# Lesson 9: Representing Proportional Relationships with Equations

## Classwork

### Example 1: Jackson's Birdhouses

Jackson and his grandfather constructed a model for a birdhouse. Many of their neighbors offered to buy the birdhouses. Jackson decided that building birdhouses could help him earn money for his summer camp, but he is not sure how long it will take him to finish all of the requests for birdhouses. If Jackson can build 7 birdhouses in 5 hours, write an equation that will allow Jackson to calculate the time it will take him to build any given number of birdhouses, assuming he works at a constant rate.

*hrs per bird house*

a. Write an equation that you could use to find out how long it will take him to build any number of birdhouses.
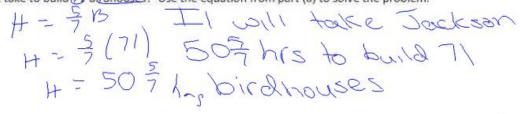
$$k = \frac{y}{x}$$
$$= \frac{5}{7}$$

$$H = \frac{5}{7} B$$

b. How many birdhouses can Jackson build in 40 hours?

$$H = \frac{5}{7} B$$
$$\frac{7}{5} \times 40 = \frac{5}{7} B \times \frac{7}{5}$$
$$56 = B$$

Jackson can build 56 birdhouses in 40hrs

c. How long will it take Jackson to build 35 birdhouses? Use the equation from part (a) to solve the problem.

$$H = \frac{5}{7} B$$
$$H = \frac{5}{7}(35)$$
$$H = 25 \, hrs$$

It will take Jackson 25hrs to build 35 birdhouses

d. How long will it take to build 71 birdhouses? Use the equation from part (a) to solve the problem.

$$H = \frac{5}{7} B$$
$$H = \frac{5}{7}(71)$$
$$H = 50\frac{5}{7} \, hrs$$

Il will take Jackson $50\frac{5}{7}$ hrs to build 71 birdhouses