

MATHEMATICS SECOND TERM E LESSON NOTE FOR BASIC SIX

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Class:- Basic 6

Subject:- Mathematics

Week:- 2

Topic: Money (Rates, Taxes, Shares and dividends)

Behavioral objective:- At the end of the lesson the pu.pils should be able to:-1.

Solve problems on taxes and Rates on population and economic Consequences.

2. Solve problem on buying and Selling of shares and dividends.

**Instructional material/Reference material:- Learn Africa Mathematics UBE
edition for primary school book 6**

Building Background /connection to prior knowledge : Students are familiar with the uses of money

Content

MONEY

Rate – means what the government Provides for her people.

Example:- Agege Local government charges N5.50 monthly for the user: Find The total rent collected monthly From

(A). 50 stalls (B) 160 stalls

Solution:-

(A). Monthly rate collected for N50

Stalls is ₦5.50×50 ₦275.00

Taxes: This is the money that Government uses to build schools, Hospitals, roads etc

Example:- Tax deducted from the taxable Income of an employee is 35K on Every N1. Find the tax paid if the Taxable income is N4,500

Solution:-

= (4,500×35)K = 1,575.00K = 1,575.00

Shares: The amount needed is Divided into units and each unit is

Called a share.

Example:- A metal manufacturing company Sells some of its 40K share to the Public who are ready to buy in Multiples of 200.

(i). What is the cost of 800 shares?

(ii). How many shares can I buy With N1, 250?

Solution

Cost of one share = 40K

Cost of 800 Share = 40×800 = N(40×800)= N32,000

(ii). 40K can buy only one share: N1,250 will buy $1250 \times 200 \div 1 = 1250 \times 5$
= N6,250 shares

Dividends:- This is the amount Made from the goods sold at the End of the year.
The profit is called Dividend.

Example: A share holder has 200 shares in a Company. How much is his
Dividend if dividend are given at 5 1/2K per share.

Solution

Dividend on 1 share = 5 1/2

Dividend on 200 shares = $11/2 \times 200/10 = N1100$

Evaluation:-

1. An executive lady earns two million naira per annum.
(a) Work out her income tax b) Work out her monthly tax
2. At the Marina Car Park, ₦400 naira is charged to park a jeep and ₦250 to park a car. How much will the Car Park Authority collect for parking 250 cars and 360 jeeps in a day?
3. The IKEDC charge for a company is ₦48275 VAT inclusive. If 10% was charged as VAT, how much was that?
4. Find the rent collected by Local Government Authority from 276 stalls at the rate of ₦5600 per stall.

Class:- Basic 6

Subject:- Mathematics

Week:- 3

Topic: Length

Behavioral objective:- At the end of the lesson the pupils should be able to:-1.

Recognise and convert the units of length

2. Apply pythagoras' rule to find the unknown length of a given right-angled triangle

3. Identify pythagorean triples

4. Find the heights and distances of objects

Instructional material/Reference material:- Learn Africa Mathematics UBE edition for primary school book 6

Building Background /connection to prior knowledge : Students are familiar with the various ways of measuring length.

Content:-

LENGTH

The standard unit of length are:

– millimetres (mm) – metres (m)

– centimetres (cm) – kilometres (km)

10 millimetres (mm) = 1 centimetre (cm)

1000 millimetres = 1 metre

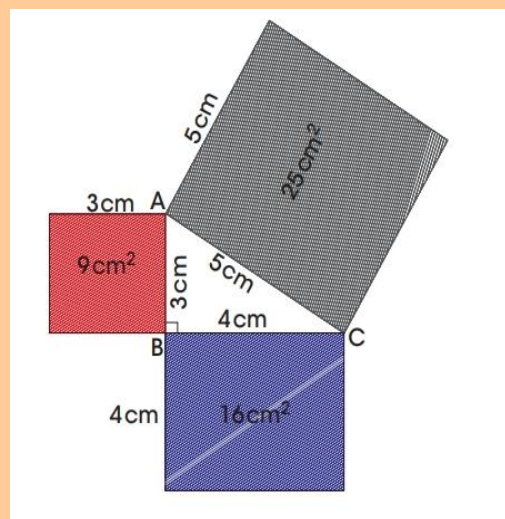
100 centimetres = 1 metre (m) 1000 metres =

1 kilometre (km)

Examples

1. $10\text{mm} = 1\text{cm} \therefore 18\text{cm} = 18 \times 10\text{mm} = 180\text{mm} \therefore$

2. $1000\text{m} = 1\text{km}$ $1.08\text{km} = 1.08 \times 1000\text{m} = 1080\text{m}$



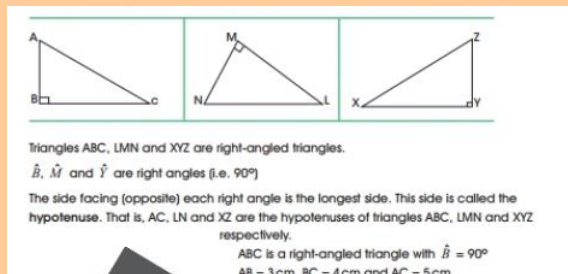
Examples

1. $10\text{mm} = 1\text{cm} \therefore 280\text{mm} = 280 \div 10\text{cm} = 28\text{cm}$

2. $100\text{cm} = 1\text{m} \therefore 185\text{cm} = 185 \div 100\text{m} = 1.85\text{m}$

Pythagoras theorem

Study the diagrams below



Triangles ABC, LMN and XYZ are right-angled triangles.

\hat{B} , \hat{M} and \hat{Y} are right angles (i.e. 90°)

The side facing (opposite) each right angle

is the longest side. This side is called the hypotenuse. That is, AC, LN and XZ are the hypotenuses of triangles ABC, LMN and XYZ respectively.

ABC is a right-angled triangle with $\hat{B} = 90^\circ$

AB = 3cm, BC = 4cm and AC = 5cm

Area of red square = $3\text{cm} \times 3\text{cm} = 9\text{cm}^2$

Area of blue square = $4\text{cm} \times 4\text{cm} = 16\text{cm}^2$

Area of red square + Area of blue square $9\text{cm}^2 + 16\text{cm}^2 = 25\text{cm}^2$

Area of black square = $5\text{cm} \times 5\text{cm} = 25\text{cm}^2$

From the calculation, you will see that the area of the black square equals the sum of the areas of both the red square and blue square.

This is called the Pythagoras theorem. In this right-angled triangle ABC, pythagoras' theorem tells you that area Y (black) = area R (red) + area B (blue)

Pythagoras' theorem

In any right-angled square on the to the sum of the the other two sides

Application of calculate the missing triangle

usually written using the lengths of the sides of the triangle.

In this right-angled triangle ABC, Pythagoras' theorem tells you that

$$b^2 = a^2 + c^2$$

The square of the hypotenuse side is

equal to the sum of the squares of the other two sides.

This rule is used to find an unknown side of a right-angled triangle when the other two sides are given.

Example

1. Study how the length of the side marked y is found.

Hypotenuse = 13cm

$$= y^2 + 5^2$$

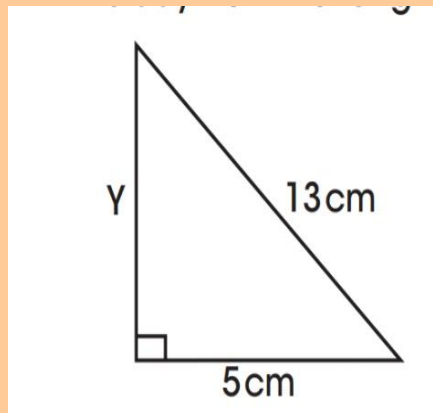
$$\therefore 169 = y^2 + 25$$

$$169 - 25 = y^2$$

$$= y^2$$

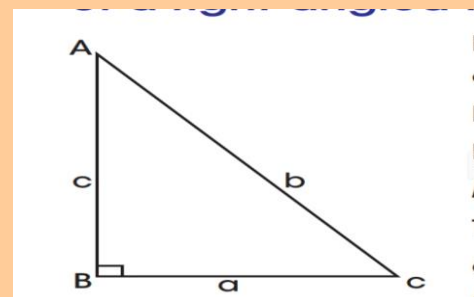
$$\therefore y^2 = 144$$

$$y = \sqrt{144} = 12\text{cm}$$



triangle, the area of the hypotenuse side is equal areas of the squares on

Pythagoras' theorem to side of a right-angled Pythagoras' theorem is

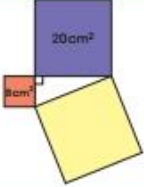
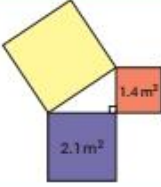
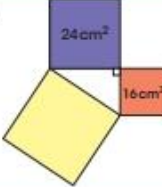
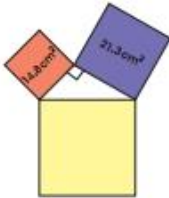
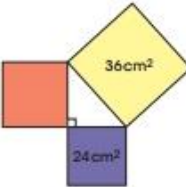
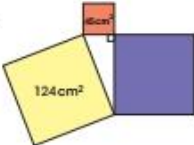


$$\therefore 13^2$$

$$= y^2 + 5^2$$

Evaluation:-

Exercise 1
Calculate the missing area of the square in each of these.

1. 	2. 	3. 
4. 	5. 	6. 

2. Find the length of the hypotenuse of a right-angled triangle if the lengths of the other two sides are 12cm and 16cm respectively.

3. A right-angled triangle has its hypotenuse as 10cm and one other side as 8cm. Calculate the length of the third side

Class:- Basic 6

Subject:- Mathematics

Week:- 4

Topic: Perimeter (Regular & Irregular Shapes)

Behavioral objective:- At the end of the lesson the pupils should be able to:-

1. Review work done on perimeters of plane shapes
2. identify rectangles that have same area but different perimeters
3. find the perimeters of compound shapes

Instructional material/Reference material:- Learn Africa Mathematics UBE edition for primary school book 6




Building Background /connection to prior knowledge : Students are familiar with the measurement of length and height from the previous lesson

Content

Perimeter

Perimeter means the sum of lengths of all the sides of a plane shape. It also means the distance round a shape, field or plot.

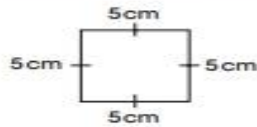
Formulae

Formulae	
<p>Perimeter of a square = $4 \times \text{side}$ $= 4l$</p>  <p>Side (l) = $\frac{\text{Perimeter}}{4}$</p>	<p>Perimeter of a circle = circumference</p>  <p>Circumference = $2\pi r = \pi d$</p> <p>Diameter (d) = $\frac{2 \times \text{Perimeter}}{22}$</p>
<p>Perimeter of a rectangle = $2(l + b)$</p> <p>$l = \frac{\text{Perimeter}}{2} - b$</p> <p>$b = \frac{\text{Perimeter}}{2} - l$</p> 	<p>Perimeter of triangles, other quadrilaterals and higher polygons = sum of lengths of all sides</p>

Examples

1. Here the perimeter of a square with sides of 5 cm is found.

Method 1

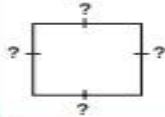


$$\text{Perimeter} = 5 \text{ cm} + 5 \text{ cm} + 5 \text{ cm} + 5 \text{ cm} = 20 \text{ cm}$$

Method 2

$$\begin{aligned} \text{Perimeter of a square} &= 4 \times \text{sides} \\ \text{Side} &= 5 \text{ cm} \\ \therefore \text{Perimeter} &= 5 \text{ cm} \times 4 \\ &= 20 \text{ cm} \end{aligned}$$

2. If the perimeter of a square is 60 cm, find the length of its side.



Perimeter of a square = 60 cm

$$\text{Side} = ?$$

$$\text{Side} = \frac{\text{Perimeter}}{4} = \frac{60 \text{ cm}}{4} = 15 \text{ cm}$$

Rectangles of the same area having different perimeters

$$\text{Area of a rectangle} = L \times B \text{ cm}^2$$

$$\text{Perimeter of a rectangle} = 2(L + B) \text{ cm}$$

We shall discover that different rectangles with the same area have different perimeters.

Examples

1.



$$\begin{aligned} \text{Length} &= 8 \text{ cm} \\ \text{Breadth} &= 5 \text{ cm} \\ \text{Area} &= 8 \times 5 \text{ cm}^2 \\ &= 40 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Length} &= 8 \text{ cm} \\ \text{Breadth} &= 5 \text{ cm} \\ \text{Perimeter} &= 2(8 + 5) \text{ cm} \\ &= 26 \text{ cm} \end{aligned}$$

2.



$$\begin{aligned} \text{Length} &= 10 \text{ cm} \\ \text{Breadth} &= 4 \text{ cm} \\ \text{Area} &= 10 \times 4 \text{ cm}^2 \\ &= 40 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Length} &= 10 \text{ cm} \\ \text{Breadth} &= 4 \text{ cm} \\ \text{Perimeter} &= 2(10 + 4) \text{ cm} \\ &= 2 \times 14 \text{ cm} \\ &= 28 \text{ cm} \end{aligned}$$

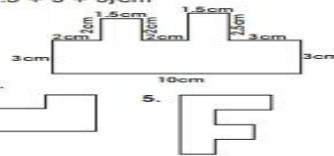
The two rectangles have the same area (40 cm²) but have different perimeters. Their perimeters are 26 cm and 28 cm respectively.

Examples

This method finds the perimeter of the shape drawn below.

$$\text{Perimeter} = (10 + 3 + 2 + 2 + 1.5 + 2 + 2 + 2.5 + 1.5 + 2.5 + 3 + 3) \text{ cm}$$

$$= 35 \text{ cm}$$



Exercise

Measure the sides of these shapes and find their perimeters.

1.



2.



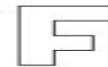
3.



4.

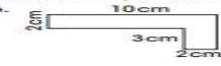


5.



Calculate the perimeters of these shapes.

6.



7.



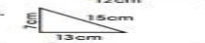
8.



9.



10.



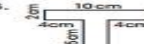
11.



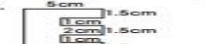
12.



13.



14.



15.



16.



17.

Find the perimeter of a square of sides 10.5 cm.

18.

Find the side of a square whose perimeter is 36 cm.

19.

The distance round a rectangular field is 720 metres. If it is 10 metres wide, how long is it?

20.

Find the circumference of a circle whose diameter is 35 cm.

21.

If the circumference of a circle is 88 cm, what is its diameter?

22.

Find the distance which a bicycle wheel of radius 7 cm covers on the ground along a straight path if it rotates 10 times.

Perimeter of
irregular
shapes/cm
pound
shapes

Evaluation:-

- 1. The perimeter of a rectangle is 78cm. Find the length if the breadth is 15cm.**
- 2. A rectangle and square have the same areas but different perimeters. If the side of the square is 8cm and the breadth of the rectangle is 2cm, find:
(a) the length of the rectangle. (b) the perimeters of the square and the rectangle.**

Class:- Basic 6

Subject:- Mathematics

Week:- 5

Topic: Area (Trapezium)

Behavioral objective:- At the end of the lesson the pupils should be able to:-

1. Define and draw a trapezium
2. Measure the area of a trapezium

Instructional material/Reference material:- Learn Africa Mathematics UBE edition for primary school book 6

Building Background /connection to prior knowledge : Students are familiar with the ways of measurement

Content

Trapezium

A trapezium is a rectangular shape joined with either a triangle at one end or a triangle each at two ends.

ABCD is a rectangle. BCE is a triangle.

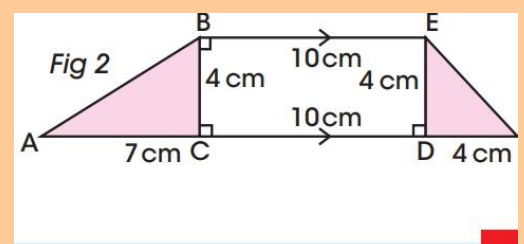
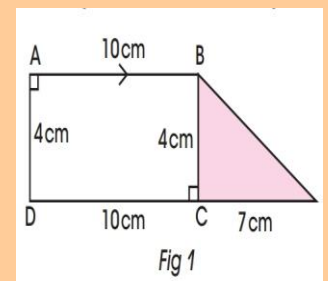
\therefore ABCD + BCE = ABED.

ABED is known as a trapezium,

that is a rectangle plus a triangle as shown in Fig 1

ABC is a triangle. EDF is also a triangle. BEDC is a rectangle.

Thus ABC + BEDC + EDF = trapezium ABEF



Hence trapezium ABEF = a rectangle + 2 triangles as shown in Fig 2

Examples

Study these methods to find the area of parallelogram ABED in Fig 1 above given that AB = 10cm, CE = 7cm and AD = 4cm.

Method 1

Area of rectangle ABCD = length \times breadth = 10cm \times 4cm = 40cm².

Area of triangle BCD = $\frac{1}{2}$ base height = $\frac{1}{2} \times 7\text{cm} \times 4\text{cm} = 14\text{cm}^2$

Area of trapezium ABED = area of rectangle ABCD + area of triangle BCE = 40cm² + 14cm² = 54cm²

Method 2

Draw a line from B to D.

Trapezium ABED = Triangle ABD + Triangle BED \therefore Area of ABED = Area of ABD + Area of BED
Note: Area of trapezium ABED = $\frac{1}{2} \times \text{height} \times (\text{sum of the parallel sides})$
= $\frac{1}{2} \times 4\text{cm} \times (10\text{cm} + 17\text{cm})$
= $\frac{1}{2} \times 4\text{cm} \times 27\text{cm} = 54\text{cm}^2$

= $\frac{1}{2} \times 4\text{cm} \times (10\text{cm} + 17\text{cm}) = 14\text{cm} + 27\text{cm} = 54\text{cm}^2$

Examples

Study these methods to find the area of trapezium ABEF, shown in fig 2 above.

Method 1

Area of trapezium ABEF = Area of triangle ABC + Area of rectangle BEBC + area of triangle EDF
= $\frac{1}{2} \times \text{base} \times \text{height} + \text{length} \times \text{breadth} + \frac{1}{2} \times \text{base} \times \text{height}$
= $\frac{1}{2} \times 7\text{cm} \times 4\text{cm} + 10\text{cm} \times 4\text{cm} + \frac{1}{2} \times 4\text{cm} \times 4\text{cm}$

= 14cm² + 40cm² + 8cm² = 62cm²

Method 2

Area of ABEF = $\frac{1}{2} \times \text{height} \times (\text{sum of the parallel sides})$
= $\frac{1}{2} \times 4\text{cm} \times (10\text{cm} + 21\text{cm}) = 14\text{cm} + 31\text{cm} = 62\text{cm}^2$

In general the area of a trapezium =

$$\frac{1}{2}(a + b)h$$

Where a and b are parallel lines and h is the perpendicular height.

Evaluation:-

1. A trapezium has an area of 126cm^2 . If the sum of the parallel sides is 28cm , what is the height of the trapezium?

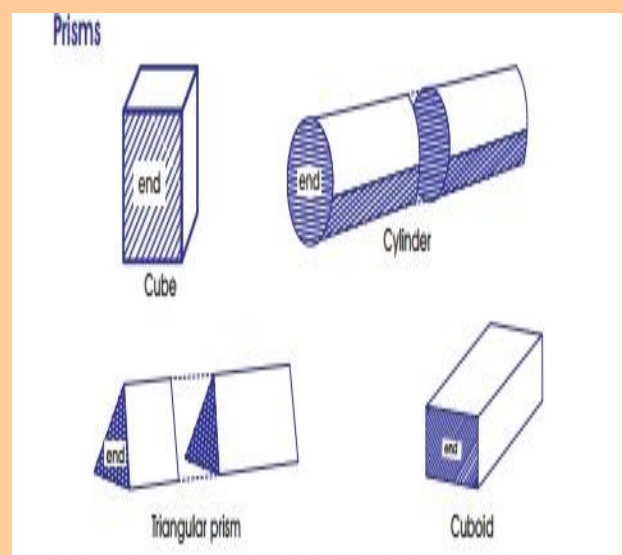
Class:- Basic 6

Subject:- Mathematics

Week:- 6.

Topic: Volume (Prisms, cube and spheres)

Behavioral objective:- At the end of the lesson the pupils should be able to:-



1. Identify different types of prism
2. Find the volume of prism
3. Calculate the volume of cube
4. Calculate the volume of spheres

Instructional material/Reference material:- Learn Africa Mathematics UBE edition for primary school book 6

Building Background /connection to prior knowledge : Students are familiar with a ludo dice and Maggie which are examples of cube

Content

VOLUME

A prism is a solid with a uniform cross section. The cross section is congruent and can be a square, rectangle, circle, triangle, etc. The cross section is cut parallel to the solid.

The end of the cross section is also called the base, which comprises of the length and width. The side that is vertical when the end is sitting on the ground is called the height.

The volume of a prism is the area of its end or cross section times the height.

Volume of prism = Area of end or cross section \times height.

Volume of a cube

The end is a square, but all the sides are equal. Volume of a cube = Area of the square \times height

Volume of a cuboid

The end could either be a square or a rectangle.

Volume of a cuboid = Area of the square or rectangle \times height.

Volume of a cylinder

The end is a circle. Volume of a cuboid = Area of the circle × the height of the cylinder.
Volume of a sphere

Evaluation:-

Calculate the volume of each of these spheres.

1. Radius 5cm 2. Radius 3cm 3. Radius 6cm

4. Radius 10cm 5. Diameter 16cm 6. Diameter 8cm

7. Calculate the volume of a water melon whose radius is 10.5.


8. Find the volume of a football whose radius is 26cm.

9. The shot put has a radius of 8cm. Calculate its volume.

10. Find the volume of a sphere whose diameter is 14cm.

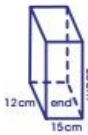
11. Calculate the volume of a sphere whose diameter is 56cm

Examples



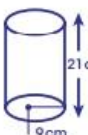
Volume of a cube = area of end or cross section × height
 Volume = $(10 \times 10 \times 10) \text{ cm}^3 = 1000 \text{ cm}^3$

Cube



Volume of a cuboid = Area of end or cross section × height
 Volume = $12 \times 15 \times 20 \text{ cm} = 3600 \text{ cm}^3$


Cuboid



Volume of a cylinder = Area of end or cross section × height end or cross section is a circle and area of circle = πr^2
 Volume = $\pi r^2 \times \text{height}$
 $= \frac{22}{7} \times 9 \times 9 \times 21$
 $= 22 \times 9 \times 9 \times 3 = 5346 \text{ cm}^3$

Cylinder

We refer to objects like balls, oranges and globes as spheres.



Formula: Volume of sphere = $\frac{4\pi r^3}{3}$
 where r is the radius of the sphere.

Examples

A solid sphere has a radius of 2cm. Here the volume of the sphere is calculated. $\left(\pi = \frac{22}{7}\right)$.

Volume of a sphere = $\frac{4\pi \times 2^3}{3} \text{ cm}^3$
 $= \frac{4 \times \pi \times 2 \times 2 \times 2}{3}$
 $= \frac{4 \times 8\pi}{3}$
 $= \frac{32 \times 22}{3 \times 7} = \frac{704}{21} \text{ cm}^3$
 $= 33.5 \text{ cm}^3$

Class:- Basic 6

Subject:- Mathematics

Week:- 7

Topic: Capacity

Behavioral objective:- At the end of the lesson the pupils should be able to:-

- 1. Do some conversions involving units of capacity**
- 2. Identify the relationship between capacity and volume**
- 3. Carry out basic operations on capacity**
- 4. Solve word problems on capacity**

Instructional material/Reference material:- Learn Africa Mathematics UBE
 edition for primary school book 6

Building Background /connection to prior knowledge : Students understand the fact that every object has capacity

Content

The volume of an object is the space occupied by the object.

The capacity of an object is the amount of substance (either liquid or solid) it can hold or contain.

Table on capacity

10 millilitres (PE) = 1 centilitre (FE)

10 centilitres (FE) = 1 decilitre (GE)

10 decilitres (GE) = 1 litre (E)

From the table above, it can be deduced that

$10 \times 10 \times 10PE = 1000PE = 1 \text{ litre.}$

Table on volume

$.10\text{mm} \times 10\text{mm} \times 10\text{mm} = 1\text{cm} \times 1\text{cm}$

$\times 1\text{cm} \therefore 1000\text{mm}^3 = 1\text{cm}^3$

$10\text{cm} \times 10\text{cm} \times 10\text{cm} = 1\text{dm} \times 1\text{dm} \times$

$1\text{dm} \therefore 1000\text{cm}^3 = 1\text{dm}^3$

Table of cubic measures		Similarly	
1 litre	= $10\text{cm} \times 10\text{cm} \times 10\text{cm} = 1000\text{cm}^3$	1000 cm ³	= 1 dm ³
	= $1\text{dm} \times 1\text{dm} \times 1\text{dm}$		= 1 litre
	= 1 dm ³		
1000mm ³	= $10\text{mm} \times 10\text{mm} \times 10\text{mm}$	1000 dm ³	= 1 metre cube
	= $1\text{cm} \times 1\text{cm} \times 1\text{cm}$		= 1 m ³
	= 1 cm ³		= 1000 litres
			= 1 kilolitre
			= 1000000 cm ³

$10\text{dm} \times 10\text{dm} \times 10\text{dm} = 1\text{m} \times 1\text{m} \times 1\text{m.} \therefore 1000\text{dm}^3 = 1\text{m}^3$

Note: A cube with sides of 10cm contains 1 litre of a liquid.

Volume of the cube = $10\text{cm} \times 10\text{cm} \times 10\text{cm} = 1000\text{cm}^3$

Capacity of the cube = 1litre

Hence $1000\text{cm}^3 = 1\text{litre} = 1000PE \therefore 1\text{cm}^3 = 1PE$

Table of cubic measures

Basic operation on capacity

Evaluation:-

1. The flow of water into a cistern is 27.5 litres every second. How much water flows into the cistern in one hour?
2. Milk arrives at a Super Mart in a container which holds 97.2 litres and is used to fill 6 milk bottles all of equal volume. How much milk will one bottle hold?
3. A cow provides 5.6 litres of milk every day. How much milk would 25 cows, each producing the same quantity of milk, produce in 9 days?
4. If a litre of paint weighs 895 grams, find the weight of 17 litres of paint in kilograms.

1 000 millilitres (ml) = 1 litre (l) 1 000 litres = 1 kilolitre

Examples

1. $\begin{array}{r} \ell \quad ml \\ 104 \quad 365 \\ + 207 \quad 977 \\ \hline 312 \quad 342 \end{array}$	2. $\begin{array}{r} \ell \quad ml \\ 94 \quad 184 \\ - 28 \quad 697 \\ \hline 65 \quad 487 \end{array}$	3. $\begin{array}{r} \ell \quad ml \\ 14 \quad 484 \\ \times 7 \\ \hline 101 \quad 395 \end{array}$	4. $\begin{array}{r} kl \quad \ell \\ 6 \overline{)74 \quad 802} \\ \underline{12} \quad 467 \end{array}$
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Exercise

Simplify the following.

1. $\begin{array}{r} \ell \quad ml \\ 104 \quad 65 \\ + 123 \quad 977 \\ \hline \end{array}$	2. $\begin{array}{r} \ell \quad ml \\ 18 \quad 941 \\ + 29 \quad 749 \\ \hline \end{array}$	3. $\begin{array}{r} \ell \quad ml \\ 67 \quad 876 \\ - 24 \quad 795 \\ \hline \end{array}$	4. $\begin{array}{r} \ell \quad ml \\ 197 \quad 273 \\ - 89 \quad 897 \\ \hline \end{array}$
5. $\begin{array}{r} \ell \quad ml \\ 31 \quad 235 \\ \times 9 \\ \hline \end{array}$	6. $\begin{array}{r} \ell \quad ml \\ 84 \quad 297 \\ \times 6 \\ \hline \end{array}$	7. $\begin{array}{r} \ell \quad ml \\ 7 \overline{)68 \quad 103} \end{array}$	8. $\begin{array}{r} \ell \quad ml \\ 9 \overline{)74 \quad 412} \end{array}$

5. A petrol tanker supplies a filling station 22500NE of fuel. How many cars with a tank capacity of 25 litres are needed to empty the petrol tank?

6. A dairy served 2211 customers with milk. 780 of them had 1 litre every day of the week except 2 litres on

Sunday, 806 had a 12 litre every day of the week except 1 litre on Sunday and the rest had 2 litres every day of the week. How much milk was sold in a week?

7. A water tank can contain 4500 litres of water when full. If it has a daily leakage of 1.2 litres, how many litres will be left in the tank after 2 weeks?

8. The pharmacist pours syrup in 230PE bottles. If she has 92 litres to pour into the 230PE bottles, how many bottles will she pour into?

9. The gas station attendant paid the sum of 'Ω192725.00 to the cashier by midday. If gas is sold for 'Ω65 per litre, how much gas did she sell?

10. Rosy bought 30 litres of lemonade for a breakfast fellowship. How many mugs of lemonade can she pour if each mug holds 300 millilitres?

Class:- Basic 6

Subject:- Mathematics

Week:- 8

Topic: Weight

Behavioral objective:- At the end of the lesson the pupils should be able to:-

1. do conversion involving unit of weight

2. do basic operations on weight

3. solve word problems involving weight.

Examples

1.
$$\begin{array}{r} 4\text{ kg } 470\text{ g} \\ + 7\text{ kg } 684\text{ g} \\ \hline 12\text{ kg } 154\text{ g} \end{array}$$
$$470\text{ g} + 684\text{ g} = 1154\text{ g}$$
$$= 1000\text{ g} + 154\text{ g}$$
$$= 1\text{ kg} + 154\text{ g}$$

2.
$$\begin{array}{r} 10\text{ kg } 200\text{ g} \\ - 4\text{ kg } 346\text{ g} \\ \hline 5\text{ kg } 854\text{ g} \end{array}$$
$$1200\text{ g} - 346\text{ g} = 854\text{ g}$$

3.
$$\begin{array}{r} 8\text{ kg } 225\text{ g} \\ \times 4 \\ \hline 32\text{ kg } 900\text{ g} \end{array}$$

4.
$$\begin{array}{r} 88\text{ kg } 440\text{ g} \div 22 \\ \underline{22} \quad \begin{array}{r} 4\text{ kg } 20\text{ g} \\ 88\text{ kg } 440\text{ g} \\ - 88 \\ \hline 44\text{ g} \\ 44 \\ \hline 0 \\ - 0 \\ \hline 4\text{ kg } 20\text{ g} \end{array} \end{array}$$

Instructional material/Reference

material:- Learn Africa Mathematics

UBE edition for primary school book 6

Building Background /connection to prior knowledge : Students are familiar with various ways of measuring weight

Content

Weight

Conversion involving unit of weight

1000 grams (g) = 1 kilogram (kg) 1000 kilograms = 1 tonne (t)

1 tonne = 1000×1000 grams = 1000 000 g

Basic operation on Weight

Evaluation:-

Change these to grams.

1. 23 kg 2. 105 kg 3. 29.2 kg 4. 17.06 kg 5. 12 kg 6. 14 kg 7. 18 kg 8. 1100kg

Change these to tonnes.

9. 7000 kg 10. 19046 kg 11. 312345 kg 12. 896 kg 13. 500 kg 14. 250 kg 15. 125 kg
16. 10 kg

Change these to kilograms.

17. 11000 g 18. 27726 g 19. 400 g 20. 250 g 21. 16 tonnes 22. 73 tonnes 23. 8.9 tonnes
24. 0.67 tonnes

How many quarter-kilogram packets of sugar can be packed from each of the amounts of sugar listed below?

25. 50 kg 26. 32 kg 27. 20250 kg 28. 110 kg 29. 18 tonne 30. 0.4 tonne 31.12 tonne
32. 1 tonne

Word problems on weight

Exercise

1. A shopkeeper sold 478 kg 400 g of rice in January and 762 kg 710 g of rice in February. How much rice did he sell in January and February?

- 2. Adisa is 5.5 kg heavier than Chukwu, who weighs 26.4 kg. What is Adisa's weight?**
- 3. Give your answer to 4 in grams and kilograms.**
- 4. A sack of groundnuts weighs 22 kg 200 g. The sack alone weighs 6 kg 450 g. What is the weight of the groundnuts?**
- 5. The heaviest boy in Seyi's class weighs 39.6 kg. The lightest boy weighs 27.9 kg. What is the difference between the weights of the heaviest boy and the lightest boy in Seyi's class?**
- 6. From a five hundred kilogram of butter, a trader sells ten lots of twenty kilograms and six lots of two kilograms five hundred grams. How much butter is left?**
- 7. A lorry carried seven baskets of kolanuts. Two of the baskets weighed 21 kilograms 90 grams and 26 kilograms 400 grams. Each of the other five baskets weighed 20 kilograms 350 grams. Find the total weight of all the baskets of kolanuts.**
- 8. An empty box weighing 0.75 kilogram is filled with twenty-four packets of rice, each weighing 0.56 kilogram. What is the total weight of the box?**
- 9. A piece of brick weighs 2.25 kilograms. What is the weight of twelve pieces of such bricks?**
- 10. Eight tins of milk weigh 17.6 kilograms. What is the weight of ten tins of milk?**

Class:- Basic 6

Subject:- Mathematics

Week:- 9

Topic: Time

Behavioral objective:- At the end of the lesson the pupils should be able to:-

1. Tell the time on a 24-hour clock
2. Read time tables on journeys
3. Calculate average speed
4. Calculate athletic time.

Instructional material/Reference material:- Learn Africa Mathematics UBE edition for primary school book 6

Building Background /connection to prior knowledge : Students are familiar with wall clock and wrist watches which are object that tells time

Content

Time

24 hours clock

Bus, railway, ship and airline timetables use the 24-hour clock to state the times of departure and arrival of journeys.

Remember: The 24-hour clock numbers hours from 00 to 24, that is, for a whole day from midnight to midnight. When 24-hour clock times are written with four

figures, the first two figures represent hours and the last two figures represent minutes past the hour. A point usually separates the hours from the minutes, e.g.

1. 7.25 am is written as 07.25

2. 7.25 pm is written as 19.25

You have to add on 12 hours if it is pm or after. That is why 7.25 pm is 19.25.

When it gets to midnight, the 24-hour clock changes from 13.59 to 00.00

Reading timetables of journeys

Flight time table
Aero Contractors flight schedule
Lagos – 09/09/2014 – Arrivals

Flight No	Arrival city/port	Aircraft type	Schedule departure	Schedule arrival	Actual departure
NG-141	Kano - MALLAM AM	B737-50	09-09-2014 06:30	09-09-2014 08:00	
NG-121	Abuja - ABUJA INT	B737-402	09-09-2014 06:45	09-09-2014 08:00	
NG-311	Portharcourt-PORT HARC	B737-403	09-09-2014 07:00	09-09-2014 08:10	
NG-2001	Accra-KOTOKA IN	B737-500	09-09-2014 07:15	09-09-2014 08:55	
NG-151	UYO-UYO	B737-402	09-09-2014 07:30	09-09-2014 08:55	
NG-341	OWERRI-OWERRI	B737-500	09-09-2014 07:45	09-09-2014 08:55	
NG-119	Sokoto-SOKOTO	B737-500	09-09-2014 08:45	09-09-2014 11:45	
NG-119	Sokoto-SOKOTO	B737-500	09-09-2014 08:45	09-09-2014 11:45	
NG-119	Abuja-ABUJA INT	B737-500	09-09-2014 08:45	09-09-2014 10:00	
NG-313	Portharcourt-PORT HARC	B737-403	09-09-2014 10:35	09-09-2014 11:45	
NG-123	Abuja-ABUJA INT	B737-402	09-09-2014 10:45	09-09-2014 12:10	
NG-181	Kaduna-KADUNA	B737-500	09-09-2014 11:00	09-09-2014 12:20	
NG-161	Benin-city - BENIN	B737-500	09-09-2014 11:30	09-09-2014 12:20	
NG-171	Calabar - CALABAR	B737-501	09-09-2014 12:35	09-09-2014 13:50	
NG-301	Enugu - ENUGU	B737-403	09-09-2014 12:35	09-09-2014 13:45	
NG-315	Portharcourt-PORT HARC	B737-403	09-09-2014 14:15	09-09-2014 15:25	
NG-127	Abuja-ABUJA INT	B737-402	09-09-2014 14:45	09-09-2014 16:10	
NG-193	Asaba - ASABA	DH8-Q400	09-09-2014 15:00	09-09-2014 16:00	
NG-343	OWERRI - OWERRI	B737-500	09-09-2014 15:50	09-09-2014 17:00	
NG-129	Abuja - ABUJA INT	B737-402	09-09-2014 16:00	09-09-2014 17:15	
NG-143	Kano - MALLAM AM	B737-501	09-09-2014 16:15	09-09-2014 17:45	
NG-319	Portharcourt-PORT HARC	B737-403	09-09-2014 16:45	09-09-2014 17:55	
NG-2003	Accra - KOTOKA IN	B737-500	09-09-2014 17:40	09-09-2014 17:45	
NG-131	Abuja - ABUJA INT	B737-403	09-09-2014 17:55	09-09-2014 19:20	
NG-135	Abuja - ABUJA INT	B737-500	09-09-2014 19:30	09-09-2014 20:45	

Reading time tables of journeys (flight and trains)
Lagos – 09/09/2014 – Arrivals

Flight No	Arrival city/port	Aircraft type	Schedule departure	Schedule arrival	Actual departure
NG-120	Abuja-ABUJA INT	B737-500	09-09-2014 07:00	09-09-2014 08:15	
NG-312	Portharcourt-PORT HARC	B737-403	09-09-2014 08:45	09-09-2014 09:55	
NG-122	Abuja-ABUJA INT	B737-402	09-09-2014 08:45	09-09-2014 10:00	
NG-2002	Accra-KOTOKA IN	B737-500	09-09-2014 08:00	09-09-2014 10:00	
NG-142	Kano-MALLAM AM	B737-501	09-09-2014 08:35	09-09-2014 10:05	
NG-124	Abuja-ABUJA INT	B737-403	09-09-2014 10:45	09-09-2014 12:00	
NG-194	Asaba-ASABA	DH8-Q400	09-09-2014 11:15	09-09-2014 12:15	
NG-314	Portharcourt-PORT HARC	B737-403	09-09-2014 12:20	09-09-2014 13:30	
NG-342	OWERRI-OWERRI	B737-500	09-09-2014 12:40	09-09-2014 13:45	
NG-162	Benin-city-BENIN	B737-500	09-09-2014 13:00	09-09-2014 13:50	
NG-126	Abuja-ABUJA INT	B737-402	09-09-2014 12:45	09-09-2014 14:10	
NG-152	UYO-UYO	B737-402	09-09-2014 13:00	09-09-2014 14:15	
NG-182	Kaduna-KADUNA	B737-500	09-09-2014 12:55	09-09-2014 14:15	
NG-128	Sokoto-SOKOTO	B737-500	09-09-2014 12:15	09-09-2014 15:15	
NG-128	Abuja-ABUJA INT	B737-500	09-09-2014 14:00	09-09-2014 15:15	
NG-128	Sokoto-SOKOTO	B737-500	09-09-2014 12:15	09-09-2014 15:15	
NG-302	Enugu-ENUGU	B737-403	09-09-2014 14:20	09-09-2014 15:30	
NG-172	Calabar-CALABAR	B737-501	09-09-2014 14:25	09-09-2014 15:40	
NG-316	Portharcourt-PORT HARC	B737-403	09-09-2014 16:00	09-09-2014 17:15	
NG-132	Abuja-ABUJA INT	B737-402	09-09-2014 16:45	09-09-2014 18:00	
NG-344	OWERRI-OWERRI	B737-500	09-09-2014 17:35	09-09-2014 18:45	
NG-320	Portharcourt-PORT HARC	B737-501	09-09-2014 18:30	09-09-2014 19:40	
NG-144	Kano-MALLAM AM	B737-500	09-09-2014 18:20	09-09-2014 19:50	
NG-2004	Accra-KOTOKA IN	B737-500	09-09-2014 18:20	09-09-2014 20:20	
NG-134	Abuja-ABUJA INT	B737-403	09-09-2014 19:55	09-09-2014 21:10	

(Flights and trains)

Train time-table

Passenger train schedule

The following passenger train services are currently running across the country.

O Lagos – Ilorin (Tuesdays, Fridays & Saturdays)

- Departs Iddo 09.00 hrs
- Arrives Ilorin 18:34 hrs of same day.

O Ilorin – Lagos (Wednesdays, Saturdays & Sundays)

- Departs Ilorin 11.00 hrs of Wednesday

- Arrives Lagos 20.59 hrs of same day
- Departs Ilorin 09.00 hrs on Saturdays and Sundays
- Arrives Lagos 20.59 hrs.
- O Lagos – Kano (Every Friday)**
- Departs Iddo 12.00 hrs
- Arrives Kano 17.01 hrs on Saturday
- O Kano – Lagos (Every Monday)**
- Departs Kano 09-00 hrs
- Arrives Lagos 14.24 hrs on Tuesday
- O Offa – Kano (Every Tuesday)**
- Departs Offa 22.00 hrs
- Arrives Kano 18.05 hrs on Wednesday
- O Kano – Offa (Every Friday)**
- Departs Kano 08.30 hrs
- Arrives 05.35 hrs on Saturday
- O Minna – Kaduna – Minna (Every Sunday, Monday & Tuesday)**
- O Nguru – Kano (Every Tuesday and Friday)**
- O Kaduna Inter-city [Commuter service] (Mondays – Saturdays)**
- O Lagos Inter-city [Commuter service] (Mondays – Saturdays)**

Average speed

Speed is often measured in kilometres per hour. This is written for short as km/h. To find the average speed, you divide distance by time taken. That is:

Average speed = Distance covered/ Time Taken

Examples

Study how the following word problems have been solved.

1. An aeroplane flies 2800km in 5 hours. What is its average speed?

Average speed = Distance covered/Time

$$2800/ 5 = 560\text{km/h}$$

are asked to find the time covered, you use formula



Taken
When you
the

Distance covered/ Average Speed: In the previous example you did $2800 / 560 = 10 / 2 = 5$ hrs

To find the distance covered, you do average speed multiplied by time.

That is $560 \times 5 = 2800$ km

2. Abel walked a distance of 90metres in 1minute. Find his walking speed in km/h.

Speed = Distance/Time = $90 \div 1000 \text{km} \div 1 \div 60 \text{ h} = 90 / 1000 \times 60 \text{km/h} = 5.410$
km/h = 5.4km/h

Athletic time

Short periods of time are recorded in seconds (s) or fractions of a second. Athletic time is recorded in seconds but using 1minute plus for long distant races.

For this purpose a stop watch us

used to give accurate timing.

The minute shown on this stopwatch is between 0 and 1. The second is 14.2. An electric timer is needed if a measurement to two decimal places is required (1/100s). We measure short periods of time in seconds. There are 60seconds in 1 minute. A stopwatch or seconds pendulum can be used to record short periods of time, such as in races, debates, quiz competitions and mental sums.

Group activity

Use the stopwatch to time these events.

1. How long does it take your partner to blink her eyes?
2. How long does it take your partner to walk from one end of the classroom to the other?
3. How long does it take to write a sentence? (Choose the same sentence.)
4. How long does it take to boil water in an electric kettle?
5. How long does it take to boil a cup of water on a stove?
6. How long does it take to warm a plate of rice in a microwave oven?
7. How long does it take to defrost a frozen chicken?

Evaluation:-

1. A motorist left his home at 10.00 am to travel to a city of distance 260km. He reckoned he could average 80km/h. At what time would he arrive at the city?
2. Express a speed of 60metres per second in kilometres per hour correct to 1 decimal place.
3. A motor car travels at 60km/h. At this speed how far will it travel in:
a) 1min b) 10min c) 3/4h?
4. The distance between Ibadan to Ilesha is 120 kilometres. A passenger lorry left Ilesha for Ibadan at 6 a.m and arrived back in Ilesha at 12 noon. It stopped at Ile-Ife for 30minutes, at Gbongan for 1 hour and at Ibadan for 1 1/2 hours. Find the time spent traveling, not including stopping time. With this time find the average speed for the journey. (Remember to exclude stopping time.)
5. How many minutes are there between each start and finish time.

Start. Finish Start Finish

a) 20.20 → 23.40 b) 23.25 → 01.10

6. A flight that was scheduled to take off at 22.55 was delayed for 25 minutes. What time did it finally take off?