Name: _____

Period: _____

Date: _____

Unit 7

Cross-sectional Area of air ducts Lab

Directions: Do Activity 3: Cross-sectional area of air ducts stating on page 35 of the textbook. Work in groups of two. Everyone must turn in a data sheet.

1. Measure the various ducts and complete the two tables below. Note that one table is for circular ducts and the other for rectangular ducts. (10 points per table)
2. Use the data from the tables and do steps c and d on page 35. (10 points per graph)

   SAFETY: Be extremely careful when handling the ducts!!! The edges are sharp and can inflict severe cuts!!
3. Put the number or letter of the duct in parentheses in one of the columns.

RECTANGULAR DUCTS

LENGTH	WIDTH	CROSS-SECTIONAL AREA	NOTES

CIRCULAR DUCTS

DIAMETER	π	RADIUS	CROSS-SECTIONAL AREA

Questions (21 points)

1. Are the graphs straight lines? _____

_____

2. Can the graphs be used to find larger or smaller circular cross-sectional area ducts?
   _____
3. How does the graph for rectangular ducts compare with the graph for circular ducts?

_____

_____

4. Why would you want or need to use different size ducts? _____

_____

5. Can circular ducts replace rectangular ducts and have the same cross-sectional area?
   _____

Calculate the cross-sectional areas of the following ducts;

6. Round duct ID (inside diameter)

Size (ID)	Cross-sectional area
a. 3 in	_____
b. 4 in	_____
c. 6 in	_____
d. 10 in	_____
e. 12 in	_____

7. Square duct

a. 5 in	_____
b. 6 in	_____
c. 8 in	_____
d. 10 in	_____
e. 12 in	_____

8. Rectangular duct
    a. 6 x 10 inch _____
    b. 8 x 12 inch _____
    c. 9 x 15 inch _____
    d. 10 x 18 inch _____
9. Which, if any, of the ducts have similar cross-sectional areas?
    _____
10. Graph all three duct types' cross-sectional areas on the same graph. Use some method to indicate each type. (20 points)

Neatness of graphs and data tables 25 points (5 points per graph and table)