METHOD 2

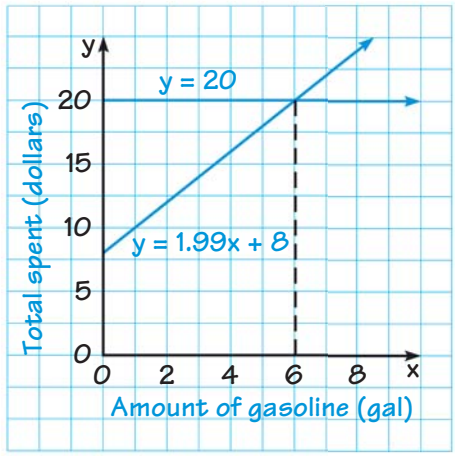
Using a graph Another alternative approach is to use a graph.

STEP 1 **Write** a verbal model. Then write an equation that gives the total amount of money y (in dollars) that you spend as a function of the amount x (in gallons) of gasoline that you buy.

Total spent (dollars)	=	Price of gasoline (dollars/gallon)	·	Amount of gasoline (gallons)	+	Price of car wash (dollars)
y	=	1.99	·	x	+	8

STEP 2 **Graph** $y = 1.99x + 8$.

STEP 3 **Graph** $y = 20$ in the same coordinate plane. This equation gives the maximum amount of money that you can spend for gasoline and a car wash.



STEP 4 **Analyze** the graphs. The point of intersection shows that you can buy slightly more than 6 gallons of gasoline when you spend \$20. Because you can spend *at most* \$20, the solutions are the x-coordinates of the points on the graph of $y = 1.99x + 8$ that lie *on or below* the graph of $y = 20$.

▶ You can buy up to slightly more than 6 gallons of gasoline.

PRACTICE

1. **BAKING** You need to bake at least 100 cookies for a bake sale. You can bake 12 cookies per batch of dough. What are the possible numbers of batches that will allow you to bake enough cookies? Solve this problem using two different methods.
2. **VIDEO GAMES** A video game console costs \$259, and games cost \$29 each. You saved \$400 to buy a console and games. What are the possible numbers of games that you can buy? Solve this problem using two different methods.
3. **WHAT IF?** In Exercise 2, suppose that you saved \$500 and decide to buy a video game console that costs \$299. What are the possible numbers of games that you can buy?
4. **MONEY** You need to have at least \$100 in your checking account to avoid a low balance fee. You have \$247 in your account, and you make withdrawals of \$20 per week. What are the possible numbers of weeks that you can withdraw money and avoid paying the fee? Solve this problem using two different methods.
5. **RUNNING TIMES** You are running a 10 mile race. You run the first 3 miles in 24.7 minutes. Your goal is to finish the race in less than 1 hour 20 minutes. What should your average running time (in minutes per mile) be for the remaining miles?