



CHAPTER 7

The Decimal Notation For Fractions

CONTENTS

| | | |
|----------|--|----------|
| 1 | Other symbols for tenths and hundredths | 1 |
| 1.1 | Tenths and Hundredths again | 1 |
| 1.2 | and thousandths | 1 |
| 2 | Percentages and Decimal fractions | 2 |
| 2.1 | Hundredths, percentages and decimals | 2 |
| 3 | Decimal concepts | 2 |
| 3.1 | Decimal jumps | 2 |
| 3.2 | Place value | 2 |
| 4 | Rounding off | 3 |
| 5 | Addition and subtraction with decimal fractions | 4 |
| 5.1 | Mental calculations | 4 |
| 6 | Multiplication and decimal fractions | 4 |
| 6.1 | The power of ten | 4 |
| 6.2 | Multiplying decimals with whole numbers | 5 |
| 6.3 | Multiplying decimals with decimals | 5 |
| 7 | Division and decimal fractions | 6 |
| 8 | Exercises | 7 |
| 8.1 | Exercise 1 | 7 |
| 8.2 | Exercise 2 | 8 |
| 8.3 | Exercise 3 | 8 |
| 8.4 | Exercise 4 | 10 |
| 8.5 | Exercise 5 | 11 |
| 8.6 | Exercise 6 | 12 |
| 8.7 | Exercise 7 | 12 |
| 8.8 | Exercise 8 | 15 |
| 8.9 | Exercise 9 | 16 |
| 8.10 | Exercise 10 | 16 |
| 8.11 | Exercise 11 | 17 |
| 8.12 | Exercise 12 | 18 |
| 8.13 | Exercise 13 | 19 |

| | |
|--------------------------------|-----------|
| 8.14 Exercise 14 | 19 |
| 8.15 Exercise 15 | 20 |
| 9 Answers for Exercises | 21 |
| 9.1 Exercise 1 | 21 |
| 9.2 Exercise 2 | 21 |
| 9.3 Exercise 3 | 22 |
| 9.4 Exercise 4 | 23 |
| 9.5 Exercise 5 | 24 |
| 9.6 Exercise 6 | 24 |
| 9.7 Exercise 7 | 25 |
| 9.8 Exercise 8 | 26 |
| 9.9 Exercise 9 | 27 |
| 9.10 Exercise 10 | 27 |
| 9.11 Exercise 11 | 28 |
| 9.12 Exercise 12 | 28 |
| 9.13 Exercise 13 | 29 |
| 9.14 Exercise 14 | 29 |
| 9.15 Exercise 15 | 30 |

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1 OTHER SYMBOLS FOR TENTHS AND HUNDREDTHS

In this chapter you will learn more about decimal fractions and how they relate to common fractions and percentages. You will also learn to order and compare decimal fractions, and how to calculate with decimal fractions.

1.1 Tenths and Hundredths again

Note

0,1 is another way to write $\frac{1}{10}$ and

0,01 is another way to write $\frac{1}{100}$.

0,1 and $\frac{1}{10}$ are different notations for the same number.

$\frac{1}{10}$ is called the **(common) fraction notation**

and 0,1 is called the **decimal notation**. The same quantity can be expressed in different ways in tenths and hundredths.

For example, (3 tenths and 17 hundredths) can be expressed as (2 tenths and 27 hundredths) or (4 tenths and 7 hundredths).

All over the world, people have agreed to keep the number of hundredths in such statements below 10. This means that the normal way of expressing the above quantity is 4 tenths and 7 hundredths.

Written in decimal notation, 4 tenths and 7 hundredths is 0,47. This is read as *nought comma four seven* and NOT *nought comma forty-seven*.

1.2 and thousandths

Note

0,001 is another way of writing $\frac{1}{1000}$.

2 PERCENTAGES AND DECIMAL FRACTIONS

2.1 Hundredths, percentages and decimals ...

Note

- Instead of *6 hundredths*, you may say *6 per cent*. It means the same.
- We do not say: "How many per cent of the rectangle is green?" We say: "What percentage of the rectangle is green?"
- The symbol % is used for "per cent".
- Instead of writing "17 per cent", you may write 17%.
- *Per cent* means *hundredths*. The symbol % is a bit like the symbol $\frac{\quad}{100}$.
- 0, 37 and 37% and $\frac{37}{100}$ are different symbols for the same thing: *37 hundredths*.

3 DECIMAL CONCEPTS

3.1 Decimal jumps

Note

A calculator can be programmed to do the same operation over and over again.

For example, press 0, 1 [=] + 0, 1 [=] (do not press CLEAR or any other operation). Press the [=] key repeatedly and see what happens. The calculator counts in 0, 1s.

3.2 Place value

We can write 3, 784 in expanded notation as $3, 784 = 3 + 0, 7 + 0, 08 + 0, 004$. We can also name these parts as follows:

- the 3 represents the **units**
- the 7 represents the **tenths**
- the 8 represents the **hundredths**
- the 4 represents the **thousandths**

Note

We say: the **value** of the 7 is 7 tenths but the **place value** of the 7 is tenths, because any digit **in that place** will represent the number of tenths.

For example, in 2, 536 the **value** of the 3 is 0,03, and its **place value** is hundredths, because the value of the **place where it stands** is hundredths.

4 ROUNDING OFF

Just as whole numbers can be rounded off to the nearest 10, 100 or 1 000, decimal fractions can be rounded off to the nearest whole number, or to one, two, three etc. digits after the comma.

A decimal fraction is rounded off to the number whose value is closest to it. Therefore 13,24 rounded off to one decimal place is 13,2 and 13,26 rounded off to one decimal place is 13,3.

A decimal ending in a 5 is an equal distance from the two numbers to which it can be rounded off. Such decimals are rounded off to the biggest number, so 13,15 rounded off to one decimal place becomes 13,2.

5 ADDITION AND SUBTRACTION WITH DECIMAL FRACTIONS

5.1 Mental calculations

Note

When you add or subtract decimal fractions, you can change them to common fractions to make the calculation easier.

$$\begin{aligned}0,4 + 0,5 \\ &= \frac{4}{10} + \frac{5}{10} \\ &= \frac{9}{10} \\ &= 0,9\end{aligned}$$

6 MULTIPLICATION AND DECIMAL FRACTIONS

6.1 The power of ten

What does multiplying a decimal number with a whole number mean?

What does something like $4 \times 0,5$ mean?

What does something like $0,5 \times 4$ mean?

$4 \times 0,5$ means 4 groups of $\frac{1}{2}$, which is $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$, which is 2.

$0,5 \times 4$ means $\frac{1}{2}$ of 4, which is 2.

A real-life example where we would find this is:

$$\begin{aligned}6 \times 0,42 \text{ kg} &= 6 \times \frac{42}{100} \\ &= (6 \times 42) \div 100 \\ &= 252 \div 100 \\ &= 2,52 \text{ kg}\end{aligned}$$

What really happens is that we convert $6 \times 0,42$ to the product of two whole numbers, do the calculation and then convert the answer to a decimal fraction again ($\div 100$).

6.2 Multiplying decimals with whole numbers

What does multiplying a decimal with a decimal mean?

For example, what does $0,32 \times 0,87$ mean?

If you buy $0,32$ m of ribbon and each metre costs $R0,87$, you can write it as $0,32 \times 0,87$.

$$\begin{aligned} 0,32 \times 0,87 &= \frac{32}{100} \times \frac{87}{100} && \text{[Write as common fractions]} \\ &= \frac{32 \times 87}{10000} && \text{[Multiplication of two fractions]} \\ &= \frac{2784}{10000} && \text{[The product of the whole numbers } 32 \times 87\text{]} \\ &= 0,2784 && \text{[Convert to a decimal by dividing the product by 10 000]} \end{aligned}$$

The product of two decimals is thus converted to the product of whole numbers and then converted back to a decimal.

The product of two decimals and the product of two whole numbers with the same digits differ only in terms of the place value of the products, in other words the position of the decimal comma. It can also be determined by estimating and checking.

6.3 Multiplying decimals with decimals

The following method can also be used to multiply decimals with decimals:

$$\begin{aligned} 0,84 \times 0,6 &= (84 \div 100) \times (6 \div 10) \\ &= (84 \times 6) \div (100 \times 10) \\ &= 504 \div 1000 \\ &= 0,504 \end{aligned}$$

7 DIVISION AND DECIMAL FRACTIONS

Look carefully at the following three methods of calculation:

1. $0,6 \div 2 = 0,3$ [6 tenths $\div 2 = 3$ tenths]

2.

$$12,4 \div 4 = 3,1$$

$$= (12 \text{ units} \div 4) + (4 \text{ tenths} \div 4)$$

$$= 3 \text{ units} + 1 \text{ tenth}$$

$$= 3,1$$

$$[(12 \text{ units} + 4 \text{ tenths}) \div 4]$$

3.

$$2,8 \div 5 = 28 \text{ tenths} \div 5$$

$$= 25 \text{ tenths} \div 5 \text{ and } 3 \text{ tenths} \div 5$$

$$= 5 \text{ tenths and } (3 \text{ tenths} \div 5)$$

[3 tenths cannot be divided by 5]

$$= 5 \text{ tenths and } (30 \text{ hundredths} \div 5)$$

[3 tenths = 30 hundredths]

$$= 5 \text{ tenths and } 6 \text{ hundredths}$$

$$= 0,56$$

8 EXERCISES

8.1 Exercise 1

1. 1.1 What part of the rectangle below is coloured yellow?



- 1.2 What part of the rectangle is red?
1.3 What part of the rectangle is blue?
1.4 What part of the rectangle is green?
1.5 What part of the rectangle is not coloured?

2. .



- 2.1 What part of the rectangle is coloured yellow? Give your answer in decimal notation.
2.2 What part of the rectangle is red? Give your answer in decimal notation.
3. Three tenths and seven hundredths of a rectangle is coloured red, and two tenths and six hundredths of the rectangle is coloured brown. What part of the rectangle is not coloured? Give your answer in fraction notation and in decimal notation.
4. On Monday, Steve ate three tenths and seven hundredths of a strip of licorice. On Tuesday, Steve ate two tenths and five hundredths of a strip of licorice. How much licorice did he eat on Monday and Tuesday together? Give your answer in fraction and decimal notation.
5. The correct answer for the previous question is ($\frac{62}{100}$) or 0.62. Lebogang's answer is five tenths and 12 hundredths. Susan's answer is six tenths and two hundredths. Who is right, or are they both wrong?
6. What is the decimal notation for each of the following numbers?
- 6.1 $3\frac{7}{10}$
6.2 $4\frac{19}{100}$
6.3 $\frac{47}{10}$
6.4 $\frac{4}{100}$

8.2 Exercise 2

1. What is the decimal notation for each of the following?

1.1 $\frac{7}{1000}$

1.2 $\frac{9}{1000}$

1.3 $\frac{147}{1000}$

1.4 $\frac{999}{1000}$

2. Write the following numbers in decimal notation:

2.1 $2 + \frac{3}{10} + \frac{7}{100} + \frac{4}{1000}$

2.2 $12 + \frac{1}{10} + \frac{4}{1000}$

2.3 $2 + \frac{4}{1000}$

2.4 $67\frac{123}{1000}$

2.5 $34\frac{61}{1000}$

2.6 $654\frac{3}{1000}$

8.3 Exercise 3

1.



1.1 How many small parts are there in the rectangle? And in one tenth of the rectangle?

1.2 What part of the rectangle is blue and what part is green?

2. .



2.1 What percentage of the rectangle is green?

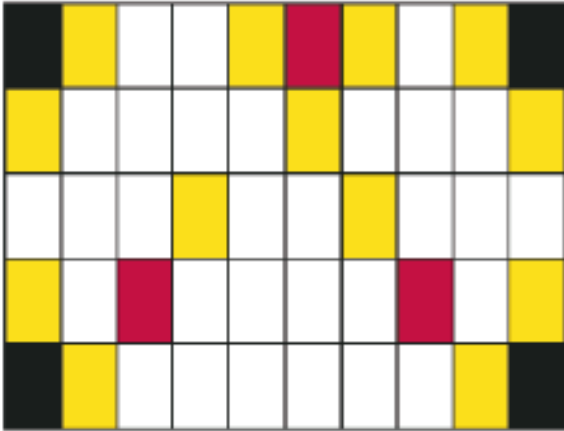
2.2 What percentage of the rectangle is red?

3. .



-
- 3.1 What percentage of the rectangle is blue?
 - 3.2 What percentage of the rectangle is white?
 4. 4.1 How much is 1% of R 400?
 - 4.2 How much is 37% of R 400?
 - 4.3 How much is 37% of R 700?
 5. 5.1 25 apples are shared equally between 100 people. What fraction of the apple does each person get?
 - 5.2 How much is 1% of 25?
 - 5.3 How much is 8% of 25?
 - 5.4 How much is 8% of 50?
 6. 6.1 Express the following in three ways: three tenths
 - 6.2 Express the following in three ways: seven hundredths
 - 6.3 Express the following in three ways: 37 hundredths
 - 6.4 Express the following in three ways: seven tenths
 - 6.5 Express the following in three ways: three quarters
 - 6.6 Express the following in three ways: seven eighths
 7. 7.1 How much is three tenths of R 200 and seven hundredths of R 200 altogether?
 - 7.2 How much is $\frac{37}{100}$ of R 200?
 - 7.3 How much is 0,37 of R 200?
 - 7.4 How much is 37% of R 200?
 8. 8.1 Express the following in three ways: 20 hundredths
 - 8.2 Express the following in three ways: 50 hundredths
 - 8.3 Express the following in three ways: 25 hundredths
 - 8.4 Express the following in three ways: 75 hundredths
 9. 9.1 Jan eats a quarter of a watermelon. What percentage of the watermelon is this?
 - 9.2 Sibule drinks 75% of the milk in a bottle. What fraction of the milk is this?
 - 9.3 Jeminah uses 0,75 of the paint in a tin. What percentage of the paint does she use?

10. The floor of a large room is shown



10.1 What part of the floor is covered in white?

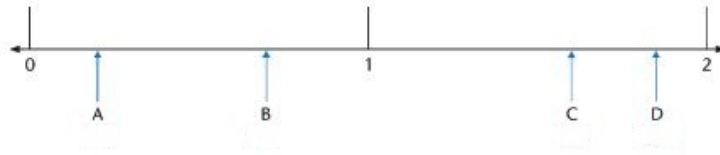
10.2 What part of the floor is covered in red?

10.3 What part of the floor is covered in yellow?

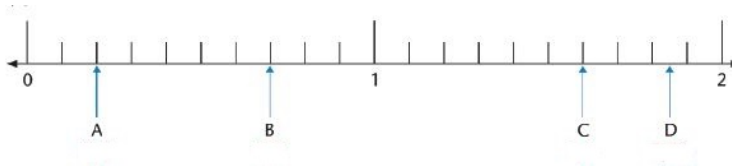
10.4 What part of the floor is covered in black?

8.4 Exercise 4

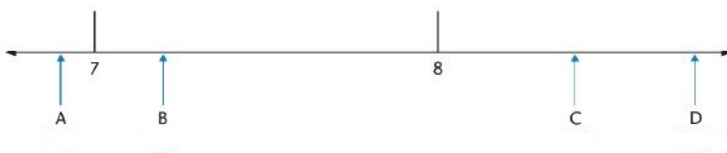
1. Give the lengths of the marked points (A to D) for the number line.



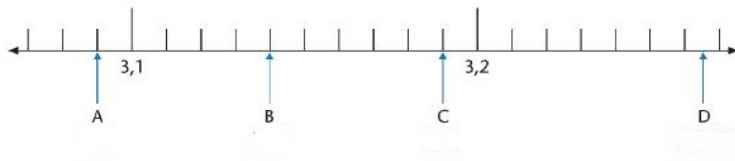
2. Give the lengths of the marked points (A to D) for the number line.



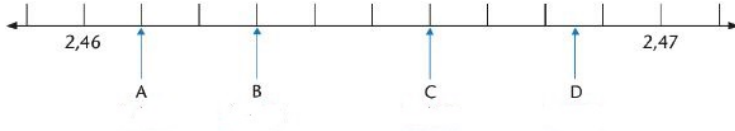
3. Give the lengths of the marked points (A to D) for the number line.



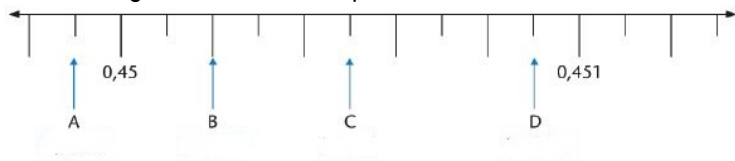
4. Give the lengths of the marked points (A to D) for the number line.



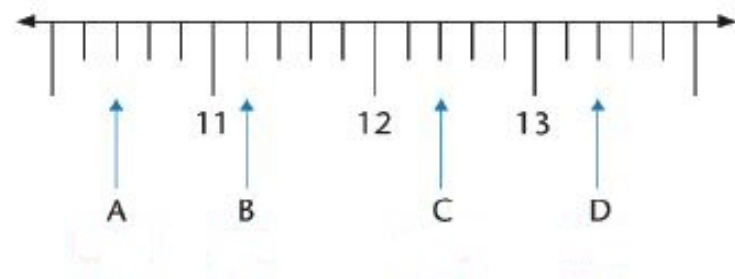
5. Give the lengths of the marked points (A to D) for the number line.



6. Give the lengths of the marked points (A to D) for the number line.



7. Give the lengths of the marked points (A to D) for the number line.



8.5 Exercise 5

1. 1.1 Write the next ten numbers in the number sequence and show your number sequence on a number line.
0, 2; 0, 4; 0, 6; ...
- 1.2 How many 0, 2s are there in 1?
- 1.3 Write 0, 2 as a common fraction?
2. 2.1 Write the next ten numbers in the number sequence and show your number sequence on a number line.
0, 3; 0, 6; 0, 9; ...
- 2.2 How many 0, 3s are there in 3?

2.3 Write $0,3$ as a common fraction.

3. 3.1 Write the next ten numbers in the number sequence and show your number sequence on a number line.

$0,25; 0,5; \dots$

3.2 How many $0,25$ s are there in 1 ?

3.3 Write $0,25$ as a common fraction.

4. 4.1 Write down the next five numbers of the number sequence.

$9,3; 9,2; 9,1; \dots$

4.2 Write down the next five numbers of the number sequence.

$0,15; 0,14; 0,13; 0,12; \dots$

8.6 Exercise 6

1. 1.1 Write the following as one number:

$2 + 0,5 + 0,07$

1.2 Write the following as one number:

$2 + 0,5 + 0,007$

1.3 Write the following as one number:

$2 + 0,05 + 0,007$

1.4 Write the following as one number:

$5 + 0,4 + 0,03 + 0,001$

1.5 Write the following as one number:

$5 + 0,04 + 0,003 + 0,1$

1.6 Write the following as one number:

$5 + 0,004 + 0,3 + 0,01$

8.7 Exercise 7

1. Order the following numbers from biggest to smallest.

$0,8; 0,05; 0,5; 0,15; 0,465; ,55; 0,75; 0,4; 0,62$

2. 2.1 Below are the results of some of the 2012 London Olympic events. Order the results from first to last place.

| Name | Country | Distance | Place |
|---------------------|---------|----------|-------|
| Anna Nazarova | RUS | 6,77 m | |
| Brittney Reese | USA | 7,12 m | |
| Elena Sokolova | RUS | 7,07 m | |
| Ineta Radevica | LAT | 6,88 m | |
| Janay DeLoach | USA | 6,89 m | 3rd |
| Lyudmila Kolchanova | RUS | 6,76 m | |

- 2.2 Below are the results of some of the 2012 London Olympic events. Order the results from first to last place.

| Name | Country | Time | Place |
|------------------|---------|---------|-------|
| Georganne Moline | USA | 53,92 s | |
| Kaliese Spencer | JAM | 53,66 s | 4th |
| Lashinda Demus | USA | 52,77 s | |
| Natalya Antyukh | RUS | 52,70 s | |
| T'erea Brown | USA | 55,07 s | |
| Zuzana Hejnová | CZE | 53,38 s | |

- 2.3 Below are the results of some of the 2012 London Olympic events. Order the results from first to last place.

| Name | Country | Time | Place |
|------------------|---------|---------|-------|
| Aries Merritt | USA | 12,92 s | |
| Hansle Parchment | JAM | 13,12 s | |
| Jason Richardson | USA | 13,04 s | |
| Lawrence Clarke | GBR | 13,39 s | |
| Orlando Ortega | CUB | 13,43 s | |
| Ryan Brathwaite | BAR | 13,40 s | |

2.4 Below are the results of some of the 2012 London Olympic events. Order the results from first to last place.

| Name | Country | Distance | Place |
|----------------------|---------|----------|-------|
| Andreas Thorkildsen | NOR | 82,63 m | |
| Antti Ruuskanen | FIN | 84,12 m | |
| Keshorn Walcott | TRI | 84,58 m | |
| Oleksandr Pyatnytsya | UKR | 84,51 m | |
| Tero Pitkämäki | FIN | 82,80 m | |
| Vítězslav Veselý | CZE | 83,34 m | |

3. 3.1 Give a number that falls between the two numbers.

3, 5 and 3, 7

3.2 Give a number that falls between the two numbers.

3, 9 and 3, 11

3.3 Give a number that falls between the two numbers.

3, 1 and 3, 2

4. How many numbers are there between 3, 1 and 3, 2?

5. 5.1 Fill in $<$, $>$ or $=$.

$0,4 \square 0,52$

5.2 Fill in $<$, $>$ or $=$.

$0,4 \square 0,32$

5.3 Fill in $<$, $>$ or $=$.

$2,61 \square 2,7$

5.4 Fill in $<$, $>$ or $=$.

$2,4 \square 2,40$

5.5 Fill in $<$, $>$ or $=$.

$2,34 \square 2,567$

5.6 Fill in $<$, $>$ or $=$.

$2,34 \square 2,251$

8.8 Exercise 8

1. Round the following number off to the nearest whole number:

1.1 7,6

1.2 18,3

1.3 204,5

1.4 1,89

1.5 0,9

1.6 34,7

1.7 11,5

1.8 0,65

2. Round the following number off to one decimal place:

2.1 7,68

2.2 18,93

2.3 21,47

2.4 0,643

2.5 0,938

2.6 1,44

2.7 3,81

3. Round the following number off to two decimal places:

3.1 3,432

3.2 54,117

3.3 4,809

3.4 3,762

3.5 4,258

3.6 10,222

3.7 9,365

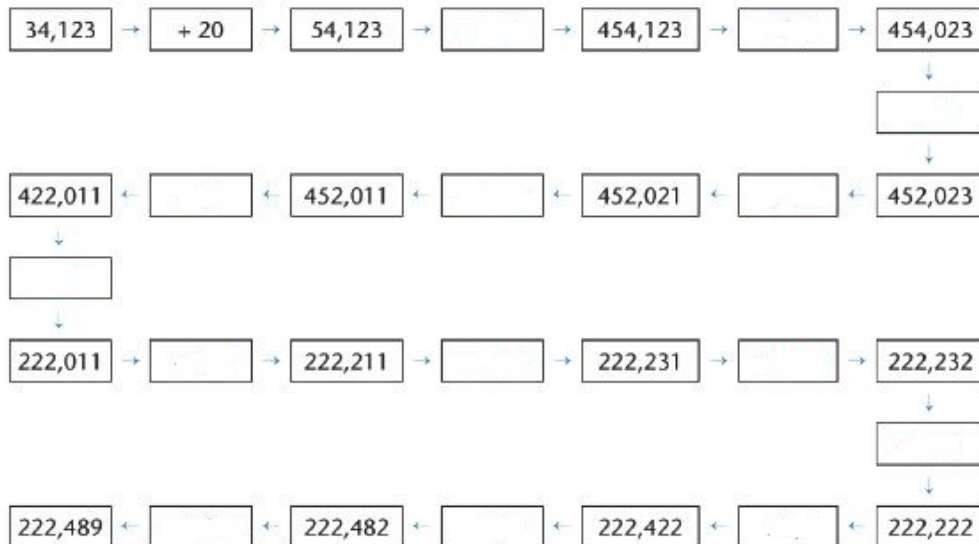
3.8 299,996

8.9 Exercise 9

1. John and three of his brothers sell an old bicycle for R 44, 65. How can the brothers share the money fairly?
2. A man buys 3, 75 m of wood at R 11, 99 per metre. What does the wood cost him?
3. 3.1 Estimate the answer of the following by rounding off the numbers:
 $89, 3 \times 3, 8 =$
- 3.2 Estimate the answer of the following by rounding off the numbers:
 $227, 3 + 71, 8 - 28, 6 =$

8.10 Exercise 10

1. Complete the number chain.



2. Calculate the following:

- 2.1 $0, 7 + 0, 2$
- 2.2 $0, 7 + 0, 4$
- 2.3 $1, 3 + 0, 8$
- 2.4 $1, 35 + 0, 8$
- 2.5 $0, 25 + 0, 7$
- 2.6 $0, 25 + 0, 07$
- 2.7 $3 - 0, 1$
- 2.8 $3 - 0, 01$

2.9 $2,4 - 0,5$

8.11 Exercise 11

1. The owner of an internet cafe looks at her bank statement at the end of the day. She finds the following amounts paid into her account: R 281,45; R39,81; R104,54 and R 9,80.

How much money was paid into her account on that day?

2. At the beginning of a journey the odometer in a car reads: 21 589,4. At the end of the journey the odometer reads: 21 763,7.

What distance was traveled?

3. At an athletics competition, an athlete runs the 100 m race in 12,8 seconds. The announcer says that the athlete has broken the previous record by 0,4 seconds.

What was the previous record?

4. In a surfing competition, five judges give each contestant a mark out of 10. The highest and the lowest marks are ignored and the other three marks are totalled. Work out each contestant's score and place the contestants in order from first to last.

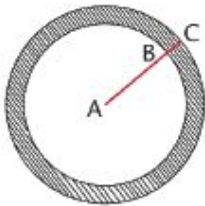
A: 7,5 8 7 8,5 7,7

B: 8,5 8,5 9,1 8,9 8,7

C: 7,9 8,1 8,1 7,8 7,8

D: 8,9 8,7 9 9,3 9,1

5. A pipe is measured accurately. $AC = 14,80$ mm and $AB = 13,97$ mm. How thick is the pipe?



6. Mrs Mdlankomo buys three packets of mincemeat. The packets weigh 0,356 kg, 1,201 kg and 0,978 kg respectively. What do they weigh together?

8.12 Exercise 12

1. 1.1 Complete the multiplication table.

| \times | 1 000 | 100 | 10 | 1 | 0,1 | 0,01 | 0,001 |
|----------|--------|-----|------|---|------|------|-------|
| 6 | 6 000 | | 60 | | | 0,06 | |
| 6,4 | | 640 | | | | | |
| 0,5 | | | | | 0,05 | | |
| 4,78 | 4 780 | | 47,8 | | | | |
| 41,2 | 41 200 | | | | | | |

1.2 Is it correct to say that "multiplication makes bigger"?

1.3 Calculate the following:

$$0,5 \times 10$$

1.4 Calculate the following:

$$0,5 \times 100$$

1.5 Calculate the following:

$$0,42 \times 10$$

1.6 Calculate the following:

$$0,675 \times 100$$

2. 2.1 Complete the division table.

| \div | 1 | 10 | 100 | 1 000 |
|--------|-----|-----|-------|-------|
| 6 | 6 | 0,6 | 0,06 | |
| 6,4 | 6,4 | | | |
| 0,5 | | | 0,005 | |
| 4,78 | | | | |
| 41,2 | | | | |

2.2 Calculate the following:

$$0,5 \div 10$$

2.3 Calculate the following:

$$0,3 \div 100$$

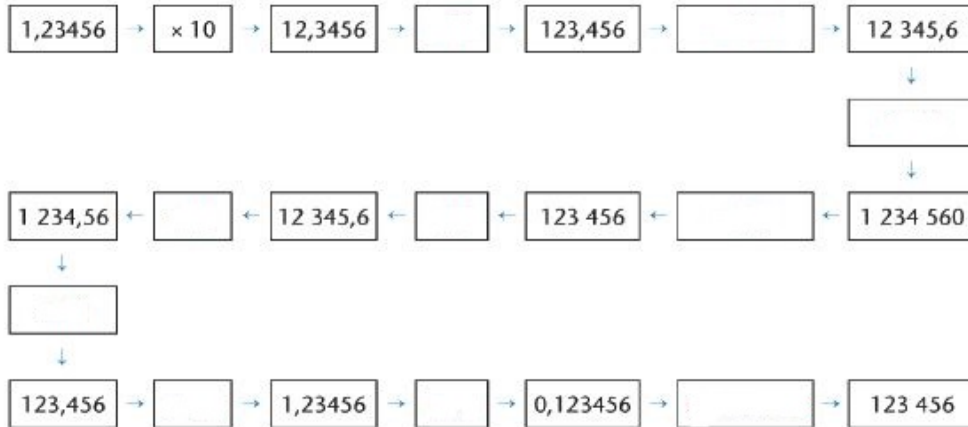
2.4 Calculate the following:

$$0,42 \div 10$$

3. Complete the following statement:

Multiplying with 0, 1 is the same as dividing by...

4. Fill in the missing numbers.



8.13 Exercise 13

1. Calculate the following. Use fraction notation to help you.

1.1 $0,3 \times 7$

1.2 $0,21 \times 91$

1.3 $8 \times 0,4$

2. Estimate the answer to the following and then calculate:

2.1 $0,4 \times 7$

2.2 $0,55 \times 7$

2.3 $12 \times 0,12$

2.4 $0,601 \times 2$

8.14 Exercise 14

1. Calculate the following using fraction notation to help you:

1. $0,6 \times 0,4$

1. $0,06 \times 0,4$

1. $0,06 \times 0,04$

2. Calculate the following:

2.1 $0,4 \times 0,7$

2.2 $0,4 \times 7$

2.3 $0,04 \times 0,7$

8.15 Exercise 15

1. Calculate the following:

1.1 $8,4 \div 2$

1.2 $3,4 \div 4$

2. Calculate the following:

2.1 $0,08 \div 4$

2.2 $14,4 \div 12$

2.3 $8,4 \div 7$

2.4 $4,5 \div 15$

2.5 $1,655 \div 5$

2.6 $0,225 \div 25$

3. A grocer buys 15 *kg* of bananas for R 99.90. What do the bananas cost per kilogram?

4. Given $26,8 \div 4 = 6,7$. Write down the answers to the following without calculating:

4.1 $268 \div 4$

4.2 $0.268 \div 4$

5. Given $128 \div 8 = 16$. Write down the answers to the following without calculating:

5.1 $12,8 \div 8$

5.2 $1,28 \div 8$

6. John buys 0,45 *m* of chain. The chain costs R 20 per metre. What does John pay for the chain?

7. Anna buys a packet of mincemeat. It weighs 0,215 *kg*. The price for the mincemeat is R 42,95 per kilogram. What does she pay for her packet of mincemeat?

9 ANSWERS FOR EXERCISES

9.1 Exercise 1

1.1 10 hundredths or $\frac{10}{100}$ or 1 tenth or $\frac{1}{10}$

1.2 $\frac{1}{100}$

1.3 $\frac{30}{100}$ or $\frac{3}{10}$

1.4 $\frac{2}{100}$

1.5 $\frac{57}{100}$

2.1 0, 1

2.2 0, 01

3. 3 tenths ($\frac{3}{10}$) and 7 hundredths ($\frac{7}{100}$) is not coloured. That is ($\frac{37}{100}$) or 0, 37.

4. ($\frac{62}{100}$) or 0.62

5. They are both right.

6.1 3, 7

6.2 4, 19

6.3 4, 7

6.4 0, 04

9.2 Exercise 2

1.1 0, 007

1.2 0, 009

1.3 0, 147

1.4 0, 999

2.1 2, 374

2.2 12, 04

2.3 2, 004

2.4 67,123

2.5 34,061

2.6 654,003

9.3 Exercise 3

1.1 100 small parts and 10 small parts in one tenth of the rectangle.

1.2 Blue: $\frac{30}{100}$ or $\frac{3}{10}$ Green: $\frac{2}{100}$ or $\frac{1}{50}$

2.1 2%

2.2 1%

3.1 30%

3.2 57%

4.1 R 4

4.2 R 148

4.3 R 259

5.1 $\frac{1}{4}$ or $\frac{25}{100}$

5.2 0.25 or $\frac{1}{4}$

5.3 2

5.4 4

6.1 0, 3; 30%; $\frac{30}{100}$

6.2 0, 07; 7%; $\frac{7}{100}$

6.3 0, 37; 37%; $\frac{37}{100}$

6.4 0, 7; 70%; $\frac{70}{100}$

6.5 0, 75; 75%; $\frac{75}{100}$

6.6 0, 875; 87, 5%; $\frac{875}{1000}$

7.1 R 60 + R 14 = R74

7.2 R 74

7.3 R 74

7.4 R 74

8.1 0, 2; 20%; $\frac{20}{100}$

8.2 0, 5; 50%; $\frac{50}{100}$

8.3 0, 25; 25%; $\frac{25}{100}$

8.4 0, 75; 75%; $\frac{75}{100}$

9.1 25%

9.2 $\frac{75}{100}$ or $\frac{3}{4}$

9.3 75%

10.1 0, 6; 60%; $\frac{60}{100}$

10.2 0, 06; 6%; $\frac{6}{100}$

10.3 0, 26; 26%; $\frac{26}{100}$

10.4 0, 08; 8%; $\frac{8}{100}$

9.4 Exercise 4

1. A= 0, 2

B= 0, 7

C= 1, 6

D= 1, 85

2. A= 0, 2

B= 0, 7

C= 1, 6

D= 1, 85

3. A= 6, 9

B= 7, 2

C= 8, 4

D= 8, 75

4. A= 2, 09

B= 31, 4

C= 3, 19

D= 3, 265

5. A= 2, 461

B= 2, 463

C= 2, 466

D= 2, 4685

6. A= 0, 4499

B= 0, 4502

C= 0, 4505

D= 0, 4509

7. A= 10, 4

B= 11, 2

C= 12, 4

D= 13, 4

9.5 Exercise 5

1.1 0, 8; 1, 1, 2; 1, 4; 1, 6; 1, 8; 2, 0; 2, 2; 2, 4; 2, 6

1.2 5

1.3 $\frac{1}{5}$

2.1 1, 2; 1, 5; 1, 8; 2, 1; 2, 4; 2, 7; 3, 0; 3, 3; 3, 6; 3, 9

2.2 10

2.3 $\frac{3}{10}$

3.1 0, 75; 1, 1, 25; 1, 50; 1, 75; 2, 0; 2, 25; 2, 50; 2, 75; 3, 0

3.2 4

3.3 $\frac{1}{4}$

4.1 9; 8, 9; 8, 8; 8, 7; 8, 6

4.2 0, 11; 0, 1; 0, 09; 0, 08; 0, 07

9.6 Exercise 6

1.1 2, 57

1.2 2, 507

1.3 2, 057

1.4 5,431

1.5 5,143

1.6 5,314

9.7 Exercise 7

1. 0.8; 0.75; 0.62; 0.55; 0.5; 0.465; 0.4; 0.15; 0.05

| Name | Country | Distance | Place |
|---------------------|---------|----------|-------|
| Anna Nazarova | RUS | 6,77 m | 5th |
| Brittney Reese | USA | 7,12 m | 1st |
| 2.1 Elena Sokolova | RUS | 7,07 m | 2nd |
| Ineta Radevica | LAT | 6,88 m | 4th |
| Janay DeLoach | USA | 6,89 m | 3rd |
| Lyudmila Kolchanova | RUS | 6,76 m | 6th |

| Name | Country | Time | Place |
|--------------------|---------|---------|-------|
| Georganne Moline | USA | 53,92 s | 5th |
| Kaliese Spencer | JAM | 53,66 s | 4th |
| 2.2 Lashinda Demus | USA | 52,77 s | 2nd |
| Natalya Antyukh | RUS | 52,70 s | 1st |
| T'erea Brown | USA | 55,07 s | 6th |
| Zuzana Hejnová | CZE | 53,38 s | 3rd |

| Name | Country | Time | Place |
|----------------------|---------|---------|-------|
| Aries Merritt | USA | 12,92 s | 1st |
| Hansle Parchment | JAM | 13,12 s | 3rd |
| 2.3 Jason Richardson | USA | 13,04 s | 2nd |
| Lawrence Clarke | GBR | 13,39 s | 4th |
| Orlando Ortega | CUB | 13,43 s | 6th |
| Ryan Brathwaite | BAR | 13,40 s | 5th |

| Name | Country | Distance | Place |
|----------------------|---------|----------|-------|
| Andreas Thorkildsen | NOR | 82,63 m | 6th |
| Antti Ruuskanen | FIN | 84,12 m | 3rd |
| 2.4 Keshorn Walcott | TRI | 84,58 m | 1st |
| Oleksandr Pyatnytsya | UKR | 84,51 m | 1st |
| Tero Pitkämäki | FIN | 82,80 m | 5th |
| Vitezslav Veselý | CZE | 83,34 m | 4th |

3.1 3,6

3.2 3,5

3.3 3,15

4. unlimited/infinite

5.1 <

5.2 >

5.3 <

5.4 =

5.5 <

5.6 >

9.8 Exercise 8

1.1 8

1.2 18

1.3 205

1.4 2

1.5 1

1.6 35

1.7 12

1.8 1

2.1 7,7

2.2 18,9

2.3 21,5

2.4 0,6

2.5 0,9

2.6 1,4

2.7 3,8

3.1 3,43

3.2 54,12

3.3 4,81

3.4 3,76

3.5 4,26

3.6 10,22

3.7 9,37

3.8 300

9.9 Exercise 9

1. $R\ 44,65 \div 4 = 11,1625 \approx R11,16$

2. $3,75 \times 11,99 = 44,9625 \approx R44,96$

3.1 $89 \times 4 = 356$

3.2 $227 + 72 - 29 = 270$

9.10 Exercise 10

1. $34,123 \rightarrow +20 \rightarrow 54,123 \rightarrow +400 \rightarrow 454,123 \rightarrow -0,01 \rightarrow 454,023 \rightarrow -2 \rightarrow 452,023 \rightarrow$
 $-0,001 \rightarrow 452,021 \rightarrow -0,01 \rightarrow 452,0111 \rightarrow -30 \rightarrow 422,011 \rightarrow -200 \rightarrow 222,011 \rightarrow +0,2$
 $\rightarrow 222,211 \rightarrow +0,02 \rightarrow 222,231 \rightarrow +0,001 \rightarrow 222,232 \rightarrow -0,01 \rightarrow 222,222 \rightarrow +0,2 \rightarrow$
 $222,422 \rightarrow -0,06 \rightarrow 222,482 \rightarrow +0,007 \xrightarrow{222,489}$

2.1 0,9

2.2 1,1

2.3 2,1

2.4 2,15

2.5 0,95

2.6 0,32

2.7 2,9

2.8 2,99

2.9 1,9

9.11 Exercise 11

1. R 435,60

2. 174,3 km

3. 13,2 seconds

4. D; B; C; A

Contestant A: $7,5 + 8 + 7,7 = 23,2$

Contestant B: $8,5 + 8,9 + 8,7 = 26,1$

Contestant C: $7,9 + 8,1 + 7,8 = 23,8$

Contestant D: $8,9 + 9 + 9,1 = 27$

5. $14,80 \text{ mm} - 13,97 \text{ mm} = 0,83 \text{ mm}$

6. 2,535 kg

9.12 Exercise 12

| | | | | | | | | |
|-----|----------|-------|------|------|------|-------|--------|---------|
| 1.1 | \times | 1000 | 100 | 10 | 1 | 0,1 | 0,01 | 0,001 |
| | 6 | 6000 | 600 | 60 | 6 | 0,6 | 0,06 | 0,006 |
| | 6,4 | 6400 | 640 | 64 | 6,4 | 0,64 | 0,064 | 0,064 |
| | 0,5 | 500 | 50 | 5 | 0,5 | 0,05 | 0,005 | 0,0005 |
| | 4,78 | 4780 | 478 | 47,8 | 4,78 | 0,478 | 0,0478 | 0,00478 |
| | 41,2 | 41200 | 4120 | 412 | 41,2 | 4,12 | 0,412 | 0,0412 |

1.2 False, it is not correct; it is true only if you multiply with whole numbers. Multiply by 10; 100 or 1 000: the value of each digit in the number becomes 10, 100 or 1 000 times bigger and each digit thus moves one, two or three places to the left. Multiply by 0, 1; 0, 01 or 0, 001: each digit moves one, two or three places to the right. The comma remains fixed. To multiply a number by 0, 1 is the same as dividing it by 10.

1.3 5

1.4 30

1.5 4,2

1.6 67,5

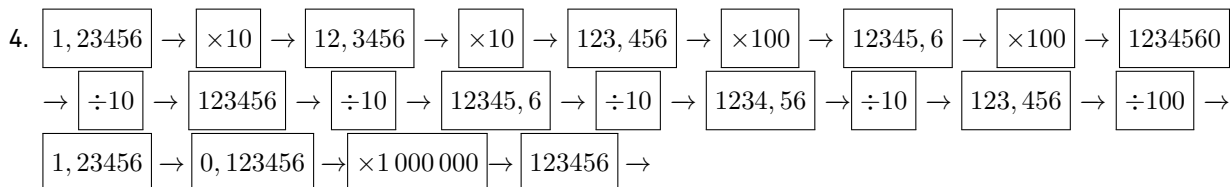
| | | | | | |
|-----|------|------|-------|--------|---------|
| | ÷ | 1 | 10 | 100 | 1000 |
| | 6 | 6 | 0,6 | 0,06 | 0,006 |
| 2.1 | 6,4 | 6,4 | 0,64 | 0,064 | 0,0064 |
| | 0,5 | 0,5 | 0,05 | 0,005 | 0,0005 |
| | 4,78 | 4,78 | 0,478 | 0,0478 | 0,00478 |
| | 41,2 | 41,2 | 4,12 | 0,412 | 0,0412 |

2.2 0,05

2.3 0,003

2.4 0,042

3. 10



9.13 Exercise 13

1.1 2,1

1.2 19,11

1.3 3,2

2.1 2,8

2.2 3,85

2.3 1,44

2.4 1,202

9.14 Exercise 14

1.1 0,24

1.2 0,024

1.3 0,0024

2.1 0,28

2.2 2,8

2.3 0,028

9.15 Exercise 15

1.1 4,2

1.2 0,85

2.1 0,02

2.2 1,2

2.3 1,2

2.4 0,3

2.5 0,331

2.6 0,009

3. $99.90 \div 15 = 6.66$

4.1 67

4.2 0,067

5.1 1,6

5.2 0,16

6. $20 \times 0,45 = R9$

7. R 9,23