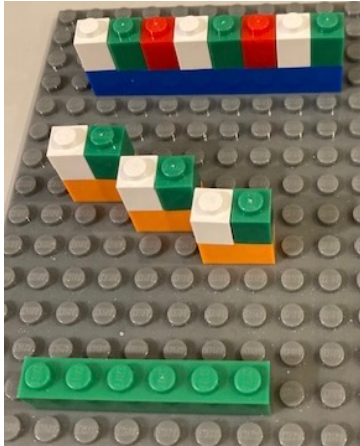


Brick Math
Fraction Division
Chapter Assessment Answer Key

Chapter 1

1. $\frac{3}{4} \div \frac{1}{8} = 6$



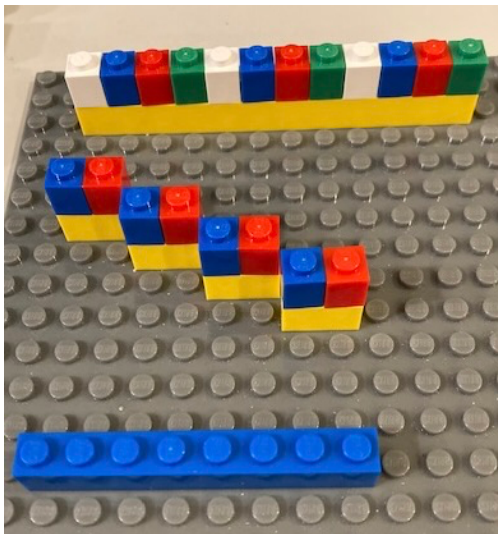
8 divided into 1/8ths

3 quarters of 8
Each quarter has 2

Answer is 6

Algorithm: $\frac{3}{4} \div \frac{1}{8} = \frac{3}{4} \times \frac{8}{1} = \frac{24}{4} = 6$

2. $\frac{4}{6} \div \frac{1}{12} = 8$



12 divided into 1/12ths

4 sixths of 12

Each sixth has 2

8 in total

Answer is 8

Algorithm: $\frac{4}{6} \div \frac{1}{12} = \frac{4}{6} \times \frac{12}{1} = \frac{48}{6} = 8$

3. The reciprocal is one of a pair of numbers that, when multiplied together, equal 1. One example of reciprocals (many answers to this):
 The reciprocal of $\frac{2}{4}$ is $\frac{4}{2}$

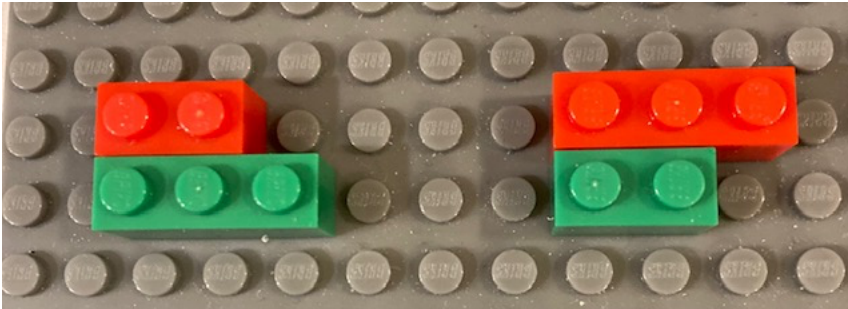
Chapter 2

1. a. $\frac{4}{3}$

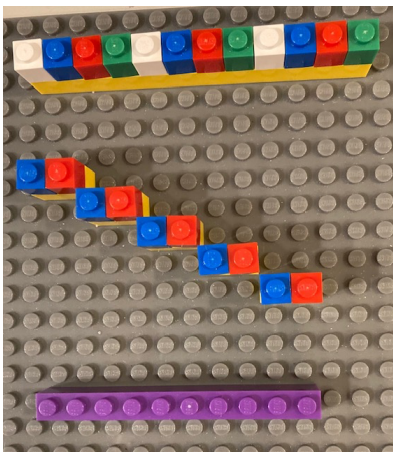
b. $\frac{8}{5}$

2. $\frac{2}{3}$

$\frac{3}{2}$ (reciprocal of $\frac{2}{3}$)



3.



The top model shows 12 divided into $\frac{1}{12}$ ths

The second model shows 5 sixths of 12; each sixth has 2

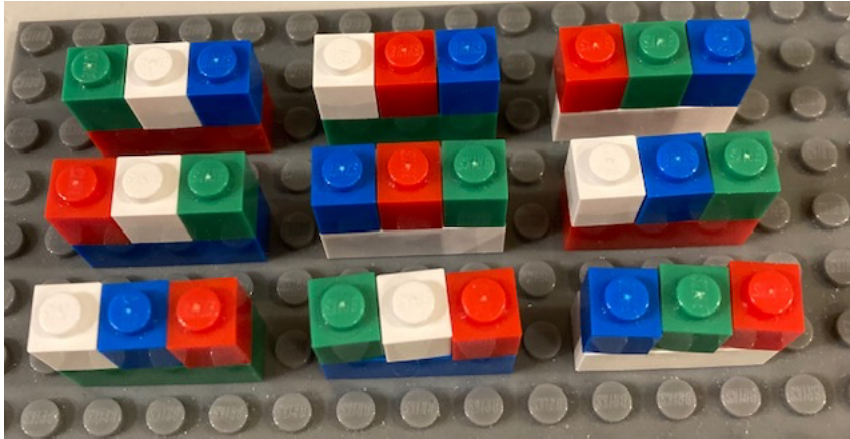
The third model shows 10 in total, so the answer is 10

Algorithm using reciprocal: $\frac{5}{6} \div \frac{1}{12} = \frac{5}{6} \times \frac{12}{1} = \frac{60}{6} = 10$

Chapter 3

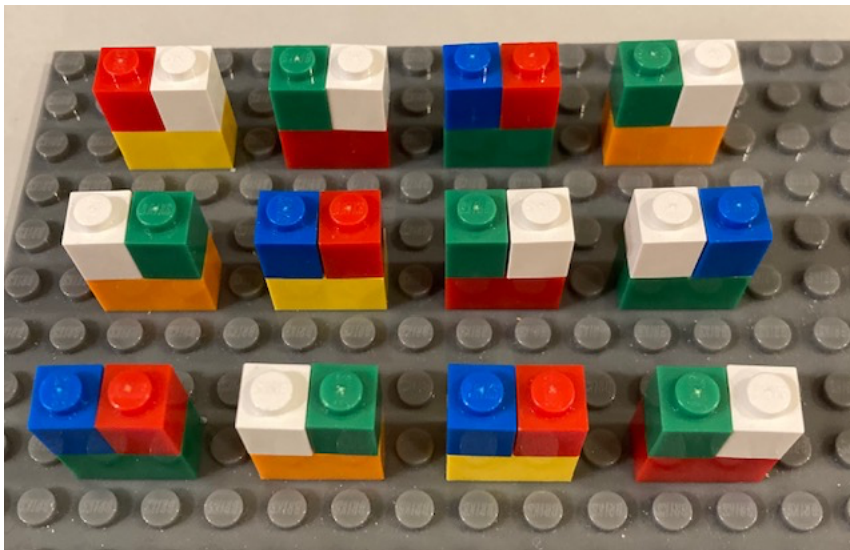
1. When a whole number is divided by a fraction, you are looking for how many of those fractional groups will fit into the number.

2. Using the algorithm with the reciprocal: $9 \div \frac{1}{3} = 9 \times \frac{3}{1} = \frac{27}{1} = 27$



9 wholes are shown, each divided into 3rds. Counting all the $\frac{1}{3}$ shown, there are 27.

3. Using the algorithm with the reciprocal: $12 \div \frac{1}{2} = 12 \times \frac{2}{1} = \frac{24}{1} = 24$

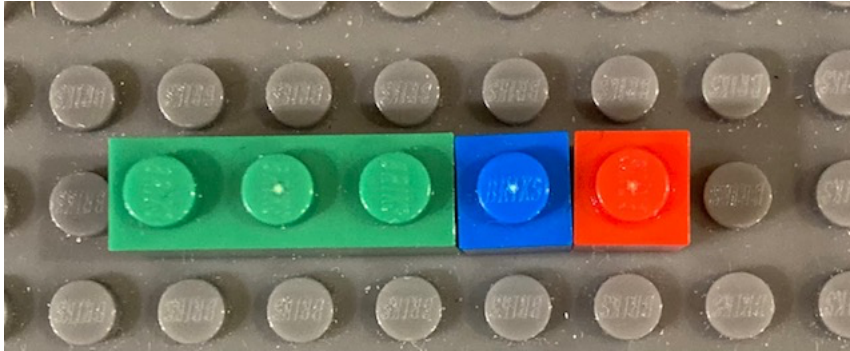


12 wholes are shown, each divided into halves. Counting all the $\frac{1}{2}$ shown, there are 24.

Chapter 4

1. (many answers possible)

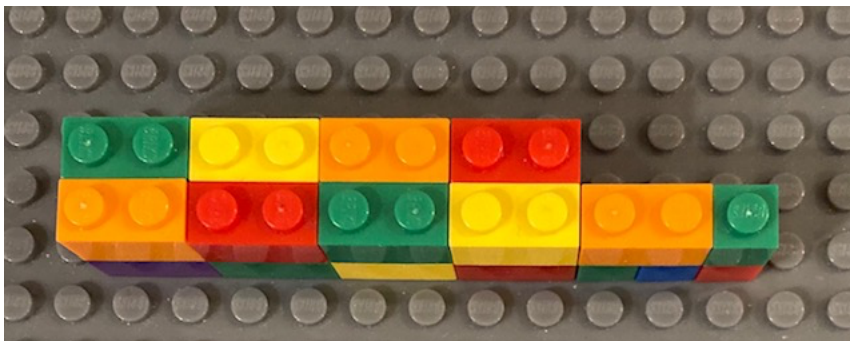
This model shows $1\frac{2}{3}$. The one is shown with a 3-stud brick because the denominator of the fraction is 3. The green brick shows 1 and the blue and red bricks show $\frac{2}{3}$ more.



2. $4\frac{3}{4} \div \frac{1}{2}$:



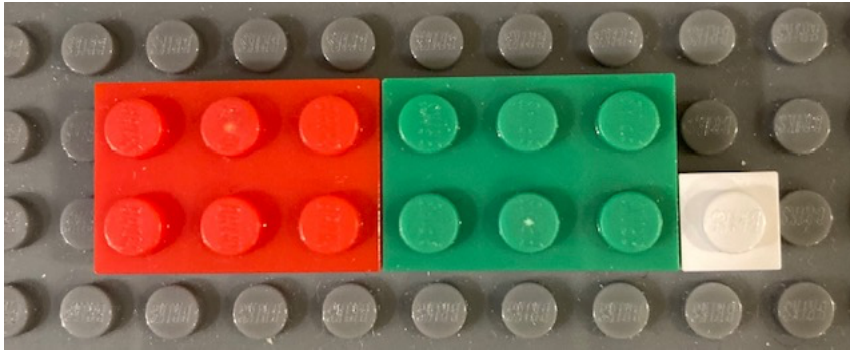
4 wholes and $\frac{3}{4}$ more



Cover the model with bricks representing $\frac{1}{2}$ of the whole brick (a 1x2 brick). There are 9 of those 1x2 bricks, plus another $\frac{1}{2}$ of that brick (a 1x1 brick), showing $9\frac{1}{2}$.

Using the algorithm with the reciprocal: $4\frac{3}{4} \div \frac{1}{2} = 4\frac{3}{4} \times \frac{2}{1} = \frac{19}{4} \times \frac{2}{1} = \frac{38}{4} = 9\frac{1}{2}$

3. $2\frac{1}{6} \div \frac{1}{3}$



2 wholes and $\frac{1}{6}$



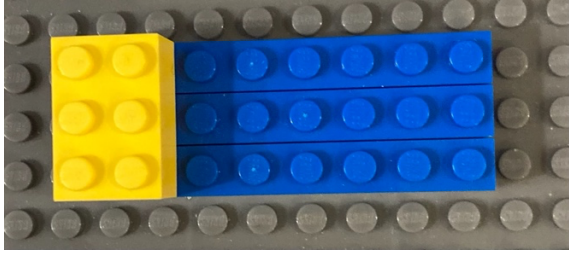
Cover the model with bricks representing $\frac{1}{3}$ of the whole brick (a 1x2 brick). There are 6 of those 1x2 bricks, plus another $\frac{1}{2}$ of that brick (a 1x1 brick), showing $6\frac{1}{2}$.

Using the algorithm with the reciprocal: $2\frac{1}{6} \div \frac{1}{3} = 2\frac{1}{6} \times \frac{3}{1} = \frac{13}{6} \times \frac{3}{1} = \frac{39}{6} = 6\frac{1}{2}$

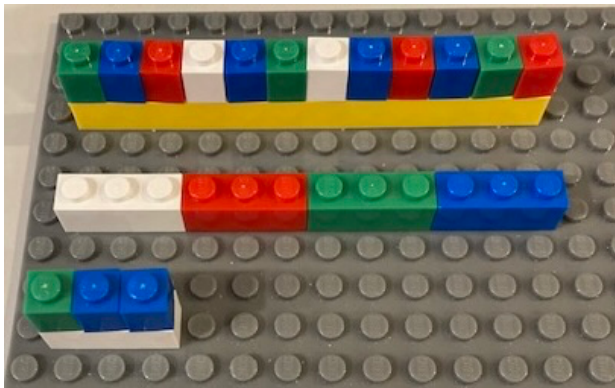
Chapter 5

1. $24 \times \frac{1}{4} = 6$

24 pencils; $\frac{1}{4}$ of 24 = 6



Alternative question: Annie buys 3 building sets to give her friends as gifts. If she uses $\frac{1}{4}$ of a roll of gift wrap to wrap all of the sets, what fraction of the gift wrap will she use to pack each one?



Top row: 1 roll of gift wrap

Second row: four quarters of the roll

Third row: $\frac{1}{4}$ of the roll, divided into 3. Each is $\frac{1}{12}$ th of the original roll.

Answer: $\frac{1}{12}$ of the gift wrap

math sentence: $\frac{1}{4} \div 3 = \frac{1}{12}$

2. All three are models of 24 hours, using 24 studs.

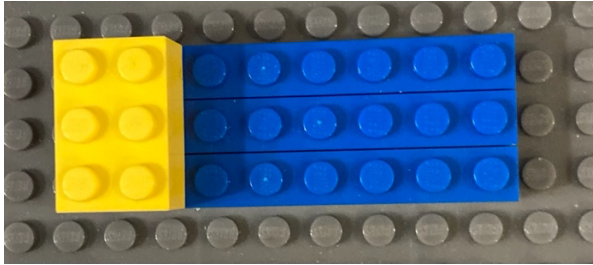
$\frac{1}{3}$ of 24, modeled with 8 studs; she sleeps 8 hours a day

$24 \times \frac{1}{3} = 8$



$\frac{1}{4}$ of 24, modeled with 6 studs; she goes to school 6 hours a day

$$\frac{1}{4} \times 24 = 6$$



$\frac{1}{8}$ of 24, modeled with 3 studs; she goes to school 3 hours a day

$$\frac{1}{8} \times 24 = 3$$

