



Let's recall.

Decimal Fractions : Addition and Subtraction

Nandu went to a shop to buy a pen, notebook, eraser and paintbox. The shopkeeper told him the prices. A pen costs four and a half rupees, an eraser one and a half, a notebook six and a half and a paintbox twenty-five rupees and fifty paise. Nandu bought one of each article. Prepare his bill.

If Nandu gave a 100 rupee note, how much money does he get back?



$$100 - \boxed{} = \boxed{}$$

Nandu will get rupees back.

Ashay Vastu Bhandar			
SNo 87		Date: 11.1.16	
Nandu			
SNo	Details	Qty	Amount
1	Pen	1	4.50
Total			



Let's learn.

While solving problems with the units rupees-paise, metres-centimetres, we have used fractions with up to two decimal places. When solving problems with the units kilogram-gram, kilometre-metre, litre-millilitre, we have to use fractions with up to three decimal places.

Example : Reshma bought some vegetables. They included three-quarter kilo potatoes, one kilo onions, half a kilo cabbage and a quarter kilo tomatoes. What is the total weight of the vegetables in her bag?

We know : 1 kg = 1000 g, half kg = 500 g,
three-quarter kg = 750 g, quarter kg = 250 g



Now to find out the total weight of the vegetables, let us add using both units, kilograms and grams, in turn.



Potatoes	750 g	Potatoes	0.750 kg
Onions	+ 1000 g	Onions	+ 1.000 kg
Cabbage	+ 500 g	Cabbage	+ 0.500 kg
Tomatoes	+ 250 g	Tomatoes	+ 0.250 kg
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Total weight	2500 grams	Total weight	2.500 kg

Note the similarity between the addition of integers and the addition of decimal fractions.

Total weight of vegetables is 2500 g, that is $\frac{2500}{1000}$ kg, that is 2.500 kg.

We know that, $2.500 = 2.50 = 2.5$

The weight of vegetables in Reshma's bag is 2.5 kg.



My friend, Maths : At the market, in the shop.

Take a pen and notebook with you when you go to the market with your parents. Note the weight of every vegetable your mother buys. Find out the total weight of those vegetables.

Practice Set 14

1. In the table below, write the place value of each of the digits in the number 378.025.

Place	Hundreds	Tens	Units	Tenths	Hundredths	Thousandths
	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
Digit	3	7	8	0	2	5
Place value	300			$\frac{0}{10} = 0$		$\frac{5}{1000} = 0.005$

2. Solve.

(1) $905.5 + 27.197$

(2) $39 + 700.65$

(3) $40 + 27.7 + 2.451$

3. Subtract.

(1) $85.96 - 2.345$

(2) $632.24 - 97.45$

(3) $200.005 - 17.186$

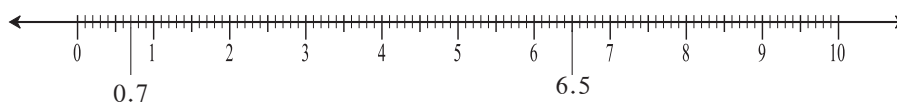
4. Avinash travelled 42 km 365 m by bus, 12 km 460 m by car and walked 640 m. How many kilometres did he travel altogether? (Write your answer in decimal fractions.)
5. Ayesha bought 1.80 m of cloth for her salwaar and 2.25 m for her kurta. If the cloth costs 120 rupees per metre, how much must she pay the shopkeeper?
6. Sujata bought a watermelon weighing 4.25 kg and gave 1 kg 750g to the children in her neighbourhood. How much of it does she have left?
7. Anita was driving at a speed of 85.6 km per hour. The road had a speed limit of 55 km per hour. By how much should she reduce her speed to be within the speed limit?



Let's recall.

Showing Decimal Fractions on the Number Line

Example : Observe how the numbers 0.7 and 6.5 are marked on the number line.



In the same way, show the following numbers on the number line.

- (1) 3.5 (2) 0.8 (3) 1.9 (4) 4.2 (5) 2.7



Let's learn.

Converting a Common Fraction into a Decimal Fraction

You know that if the denominator of a common fraction is 10 or 100, it can be written as a decimal fraction.

Can you recall how to convert the fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{5}$ into decimal fractions?

A fraction whose denominator is 1000 can also be written as a decimal fraction. Let us see how.

If the denominator of a common fraction is 10, 100, 1000, then -

- (1) If there are more digits in the numerator than zeros in the denominator, then count as many digits from the right as the number of zeros, and place the decimal point before those digits.

Examples (1) $\frac{723}{10} = 72.3$ (2) $\frac{51250}{100} = 512.50$ (3) $\frac{5138}{1000} = 5.138$



(2) If there are as many digits in the numerator as zeros in the denominator, place the decimal point before the number in the numerator and a zero in the integers' place.

Examples (1) $\frac{7}{10} = 0.7$ (2) $\frac{54}{100} = 0.54$ (3) $\frac{725}{1000} = 0.725$

(3) If there are fewer digits in the numerator than the zeros in the denominator, place zeros before the digits in the numerator to make the total number of digits equal to the number of zeros in the denominator. Place a decimal point before them and a zero in the integers' place.

Examples (1) $\frac{8}{100} = \frac{08}{100} = 0.08$ (2) $\frac{8}{1000} = \frac{008}{1000} = 0.008$



Let's learn.

Converting a Decimal Fraction into a Common Fraction

(1) $26.4 = \frac{264}{10}$ (2) $0.04 = \frac{4}{100}$ (3) $19.315 = \frac{19315}{1000}$



Now I know -

This is how we convert a decimal fraction into a common fraction. In the numerator, we write the number we get by ignoring the decimal point. In the denominator, we write 1 followed by as many zeros as there are decimal places in the given number.

Practice Set 15

1. Write the proper number in the empty boxes.

(1) $\frac{3}{5} = \frac{3 \times \boxed{}}{5 \times \boxed{}} = \frac{\boxed{}}{10} = \boxed{}$ (2) $\frac{25}{8} = \frac{25 \times \boxed{}}{8 \times 125} = \frac{\boxed{}}{1000} = 3.125$

(3) $\frac{21}{2} = \frac{21 \times \boxed{}}{2 \times \boxed{}} = \frac{\boxed{}}{10} = \boxed{}$ (4) $\frac{22}{40} = \frac{11}{20} = \frac{11 \times \boxed{}}{20 \times 5} = \frac{\boxed{}}{100} = \boxed{}$

2. Convert the common fractions into decimal fractions.

(1) $\frac{3}{4}$ (2) $\frac{4}{5}$ (3) $\frac{9}{8}$ (4) $\frac{17}{20}$ (5) $\frac{36}{40}$ (6) $\frac{7}{25}$ (7) $\frac{19}{200}$

3. Convert the decimal fractions into common fractions.

(1) 27.5 (2) 0.007 (3) 90.8 (4) 39.15 (5) 3.12 (6) 70.400





Let's learn.

Multiplication of Decimal Fractions

Example 1. Multiply 4.3×5 .

Method I

$$\begin{aligned} 4.3 \times 5 &= \frac{43}{10} \times \frac{5}{1} \\ &= \frac{43 \times 5}{10 \times 1} \\ &= \frac{215}{10} \\ 4.3 \times 5 &= 21.5 \end{aligned}$$

Method II

×	4	$\frac{3}{10}$
5	20	$\frac{15}{10}$
	20	1.5

$4.3 \times 5 = 20 + 1.5 = 21.5$

Method III

$$\begin{array}{r} 43 \\ \times 5 \\ \hline 215 \\ \\ 4.3 \\ \times 5 \\ \hline 21.5 \end{array}$$

Example 2.

The rate of petrol is ₹ 62.32 per litre. Seema wants to fill two and a half litres of petrol in her scooter. How many rupees will she have to pay?

Which operation is required?



Method I

$$\begin{aligned} 62.32 \times 2.5 &= ? \\ 62.32 \times 2.5 &= \frac{6232}{100} \times \frac{25}{10} \\ &= \frac{155800}{1000} \\ &= 155.800 \end{aligned}$$

Seema will have to pay ₹155.80

Method II

$$\begin{array}{r} 6232 \\ \times 25 \\ \hline 155800 \end{array} \quad \begin{array}{r} 62.32 \\ \times 2.5 \\ \hline 155.800 \end{array}$$

- First, multiply ignoring the decimal point.
- Then, in the product, starting from the units place, we count as many places as the total decimal places in the multiplicand and multiplier, and place the decimal point before them.

Practice Set 16

- If, $317 \times 45 = 14265$, then $3.17 \times 4.5 = ?$
- If, $503 \times 217 = 109151$, then $5.03 \times 2.17 = ?$
- Multiply.

(1) 2.7×1.4

(2) 6.17×3.9

(3) 0.57×2

(4) 5.04×0.7



4. Virendra bought 18 bags of rice, each bag weighing 5.250 kg. How much rice did he buy altogether? If the rice costs 42 rupees per kg, how much did he pay for it?
5. Vedika has 23.50 metres of cloth. She used it to make 5 curtains of equal size. If each curtain required 4 metres 25 cm to make, how much cloth is left over?



Let's learn.

We have seen that $\frac{5}{7} \div \frac{2}{3} = \frac{5}{7} \times \frac{3}{2} = \frac{15}{14}$

Division of Decimal Fractions

$$(1) 6.2 \div 2 = \frac{62}{10} \div \frac{2}{1} = \frac{62}{10} \times \frac{1}{2} = \frac{31}{10} = 3.1$$

$$(2) 3.4 \div 5 = \frac{34}{10} \div \frac{5}{1} = \frac{34}{10} \times \frac{1}{5} = \frac{34}{50} = \frac{34 \times 2}{50 \times 2} = \frac{68}{100} = 0.68$$

$$(3) 4.8 \div 1.2 = \frac{48}{10} \div \frac{12}{10} = \frac{48}{10} \times \frac{10}{12} = 4$$

Practice Set 17

1. Carry out the following divisions.
 (1) $4.8 \div 2$ (2) $17.5 \div 5$ (3) $20.6 \div 2$ (4) $32.5 \div 25$
2. A road is 4 km 800 m long. If trees are planted on both its sides at intervals of 9.6 m, how many trees were planted?
3. Pradnya exercises regularly by walking along a circular path on a field. If she walks a distance of 3.825 km in 9 rounds of the path, how much does she walk in one round?
4. A pharmaceutical manufacturer bought 0.25 quintal of *hirada*, a medicinal plant, for 9500 rupees. What is the cost per quintal of *hirada*? (1quintal = 100 kg)



Maths is fun!

Hamid : Salma, tell me any three-digit number.

Salma : Ok, here's one, five hundred and twenty-seven.

Hamid : Now multiply the number by 7. Then multiply the product obtained by 13, and this product, by 11.

Salma : Hm, I did it.

Hamid : Your answer is five lakh twenty-seven thousand five hundred and twenty-seven.

Salma : Wow! How did you do that so quickly?

Hamid : Take two or three other numbers. Do the same multiplications and find out how it's done!