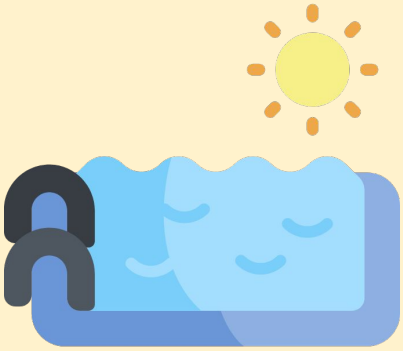
Helping With Math

Dividing Mixed Numbers by Fractions

GRADE 5

Dividing mixed numbers by fraction involves the multiplication operation. In addition, its one process or step is to convert the mixed numbers into improper fractions.



A swimming pool is open for 8 ½ hours a day. The pool keeps one lifeguard on duty at a time, and each lifeguard's shift is 4/6 hours long. How many shifts are there per day?

Given: $8\frac{1}{2} \div \frac{4}{6}$ = ???

Analyze the sense of the problem before you proceed with the computation to avoid mistakes.

STEPS IN DIVIDING NUMBERS BY FRACTION

A swimming pool is open for 8 ½ hours a day. The pool keeps one lifeguard on duty at a time, and each lifeguard's shift is 4/6 hours long. How many shifts are there per day?

Step 1: Write the given. Convert the mixed number into improper fraction.

Step 2: Write the reciprocal of the divisor, 6/4, then multiply.

$$8\frac{1}{2} \div \frac{4}{6} = \frac{17}{2} \div \frac{4}{6}$$

$$\frac{17}{2} \div \frac{4}{6} = \frac{17}{2} \times \frac{6}{4}$$

Step 3: Perform the simple multiplication of numerators and denominators.

Step 4: Since the answer is expressed in improper fraction, convert it to a mixed number in lowest term.

$$\frac{17}{2} \times \frac{6}{4} = \frac{102}{8}$$

$$\frac{102}{8} = 12\frac{6}{8} = \mathbf{12\frac{3}{4}}$$

ILLUSTRATIVE EXAMPLES

$$2\frac{3}{4} \div \frac{2}{7} = \boxed{???}$$

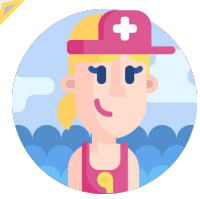
Step 1: Write the given. Convert the mixed number into improper fraction.

Step 2: Write the reciprocal of the divisor, 7/2, then multiply.

$$2\frac{3}{4} \div \frac{2}{7} = \frac{11}{4} \div \frac{2}{7}$$

$$\frac{11}{4} \div \frac{2}{7} = \frac{11}{4} \times \frac{7}{2}$$

Step 3: Perform the simple multiplication of numerators and denominators.



Step 4: Since the answer is expressed in improper fraction, convert it to a mixed number in lowest term.

$$\frac{11}{4} \times \frac{7}{2} = \frac{77}{8}$$

$$\frac{77}{8} = 8\frac{5}{9}$$

EXERCISE

Try to save the drowning fractions below!

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

2. $7\frac{4}{6} \div \frac{5}{9}$

Coach Ben set up a swimming race relay. The race will be 2 ⅓ times around the pool. If each swimmer is to swim ⅙ of a lap, how many swimmers will he need for the relay?

3.

TABLE OF ACTIVITIES

SWIMMING STEPS

Coach RJ is here to teach you the steps on how to swim properly. Identify the step that is being shown through the solution. Write the step in your own words.

Given: $3\frac{2}{4} \div \frac{2}{6}$

1. $\frac{14}{4} \times \frac{6}{2} = \frac{84}{8}$

2. $\frac{84}{8} = 10\frac{4}{8} = \mathbf{10\frac{1}{2}}$

3. $\frac{14}{4} \div \frac{2}{6} = \frac{14}{4} \times \frac{6}{2}$

4. $3\frac{2}{4} \div \frac{2}{6} = \frac{14}{4} \div \frac{2}{6}$

HELP!

Oh no! Seve is drowning. Help the lifeguard by converting the following mixed numbers into improper fractions.

1. $7\frac{3}{5}$ =

2. $6\frac{5}{8}$ =

3. $5\frac{5}{7}$ =

4. $5\frac{8}{11}$ =

5. $8\frac{5}{10}$ =

SECOND DUTIES

The first set of lifeguards are about to go home. Help them reach their second team by getting the reciprocal of the following fractions.


1. $\frac{8}{33}$
2. $\frac{14}{17}$
3. $\frac{7}{16}$
4. $\frac{4}{7}$
5. $\frac{12}{24}$
6. $\frac{28}{45}$


RESORT ESCAPADE

Name some of the finest resorts in your area! Find the quotient of the following given. Note: If your solution cannot fit on the space provided, just solve it on a separate sheet of paper.

1. $8\frac{4}{5} \div \frac{5}{6}$

2. $5\frac{7}{12} \div \frac{1}{5}$

3. $9\frac{2}{6} \div \frac{2}{8}$

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

CAUTION!

Reminder, this side is an accident prone area! Identify the mistake that the swimmers have done by crossing out the part of the solution that is incorrect then write the correct answer or solution on the space provided.

1.

$$2\frac{1}{2} \div \frac{3}{4} = \frac{5}{2} \div \frac{4}{3}$$

$$\frac{5}{2} \div \frac{3}{4} = \frac{5}{2} \times \frac{4}{3}$$

$$\frac{5}{2} \times \frac{4}{3} = \frac{9}{5} = 3\frac{1}{3}$$

2.

$$1\frac{3}{4} \div \frac{2}{5} = \frac{7}{4} \div \frac{2}{5}$$

$$\frac{7}{4} \div \frac{2}{5} = \frac{4}{7} \times \frac{2}{5}$$

$$\frac{4}{7} \times \frac{5}{2} = \frac{8}{35} = 4\frac{3}{8}$$

LIFEGUARD HALL OF FAME

Let us help the manager name the lifeguards with excellent services. Solve the following given. Show your solution.

1. 

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

2. 

$$9\frac{4}{8} \div \frac{6}{8}$$

3. 

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

4. 

$$6\frac{7}{12} \div \frac{2}{12}$$

LUNA ETOILE GARDEN RESORT

Christine will open her resort soon! As a kick start, she is offering a discount for the customers who can answer the problems below. Since Joyce wants to go, help her solve the problems. Show your solution.

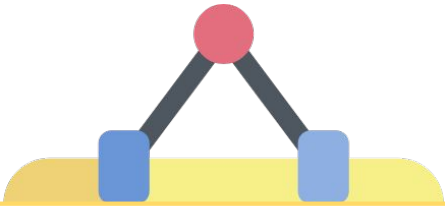
3.Amy's tile is a square, so it is also 4/9 of a foot wide. If her bathroom is 5 4/6 wide, how many tiles will she need to cover the bathroom width?

2.Luke is remodeling his bathroom floor. He is going to use tile that is 4/9 of a foot long. If his bathroom is 7 ⅛ feet long, how many tiles will he need to cover the length of the floor?

1.Lara is baking for her pool party! Each cupcake requires ½ cup of sugar. How many cupcakes can she bake if she has 6 2/4 cups of sugar?

RESORT'S RULES

Help Christine list the important rules below to remind her customers. Answer the given below.



1. $5\frac{9}{18} \div \frac{2}{3}$

2. $3\frac{10}{15} \div \frac{6}{9}$

3. Marcus is a swimmer. He can swim at a constant pace of 3 2/6 minutes per turn. How many swim turns can he make in 30 minutes?

YOU COACH

It is now the time for you to teach others on how to properly swim. Make your own word problem. Create at least 3 and show your solution.

SWIMMING LESSON

It's the time to show what you learned! Answer the following questions in not more than 5 sentences each.

1.What is the importance of learning how to divide mixed numbers by fractions?

2.How can you use your learning in the real world set up? Give three.

ANSWER GUIDE

Activity 1

1. Step 3
2. Step 4
3. Step 2
4. Step 1

Activity 2

1. 38/5
2. 53/8
3. 40/7
4. 63/11
5. 85/10

Activity 3

1. 33/8
2. 17/14
3. 16/7
4. 7/4
5. 24/12
6. 45/28

Activity 4

1. 10 14/25
2. 27 11/12
3. 37 ⅓
4. 7 ½

Activity 5

1. 4/3, 3 ⅓
2. 4/7, 2/5, 8/35

Activity 6

1. 47/5 or 9 2/5
2. 38/3 or 12 2/3
3. 22/3 or 7 1/3
4. 79/2 or 39 1/2

ANSWER GUIDE

Activity 7

1. 13 cupcakes
2. 16 ⅛ tiles
3. 12 ¾ tiles

Activity 8

1. 8 ¼
2. 4 ⅛
3. 9 turns

Activity 9

Answers may vary.

Activity 10

Answers may vary.

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