Work Zone

Divide a Mixed Number by a Fraction

Dividing mixed numbers is similar to dividing fractions. To divide mixed numbers, write the mixed numbers as improper fractions and then divide as with fractions.

Examples

Tutor

Check by Multiplying

You can check the answer of Example 1 by multiplying the quotient by the divisor.

$\frac{7}{\cancel{35}_{\cancel{8}}} \times \frac{\cancel{2}^{1}}{\cancel{5}_{1}} = \frac{7}{4}$, or $1\frac{3}{4}$

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

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

$1\frac{3}{4} \div \frac{2}{5} = \frac{7}{4} \div \frac{2}{5}$ Write the mixed number as an improper fraction.

$= \frac{7}{4} \times \frac{5}{2}$ Multiply by the reciprocal.

$= \frac{35}{8}$ or $4\frac{3}{8}$ Simplify.

Check for Reasonableness $4\frac{3}{8} \approx 4$ ✓

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

Estimate $\square \div \square = \square$

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

$= \frac{\square}{\square} \times \frac{\square}{\square}$ Multiply by the reciprocal.

$= \frac{\square}{\square}$ or $\square\frac{\square}{\square}$ Simplify.

Check for Reasonableness $\square\frac{\square}{\square} \approx \square$ ✓

Show your work.

a. _____

b. _____

c. _____

Got it? Do these problems to find out.

Divide. Write in simplest form. Check by multiplying.

a. $2\frac{3}{8} \div \frac{1}{4}$ **b.** $2\frac{1}{2} \div \frac{3}{7}$ **c.** $5\frac{5}{8} \div \frac{3}{4}$

Divide by a Mixed Number

To divide a mixed number by another mixed number, change both mixed numbers to improper fractions. Remember to simplify before you multiply.

Examples

Tutor

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

Estimate $6 \div 3 = 2$

$5\frac{1}{2} \div 2\frac{1}{2} = \frac{11}{2} \div \frac{5}{2}$ Write mixed numbers as improper fractions.

$= \frac{11}{2} \times \frac{2}{5}$ Multiply by the reciprocal.

$= \frac{11}{\cancel{2}_{1}} \times \frac{\cancel{2}^{1}}{5}$ Divide 2 and 2 by the GCF, 2.

$= \frac{11}{5}$ or $2\frac{1}{5}$ Simplify. Compare to the estimate.

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

Estimate $\square \div \square = \square\frac{\square}{\square}$

$4\frac{2}{3} \div 1\frac{3}{4} = \frac{\square}{\square} \div \frac{\square}{\square}$ Write the mixed numbers as an improper fractions.

$= \frac{\square}{\square} \times \frac{\square}{\square}$ Multiply by the reciprocal. Divide by the GCF.

$= \frac{\square}{\square}$ or $\square\frac{\square}{\square}$ Simplify.

Check for Reasonableness $\square\frac{\square}{\square} \approx \square\frac{\square}{\square}$ ✓

STOP and Reflect

How is dividing two mixed numbers similar to dividing two fractions?

Got it? Do these problems to find out.

Show your work.

d. $4\frac{1}{5} \div 2\frac{1}{3}$ d. _____

e. $8 \div 2\frac{1}{2}$ e. _____

f. $1\frac{5}{9} \div 2\frac{1}{3}$ f. _____

Example

Watch Tutor

5. **The average adult male Giant Panda weighs about $1\frac{1}{5}$ times as much as the average adult female. If the average weight of a male Giant Panda is 330 pounds, how much does the average female Giant Panda weigh?**

To find the average weight, solve the equation $330 \div 1\frac{1}{5} = \blacksquare$.

$330 \div 1\frac{1}{5} = \frac{330}{1} \div \frac{6}{5}$ Write the mixed number as an improper fraction.

$= \frac{330}{1} \times \frac{5}{6}$ Multiply by the reciprocal.

$= \frac{\overset{55}{\cancel{330}}}{1} \times \frac{5}{\cancel{6}_{1}}$ Divide 330 and 6 by their GCF, 6.

$= \frac{275}{1}$ or 275 Simplify.

So, the average female Giant Panda weighs about 275 pounds.

Guided Practice

Check

Divide. Write in simplest form. Check by multiplying. (Examples 1–4)

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

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

3. $6\frac{2}{3} \div 2\frac{6}{7} =$ _____

Show your work.

4. A box of snack-size cracker packs weighs $28\frac{1}{2}$ ounces. Each snack pack weighs $4\frac{3}{4}$ ounces. How many snack packs are in the box? (Example 5)

_____

5. The soccer team has $16\frac{1}{2}$ boxes of wrapping paper left to sell. If each of the 12 players sells the same amount, how many boxes should each player sell? (Example 5)

_____

6. **Building on the Essential Question** How do you divide mixed numbers? _____

_____

_____

Rate Yourself!

☐ I understand how to divide mixed numbers.

Great! You're ready to move on!

☐ I still have some questions about dividing mixed numbers.

No Problem! Go online to access a Personal Tutor. Tutor

FOLDABLES Time to update your Foldable!

Name _____ My Homework 11/5/2020

Independent Practice

Go online for Step-by-Step Solutions eHelp

Divide. Write in simplest form. Check by multiplying. (Examples 1–4)

1. $4\frac{1}{6} \div 10 =$ _____ Show your work.

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

3. $3\frac{3}{4} \div 5\frac{5}{8} =$ _____

4. The length of a kitchen wall is $24\frac{2}{3}$ feet long. A border will be placed along the wall of the kitchen. If the border comes in strips that are each $1\frac{3}{4}$ feet long, how many strips of border are needed? (Example 5)

5. Jay is cutting a roll of biscuit dough into slices that are $\frac{3}{8}$ inch thick. If the roll is $10\frac{1}{2}$ inches long, how many slices can he cut? (Example 5)

6. PS **Be Precise** Refer to the graphic novel frame below for Exercises a–c.

a. What is the total weight of the birdseed they bought? _____

b. If each smaller bag contains $1\frac{1}{2}$ pounds, how many bags can they make?

c. Will there be any birdseed left over? Explain.

Power Up! Test Practice

23. You have a shelf that holds $25\frac{1}{2}$ pounds. How many $1\frac{1}{4}$–pound books can the shelf hold? Explain your response.

24. Sort the expressions listed at the right into the appropriate bins.

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

Quotient Less Than 1	Quotient Equal to 1	Quotient Greater Than 1

Spiral Review

Multiply. Write in simplest form.

25. $\frac{3}{4} \times 1 =$ _____

26. $\frac{3}{7} \times 2 =$ _____

27. $\frac{1}{2} \times \frac{1}{2} =$ _____

28. $\frac{1}{2} \times \frac{1}{4} =$ _____

29. $\frac{2}{5} \times \frac{1}{4} =$ _____

30. $\frac{3}{4} \times \frac{2}{3} =$ _____

31. Anna is planting corn on her farm. What is the area of cornfield?

_____