**Competence based curriculum**

**Grade 4**

**mathematics**

**MEASUREMENT**

**Working out the Perimeter of Plane Figures**

**Square**

**What is the perimeter of the figure below?**


Perimeter is calculated by adding all the sides of the square.
**Remember that all sides of a square have equal measurements**
So, if One side is marked 10 cm, all sides are 10 cm
Perimeter = L + L + L + L or L x 4
= 10 + 10 + 10 + 10 (or 10 x 4) = 40
= 40 cm (do not forget the units)

**Rectangle**

**What is the perimeter of the figure below?**


Perimeter is calculated by adding all the sides of the Rectangle.
**Remember that two opposite sides of a rectangle have equal measurements**
So, if One side is marked 10 cm, the opposite side is also 10 cm.
Perimeter = L + W + L + W or (L x 2) + (W x 2) or 2L + 2W
= 18 + 10 + 18 + 10 or (18 x 2) + (10 x 2) = 56
= 56 cm (do not forget the units)

**Other Figures**

**What is the perimeter of the figure below?**


Perimeter is calculated by adding all the sides of the shape.
**Draw the shape on a paper and mark each side when you add it. This will help prevent adding a side twice.**
= 12 + 7 + 16 + 10 + 18 = 63
= 63 cm (do not forget the units)

**Addition involving metres and centimetres**

When working with metres and centimetres, always remember:

**1 metre = 100 centimetres.**

**Example 2.1**

**Convert 16 metres to centimetres**

Remember 1m = 100 cm
Hence,
16 m = ? cm
16 x 100 = 1600 cm.
1600 cm

**Example 2.2**

**Wok out**



Answer



**Example 2.3**

**Mary's drew a 1m and 30 cm line on the sand. John's drew 5m and 10 cm from where Mary left. How long was the line?**

Answer



**Subtraction involving metres and centimetres**

**Example 3.1**

**Wok out**



Answer



**Example 3.2**

**A stick measured 3m and 16 cm. Mercy cut 1m and 50 cm from it. What was length of the remaining stick.**


In this example, 16 is less than 50 and hence will leave a negative number. Hence, we 'borrow' 1 metre from the metres column, convert it to centimetres and add 16. It will be 116.
Therefore, 116 - 50 = 66.
On the metres column, we are left with 2 - 1 (remember we 'borrowed' 1m earlier)
2 - 1 = 1

**Multiplication involving metres and centimetres**

**Example 4.1**

**Wok out**



Answer



First, we multiply 40 by 3 to get: 40 x 3 = 120
Remember that 100cm = 1, hence the 120cm can be converted to metres to give 1m and 20cm
Write the 20 in the cm column and 'carry forward' the 1m.
Then multiply 2 x 3,
2 x 3 = 6,
Then add the 1 we had 'carried forward' earlier,
6 + 1 = 7m,
Hence the answer is 7m 20cm.

**Division involving metres and centimetres**

**Example 5.1**

**Wok out**



Answer



Your answer, 6m 9cm

## Mass

#### Student's Activity 1

When you go the shop, you buy some items in terms of their mass. Some items are usually written how heavy they are.
For instance, Elizabeth found this packet of maize flour in her kitchen. What is mass of the maize flour when full?

#### Answer

You can also be asked: "How heavy was the packet of maize flour when full"
As indicated on the packet, when full of maize flour, it has a mass of 2 kilograms.

Mass can be given in terms of grams (g) or kilograms (kg).
Always remember that 1000 grams (g) = 1 kilogram (kg)

### Addition of Mass Involving Kilograms

#### Practice 1

Mary bought 5kg of maize flour and 2kg of sugar. How many kilograms of maize flour and sugar did she buy?

#### Answer

Maize flour: 5kg
Sugar: 2kg
5 + 2 = **7kg**

#### Practice 2

Our teacher went to the market and bought the following items:

* Maize flour: 2kg
* Wheat flour: 2kg
* Sugar: 1kg
* Rice: 2kg
* Beans: 2kg

How many kilograms of items did she buy altogether?

#### Answer

2 + 2 + 1 + 2 + 2 = **9kg**

### Subtraction of Mass Involving Kilograms

#### Practice 1

Work out the following:
30 kg - 13kg

#### Answer


**Answer: 17kg**

#### Practice 2

Jecinta bought 35kg of maize flour and gave 16kg to her sister. How many kilograms of maize flour was she left with?

#### Answer


**Answer: 19kg**

## Money

When dealing with money, always note:
1 shilling (sh) = 100 cents (cts)
so
100 cents = 1 shilling

#### Practice 1

Convert the following into cents
a) 5 shillings
b) 75 shillings

#### Answer

a) 5 shillings
Every shilling is 100 cents, so:

This can also be represented as:
5 x 100 = **500 cents**

b) 75 shillings
75 x 100 = **7500 cents**

#### Practice 2

Convert the following into shillings
a) 200 cents
b) 650 cents

#### Answer

Remember that 100 cents = 1 shillings
Therefore we divide the amount given in cents by 100 to get amount in shillings
a) 200 cents

**2 shillings**
b) 650 cents

**6 shillings 50 cents**

### Addition Involving Money

#### Practice 3

Work out
1000 + 550

#### Answer


Answer: **Sh. 1550**

#### Practice 4

Add 50 shillings 60 cents and 14 shillings and 30 cents
This can also be written as:


#### Answer



#### Practice 5

Work out the following:


#### Answer



**Hint:**
- When adding the cents, always remember that 100 cents = 1 shilling.
- In the question above, 55 cents + 75 cents = 130 cents.
- Since 130 cents is more than 100, we convert 130 cents into shillings.
- 130 cents ÷ 100 cents = 1 shilling 30 cents.
- We 'carry' the one shilling to the shillings side and add it.
175 + 69 + 1 = 245.
Answer: **Sh. 245  30 cts**

### Subtraction Involving Money

#### Practice 6

Work out the following:


#### Answer



**NUMBERS**

**Numbers: Place Value and Total Value**

**1. Place Value**

a. This is the position of a digit in a number
b. It is given in words
c. The place value is identified from the right side

**Place Value Chart**



Practice Question 1

If you have a number like **97234**, the place value of **2** would be?

Answer


Counting from the right, the place value of 2 is **hundreds**.
In the same number, the place value of 9 is **tens of thousands**.

**2. Total Value**

a. It is shows the quantity and value of digit in a number
b. It is given in words or symbols
c. One has to first identify the place value before the total value
d. Digits to the right hand of the digit are replaced with zeroes to give the total value.

Practice Question 2

The total value of **7** in the number **17264** is obtained as follows.

Answer


The place value of the number 7 is **thousands**.
All the numbers to the right of 7 are replaced with zeroes, and the ones before 7 are ignored.
Therefore, the **total value** of 7 is **7000**

Practice Questions

In the number 52831, the **total value** of 5 is **50000**
In the number 11809, the **total value** of 8 is **800**
In the number 1236, the **total value** of 1 is **1000**

**Practice Questions**

What is the place value and total value of 5 in the following numbers

* 62159
* 54782
* 95124
* 12015

## Numbers: Arranging Numbers

### 1. Arranging from smallest to largest

It is arranging numbers from the one with the least value to one with the highest value.

#### Practice Question 1

Arrange the following numbers from smallest to largest; 598, 601, 399, 248, 733.

#### Answer


The digits in the hundreds (place value) are 5, 6, 3, 2, and 7.
When arranged from smallest to largest, the numbers are 2, 3, 5, 6, 7.
Then, the correct order is 248, 399, 598, 601, 733.

#### Practice Question 2

Arrange the following numbers from smallest to largest; 528, 557, 501, 590, 538.

#### Answer


The digits in the hundreds (place value) are the same, so we consider the tens column.
When arranged from smallest to largest, the numbers are 0, 2, 3, 5, 9.
Then, the correct order is 501, 528, 538, 557, 590.

### 2. Arranging from largest to smallest

It is arranging numbers from the one with the highest value to one with the least value.

#### Practice Question 3

Arrange the following numbers from the largest to the smallest; 847, 748, 487, 874,784.

#### Answer


First, we consider the hundreds column, the numbers are grouped as **8, 8**, **7, 7**, **4**.
Since number 8 and 7 occur more than once, we consider the tens column.
We can arrange them as: **87, 84**, **78, 74**, **48**
Therefore, the answer is 874, 847, 784, 748, 487

**Numbers: Rounding off numbers to the nearest ten**

**Rounding off numbers to the nearest ten up to 1000**

**Important Notes**

**a.** When rounding off a number to the nearest ten, you look at the digit in the place value of ones.
**b.** If this digit is 0, 1,2, 3, or 4, the digit in the place value of tens remain the same, while the digit in the ones place value becomes zero.
**c.** If the digit in the ones place value is 5,6,7, 8 or 9,add 1 to the digit in the place value of tens, and the digit in the place value of ones becomes zero.

**Practice Question 1**

Round off 34 to the nearest tens;

Answer

The digit in the ones place value is **4**.
Therefore, the digit in the tens place value (3) **remains the same** and the one in the ones column changes to **0**.
The answer is **30**.

**Practice Question 2**

Round off 47 to the nearest tens;

Answer

The digit in the ones place value is 7.
Therefore, we add **1** to the digit in the tens place value and the digit in the ones place value becomes **0**.
The answer is **50**

**Practice Question 3**

Round off 396 to the nearest tens;

Answer


The digit in the ones place value is 6.

Therefore, we add **1** to the digit in the tens place value and the digit in the ones place value becomes **0**.
Since the digit in tens column is 9, on adding the 1, we get 10, where we write 0 and carry 1 to the number in the hundreds column, which is 3.
The answer is **400**

**More rounding-off examples**



**Practice Questions**

Round-off the following numbers to the nearest ten.

* 126
* 215
* 111
* 982
* 659

**ALGEBRA**

### Using Letters to Form Algebraic Expressions

We use letters in the alphabet to form algebraic expressions. These letters are from **a to z**.
Everything can be represented in terms of letters.
For instance, we can use:
**t** to represent tables
**b** to represent boys
**g** to represent girls
**a** to represent books

#### Forming Algebraic Expressions

#### Practice 1

Using the letters given above, form an algebraic expression to show:
3 boys + 5 girls

#### Answer

Boys are represented by the letters b and girls by the letters g.
Hence
3 boys = b + b + b = 3b
5 girls = g + g + g + + g + g = 5g
**3b + 5g**

#### Question 1

Use different letters to write an algebraic expression to show:
a) 4 books + 6 pens
b) 10 chairs + 2 tables
c) 1 desk + 4 books

##### *Show your answers to your teacher/parent/guardian.*

**DATA HANDLING**

**Representing Data using Frequency Tables**

**Activity 1**

Count the number of spoons, plates, and cups in your home.
John, a Grade 4 pupil counted the following:

John counted:
**12** cups
**10** plates
**14** spoons
This information can be represented as follows:



**Hint:
Count the number of 'lines'. Each '/' is counted as 1 as shown below
**

**Practice 1**

Grade 4 students did an exam and scored as shown in the table below:

Using the information above, how many marks did each student score?

Answer

* Mary: 17
* Stephen: 13
* Michael: 18
* Susan: 19
* John: 15
* Angela: 16

**Interpreting Frequency Tables**

**Practice 2**

The table below shows the number of men and women who went to the hospital in the month of May.

a) On which day were the number of men who went to the hospital the highest?
b) On which day were the number of women who went to the hospital the lowest?
c) How many men visited the hospital on Monday, Tuesday, and Wednesday?
d) How many women visited the hospital from Monday to Sunday?
e) How many people went to the hospital on Friday, Saturday, and Sunday?

Answers

a) ***On which day were the number of men who went to the hospital the highest?***
**Friday**. 28 Men went to the hospital that day.

b) ***On which day were the number of women who went to the hospital the lowest?***
**Saturday**. 12 women went to the hospital on Saturday.

c) ***How many men visited the hospital on Monday, Tuesday, and Wednesday?***
Monday: 20
Tuesday: 26
Wednesday: 21
Hence; 20 + 26 + 21 = **67 men**

d) ***How many women visited the hospital from Monday to Sunday?***
Monday: 17
Tuesday: 19
Wednesday: 29
Thursday: 23
Friday: 20
Saturday: 12
Sunday: 19
Hence; 17 + 19 + 29 + 23 + 20 + 12 + 19 = **139 women**

e) ***How many people went to the hospital on Friday, Saturday, and Sunday?***
**Men**
Friday: 28
Saturday: 22
Sunday: 14
Total = 28 + 22 + 14 = 64
**Women**
Friday: 20
Saturday: 12
Sunday: 19
Total = 20 + 12 + 19 = 51
Total People: 64 + 51 = **115 Men and Women**