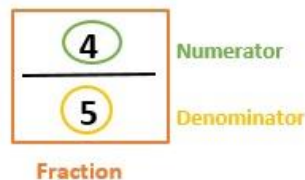# Fractions - Worksheet

Fraction: A fraction is a part of a whole thing.

Numerator: This is the number on the top that represents the number of fractional parts.

Denominator: This is the number at the bottom that represents the number in which the whole has been divided into.

<u>Example</u>

Types of Fractions

<u>Proper fraction:</u> numerator is less than denominator. e.g. $\frac{2}{3}$ (2 is less than 3)

<u>Improper fraction:</u> numerator is greater than denominator. e.g. $\frac{8}{5}$ (8 is greater than 5)

<u>Mixed fraction:</u> A whole number and a fraction together. e.g. $2\frac{3}{11}$ (2 is a whole number and 3/11 is a fraction)

Converting mixed fractions to improper fractions

Method: Multiply the whole number with the denominator and add them with the numerator; then place the answer on top of the denominator to get the improper fraction.

<u>Example</u>

$2\frac{3}{5} \rightarrow \frac{13}{5}$ (new numerator: 5×2=10+3=13)

Converting Fractions to Decimals

Method: The numerator is divided by the denominator to convert it into a decimal.

<u>Example</u>

$\frac{3}{5} = 3 \div 5 = 0.60$

Multiplication of fractions

Method: Multiply numerators of the fractions and denominator of the fractions separately to find the answer and simplify the fraction if necessary. If any of the fractions are mixed fractions, change them into an improper fraction first before doing the calculation.

Example

$$\frac{6}{7} \times \frac{8}{5} = \frac{48}{35} \rightarrow 1\frac{13}{35}$$

Working notes:

Multiplying numerators: 6×8=48; multiplying denominators: 7×5=35

Answer fraction: $\frac{48}{35}$ which is simplified to a mixed fraction by dividing 48 by 35: $1\frac{13}{35}$

Division of fractions

Method: Turn the second fraction upside down to change the divide sign into a multiplication and follow the method of multiplication as with the previous example.

Example

$$\frac{7}{8} \div \frac{4}{5}$$

Turning the second fraction upside down and change the division sign to multiplication,

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

Do the multiplication to get the answer:

$$\frac{7}{8} \times \frac{5}{4} = \frac{35}{32} \rightarrow 1\frac{3}{32}$$

Calculating flow rate/drop factor

Given, Flow rate= Volume/Time

Drop factor is drops per minute administered

Example

If 45 ml of infusion is administered to a patient in 20 minutes, we can calculate the flow rate in ml/min as following, (where volume=45 ml, time=20 mins)

$\text{Flow rate} = {45\text{ml}}/{20\text{mins}} \rightarrow {9\text{ml}}/{4\text{mins}}$ (Simplifying the fraction by dividing the numerator and denominator by their greatest common denominator, i.e. 5)

$= 2\frac{1}{4}$ ml/mins $\rightarrow 2.25$ ml/mins

Please ensure you get the right unit in which the answer is asked for and do any required adjustments regarding that. e.g. if the answer is asked in ml/hr you need to convert the minutes into hour by dividing them by 60. That is,

$1\ \text{hour} = 60\ \text{minutes}$

Hence, $20\text{minutes} = 20 \div 60 = \frac{1}{3}$ hour $\rightarrow 0.33\text{hour}$

Practice Exercises

Question 1:

Complete the table:

No.	Fraction	Numerator	Denominator
1	4/5		
2	7/30	7	
3		9	59
4	40/		89
5		3	8

Question 2:

Melissa makes $25.00 an hour for the first 40 hours in a week and one and a half times for each hour over 40 that she works in one week. Calculate her salary in a week in which she has worked 63 hours.

Question 3:

Convert these fractions into decimals:

No.	Fraction	Answer
1	27/81	
2	74/23	
3	5/6	
4	5/16	
5	21/9	

Question 4:

Multiply these fractions:

No.	Fraction 1	Fraction 2	Answer
1	27/81	2/5	
2	18/77	11/33	
3	5/6	2/3	
4	5/16	32/50	
5	21	2/3	

Question 5:

Divide these fractions:

No.	Fraction 1	Fraction 2	Answer
1	27/81	2/5	
2	18/77	11/33	
3	5/6	2/3	
4	5/16	32/50	
5	$2\frac{3}{7}$	2/3	

Question 6:

75 ml of infusion is administered to a patient in 45 minutes. What is the flow rate in ml/hr? (Given, Flow rate= Volume/Time).

Question 7:

Convert the following to a concentration expressed per ml: -

No.	Concentration	Converted per ml
1	16mg/9ml	
2	74mg/3ml	
3	40mg/15ml	
4	19mg/8ml	
5	23mg/6ml	

Question 8:

A patient is required to have an intravenous infusion of saline of 1000ml over a period of 6 hours. Calculate the drop factor for the patient.

Answers

Answer 1:

No.	Fraction	Numerator	Denominator
1	4/5	4	5
2	7/30	7	30
3	9/59	9	59
4	40/89	40	89
5	3/8	3	8

Answer 2:

Total work: 63 hours

Which is (63-40) = 23 hours over 40.

Rate for additional hour: $(25.00 × 1 ½) =$(25 × 3/2) = $37.5

Total salary= (25×40) +(37.5×23) =$ 1862.50

Answer 3:

No.	Fraction	Answer
1	27/81	0.33
2	74/23	3.22
3	5/6	0.83
4	5/16	0.31
5	21/9	2.33

Answer 4:

No.	Fraction 1	Fraction 2	Answer
1	27/81	2/5	2/15
2	18/77	11/33	6/77
3	5/6	2/3	5/9
4	5/16	32/50	1/5
5	21	2/3	14

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Answer 5:

No.	Fraction 1	Fraction 2	Answer
1	27/81	2/5	5/6
2	18/77	11/33	54/77
3	5/6	2/3	$1\frac{1}{4}$
4	5/16	32/50	125/256
5	$2\frac{3}{7}$	2/3	$3\frac{9}{14}$

Answer 6:

60 minutes= 1 hour

Therefore, 45 minutes= $\frac{45}{60} = \frac{3}{4}$ hour

Flow rate= Volume/ time

$$= \frac{75}{3/4} = 75 \div \frac{3}{4} = 75 \times \frac{4}{3} = 100\text{ml/hr}$$

Answer 7:

No.	Concentration	Converted per ml
1	16mg/9ml	$1\frac{7}{9}$ mg/ml
2	74mg/3ml	$24\frac{2}{3}$ mg/ml
3	40mg/15ml	$2\frac{2}{3}$ mg/ml
4	19mg/8ml	$2\frac{3}{8}$ mg/ml
5	23mg/6ml	$3\frac{5}{6}$ mg/ml

Answer 8:

Drop factor = Volume/time

= 1000ml/6 hours

= 166.66ml/hr

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