**Basketball Jerseys: CCSS.MATH.CONTENT.HSF.IF.A.2**

Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

**Alignment to Content Standards:**

My assessment task directly relates to my content standard for this activity. The task begins by explaining the context for the function we will be using, then gives them the specific function. The students will then use their prior knowledge of functions to find a solution for two specific domains. This will assess their ability to evaluate functions when given a specific input that is in the domain. The students will also have to explain the meaning of the solution they found. This will require them to interpret their solution back into the context of the function. Next, the students will be assessed on their conceptual knowledge function notation. Instead of giving them a domain input, I will give them an output from the range. Again, they will need to understand the context in order substitute this output into the function and solve for n. Lastly, the students will be required to form their own function of a similar situation. They will be given the context in a few sentences which they will decontextualize into function notation, which assess their ability to interpret information about a function.

**Task:**

Basketball Jerseys

The basketball coach at Cashmere High School is planning on buying new jerseys for his team. There is an initial design fee of 500 dollars plus a fee of 110 dollars per jersey. The total cost of n jerseys can be written as the function

C(n)=500+110n

1. Find C(16). Explain in words what this solution means.
2. Find C(20). Explain in words what this solution means.
3. If the coach has a budget of $2,000, how many jerseys can he afford?
4. The coach then went to a different brand to check their jersey prices. They told him there is a design fee of $200 and each jersey is an additional $150. Write a new function, F(n), that represents the total price of these jerseys.

**Commentary:**

This task focuses on the student’s ability to use function notation and apply it to a real situation. The students will demonstrate procedural fluency by plugging in domain inputs to solve for a unique output of the function. Then, they will use mathematical reasoning and their conceptual knowledge of functions to explain what their solution means in the context of the story problem. The first two problems are in this form and will evaluate the students’ abilities to find a solution for a function with a given input and interpret the meaning back into the context of the problem. The context I used for my assessment task was the total cost of n basketball jerseys. This means the students will explain that when given a domain input (number of jerseys) they output will be the total cost for those jerseys. Next, the students will be given an output in the form of a budget. This means I will not directly give them an output value (C(n)=2000) but instead I will tell them the coach has a budget of 2,000. By doing this, the students will demonstrate their conceptual knowledge of functions and their ability to apply it to a slightly different context. They will need to use their reasoning to substitute the budget into the function for C(n), and then they will problem solve to find the total number of jerseys the coach can afford. Lastly, the students will be given a similar context for a function in story problem form. They will have to interpret the information from sentences into a function of their own, which will be assessing their conceptual understanding of function notation. Overall, this assessment task will evaluate the students’ ability to interpret information to and from function notation.

**Solution:**

Basketball Jerseys

The basketball coach at Cashmere High School is planning on buying new jerseys for his team. There is an initial design fee of 500 dollars plus a fee of 110 dollars per jersey. The total cost of n jerseys can be written as the function

C(n)=500+110n

1. Find C(16). Explain in words what this solution means.

**C(16)=500+110(16)=2,260**

**This solution means the total cost of 16 jerseys is $2,260.**

1. Find C(20). Explain in words what this solution means.

**C(20)=500+110(20)=2,700**

**This solution means the total cost of 20 jerseys is $2,700.**

1. If the coach has a budget of $2,000, how many jerseys can he afford?

**C(n)=2,000. So,**

**2,000=500+110n**

**1,500=110n**

**1,500/110=n**

**n= about 13.6**

**So, he can afford 13 jerseys.**

The coach then went to a different brand to check their jersey prices. They told him there is a design fee of $200 and each jersey is an additional $150. Write a new function, F(n), that represents the total price of these jerseys.

**F(n)=200+150n**