Problem-Based Task 1.4.1: Skate Constraints

A sporting goods company produces figure skates and hockey skates. One group of workers makes the blades for both types of skates. Another group makes the boots for both types of skates.

- It takes 2 hours to make the blade of a figure skate. It takes 3 hours to make the blade of a hockey skate. There is a maximum of 40 hours per week in which the blades can be made for both types of skates.
- It takes 3 hours to make the boot of a figure skate. It takes 1 hour to make the boot for a hockey skate. There is a maximum of 20 hours per week in which boots can be made for both types of skates.

What are possible combinations of the number of figure skates and hockey skates that can be produced given the constraints of this situation?

Problem-Based Task 1.4.1: Skate Constraints

Coaching

a. What information do you know about the amount of time needed to make the blade of a figure skate?

b. What information do you know about the amount of time needed to make the blade of a hockey skate?

c. How many hours each week can be spent making skate blades?

d. What inequality can be used to represent the amount of time it takes to make blades for both figure skates and hockey skates?

e. What information do you know about the amount of time needed to make the boot of a figure skate?

f. What information do you know about the amount of time needed to make the boot of a hockey skate?

continued

g. How many hours each week can be spent making skate boots?

h. What inequality can be used to represent the amount of time it takes to make the boots for both figure skates and hockey skates?

i. What other constraints are needed in this situation?

j. What is the system of inequalities that represents this situation?

k. Is it possible to construct 3 figure skates and 4 hockey skates given the constraints of this situation?

l. Is it possible to construct 8 figure skates and 5 hockey skates given the constraints of this situation?

m. What is another possible combination of the number of figure skates and hockey skates that can be produced given the constraints of this situation?