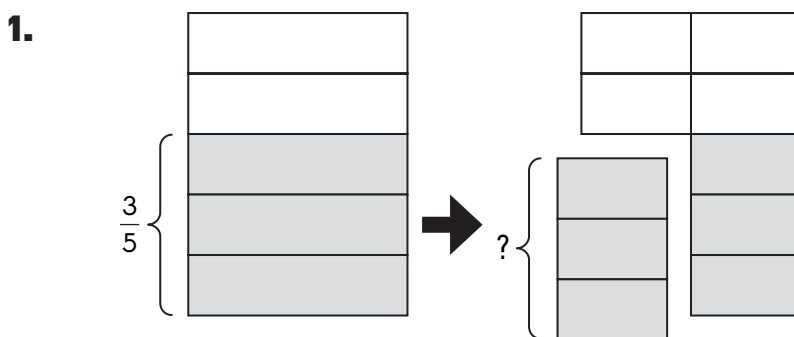


CHAPTER
4

Multiplying and Dividing Fractions and Mixed Numbers

Lesson 4.1 Product of Proper Fractions

Look at the diagram. Then complete.



$$\frac{1}{2} \text{ of } \frac{3}{5} = \frac{\square}{\square} \times \frac{\square}{\square}$$

$$= \frac{\square}{\square}$$

Complete.

2.

$$\frac{3}{4} \text{ of } \frac{5}{7} = \frac{\square}{\square} \times \frac{\square}{\square}$$

$$= \frac{\square}{\square}$$

Name: _____

Date: _____

Multiply. Express each product in simplest form:

3. $\frac{5}{6}$ of $\frac{9}{11}$

4. $\frac{7}{10}$ of $\frac{5}{9}$

5. $\frac{7}{8} \times \frac{10}{14}$

6. $\frac{8}{9} \times \frac{9}{10}$

7. $\frac{3}{5} \times \frac{4}{12}$

8. $\frac{5}{7} \times \frac{7}{10}$

Name: _____

Date: _____

Lesson 4.2 Real-World Problems: Multiplication with Proper Fractions

Solve. Show your work.

1. Tian has 56 paper clips. He gives $\frac{3}{4}$ of them to Joe. Joe gives $\frac{2}{7}$ of what he receives to Rahul. How many paper clips does Rahul get?

2. Tony is given $\frac{9}{10}$ hour to mow a lawn. He only uses $\frac{2}{3}$ of the given time to mow the lawn. How much time is left?

Name: _____

Date: _____

3. Keith spends $\frac{1}{6}$ of his savings on a magazine and $\frac{2}{5}$ of the remainder on a storybook. What fraction of his savings is left?

4. There are some caps in a box. $\frac{1}{6}$ of them are red, $\frac{1}{3}$ are blue, and $\frac{3}{7}$ of the remainder are green. If there are 27 green caps, how many caps are there altogether?

Name: _____

Date: _____

5. Lily receives 30 messages on her cell phone. Of those messages, $\frac{1}{5}$ are picture messages and $\frac{7}{8}$ of the remainder are text messages. How many text messages does she receive?

6. Sam makes some bread rolls. He gives $\frac{2}{5}$ of the bread rolls to his neighbor and $\frac{4}{9}$ of the remainder to his cousin. He has 15 bread rolls left. How many bread rolls does Sam make?

Name: _____

Date: _____

7. Anne has 24 more cards than Devi. Anne finds that $\frac{3}{5}$ of Devi's cards are equal to $\frac{1}{2}$ of her cards. How many cards does Anne have?

8. Roxanne has $\frac{1}{2}$ as many beads as Sherie. The number of beads Sherie has is $\frac{4}{5}$ that of Marcos. Marcos has 165 beads. How many more beads does Marcos have than Roxanne?

Name: _____

Date: _____

9. Ken spends $\frac{1}{5}$ of his money on a dictionary. He gives \$21 to his brother and has $\frac{1}{2}$ of his money left. How much money does Ken have left?

10. Victoria spends $\frac{5}{9}$ of her money on a flan and two chicken pies. Each chicken pie costs $\frac{1}{6}$ as much as the flan. Victoria has \$24 left.
- How much does Victoria spend?
 - How much does the flan cost?

Name: _____

Date: _____

- 11.** Melody has 98 stickers. She gives $\frac{2}{7}$ of them to her sister and $\frac{3}{5}$ of the remainder to her brother. If she wants to increase her collection of stickers to twice what she had originally, how many more stickers must Melody buy?
- 12.** Jacky bakes some biscuits. He keeps $\frac{3}{7}$ of the biscuits in container A, $\frac{5}{8}$ of the remainder in container B, and the rest in container C. There are 21 more biscuits in container A than in container C. How many biscuits does Jacky bake?

Name: _____

Date: _____

Lesson 4.3 Product of an Improper Fraction and a Proper or Improper Fraction

Multiply. Express each product in simplest form.

1. $\frac{7}{4} \times \frac{9}{14}$

2. $\frac{8}{5} \times \frac{3}{4}$

3. $\frac{14}{9} \times \frac{6}{7}$

4. $\frac{9}{7} \times \frac{5}{6}$

5. $\frac{9}{8} \times \frac{4}{7}$

6. $\frac{7}{5} \times \frac{9}{14}$

Name: _____

Date: _____

Multiply. Express each product in simplest form.

7. $\frac{9}{5} \times \frac{10}{3}$

8. $\frac{17}{12} \times \frac{9}{4}$

9. $\frac{7}{3} \times \frac{12}{5}$

10. $\frac{14}{6} \times \frac{8}{7}$

11. $\frac{10}{7} \times \frac{14}{9}$

12. $\frac{13}{10} \times \frac{15}{8}$

Name: _____

Date: _____

Lesson 4.4 Product of a Mixed Number and a Whole Number

Multiply. Express each product in simplest form.

1. $3\frac{4}{5} \times 2$

2. $2\frac{3}{4} \times 8$

3. $2\frac{1}{6} \times 4$

4. $21 \times 1\frac{6}{7}$

5. $40 \times 2\frac{5}{8}$

6. $6 \times 3\frac{4}{9}$

Name: _____

Date: _____

Multiply. Express each product in simplest form.

7. $3\frac{2}{3} \times 17$

8. $2\frac{3}{7} \times 16$

9. $2\frac{5}{9} \times 12$

10. $18 \times 1\frac{7}{8}$

11. $14 \times 3\frac{3}{10}$

12. $9 \times 2\frac{5}{6}$

Name: _____

Date: _____

Lesson 4.5 Real-World Problems: Multiplication with Mixed Numbers

Solve. Show your work.

1. The Smith family drinks $1\frac{4}{5}$ liters of apple juice each day. The apple juice is packed in 2-liter bottles. How many bottles does Mrs. Smith need to buy every week?

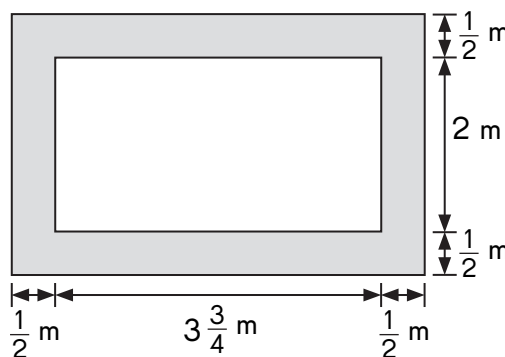
2. Lily uses $1\frac{3}{4}$ meters of ribbon to make a knot. She wants to make 9 similar knots for her cousins. How many meters of ribbon does Lily need? Round your answer to the nearest meter.

Name: _____

Date: _____

3. Puppy A is $\frac{3}{4}$ as heavy as puppy B. Puppy C is twice as heavy as puppy A. If the weight of puppy B is 8 pounds, find the weight of puppy C.

4. A flowerbed is $3\frac{3}{4}$ meters long and 2 meters wide. Uncle James wants to build a border around the flowerbed. The width of the border is $\frac{1}{2}$ meter. The cost of building the border is \$20 per square meter. How much does Uncle James have to pay to have the border built?



Name: _____

Date: _____

Lesson 4.6 Dividing a Fraction by a Whole Number

Shade parts of the model to show the division expression.
Then fill in the blanks.

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



$\frac{\square}{\square}$ is shaded.

$\frac{2}{3} \div 4 = \underline{\hspace{2cm}}$

Divide. Draw a model to help you.

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

Name: _____

Date: _____

Divide. Draw a model to help you.

3. $\frac{8}{9} \div 8$

Divide. Express each answer in simplest form.

4. $\frac{4}{5} \div 6$

5. $\frac{7}{8} \div 21$

6. $\frac{9}{10} \div 3$

7. $\frac{5}{6} \div 15$

Name: _____

Date: _____

Solve. Show your work.

8. A bottle contains $\frac{5}{12}$ liter of paint. Mr. Jacobs pours all the paint equally into 5 pots. How much paint is there in each pot?

9. During lunch, $\frac{1}{2}$ of a loaf of bread is shared equally among 5 girls. What fraction of the loaf of bread does each girl have?

Name: _____

Date: _____

- 10.** A string of length $\frac{9}{10}$ meter is cut into 6 equal pieces. What is the total length of 2 of the pieces?
- 11.** Peggy had a bag of nuts. She ate $\frac{1}{5}$ of the nuts and gave the remaining nuts to 3 friends equally. What fraction of the nuts did each friend get?

Name: _____

Date: _____

Lesson 4.7 Real-World Problems: Multiplication and Division with Fractions

Solve. Show your work.

1. Maria and Farida had 250 beads altogether. After Maria used 18 beads to make a bracelet and Farida gave away $\frac{2}{5}$ of her beads, they have the same number of beads left. How many beads did Maria have at first?

2. Paul has $\frac{2}{3}$ as many postcards as Shawn. The number of postcards Shawn has is $\frac{3}{5}$ of the number of postcards Tim has. If the three boys have 280 postcards altogether, how many more postcards does Tim have than Paul?

Name: _____

Date: _____

3. There are 1,800 students in a school, and 540 of them do not take part in sports activities. Of these students who do not take part, $\frac{5}{9}$ are girls. There are $\frac{2}{3}$ as many girls as boys in the school. How many boys take part in sports activities?

4. Daniel and William have some marbles. Daniel finds that $\frac{2}{5}$ of the number of marbles he has is $\frac{4}{5}$ the number of marbles William has. William has 195 marbles. How many marbles does Daniel have?

Name: _____

Date: _____

5. Katherine and Shally had \$288 altogether. Katherine gave $\frac{1}{3}$ of her share to Shally and their father gave \$68 to Shally. They now have the same amount of money. How much money did Shally have at first?

6. Class A folds 160 fewer paper cranes than class B and $\frac{2}{3}$ as many paper cranes as class C. Class B folds 92 more paper cranes than class C. How many paper cranes does class B fold?

Name: _____

Date: _____

7. Devi and her brother had the same amount of money. After Devi spent $\frac{2}{5}$ of her money and her brother spent $\frac{3}{10}$ of his money, they had \$78 left altogether. How much did they spend altogether?
8. Emily and Sarah had a total of \$80. After Sarah spent $\frac{1}{3}$ of her money and Emily spent \$17, Emily had twice as much money as Sarah. How much more money did Emily have than Sarah at first?

Name: _____

Date: _____

9. At the fair, 220 balloons are given to 40 children, $\frac{3}{8}$ of whom are girls. Each boy receives the same number of balloons. Each girl receives twice as many balloons as each boy. How many more balloons do all the girls receive than all the boys?

10. In a piggy bank, $\frac{3}{7}$ of the number of coins are quarters and the rest are nickels. The total value of the nickels is \$12. How many coins are in the piggy bank?

Name: _____

Date: _____

- 11.** After saving $\frac{2}{7}$ of his paycheck for the month, Mr. Donovan has \$1,335 left to spend. Mrs. Spencer saves $\frac{3}{8}$ of her paycheck. Both of them save the same amount of money. How much is Mrs. Spencer's paycheck?
- 12.** Susie bought 5 kilograms of flour and 4 kilograms of sugar for \$12. If $\frac{3}{4}$ kilogram of flour cost as much as $\frac{3}{5}$ kilogram of sugar, find the cost of 1 kilogram of sugar.

Name: _____

Date: _____



Put on Your Thinking Cap!

Solve. Show your work.

1. Mrs. Tan spent $\frac{5}{8}$ of her savings on a microwave oven and a refrigerator. Of the amount she spent, $\frac{4}{7}$ was used to pay for the refrigerator. The refrigerator cost \$280 more than the microwave oven. How much was Mrs. Tan's savings at first?

2. Reena and Pauline have some bookmarks. If Reena gives Pauline 28 bookmarks, they will have the same number of bookmarks. If Pauline gives Reena 35 bookmarks, she will have $\frac{1}{3}$ of what Reena has. How many bookmarks does Reena have?

Name: _____

Date: _____

3. Jane had $\frac{3}{4}$ as much money as Kerrie. After spending \$203, Jane had $\frac{1}{6}$ as much money as Kerrie. How much money did Kerrie have?

4. There were 120 students in the town library. $\frac{3}{5}$ of them were girls. Some girls then left the library. The number of girls remaining in the library is $\frac{4}{7}$ of all of the remaining students. How many girls left the library?

Name: _____

Date: _____

5. There were $\frac{3}{5}$ as many adults as children on a bus. At the next stop, 6 adults and 6 children boarded the bus. As a result, there are $\frac{2}{3}$ as many adults as children on the bus. How many people were on the bus at first?

6. In a box, $\frac{2}{5}$ of the counters were red and the rest were blue. After putting another 48 blue counters into the box, $\frac{3}{4}$ of the counters are blue. How many counters were in the box at first?

Name: _____

Date: _____

7. There were $\frac{5}{8}$ as many apples as oranges at a fruit stand. After $\frac{1}{2}$ of the apples and $\frac{3}{8}$ of the oranges were sold, a total of 120 apples and oranges are left at the stand. How many apples and oranges were there at the stand at first?
8. Noah bought a jigsaw puzzle. On the first day, he fit $\frac{2}{5}$ of the pieces of the puzzle together. On the second day, he put another 300 pieces into the puzzle. As a result, the number of the pieces left to put in the puzzle is $\frac{7}{13}$ of the number of pieces already in the puzzle. How many pieces does the jigsaw puzzle consist of?

Name: _____

Date: _____

9. Samuel and Pat had a total of 720 stamps at first. Samuel gave $\frac{1}{4}$ of his stamps to Pat. In return, Pat gave $\frac{1}{3}$ of her total number of stamps to Samuel. They then had an equal number of stamps each. How many stamps did Samuel have at first?

Name: _____

Date: _____

10. Pails A, B, and C contain some water. These steps are taken:

Step 1 $\frac{1}{4}$ of the water in pail A is poured into pail B.

Step 2 $\frac{1}{4}$ of the water in pail B is poured into pail C.

Step 3 $\frac{1}{4}$ of the water in pail C is poured into pail A.

In the end, all the pails contain 18 gallons of water each.
Find the amount of water in each pail at first.