point (26, 0)



Black Bird's flight path can be modeled by the quadratic equation

$$y = -x^2 + 16x - 39$$

King Pig is located at point (22, 20)

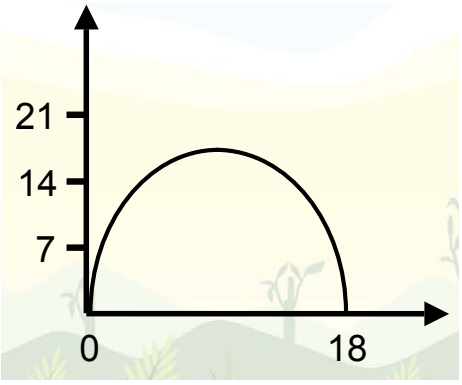
Moustache Pig is located at point (11, 16)

Version 3:

The table below contains partial data points of Red Bird's trajectory.

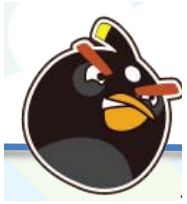
x	6	7	8	9	10	11	12	13	14	15	16
y	0	24	33	40	45	48	49	48			

Yellow Bird's flight is represented by the graph below.



Blue Bird's flight path can be modeled by the quadratic equation

$y = -x^2 + 20x - 64$



Black Bird starts his flight from point (4, 0). His flight path reaches a maximum height of 28 yards and lands at point (38, 0)

King Pig is located at point (17, 24)

Moustache Pig is located at point (13, 27)

Version 4:

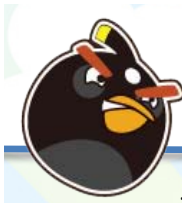
Red Bird's flight path can be modeled by the quadratic equation

$y = -x^2 + 12x - 11$

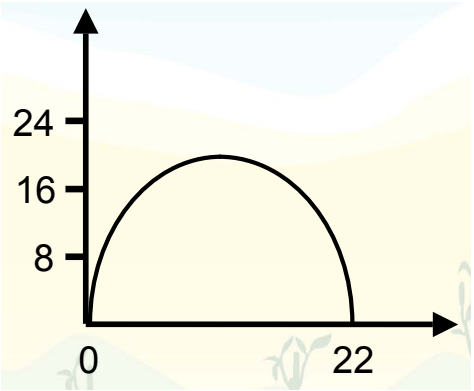
Yellow Bird launches off from point (10, 0). His flight path reaches a maximum height of 22 yards and lands at point (42, 0)

The table below contains partial data points of Blue Bird's trajectory.

x	4	5	6	7	8	9	10	11	12	13	14
y	0	13	24	33	40	45	48	49	48		



Black Bird's flight is represented by the graph below.

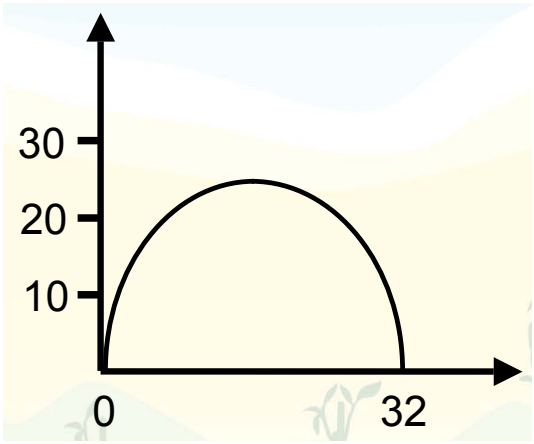


King Pig is located at point (6, 25)

Moustache Pig is located at point (15, 33)

Version 5:

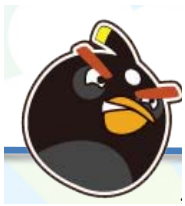
Red Bird's flight is represented by the graph below.



Yellow Bird has a launch point of (2, 0). His flight path reaches a maximum height of 20 yards and lands at point (26, 0)

The table below contains partial data points of Blue Bird's trajectory.

x	2	3	4	5	6	7	8	9	10	11	12
y	0	9	16	21	24	25	24				



Black Bird's flight path can be modeled by the quadratic equation

$$y = -x^2 + 28x - 171$$

King Pig is located at point (15, 24)

Moustache Pig is located at point (11, 16)