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**ICE 6 – 5 Points**

# User-Defined Classes and UML

The ABC Company sells widgets. Widgets have a color, shape, and each widget (color and shape combination) takes a certain number of minutes to produce. The ABC manufacturing plant needs a widget calculator to calculate the time needed to create a batch of widgets. You’ve been asked to design a class using UML that will meet the needs of the organization.

The class should at a minimum have:

* appropriate attributes and methods
* an overloaded constructor
* a method that calculates how many days it will take to produce the number of widgets when supplied an order number. The result should be a whole number (round up). Note: The plant operates two shifts of eight hours each per day.

Your job is to:

1. First create the UML. (2 points)

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| Widgets |
| - color: String  - shape: String  - minutes: int |
| + Widgets(widgetColor: String, widgetShape: String, productionTimeMinutes: int)  + setColor(newColor: String): void  + setShape(newShape: String): void  + setMinutes(productionTimeMinutes: int): void  + getColor(): String  + getShape(): String  + getMinutes(): int  + numDays(amountOrdered: int): int |

2. Code the user-defined class. (2 points)

* + Done, see .java files

3. Test the class by creating a driver/test class. (1 point)

* + Done

**Example proposed input:**> Enter widget color: red> Enter widget shape: rhombus> Enter number of minutes to create: 10> Enter number of widgets needed: 100> It will take 2 days to produce 100 red rhombus widgets.