Name _____ **Math Hour:** _____

Date I Started This Packet: ____ / ____ / _____ **Date I Finished This Packet:** ____ / _____ / _____

6th Grade Math Chapter Portfolio
Chapter 4: Multiplying and Dividing Fractions

DIRECTIONS: Keep this packet safe from now until we finish Chapter 4 (likely several weeks). You will be completing assignments out of this packet on a daily basis, sometimes in class, sometimes as homework. You will also log this chapter's learning targets and self-assess how you are doing. Please make sure to complete everything in PENCIL. At the END of the chapter, you will need to take this packet home to be signed by a parent.

Lesson	Date	Learning Target	*Reteach* Grade %	*HW Practice* Grade %	How well do I "get this"?
3.1		I can estimate products of fractions.			0 1 2 3 4
3.2		I can			0 1 2 3 4
3.3		I can			0 1 2 3 4
3.4		I can			0 1 2 3 4
3.5		I can			0 1 2 3 4
3.6		I can			0 1 2 3 4
3.7		I can			0 1 2 3 4
3.8		I can			0 1 2 3 4
Review Page		I can			0 1 2 3 4

Teacher Comments: _____

Parent Signature (wait until portfolio is completed): _____

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Lesson 1 Reteach

Estimate Products of Fractions

Numbers that are easy to divide mentally are called **compatible numbers**. One way to estimate products involving fractions is to use compatible numbers.

Example 1

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

Estimate $\frac{2}{3} \times 8$. Make it easier by finding $\frac{1}{3} \times 8$ first.

$\frac{1}{3} \times 9 = ?$ Change 8 to 9 since 3 and 9 are compatible numbers.

$\frac{1}{3} \times 9 = 3$ $\frac{1}{3}$ of 9, or 9 divided by 3, is 3.

$\frac{2}{3} \times 9 = 6$ Since $\frac{1}{3}$ of 9 is 3, $\frac{2}{3}$ of 9 is 2 × 3 or 6.

So, $\frac{2}{3} \times 8$ is *about* 6.

Another way to estimate products is by rounding fractions to 0, $\frac{1}{2}$, or 1. If the fraction has a numerator much smaller than the denominator, round to 0. If the numerator is about half of the denominator, round to $\frac{1}{2}$. If the numerator and denominator are almost the same, round to 1.

Example 2

Estimate $\frac{1}{3} \times \frac{5}{6}$.

$\frac{1}{3} \times \frac{5}{6} \rightarrow \frac{1}{2} \times 1 = \frac{1}{2}$.

So, $\frac{1}{3} \times \frac{5}{6}$ is *about* $\frac{1}{2}$.

You can estimate the product of mixed numbers by rounding to the nearest whole number.

Example 3

Estimate $3\frac{1}{4} \times 5\frac{7}{8}$.

Since $3\frac{1}{4}$ rounds to 3 and $5\frac{7}{8}$ rounds to 6, $3\frac{1}{4} \times 5\frac{7}{8} \rightarrow 3 \times 6 = 18$.

So, $3\frac{1}{4} \times 5\frac{7}{8}$ is *about* 18.

Exercises

Estimate each product.

1. $\frac{1}{5} \times 24$ **2.** $\frac{1}{3} \times 16$ **3.** $\frac{3}{8} \times 17$ **4.** $\frac{4}{7}$ of 20

5. $\frac{7}{8} \times \frac{3}{5}$ **6.** $\frac{11}{12} \times \frac{1}{3}$ **7.** $\frac{1}{9} \times \frac{1}{12}$ **8.** $\frac{11}{12} \times \frac{6}{7}$

9. $3\frac{7}{8} \times 10\frac{1}{10}$ **10.** $2\frac{4}{5} \times 6\frac{1}{12}$ **11.** $4\frac{7}{8} \times 2\frac{9}{10}$ **12.** $7\frac{2}{7} \times 5\frac{3}{4}$

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Lesson 1 Homework Practice

Estimate Products of Fractions

Estimate each product.

1. $\frac{1}{3} \times 28$

2. $\frac{1}{7} \times 20$

3. $\frac{1}{9}$ of 83

4. $\frac{1}{11}$ of 47

5. $\frac{5}{8} \times 23$

6. $\frac{2}{3} \times 76$

7. $\frac{2}{5}$ of 37

8. $\frac{6}{7}$ of 51

9. $\frac{3}{5} \times \frac{2}{9}$

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

11. $\frac{10}{19} \times \frac{7}{8}$

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

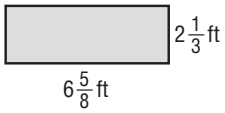
13. $2\frac{6}{7} \times 3\frac{1}{4}$

14. $12\frac{9}{10} \times 6\frac{1}{4}$

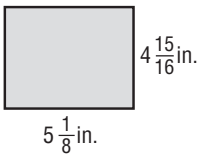
15. $4\frac{3}{8} \times 17\frac{2}{7}$

Estimate the area of each rectangle.

16.



17.



18. SCULPTURE Trevor is using the recipe for sculpture-carving material shown at the right.

Girostone Recipe
5 cup vermiculite
$1\frac{1}{4}$ cup cement
$\frac{5}{8}$ cup sand
water to form thick paste

a. About how many cups of cement would he need to make $\frac{4}{9}$ batch of the recipe?

b. About how many cups of sand would he need to make $1\frac{6}{7}$ batches of the recipe?

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Lesson 2 Reteach

Multiply Fractions and Whole Numbers

You can multiply whole numbers and fractions by writing the whole number as a fraction. Then multiply the numerators and multiply the denominators.

Example 1

Find $6 \times \frac{3}{8}$.

Estimate $6 \times \frac{1}{2} = 3$.

$6 \times \frac{3}{8} = \frac{6}{1} \times \frac{3}{8}$ Write 6 as $\frac{6}{1}$.

$= \frac{6 \times 3}{1 \times 8}$ Multiply.

$= \frac{18}{8} = \frac{9}{4}$ or $2\frac{1}{4}$ Simplify. Compare to the estimate.

You can also multiply fractions by using a diagram.

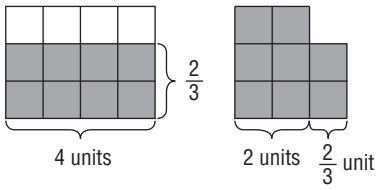
Example 2

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

Draw 4 units. Then divide each unit into thirds.

Shade $\frac{2}{3}$ of each unit.

Rearrange to see that $2\frac{2}{3}$ units are shaded.



Exercises

Multiply. Write in simplest form.

1. $5 \times \frac{2}{3}$ **2.** $10 \times \frac{3}{5}$ **3.** $9 \times \frac{1}{3}$ **4.** $2 \times \frac{2}{5}$

5. $6 \times \frac{1}{4}$ **6.** $15 \times \frac{1}{8}$ **7.** $\frac{2}{3} \times 12$ **8.** $\frac{4}{5} \times 3$

9. $\frac{4}{5} \times 15$ **10.** $\frac{1}{6} \times 11$ **11.** $\frac{2}{7} \times 5$ **12.** $\frac{5}{6} \times 12$

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Lesson 2 Homework Practice

Multiply Fractions and Whole Numbers

Multiply. Write in simplest form.

1. $5 \times \frac{1}{5}$

2. $15 \times \frac{1}{3}$

3. $36 \times \frac{1}{9}$

4. $15 \times \frac{2}{3}$

5. $24 \times \frac{3}{8}$

6. $20 \times \frac{3}{4}$

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

8. $11 \times \frac{3}{4}$

9. $10 \times \frac{6}{7}$

10. $\frac{2}{5} \times 25$

11. $\frac{4}{6} \times 30$

12. $\frac{3}{4} \times 28$

13. $\frac{3}{7} \times 10$

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

15. $\frac{5}{6} \times 4$

16. **CHARITY** At a charity bike rally, $\frac{2}{3}$ of the student population of Heartsworth Middle School participated. If there are 1,200 students at Heartsworth, how many participated?

17. **ALLIGATORS** At a local river, there were 48 alligators laying on the riverbank. If $\frac{5}{6}$ of the alligators were asleep, how many were *not* asleep?

18. **GEOGRAPHY** The width of Florida is about $\frac{4}{5}$ of its length. If the length of Florida is about 450 miles, what is its approximate width?

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Lesson 3 Reteach

Multiply Fractions

To multiply fractions, multiply the numerators and then multiply the denominators.

$$\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5} = \frac{8}{15}$$

Example 1

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

Estimate $\frac{1}{2} \times 1 = \frac{1}{2}$

$\frac{2}{5} \times \frac{3}{4} = \frac{2 \times 3}{5 \times 4}$ Multiply the numerators. Multiply the denominators.

$= \frac{6}{20}$ or $\frac{3}{10}$ Simplify. Compare to the estimate.

If the numerator and denominator have a common factor, you can simplify *before* you multiply.

Example 2

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

Estimate $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

$\frac{2}{5} \times \frac{3}{8} = \frac{\overset{1}{\cancel{2}} \times 3}{5 \times \underset{4}{\cancel{8}}}$ Divide both the numerator and denominator by the common factor, 2.

$= \frac{3}{20}$ Simplify. Compare to the estimate.

Exercises

Multiply.

1. $\frac{1}{2} \times \frac{5}{7}$ **2.** $\frac{3}{4} \times \frac{2}{3}$ **3.** $\frac{5}{6} \times \frac{1}{3}$ **4.** $\frac{1}{5} \times \frac{1}{2}$

5. $\frac{1}{4} \times \frac{5}{6}$ **6.** $\frac{3}{7} \times \frac{3}{4}$ **7.** $\frac{1}{5} \times 4$ **8.** $\frac{5}{12} \times 2$

9. $\frac{3}{5} \times 10$ **10.** $\frac{2}{3} \times \frac{3}{8}$ 11. $\frac{1}{7} \times \frac{1}{7}$ **12.** $\frac{2}{9} \times \frac{1}{2}$

13. $\frac{1}{3} \times \frac{5}{7}$ **14.** $\frac{1}{8} \times \frac{5}{9}$ **15.** $\frac{4}{9} \times 10$ 16. $\frac{5}{6} \times \frac{9}{15}$

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Lesson 3 Homework Practice

Multiply Fractions

Multiply. Write in simplest form.

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

2. $\frac{7}{8} \times \frac{1}{3}$

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

4. $\frac{2}{3} \times \frac{2}{9}$

5. $\frac{1}{3} \times 11$

6. $\frac{1}{2} \times 12$

7. $\frac{5}{6} \times 21$

8. $\frac{3}{4} \times 10$

9. $\frac{1}{4} \times \frac{4}{5}$

10. $\frac{4}{9} \times \frac{3}{8}$

11. $\frac{7}{10} \times \frac{4}{21}$

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

13. $\frac{6}{7} \times \frac{1}{8}$

14. $\frac{9}{11} \times \frac{4}{15}$

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

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

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

18. $\frac{2}{3} \times \frac{12}{17} \times \frac{1}{4}$

19. SPORTS Of the sixth graders in a school, $\frac{4}{5}$ play at least one sport. Of those, $\frac{2}{3}$ play on a team. What fraction of the sixth graders play a sport on a team?

20. AQUARIUM A model of the ocean floor takes up $\frac{2}{5}$ of the space in an aquarium. If $\frac{3}{8}$ of the model is coral, what fraction of the space in the aquarium is taken up by coral?

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Lesson 4 Reteach

Multiply Mixed Numbers

To multiply mixed numbers, write the mixed numbers as improper fractions and then multiply as with fractions.

Example 1

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

Estimate. Use compatible numbers. $\frac{1}{2} \times 2 = 1$

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

$= \frac{1 \times 5}{4 \times 3}$ Multiply.

$= \frac{5}{12}$ Simplify. Compare to the estimate.

Example 2

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

$1\frac{1}{3} \times 2\frac{1}{4} = \frac{4}{3} \times \frac{9}{4}$ Convert mixed numbers to improper fractions.

$= \frac{\overset{1}{\cancel{4}}}{\underset{1}{\cancel{3}}} \times \frac{\overset{3}{\cancel{9}}}{\underset{1}{\cancel{4}}}$ Divide the numerator and denominator by their common factors, 3 and 4.

$= \frac{3}{1}$ or 3 Simplify.

Exercises

Multiply. Write in simplest form.

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

5. $\frac{2}{9} \times 1\frac{1}{6}$ **6.** $2\frac{4}{9} \times \frac{4}{11}$ **7.** $2\frac{1}{2} \times 1\frac{1}{3}$ **8.** $1\frac{1}{4} \times 3\frac{3}{5}$

9. $8\frac{1}{5} \times 1\frac{1}{4}$ **10.** $1\frac{3}{8} \times 2\frac{1}{2}$ **11.** $4\frac{2}{3} \times 1\frac{1}{8}$ **12.** $1\frac{1}{9} \times 3\frac{2}{5}$

13. Find the product of $\frac{1}{5}$ and $3\frac{1}{3}$.

14. Simplify $4\frac{2}{3} \times 1\frac{1}{4}$.

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Lesson 4 Homework Practice

Multiply Mixed Numbers

Multiply. Write in simplest form.

1. $\frac{4}{5} \times 3\frac{1}{8}$

2. $\frac{9}{10} \times 3\frac{1}{3}$

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

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

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

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

7. $1\frac{1}{4} \times 2\frac{2}{3}$

8. $5\frac{1}{3} \times 2\frac{1}{4}$

9. $2\frac{1}{5} \times 1\frac{1}{4}$

10. $6\frac{4}{5} \times 1\frac{2}{3}$

11. $3\frac{3}{7} \times 5\frac{1}{8}$

12. $8\frac{3}{4} \times 4\frac{1}{5}$

13. $\frac{2}{9} \times \frac{3}{4} \times 2\frac{1}{4}$

14. $5\frac{1}{2} \times 3\frac{1}{3} \times \frac{1}{6}$

15. $1\frac{1}{2} \times 2\frac{1}{6} \times 1\frac{1}{5}$

16. LUMBER A lumber yard has a scrap sheet of plywood that is $23\frac{3}{4}$ inches by $41\frac{1}{5}$ inches. What is the area of the plywood?

17. LANDSCAPING A planter box in the city plaza measures $3\frac{2}{3}$ feet by $4\frac{1}{8}$ feet by $2\frac{1}{2}$ feet. Find the volume of the planter box.

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Lesson 5 Reteach

Convert Measurement Units

Customary Units		
Length	**Weight**	**Capacity**
1 foot (ft) = 12 inches (in.)	1 pound (lb) = 16 ounces (oz)	1 cup (c) = 8 fluid ounces (fl oz)
1 yard (yd) = 3 feet	1 ton (T) = 2,000 pounds	1 pint (pt) = 2 cups
1 mile (mi) = 5,280 feet		1 quart (qt) = 2 pints
		1 gallon (gal) = 4 quarts

In a **unit ratio**, the numerator and denominator are equivalent, so the value of the ratio is one. It is called a unit ratio because the denominator is one unit. Unit ratios can be used to convert from one unit to another.

Example 1

Convert 5 pounds into ounces.

$5 \text{ lb} = 5 \text{ lb} \cdot \frac{16 \text{ oz}}{1 \text{ lb}}$ Multiply by the unit ratio $\frac{16 \text{ oz}}{1 \text{ lb}}$.

$= 5 \cancel{\text{lb}} \cdot \frac{16 \text{ oz}}{1 \cancel{\text{lb}}}$ Divide out common units.

$= 80 \text{ oz}$ Multiply.

So, 5 pounds = 80 ounces.

Sometimes, you need to multiply by the reciprocal of the unit ratio.

Example 2

Convert 28 ounces to cups.

$28 \text{ oz} = 28 \text{ oz} \cdot \frac{1 \text{ c}}{8 \text{ oz}}$ Multiply by the reciprocal of $\frac{8 \text{ oz}}{1 \text{ c}}$.

$= 28 \cancel{\text{oz}} \cdot \frac{1 \text{ c}}{8 \cancel{\text{oz}}}$ Divide out common units.

$= 3.5 \text{ c}$ Multiply.

So, 28 ounces = 3.5 cups.

Exercises

Complete.

1. 5 lb = _____ oz **2.** 48 in. = _____ ft **3.** 6 yd = _____ ft

4. 7 qt = _____ pt **5.** 8,000 lb = _____ T **6.** $3\frac{1}{4}$ mi = _____ ft

7. 4 c = _____ fl oz **8.** 6 c = _____ pt **9.** $\frac{1}{2}$ gal = _____ qt

10. 3 ft = _____ in. **11.** 9 qt = _____ gal **12.** 30 fl oz = _____ c

13. 6,864 ft = _____ mi **14.** 40 oz = _____ lb **15.** 9 pt = _____ c

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Lesson 5 Homework Practice

Convert Measurement Units

Complete.

1. 4 c = _____ fl oz

2. 5 c = _____ pt

3. 3 lb = _____ oz

4. 24 ft = _____ yd

5. $1\frac{1}{2}$ pt = _____ c

6. 64 oz = _____ lb

7. 4 mi = _____ ft

8. $2\frac{3}{4}$ mi = _____ ft

9. 3,000 lb = _____ T

10. 5 gal = _____ qt

11. $3\frac{1}{4}$ qt = _____ pt

12. $4\frac{5}{8}$ T = _____ lb

13. $3\frac{1}{2}$ gal = _____ qt

14. 7 c = _____ qt

15. 40 fl oz = _____ qt

16. 660 yd = _____ mi

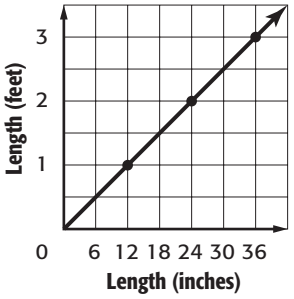
17. 1.9 yd = _____ in.

18. $2\frac{1}{4}$ T = _____ oz

19. **SPORTS** The track surrounding a football field is $\frac{1}{4}$ mile long. How many yards long is the track?

20. **STRAWBERRIES** One quart of strawberries weighs about 2 pounds. About how many quarts of strawberries would weigh $\frac{1}{4}$ ton?

21. **ANALYZE GRAPHS** Use the graph shown.



a. What does an ordered pair from this graph represent?

b. Write two sentences that describe the graph.

c. Explain how you could use the graph to find the length in inches of a 1.5 foot iguana.

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Lesson 6 Reteach

Divide Whole Numbers by Fractions

When the product of two numbers is 1, the numbers are called reciprocals.

Example 1

Find the reciprocal of $\frac{5}{9}$.

Since $\frac{5}{9} \times \frac{9}{5} = 1$, the reciprocal of $\frac{5}{9}$ is $\frac{9}{5}$.

Example 2

Find the reciprocal of 8.

Since $8 \times \frac{1}{8} = 1$, the reciprocal of 8 is $\frac{1}{8}$.

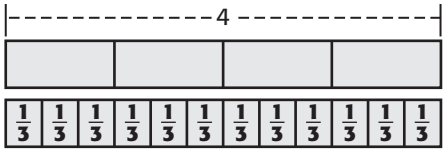
You can use reciprocals to divide whole numbers by fractions. To divide by a fraction, multiply by its reciprocal.

Example 3

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

$4 \div \frac{1}{3} = \frac{4}{1} \times \frac{3}{1}$ Multiply by the reciprocal, $\frac{3}{1}$.

$= \frac{12}{1}$ or 12 Simplify.



Exercises

Find the reciprocal of each number.

1. $\frac{1}{2}$ **2.** $\frac{1}{6}$ **3.** $\frac{4}{11}$ **4.** $\frac{3}{5}$

Divide. Write in simplest form.

5. $3 \div \frac{2}{5}$ **6.** $9 \div \frac{1}{2}$ **7.** $2 \div \frac{1}{4}$ **8.** $1 \div \frac{3}{4}$

9. $4 \div \frac{1}{2}$ **10.** $5 \div \frac{1}{10}$ **11.** $12 \div \frac{5}{6}$ **12.** $9 \div \frac{2}{3}$

13. $4 \div \frac{7}{12}$ **14.** $10 \div \frac{8}{9}$ **15.** $3 \div \frac{5}{8}$ **16.** $4 \div \frac{7}{9}$

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Lesson 6 Homework Practice

Divide Whole Numbers by Fractions

Find the reciprocal of each number.

1. $\frac{2}{7}$ **2.** $\frac{1}{9}$ **3.** $\frac{3}{8}$ **4.** $\frac{1}{2}$ **5.** $\frac{11}{12}$

Divide. Write in simplest form.

6. $2 \div \frac{1}{6}$ **7.** $2 \div \frac{2}{5}$ **8.** $3 \div \frac{1}{4}$

9. $4 \div \frac{1}{10}$ **10.** $2 \div \frac{1}{4}$ **11.** $8 \div \frac{2}{5}$

12. $6 \div \frac{4}{5}$ **13.** $7 \div \frac{5}{8}$ **14.** $13 \div \frac{3}{5}$

15. $10 \div \frac{4}{5}$ **16.** $14 \div \frac{7}{9}$ **17.** $14 \div \frac{5}{7}$

18. PARTY For a party, 20 sandwiches are being made. If each sandwich is cut into thirds, how many sandwich pieces are there?

19. PICNICKING An average ant is $\frac{1}{4}$ inch long. A picnic blanket is 72 inches long. How many ants long is the picnic blanket?

20. WIRE Carmen cuts a 60-inch-long wire into pieces that are $\frac{3}{4}$ inch long. How many pieces does she have?

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Lesson 7 Reteach

Divide Fractions

You can use reciprocals to divide fractions. To divide by a fraction, multiply by its reciprocal.

Example 1

Find $\frac{1}{2} \div \frac{1}{5}$.

$\frac{1}{2} \div \frac{1}{5} = \frac{1}{2} \times \frac{5}{1}$ Multiply by the reciprocal, $\frac{5}{1}$.

$= \frac{5}{2}$ or $2\frac{1}{2}$ Multiply numerators and denominators.

Example 2

Find $\frac{2}{3} \div \frac{4}{5}$.

$\frac{2}{3} \div \frac{4}{5} = \frac{2}{3} \times \frac{5}{4}$ Multiply by the reciprocal, $\frac{5}{4}$.

$= \frac{{}^{1}\cancel{2} \times 5}{3 \times \cancel{4}_{2}}$ Divide 2 and 4 by the GCF, 2.

$= \frac{5}{6}$ Multiply numerators and denominators.

Exercises

Divide. Write in simplest form.

1. $\frac{1}{3} \div \frac{2}{5}$ **2.** $\frac{1}{9} \div \frac{1}{2}$ **3.** $\frac{2}{3} \div \frac{1}{4}$ **4.** $\frac{1}{2} \div \frac{3}{4}$

5. $\frac{4}{5} \div \frac{1}{2}$ **6.** $\frac{4}{5} \div \frac{1}{10}$ **7.** $\frac{5}{12} \div \frac{5}{6}$ **8.** $\frac{9}{10} \div \frac{1}{3}$

9. $\frac{3}{4} \div \frac{7}{12}$ **10.** $\frac{9}{10} \div \frac{1}{9}$ **11.** $\frac{2}{3} \div \frac{5}{8}$ **12.** $\frac{3}{4} \div \frac{7}{9}$

13. $\frac{1}{2} \div 2$ **14.** $\frac{5}{6} \div 15$ 15. $\frac{3}{8} \div \frac{3}{4}$ **16.** $\frac{7}{10} \div \frac{5}{7}$

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Lesson 7 Homework Practice

Divide Fractions

Divide. Write in simplest form.

1. $\frac{2}{7} \div \frac{1}{7}$

2. $\frac{1}{9} \div \frac{2}{3}$

3. $\frac{3}{8} \div \frac{1}{2}$

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

5. $\frac{1}{2} \div \frac{2}{5}$

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

7. $\frac{3}{4} \div \frac{1}{10}$

8. $\frac{2}{5} \div \frac{1}{4}$

9. $\frac{1}{8} \div \frac{2}{5}$

10. $\frac{3}{7} \div \frac{4}{5}$

11. $\frac{5}{8} \div 2$

12. $\frac{3}{7} \div \frac{3}{7}$

13. $\frac{4}{5} \div \frac{7}{10}$

14. $\frac{7}{9} \div 14$

15. $\frac{5}{7} \div \frac{4}{9}$

16. INSECTS An average ant is $\frac{1}{4}$ inch long. An average aphid is $\frac{3}{32}$ inch long. How many times longer is an average ant than an average aphid?

17. LAND A field has an area of $\frac{9}{20}$ square mile. Find the width of the field if the length is $\frac{9}{10}$ mile long.

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Lesson 8 Reteach

Divide Mixed Numbers

To divide mixed numbers, express each mixed number as an improper fraction. Then divide as with fractions.

Example 1

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

$1\frac{2}{3} \div \frac{3}{4} = \frac{5}{3} \div \frac{3}{4}$ Write the mixed number as an improper fraction.

$= \frac{5}{3} \times \frac{4}{3}$ Multiply by the reciprocal.

$= \frac{20}{9}$ or $2\frac{2}{9}$ Simplify.

Example 2

Find $2\frac{2}{3} \div 1\frac{1}{5}$.

Estimate: $3 \div 1 = 3$

$2\frac{2}{3} \div 1\frac{1}{5} = \frac{8}{3} \div \frac{6}{5}$ Write mixed numbers as improper fractions.

$= \frac{8}{3} \times \frac{5}{6}$ Multiply by the reciprocal, $\frac{5}{6}$.

$= \frac{\overset{4}{\cancel{8}} \times 5}{3 \times \underset{3}{\cancel{6}}}$ Divide 8 and 6 by the GCF, 2.

$= \frac{20}{9}$ or $2\frac{2}{9}$ Simplify. Compare to the estimate.

Exercises

Divide. Write in simplest form.

1. $2\frac{1}{2} \div \frac{4}{5}$ **2.** $9 \div 1\frac{1}{9}$ **3.** $5 \div 1\frac{3}{7}$ **4.** $2\frac{1}{3} \div \frac{7}{9}$

5. $5\frac{2}{5} \div \frac{9}{10}$ **6.** $2\frac{1}{4} \div \frac{2}{7}$ **7.** $2\frac{1}{2} \div 3\frac{1}{3}$ **8.** $7\frac{1}{2} \div 1\frac{2}{3}$

9. $1\frac{2}{3} \div 1\frac{1}{4}$ **10.** $4\frac{4}{5} \div 2\frac{6}{7}$ **11.** $5\frac{1}{10} \div 1\frac{8}{9}$ **12.** $2\frac{3}{8} \div 2\frac{1}{4}$

13. Simplify $6 \div 4\frac{3}{5}$.

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

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Lesson 8 Homework Practice

Divide Mixed Numbers

Divide. Write in simplest form.

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

2. $10 \div 1\frac{1}{4}$

3. $4\frac{3}{4} \div \frac{7}{8}$

4. $1\frac{15}{16} \div \frac{7}{8}$

5. $7\frac{1}{2} \div 1\frac{1}{4}$

6. $3\frac{3}{8} \div 2\frac{1}{4}$

7. $2\frac{1}{10} \div 1\frac{1}{5}$

8. $4\frac{1}{2} \div 2\frac{7}{10}$

9. HURRICANES Suppose a hurricane traveled 130 miles from a point in the Atlantic Ocean to the Florida coastline in $6\frac{1}{2}$ hours. How many miles per hour did the hurricane travel?

10. PIPES How many $\frac{3}{4}$-foot lengths of pipe can be cut from a $6\frac{1}{3}$-foot pipe?

11. TRUCKING A truck driver drove 300 miles in $6\frac{3}{4}$ hours. How many miles per hour did the driver drive?

12. BAKING A bag contains $22\frac{1}{2}$ cups of flour. A recipe for pancakes uses $1\frac{1}{4}$ cups of flour. How many batches of pancakes can be made with one bag of flour?

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Test, Form 1A

SCORE _____

Write the letter for the correct answer in the blank at the right of each question.

Which is the best estimate of each product?

1. $\frac{1}{5} \times 26$

A. 26 **B.** 21 **C.** 5 **D.** 1 **1.** _____

2. $\frac{11}{12} \times \frac{4}{5}$

F. 0 **G.** 1 **H.** 2 **I.** 4 **2.** _____

3. $3\frac{1}{3} \times \frac{5}{6}$

A. 4 **B.** 3 **C.** 2 **D.** 1 **3.** _____

4. Joelle's necklace is $10\frac{1}{4}$ inches long. Erin's necklace is $2\frac{2}{3}$ times as long. About how long is Erin's necklace?

F. 33 in. **G.** 30 in. **H.** 22 in. **I.** 20 in. **4.** _____

What is the value of each expression in simplest form?

5. $4 \times \frac{1}{8}$

A. 4 **B.** 2 **C.** 1 **D.** $\frac{1}{2}$ **5.** _____

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

F. $\frac{1}{18}$ **G.** $\frac{1}{9}$ **H.** $\frac{1}{2}$ **I.** 2 **6.** _____

7. $2\frac{1}{2} \times 1\frac{1}{2}$

A. 4 **B.** $3\frac{3}{4}$ **C.** 3 **D.** $2\frac{1}{4}$ **7.** _____

8. What is the area of a room that is $3\frac{3}{4}$ yards long by $3\frac{1}{3}$ yards wide?

F. $12\frac{1}{2}$ yd^2 **G.** $10\frac{1}{2}$ yd^2 **H.** $9\frac{1}{4}$ yd^2 **I.** 5 yd^2 **8.** _____

9. Olivia ate $\frac{1}{4}$ of a pizza. If there were 12 slices of pizza, how many slices did Olivia eat?

A. 2 slices **B.** 3 slices **C.** 4 slices **D.** 5 slices **9.** _____

10. What is the area of a rectangle with a length of $\frac{1}{3}$ yard and width of $\frac{3}{4}$ yard?

F. $\frac{1}{2}$ yd^2 **G.** $\frac{1}{12}$ yd^2 **H.** $\frac{1}{4}$ yd^2 **I.** $\frac{1}{6}$ yd^2 **10.** _____

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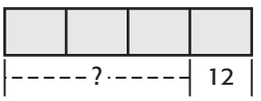
Test, Form 1A *(continued)*

SCORE _____

11. Use the *draw a diagram* strategy to solve. Lukas used $\frac{3}{4}$ of the nails in a box. He has 12 nails left. How many did he use?



A. 21 **B.** 24 **C.** 36 **D.** 48 **11.** _____

12. Norah has $\frac{2}{3}$ ton of stone to spread equally in 4 square yards. How many tons of stone will be spread in each square yard?

F. $\frac{1}{2}$ ton **G.** 1 ton **H.** $\frac{1}{6}$ ton **I.** $2\frac{2}{3}$ tons **12.** _____

What is the value of each expression in simplest form?

13. $\frac{3}{4} \div \frac{1}{8}$

A. $\frac{1}{2}$ **B.** 8 **C.** $\frac{3}{32}$ **D.** 6 **13.** _____

14. $2 \div \frac{4}{5}$

F. $3\frac{1}{2}$ **G.** $2\frac{1}{2}$ **H.** $1\frac{3}{8}$ **I.** $1\frac{1}{5}$ **14.** _____

15. $3 \div 1\frac{1}{4}$

A. $3\frac{3}{4}$ **B.** $3\frac{1}{4}$ **C.** $2\frac{2}{5}$ **D.** $1\frac{2}{5}$ **15.** _____

16. $1\frac{1}{3} \div \frac{2}{3}$

F. $2\frac{2}{3}$ **G.** 2 **H.** $\frac{8}{9}$ **I.** $\frac{1}{2}$ **16.** _____

17. $4\frac{1}{6} \div 1\frac{2}{3}$

A. $\frac{2}{5}$ **B.** $2\frac{1}{2}$ **C.** $4\frac{1}{4}$ **D.** $6\frac{17}{18}$ **17.** _____

Complete.

18. $4\frac{2}{3}$ yd = _____ ft

F. 10 **G.** 12 **H.** $12\frac{2}{3}$ **I.** 14 **18.** _____

19. 68 oz = _____ lb

A. $4\frac{1}{3}$ **B.** $4\frac{1}{4}$ **C.** $4\frac{2}{3}$ **D.** $4\frac{3}{4}$ **19.** _____

20. Addison made 11 quarts of punch for her party. How many gallons of punch did she make?

F. 2 gal **G.** 2.25 gal **H.** 2.75 gal **I.** 3 gal **20.** _____