

4.2 Addition and subtraction of decimal numbers

ACTIVITY 1 A stroll through the park

The adjacent table gives the lengths of different trails in a nature park.

| Trail | Length |
|------------------|-----------|
| The Crickets | 14.345 km |
| The Dragon Flies | 7.18 km |
| The Rose Bushes | 19.47 km |
| The Gazelles | 9.498 km |
| The Lilacs | 3.675 km |

- a) Lyvia wishes to take a walk of about 25 km, but not more than 25 km. Give an example of a combination of trails that she could take.

The Crickets Trail and the Gazelles Trail.

- b) Nina took the Gazelles Trail, followed by the Lilacs Trail, and she finished her walk on the Rose Bushes Trail. How many kilometres did she cover?

20.353 km

ADDITION AND SUBTRACTION OF DECIMAL NUMBERS

- To add (or subtract) decimal numbers:
 - Write the digits occupying the same position under each other and line up the decimal points.
 - Add (or subtract) the numbers, ignoring the decimal points.
 - Place the decimal point of the result directly under the decimal points of the other numbers.

Ex.: Let's add

$$\begin{array}{r} 235.7 + 18.276 + 1\ 085.88. \\ + 18.276 \\ \hline 1\ 085.88 \\ \hline 1\ 339.856 \end{array}$$

Let's subtract

$$\begin{array}{r} 345.5 - 285.87. \\ + 345.50 \\ - 285.87 \\ \hline 59.63 \end{array}$$

1. Estimate the result of each of the following operations by rounding each number to the nearest unit. Then calculate the exact answer.

| | Operation | Estimate | Exact answer |
|----|------------------|----------|--------------|
| a) | $45.28 + 27.87$ | 73 | 73.15 |
| b) | $34.87 + 18.24$ | 53 | 53.11 |
| c) | $28.218 - 14.85$ | 13 | 13.368 |
| d) | $45.37 - 28.18$ | 17 | 17.19 |

- 2 Perform each of the following operations.

a) $23.45 + 48.15 = 71.6$ b) $235.98 + 19.54 = 255.52$
 c) $185.96 - 29.85 - 158.27 = -2.16$ d) $-345.63 + 198.748 - 24.18 = -171.062$
 e) $2\ 436.74 + 385.179 = 2\ 821.919$ f) $386.75 + 75.867 = 462.617$
 g) $-347.68 + 146.37 = -201.31$ h) $624.18 - 245.34 = 378.84$

- 3 If $a = 45.39$, $b = 27.14$, $c = 9.45$, find the value of:

a) $a + b + c = 81.98$ b) $(a - b) + c = 27.7$ c) $(a - b) - c = 8.8$
 d) $a + (b - c) = 63.08$ e) $a - (b + c) = 8.8$ f) $a - (b - c) = 27.7$

- 4.** Complete the following table.

| | | | |
|-------|-------|-------|-------|
| + | 35 | 36.18 | 38.02 |
| 18.45 | 53.45 | 54.63 | 56.47 |
| 10.36 | 45.36 | 46.54 | 48.38 |

- 5.** Find the value of x in each of the following cases.

a) $x + 25.18 = 48.32$ $x = 23.14$ b) $x - 35.48 = 84.18$ $x = 119.66$
 c) $146.36 - x = 184.29$ $x = -37.93$ d) $138.47 + x = 256.42$ $x = 117.95$

- 6.** True or False? If a statement is false, give a counter-example.

- a) The sum of two decimal numbers is a decimal number. True
 b) The difference of two decimal numbers is a decimal number. True
 c) Addition of decimal numbers is a commutative operation. True
 d) Addition of decimal numbers is an associative operation. True
 e) Subtraction of decimal numbers is a commutative operation. False
 f) Subtraction of decimal numbers is an associative operation. False

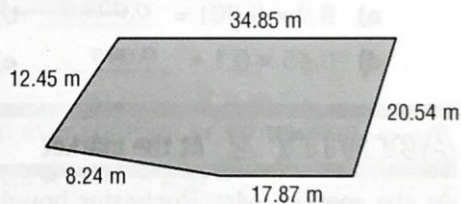
- 7.** Mrs. Lawson sells purses at a flea market. The following table shows her receipts, in dollars, during the course of 4 days. Complete the table.

| | Thursday | Friday | Saturday | Sunday | Total |
|-----------|----------|--------|----------|----------|----------|
| Morning | 346.75 | 323.33 | 245.20 | 604.66 | 1 519.94 |
| Afternoon | 507.43 | 324.87 | 472.75 | 1 425.85 | 2 730.90 |
| Total | 854.18 | 648.20 | 717.95 | 2 030.51 | 4 250.84 |

- 8.** Mr. Potts owns a piece of land in the shape of the given figure. He wishes to enclose his land with a fence.

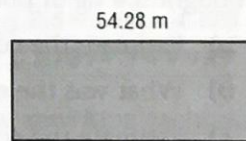
What is the total length of fencing that he will require?

He will require 93.95 m of fencing.



- 9.** Find the width of the rectangle represented in the adjacent figure if half of its perimeter is equal to 84.28 m.

The width of the rectangle is 30 m.



- 10.** Marissa is buying Christmas presents for her friends: a pen for \$9.45, a flower pot for \$8.48, an assortment of soaps for \$7.28 and a cassette for \$9.26. If she gives the cashier a \$50 bill, how much change should she receive?

She should receive \$15.53.

- 11.** Marina gathered 2.75 kg of raspberries, 1.85 kg of strawberries and 1.3 kg of blueberries to make some jam. What quantity of sugar must she add if she needs the same amount of sugar, in kg, as fruit?

She must add 5.9 kg of sugar.