

Learning Outcome:

Students should be able to multiply & divide fractions and interpreting division as a multiplicative inverse

MULTIPLYING FRACTIONS

Remember! 1. Multiply 2. Multiply 3. Simplify	Fraction multiplied by a fraction	Whole number multiplied by a fraction	Fraction multiplied by a mixed number
Step 1: Write whole number as fraction; write mixed number as improper fraction.	$\frac{2}{3} \times \frac{3}{4}$	$9 \times \frac{2}{5}$ $\frac{9}{1} \times \frac{2}{5}$	$\frac{2}{3} \times 2\frac{1}{3}$ $\frac{2}{3} \times \frac{7}{3}$
Step 2: Multiply the numerators	$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12}$	$\frac{9}{1} \times \frac{2}{5} = \frac{18}{5}$	$\frac{2}{3} \times \frac{7}{3} = \frac{14}{9}$
Step 3: Multiply the denominators	$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12}$	$\frac{9}{1} \times \frac{2}{5} = \frac{18}{5}$	$\frac{2}{3} \times \frac{7}{3} = \frac{14}{9}$
Step 4: Write answer in simplest terms	$\frac{6}{12} = \frac{1}{2}$	$\frac{18}{5} = 3\frac{3}{5}$	$\frac{14}{9} = 1\frac{5}{9}$

DIVIDING FRACTIONS

Remember!	Keep	Change	Flip	Fraction divided by a fraction	Whole number divided by a fraction	Fraction divided by a mixed number
First fraction stays the same	Operation changes from \times to \div	Flip 2 nd fraction for reciprocal		$\frac{2}{3} \div \frac{1}{3}$	$9 \div \frac{1}{3}$ $\frac{9}{1} \div \frac{1}{3}$ $\frac{9}{1} \times \frac{3}{1}$	$\frac{2}{3} \div 2\frac{1}{3}$ $\frac{2}{3} \div \frac{7}{3}$ $\frac{2}{3} \times \frac{3}{7}$
Step 1: Write whole number as fraction; write mixed number as improper fraction.				$\frac{2}{3} \div \frac{1}{3}$		
Step 2: Find the reciprocal of the divisor (the number you are dividing by).				$\frac{2}{3} \div \frac{3}{1}$		
Step 3: The reciprocal allows you to change the operation from division to multiplication.				$\frac{2}{3} \times \frac{3}{1}$	$\frac{9}{1} \times \frac{3}{1}$	$\frac{2}{3} \times \frac{3}{7}$
Step 4: Multiply the fractions.				$\frac{2}{3} \times \frac{3}{1} = \frac{6}{3}$	$\frac{9}{1} \times \frac{3}{1} = \frac{27}{1}$	$\frac{2}{3} \times \frac{3}{7} = \frac{6}{21}$
Step 5: Write the answer in simplest terms.				$\frac{6}{3} = 2$	$\frac{27}{1} = 27$	$\frac{6}{21} = \frac{2}{7}$

Example 2 I

(a) $2 \times 1\frac{1}{3}$

Change mixed number into improper fraction and solve

$$2 \times \frac{\square}{\square} = \frac{\square}{\square}$$

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

Change improper fraction into mixed number for your final answer.



Please copy the step-by-step workings and answers into your notes.

Example 2 1

(b) $\frac{1}{3}$ of $\frac{1}{4}$

$$\frac{1}{3} \square \frac{1}{4} = \frac{\square}{\square}$$

What is "of" ?

+ - × ÷

Choose and drag any of these maths operations that will define the word "of"



K	E	F
Keep	Change	Flip
1 st fraction stays the same	Operation changes from ÷ to ×	Flip 2 nd fraction for reciprocal

(c) $\frac{1}{4} \div \frac{3}{10}$

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



Please copy the step-by-step workings and answers into your notes.

(d) $7\frac{1}{2} \div 2\frac{1}{4}$

Step 1: Change mixed number into improper fraction.

$$\frac{\square}{\square} \div \frac{\square}{\square}$$

Step 2: Apply the KCF method and solve.

$$\frac{\square}{\square} \times \frac{\square}{\square}$$

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

If your answer is improper fraction,
Convert it to mixed numbers in
simplest form



**Please copy the step-by-step workings
and answers into your notes.**

Example 22: $\frac{4}{7}$ of a number is 84. Find the number.

Let y be the number,

$$\frac{4}{7} \text{ of } \boxed{\text{A number}} = 84$$

$$\frac{4}{7} \times y = 84$$

$$y = \frac{\boxed{}}{\boxed{}} \times 84 \quad \left. \vphantom{\frac{\boxed{}}{\boxed{}}} \right\} \text{ simplify}$$

Hint:
Multiplicative inverse
(reciprocal) of $\frac{4}{7}$

$$= 147$$



Please copy the step-by-step workings and answers into your notes.

Example 23

Calculate five-eighths of fourteen dollars

$$\frac{\square}{\square} \text{ of } \square$$

$$\frac{\square}{\square} = \$ 8.75$$

Example 24

Aqil has 15 shirts in his closet. If 2 out of every 3 of these shirts are striped, how many unstriped shirts does he have in his closet?

Watch the video explanation:

Answer = unstriped shirts



Please copy the step-by-step workings and answers into your notes.