EXAMPLE

Eight pounds of flour are divided into $\frac{1}{5}$-pound bags. How many bags are needed to hold all the flour?

From each pound of flour, we can make five $\frac{1}{5}$-pound bags, so from eight pounds of flour, we can make $8 \times 5 = \mathbf{40}$ bags.

PRACTICE Answer each question below.

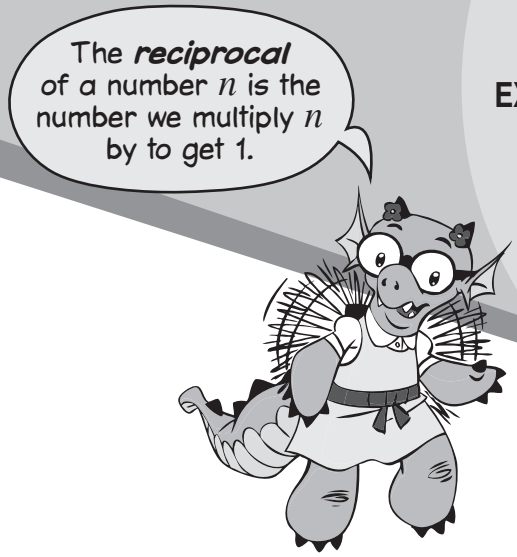
114. The Burger Palace orders a box that contains 12 pounds of hamburger patties. Each patty weighs $\frac{1}{3}$ of a pound. How many patties are in the box? **114.** _____

115. One lap around the track at Kayla's school is $\frac{1}{5}$ of a mile. Kayla runs 7 miles around the track. How many laps does Kayla run? **115.** _____

116. Captain Kraken has sheets of plywood that are $\frac{1}{4}$ inches thick. A stack of these plywood sheets is 18 inches tall. How many sheets are in the stack? **116.** _____

117. A regular polygon whose sides are $\frac{1}{5}$ of an inch long has a perimeter of 4 inches. How many sides does the polygon have? **117.** _____

118. The Beast Island Candy Shop makes 50 pounds of peppermint bark candy. The candy makers split the bark into $\frac{1}{8}$-pound bags, which are each sold for $6. How much money will the shop collect if they sell every bag of peppermint bark? **118.** _____



EXAMPLE | What is the reciprocal of 7?

$7 \times \frac{1}{7} = 1$, so 7 and $\frac{1}{7}$ are reciprocals.

$\frac{1}{7}$ is the reciprocal of 7.

PRACTICE | Find the reciprocal of each number or expression below.

119. $\frac{1}{5}$ Reciprocal: _____

120. 17 Reciprocal: _____

121. $5+6$ Reciprocal: _____

122. 6×9 Reciprocal: _____

123. $\frac{15}{3}$ Reciprocal: _____

124. $\frac{13}{39}$ Reciprocal: _____

125. Does 0 have a reciprocal? If so, what is it? If not, explain why not.

126. Write an expression for the reciprocal of n. (Assume that n is not zero.) **126.** _____

127. Write an expression for the reciprocal of $\frac{1}{a}$. (Assume that a is not zero.) **127.** _____

128. Write an expression for the reciprocal of $c+1$. (Assume that c is not -1.) **128.** _____

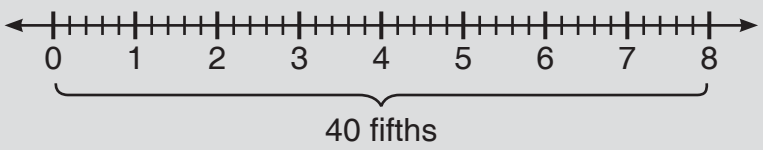
129. What is the sum of the reciprocals of $\frac{1}{5}$ and $\frac{1}{7}$? **129.** _____

EXAMPLE | What is $8 \div \frac{1}{5}$?

We consider dividing 8 pounds of flour into $\frac{1}{5}$-pound bags. From each pound of flour, we can make five $\frac{1}{5}$-pound bags, so from eight pounds of flour, we can make $8 \times 5 = \mathbf{40}$ bags.

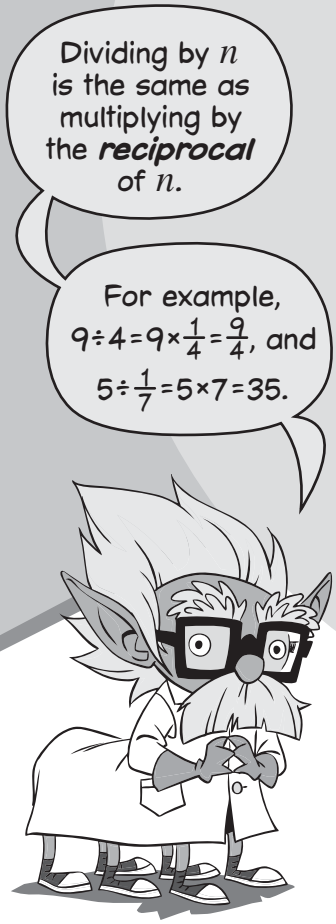
— ***or*** —

We look at the number line to find out how many $\frac{1}{5}$'s are in 8. Since there are 5 fifths in 1, there are $8 \times 5 = \mathbf{40}$ fifths in 8.



We write $8 \div \frac{1}{5} = 8 \times 5 = \mathbf{40}$.

Dividing by a number is the same as multiplying by its reciprocal.



PRACTICE | To compute each quotient below, multiply by the reciprocal. Write your answers in simplest form.

130. $5 \div \frac{1}{7} =$

131. $3 \div \frac{1}{16} =$

132. $9 \div \frac{1}{4} =$

133. $\frac{1}{16} \div \frac{1}{8} =$

PRACTICE | Write each quotient below in simplest form.

134. $3\frac{2}{11} \div \frac{1}{2} =$

135. $2\frac{1}{5} \div \frac{1}{8} =$

136. $5 \div \left(3 \div \frac{1}{12}\right) =$

137. $(5 \div 3) \div \frac{1}{12} =$

138. $\left(9 \div \frac{1}{10}\right) \div \frac{1}{5} =$

139. $9 \div \left(\frac{1}{10} \div \frac{1}{5}\right) =$

PRACTICE | Answer each question below.

140. How many $\frac{1}{4}$-cup scoops of flour are needed to equal $2\frac{3}{4}$ cups? **140.** _____

141. The tallest tree in Ranger Rick's forest grows $\frac{1}{8}$ of an inch every week. How many weeks will it take for the tree to grow $7\frac{3}{4}$ inches? **141.** _____

142. Tara brought 4 gallons of water on a hike. She gave $\frac{1}{3}$ of a gallon to each of her hiking companions, which left her with $1\frac{1}{3}$ gallons of water. How many companions were on the hike with Tara? **142.** _____

143. ★ If $a \div \frac{1}{16} = 20$, what is the value of a? **143.** _____