Practice 3.6: Inverse Variation A

Use the following information to complete problems 1–4.

Write an inverse variation equation that relates x and y. Assume that y varies inversely as x. Then solve.

1. If $x = 6$, then $y = 12$. Find y when $x = 10$.

2. If $x = 8.1$, then $y = 2.7$. Find x when $y = 5.4$.

3. If $y = -12$ when $x = 5$, find y when $x = 3$.

4. If $y = -8.5$ when $x = 2$, find x when $y = -2.5$.

For problems 5 and 6, write an inverse variation equation of the function given in the table.

5.

x	–6	–3	–2	0	2	3	6
y	–15	–30	–45	undefined	45	30	15

6.

x	–9	–6	3	0	3	6	9
y	–4	–6	–12	undefined	12	6	4

continued

Use the given information to complete problems 7–10.

7. Melanie is looking to purchase a new doghouse. She sees an advertisement for a custom-built doghouse that fits her budget. In this advertisement, the builder offers a 120-square-foot doghouse. Melanie would like the doghouse to fit into a corner of her backyard, but the width will be restricted by a tree. She remembers the formula for the area of a rectangle is length times width, and solves for the width to get $w = \frac{a}{l}$. She then measures the restricted width to be 15 feet. What are the dimensions of the doghouse?

8. The relationship between rate, distance and time can be calculated with the equation $d = r \bullet t$, where r is the rate (speed), d represents the distance traveled, and t represents the time. If the speed of a car in traffic is 30 miles per hour, it takes Sean 1.5 hours to get to work. If there is no traffic and Sean is able to drive 60 miles per hour, how long will it take for him to arrive at work?

9. Solve for x by graphing or using a table of values: $\frac{1}{x} = \sqrt{2x + 3}$

10. Solve for x by graphing or using a table of values: $\frac{18}{x} = \sqrt{x + 9}$