

158. Mrs. Phiri's son was born during her silver jubilee. If the son is now 22 years old, how old is Mrs. Phiri?

- |       |       |
|-------|-------|
| A. 47 | C. 72 |
| B. 50 | D. 82 |
- MANEB 2012

Silver jubilee = 25 years

Mrs Phiri was 25 years old when her son was born.

Now her age is = 25 years + 22 years  
= 47 years old

Answer A

159. When will a boy cerebrate his silver jubilee birthday if he was in 1997?

MANEB 2009

- |         |         |
|---------|---------|
| A. 2007 | C. 2047 |
| B. 2022 | D. 2072 |

Silver jubilee = 25 years

$$\begin{aligned} &= 1997 + 25 \text{ years} \\ &= 2022 \end{aligned}$$

Answer B

THE END!!

Simply add 35 min to 7:30am  
8:05am

**Answer C**

151. Maria left her home from school at 11:33am. She walked for 25 minutes after which she rode an ox-wagon. If she arrived home at 12:49pm, how long was her ox-wagon ride?

A. 45 minutes      C. 76 minutes  
B. 51 minutes      D. 91 minutes

MANEB 2002

Start by adding 25 minutes to 11:33am.

11:33am + 25 min = 11:58am

Then subtract 11:58am from 12:49pm.

12:49pm - 11:58am = 12:49

- 11:58

00:51

### Answer B

152. Multiply 15h 50min by 5  
MANER 2009

Hr	min
15	50
x	5
79	10

153. A train is supposed to start off from Limbe at 11:58am and to reach Makhanga at 1:49pm. If it arrived 22 minutes late, how long did the journey take? (MANER 2007)

A. 1 h 29 min      C. 2 h 13 min  
 B. 1 hr 51 min    D. 2 h 51 min

First, find how long it is from 11:58a, to 1:49pm then add 22 min to the result.

$$\begin{aligned}
 & \text{Change } 1:49\text{pm to 24 hour time. i.e } 1:49\text{hours} \\
 & + 12:00\text{hours} = 13:49 \text{ hours} \\
 & = (13:49 \text{ hours} - 11:58 \text{ hours}) \div 22 \text{ min} \\
 & = 1 \text{h } 51\text{min} + 22 \text{ min} \\
 & = (1\text{h} \times 60) + 51 \text{ min} + 22 \text{ min} \\
 & = 60 \text{ min} + 73 \text{ min} \\
 & \equiv 133 \text{ min}
 \end{aligned}$$

But the answer is given in h min  
 Finally change 133min to h min  
 $= 133 \div 60$   
 $= 2\text{h } 13\text{ min}$

154. Express 6 hours as a fraction of a day

MANEB 2007

$$\frac{16}{24} = \frac{2}{3}$$

**Answer D**

155. How many days are in 2 fortnights?  
A. 14 days      C. 28 days  
B. 21 days      D. 40 days

MANER 2009

$$1 \text{ fortnight} = 2 \text{ weeks} = 2 \times 7 = 14 \text{ days}$$

$$\therefore 2 \text{ fortnights} = 2 \times 14 \text{ days}$$

$$= 28 \text{ days} \quad \text{Ans}$$



1 fortnight = 2 weeks

1 fortnight ago + 2 coming weeks

$$2 \text{ weeks} + 2 \text{ weeks} = 4 \text{ weeks}$$

**Answer C**

157. Brenda receives K2,300 per fortnight from an employer as her wage. Find the amount of money she gets in a month.

$$\begin{aligned} \text{There are 2 fortnights in 1 month} \\ \text{So, if 1 fortnight} &= 2,300 \\ \therefore 2 \text{ fortnights} &= 2 \times K2,300 \\ &= K4,600 \end{aligned}$$

### **Answer A**

145. Express  $3,274 \text{ dm}^3$  in  $\text{m}^3$

- A.  $0.3274 \text{ m}^3$       C.  $32.74 \text{ m}^3$   
 B.  $3.274 \text{ m}^3$       D.  $327.4 \text{ m}^3$

MANEB 2009

If  $1,000 \text{ dm}^3 = 1 \text{ m}^3$

$\therefore 3,274 \text{ dm}^3 = ? \text{ m}^3$

$$= \frac{1 \text{ m}^3 \times 3,274 \text{ dm}^3}{1,000 \text{ dm}^3}$$

$$= 3.274 \text{ m}^3$$

Answer B

146. Calculate the volume of a cuboid which has the measurements of 12cm by 7cm by 4cm

- A.  $84 \text{ cm}^3$       C.  $48 \text{ cm}^3$   
 B.  $83 \text{ cm}^3$       D.  $336 \text{ cm}^3$

MANEB 2012

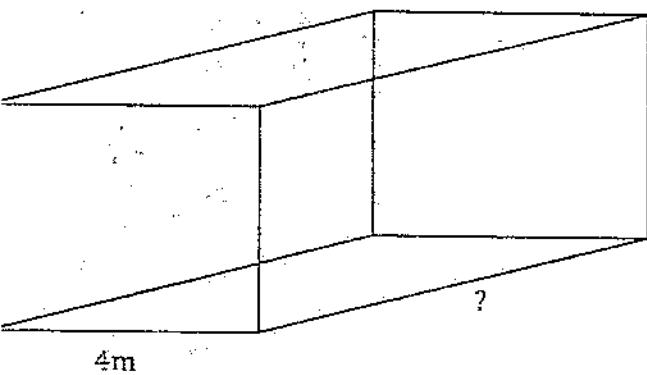
$$\text{Volume} = L \times W \times H$$

$$= 12 \text{ cm} \times 7 \text{ cm} \times 4 \text{ cm}$$

$$= 336 \text{ cm}^3$$

Answer D

147. A rectangular tank 4m wide and 7m high has a volume of  $168 \text{ m}^3$ . Calculate the length of the tank



Length = volume ÷ area

$$= 168 \text{ m}^3 \div (L \times W)$$

$$= 168 \text{ m}^3 \div (7 \text{ m} \times 4 \text{ m})$$

$$= 168 \text{ m}^3 \div 28 \text{ m}$$

$$= 6 \text{ m}$$

148. If  $48 \text{ m}^3$  of water is stored in a rectangular tank 6m long and 4m wide, calculate the height of the water level in the tank?

- A. 2m      C. 0.5m  
 B. 4m      D. 4.8m

MANEB 2007

Start with the formula for finding volume

$$L \times W \times H = \text{volume}$$

$$6 \text{ m} \times 4 \text{ m} \times H = 48 \text{ m}^3$$

$$H = 48 \text{ m}^3 \div (6 \text{ m} \times 4 \text{ m})$$

$$H = 48 \text{ m}^3 \div 24 \text{ m}$$

$$= 2 \text{ m}$$

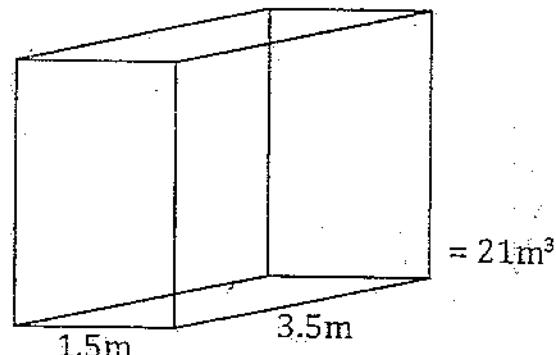
Answer A

149. Find the height of a rectangular object of its volume is  $21 \text{ m}^3$ , length is 3.5m and width is 1.5m

- A. 4m      C. 6.00m  
 B. 5.25m      D. 14m

MANEB 2002

You can sketch the rectangular object as shown below



Start with the formula for finding volume

$$L \times W \times H = \text{volume}$$

$$3.5 \text{ m} \times 1.5 \text{ m} \times H = 21 \text{ m}^3$$

$$H = 21 \text{ m}^3 \div (3.5 \text{ m} \times 1.5 \text{ m})$$

$$H = 21 \text{ m}^3 \div 5.25 \text{ m}$$

$$= 4 \text{ m}$$

Answer A

### Time

Calculations with time involves a lot of tricks because time units are not metric system (60 sec, 60 min, 24 hours, 7 days, 2 weeks / fortnight; 12 months, 10 years / decade, 25 years / silver jubilee; 30 years / generation; 50 years / golden jubilee, 100 years / centenary / centuary, 1,000 years / millennium

150. Mary goes to school that starts at 7:30am. One day she arrived at the school 35 minutes late. At what time did she get to school

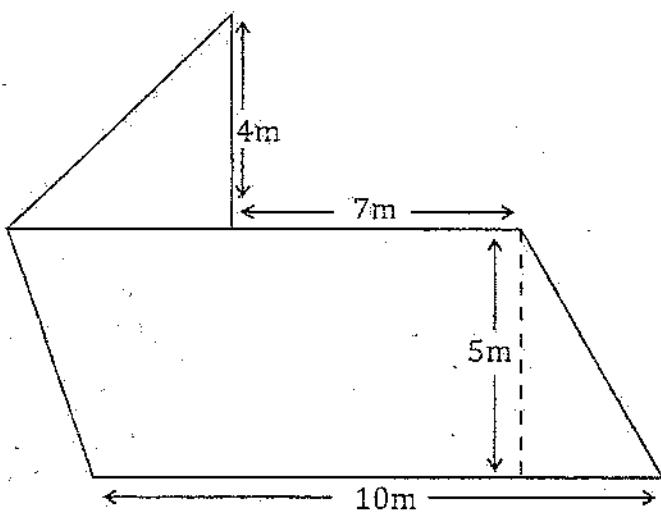
- A. 6:55am      C. 8:05am  
 B. 7:05am      D. 9:05am

$$\begin{aligned}
 \text{Area of small semi-circle} &= \frac{1}{2} \pi r^2 \\
 &= \frac{22}{7} \times 3 \frac{1}{2} \text{ cm} \times 3 \frac{1}{2} \text{ cm} \\
 &= \frac{1}{2} \times \frac{22}{7} \times \frac{7\text{cm}}{2} \times \frac{7\text{cm}}{2} \\
 &= \frac{77}{4} \\
 &= 19.25\text{cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Total area} &= 77\text{cm}^2 + 19.25\text{cm}^2 \\
 &= 96.25\text{cm}^2
 \end{aligned}$$

**Answer C**

141. The figure below is made up of a parallelogram and a triangle. Find the area of the figure. MANEB 2002



$$\begin{aligned}
 \text{Area of parallelogram} &= \text{base} \times \text{perpendicular height} \\
 &= 10 \times 5 \\
 &= 50\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Area of a triangle} &= \frac{1}{2} \text{base} \times \text{perpendicular height} \\
 &= \frac{1}{2} \times (10 - 7) \text{ m} \times 4 \\
 &= \frac{1}{2} \times 3\text{m} \times 4 \\
 &= 6\text{m}^2
 \end{aligned}$$

$$\therefore \text{Total area} = 50\text{m}^2 + 6\text{m}^2 = 56\text{m}^2$$

#### Volume, capacity, mass (weight)

**Volume** is the amount of space taken up by something. It is measured in cubic unit such as:  $\text{m}^3$ ,  $\text{dm}^3$ ,  $\text{cm}^3$  etc

**Capacity** usually refers to liquid space. It is measured in litres, ml etc. You, candidates, need to memorise the relationship between

volume and capacity because they both deal with space. Below are the relationships:  
 $1\text{cm}^3 = 1\text{ml}$ ;  $1\text{dm}^3 = 1$  litre;  $1000\text{cm}^3 = 1$  litre;  $1\text{m}^3 = 1,000$  litres.

**Mass** is how heavy a thing is. It is the amount of matter in a substance. The more the matter the more heavier it will be. Mass is measured in kilograms (kg), grams (g) milligrams (mg), etc Note that  $1,000\text{g} = 1\text{kg}$ ;  $1,000\text{kg} = 1$  tone.

142. Which of the following is the unit measurement of capacity?

(MANEB 2012)

- A. Kilogram  
B. Meter

**Solution :** litre

- C. Litre  
D. gram

**Answer C**

143. The paraffin in a bottle has a volume of  $24,000\text{cm}^3$ . Calculate the capacity of the bottle of paraffin in litres.

(MANEB 2008)

- A. 25 litres  
B. 250 litres

- C. 2,500 litres

- D. 25,000 litres

First ask yourself a question: How many cubic centimetres make 1 litre? i.e.

$$\begin{aligned}
 \text{If } 1,000\text{cm}^3 &= 1\ell \\
 \therefore 25,000\text{cm}^3 &= ? \text{ more} \\
 &= \frac{1\ell \times 25,000\text{cm}^3}{1,000\text{cm}^3} \\
 &= 25\ell
 \end{aligned}$$

144. A lorry has to carry 13 parcels each having a mass of 82,375g. Find the total mass of the parcels in kg.

(MANEB 2009)

- A. 107,087kg  
B. 1,070.875kg

- C. 10,708.75kg

- D. 107,087.5kg

This is a multiplication problem. i.e  $13 \times 82,375\text{g} = 1070875\text{g}$

But, the answers are given in kg, so we need to convert 1070875g to kg i.e.

kg	hg	dag	g	dg	cg	mg
1070	8	7	5	0	0	0

$$\begin{aligned}
 &= 1,070.87500\text{kg} \text{ (place value method)} \\
 &= 1,070.875\text{kg}
 \end{aligned}$$

**Answer B**

Area of two semi-circles

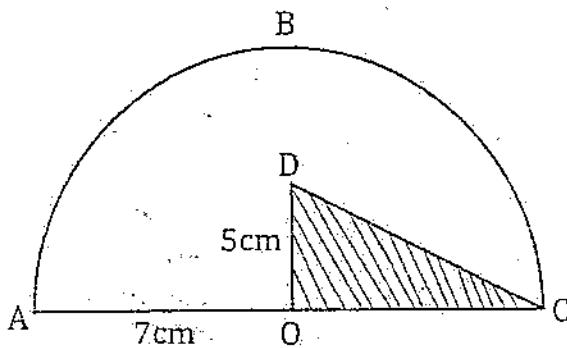
$$\begin{aligned}
 &= \text{area of a whole circle} \\
 &= \frac{22}{7} \times \frac{2.1\text{cm}}{2} \times \frac{2.1\text{cm}}{2} \\
 &= \frac{11}{7} \times \frac{0.3}{1} \times \frac{2.1}{2} \\
 &= 3.3 \times 2.1 \div 2 \\
 &= 3.465\text{cm}^2
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Total area} &= 10.5\text{cm}^2 + 3.465\text{cm}^2 \\
 &= 13.965\text{cm}^2
 \end{aligned}$$

138. The figure shows a semi-circle ABC in which a right angled triangle DOC has been removed.

$AO = 7\text{cm}$  and  $OD = 5\text{cm}$ . If O is the centre of the semi-circle. Calculate the area of the remaining part. Take  $\pi = \frac{22}{7}$

MANEB 2010



$$\begin{aligned}
 \text{Area of semi-circle} &= \frac{1}{2} \pi r^2 \\
 &= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7 \\
 &= 11 \times 7 \\
 &= 77\text{cm}^2
 \end{aligned}$$

Area of triangle =  $\frac{1}{2}$  base x height

$$\begin{aligned}
 &= \frac{1}{2} \times 7\text{cm} \times 5 \\
 &= 17.5\text{cm}^2
 \end{aligned}$$

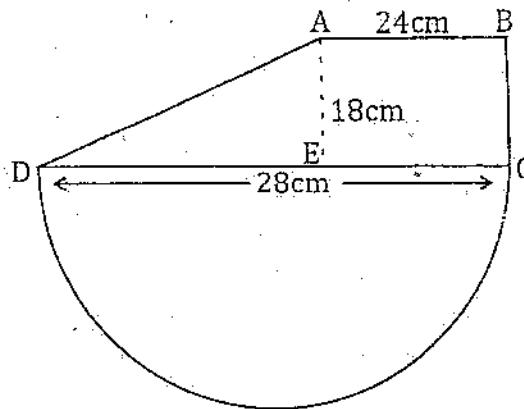
Area of remaining part

$$\begin{aligned}
 &= 77\text{cm}^2 - 17.5\text{cm}^2 \\
 &= 59.5\text{cm}^2
 \end{aligned}$$

139. The figure is a composite shape made up of a trapezium ABCD and a semi-circle DEC. Calculate the total area of the figure.

Take  $\pi = \frac{22}{7}$

MANEB 2012



Area of a trapezium

$$\begin{aligned}
 &= \frac{1}{2} \times \text{sum of parallel sides} \times \text{height} \\
 &= \frac{1}{2} \times 52 \times 18 \\
 &= 52 \times 9 \\
 &= 468\text{cm}^2
 \end{aligned}$$

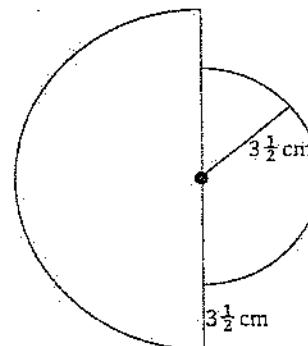
Area of semi-circle

$$\begin{aligned}
 &= \frac{1}{2} \pi r^2 \\
 &= \frac{1}{2} \times \frac{22}{7} \times \frac{28\text{cm}}{2} \times \frac{28\text{cm}}{2} \\
 &= 11 \times 28 \\
 &= 308\text{cm}^2 \\
 \therefore \text{Total Area} &= 468\text{cm}^2 + 308\text{cm}^2 \\
 &= 776\text{cm}^2
 \end{aligned}$$

140. The two semi-circles in the figure below have the same centre. Find the total area of the figure.

Take  $\pi = \frac{22}{7}$

MANEB 2002



- A.  $33\text{cm}^2$   
B.  $57.75\text{cm}^2$   
C.  $96.25\text{cm}^2$   
D.  $192.5\text{cm}^2$

Area of big semi-circle

$$\begin{aligned}
 &= \frac{1}{2} \pi r^2 \\
 &= \frac{1}{2} \times \frac{22}{7} \times 7\text{cm} \times 7\text{cm} \\
 &= 11 \times 7\text{cm} \\
 &= 77\text{cm}^2
 \end{aligned}$$

parallelogram concept (where parallel sides determine lengths of missing measurements). Add all the six sides.

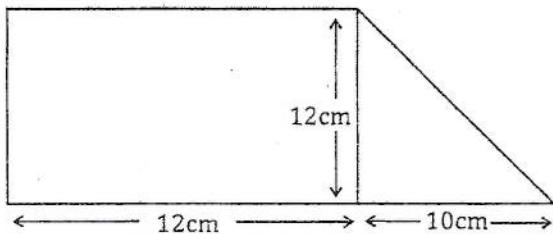
$$\text{The longer top side} = 3\text{m} + 1\text{m} = 4\text{m}$$

$$\text{The shorter side} = 4\text{m} - 2\text{m} = 2\text{m}$$

So, the total perimeter will be as follows:  
 $= 4\text{m} + 4\text{m} + 2\text{m} + 1\text{m} + 2\text{m} + 3\text{m} = 16\text{m}$

**Answer C**

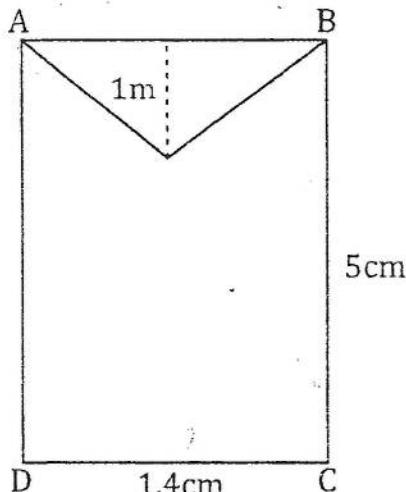
134. Calculate the area of the figure



- A. 132cm      C. 204cm  
 B. 154cm      D. 264cm

**MANEB 2008**

135. The figure is a rectangular door ABCD with triangle AEB unpainted.  
 $EF = 1\text{m}$ ,  $BC = 2.5\text{m}$  and  $DC = 1.4\text{m}$

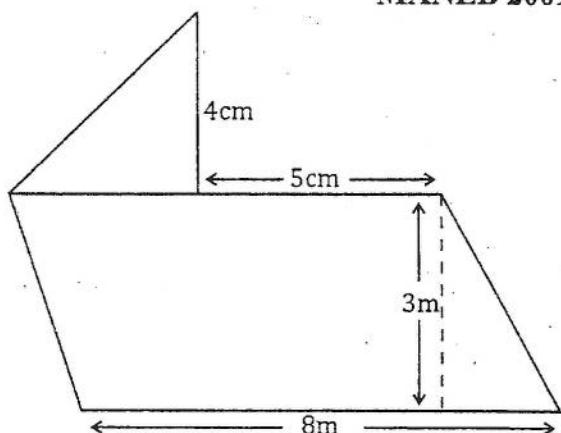


Calculate the area of the painted part  
**MANEB 2008**

$$\text{Area of painted part} \\ = (L \times W) - \frac{1}{2} b \times h$$

136. The figure shows a composite figure consisting of a parallelogram and a triangle. Find the area of the figure.

**MANEB 2009**



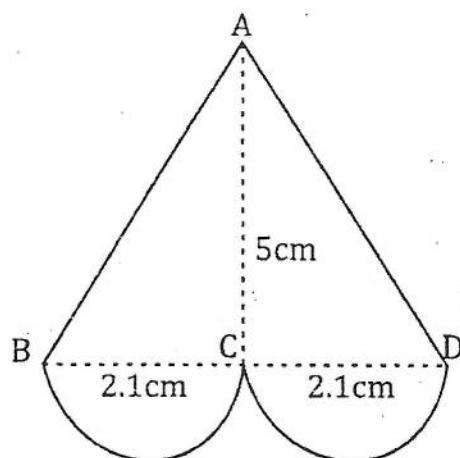
The figure is made of a parallelogram and a triangle.

$$\begin{aligned}\text{Area} &= (\text{base} \times \text{height}) + \frac{1}{2} \text{base} \times \text{height} \\ &= 8\text{m} \times 3\text{m} + \frac{1}{2} \times (8-5) \times 4 \\ &= 24\text{m} + (\frac{1}{2} \times 3\text{m} \times 4\text{m}) \\ &= 24\text{m}^2 + 6\text{m}^2 \\ &= 30\text{m}^2\end{aligned}$$

137. The figure shows a flower ABCD in a shape of a triangle and two equal semi-circles.  $AC = 5\text{cm}$ ,  $BC = 2.1\text{cm}$  and  $CD = 2.1\text{cm}$ . Calculate the area of the flower, giving your answer correct to 2 decimal places.

Take  $\pi = \frac{22}{7}$

**MANEB 2009**



$$\begin{aligned}\text{Area of triangle} &= \frac{1}{2} \text{base} \times \text{height} \\ &= \frac{1}{2} \times (2.1 + 2.1) \times 5\text{cm} \\ &= \frac{1}{2} \times 4.2\text{cm} \times 5\text{cm} \\ &= 10.5\text{cm}^2\end{aligned}$$

129. Find the circumference of a circle whose radius is 28cm. Take  $\pi = \frac{22}{7}$
- A. 88cm      C. 176cm  
B. 56cm      D. 2,464cm

MANEB 2008

$$\begin{aligned}\text{Circumference} &= \pi \times \text{diameter} \\ &= \frac{22}{7} \times 28\text{cm} \\ &= 22 \times 4\text{cm} \\ &= 88\text{cm}\end{aligned}$$

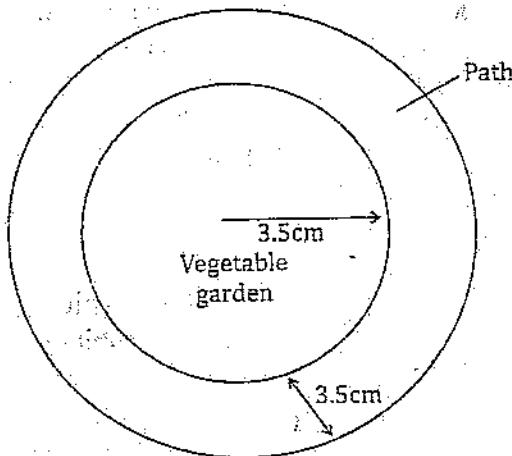
Answer A

130. Find the area of a circle whose diameter is 14cm. Take  $\pi = \frac{22}{7}$  MANEB 2006
- A. 44cm<sup>2</sup>      C. 154cm<sup>2</sup>  
B. 77cm<sup>2</sup>      D. 616cm<sup>2</sup>

$$\begin{aligned}\text{Area of a circle} &= \pi r^2 \\ &= \frac{22}{7} \times \frac{14\text{cm}}{2} \times \frac{14\text{cm}}{2} \\ &= 11 \times 2 \times 7\text{cm} = 154\text{cm}^2\end{aligned}$$

Answer C

131. The diagram shows a circular vegetable garden with radius 3.5m. The garden is surrounded by a path which is 3.5m wide. Find the area of the path. Take  $\pi = \frac{22}{7}$ .



To find the area of the path, subtract area of the smaller circle from area of the bigger circle.

$$\begin{aligned}\text{Large circle area} &= \pi r^2 \\ &= \frac{22}{7} \times 7\text{m} \times 7\text{m} \\ &= 22 \times 7\text{cm} \\ &= 154\text{m}^2\end{aligned}$$

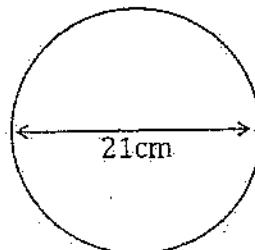
$$\begin{aligned}\text{Small circle area} &= \pi r^2 \\ &= \frac{22}{7} \times 3.5\text{m} \times 3.5\text{m} \\ &= 22 \times 0.5\text{m} \times 3.5\text{m} \\ &= 38.5\text{m}^2 \\ \therefore \text{Area of path} &= 154 - 38.5\text{m}^2 \\ &= 116.5\text{m}^2\end{aligned}$$

132. A circle has a diameter of 21cm. Calculate its:
- Circumference
  - Area

Take  $\pi = \frac{22}{7}$

MANEB 2011

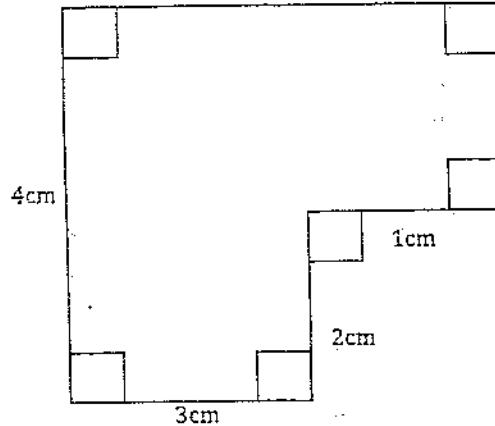
You are advised to draw a sketch diagram first.



$$\begin{aligned}\text{a. Circumference} &= \pi \times \text{diameter} \\ &= \frac{22}{7} \times 21\text{cm} \\ &= 22 \times 3\text{cm} \\ &= 66\text{cm}\end{aligned}$$

$$\begin{aligned}\text{b. Area} &= \pi r^2 \\ &= \frac{22}{7} \times \frac{21\text{cm}}{2} \times \frac{21\text{cm}}{2} \\ &= 346 \frac{1}{2} \text{cm}^2 \text{ (or } 346.5\text{cm}^2)\end{aligned}$$

133. The figure shows the floor of a house. Calculate the perimeter of the floor.

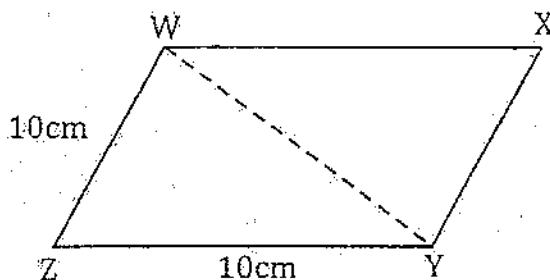


- A. 10m      C. 16m  
B. 14m      D. 20m

In the figure, (measurements) of two sides are missing. We need to work them out using.

### Solution

- a. First divide lengths by scale to reduce size  $WZ = ZY = 500m \div 50m = 10\text{cm}$



- b. WY = 5.2cm  
 c. WY on the actual ground =  $\frac{5.2\text{cm}}{1\text{cm}} : 50$   
 $= 5.2 \times 50\text{m}$   
 $= 260.0\text{m}$

124. A child's height is 1 metre 18 millimetres. Express the height in millimetres (MANEB 2008)

For easy and accurate answer, use the place value method in which each digit is to be written under its respective unit. i.e

$$\begin{array}{ccccccccc} \text{Km} & \text{hm} & \text{dam} & \text{m} & \text{dm} & \text{cm} & \text{mm} \\ 0 & 0 & 0 & 1 & 0 & 1 & 8 \\ = 1.018\text{mm} & & & & & & \text{answer} \end{array}$$

125. One side of a square field is 48.35m.  
Calculate the perimeter of the field.

MANER 2009

In a square, all sides are equal in length.  
To find perimeter, simply multiply 48.35m by 4.

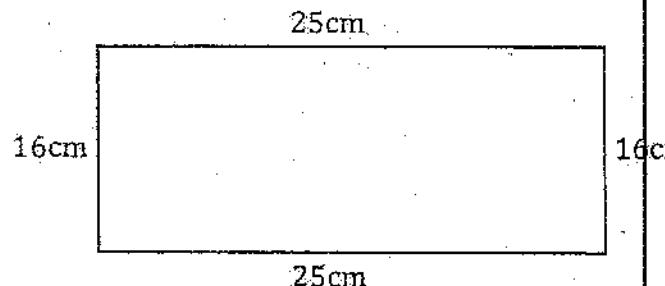
$$48.35\text{m} \times 4 = 193.4\text{m}$$

126. A rectangle is 25cm long and 16cm wide. Calculate its perimeter.

- A. 47cm      C. 164cm  
 B. 82cm      D. 300cm

MANEB 2006

Perimeter is the total distance around a geometrical shape. First, draw the rectangle as shown below



$$\text{Perimeter} = 25\text{cm} + 25\text{cm} + 16\text{cm} + 16\text{cm} \\ = 82\text{cm} \quad \text{Answer B}$$

127. Find the side of a square whose area is  $196\text{cm}^2$

- A. 7cm C. 28cm  
B. 14cm D. 49cm

To find the side of a square root of  
196cm. the method goes like this.

2	196
2	98
7	49
7	7
	1

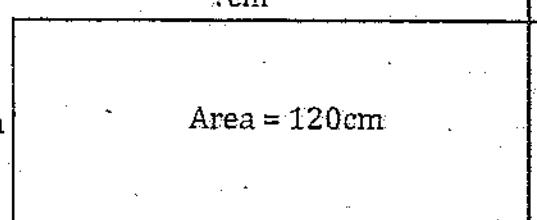
Each pair of factors contributes one number whose product is the square root.  
i.e  $2 \times 7 = 14\text{cm}$       Answer B

128. The area of a rectangle is  $120\text{cm}^2$ . If its width is 8cm, what is its length?

- A. 15cm      C. 52cm  
 B. 30cm      D. 56cm

During a sketch figure helps in critical thinking about how to work out the problem. First, let us draw it.

Drawing a sketch figure helps in critical thinking about how to work out the problem. First, let us draw it.



Length = 120cm ÷ 3cm = 15cm. Answer A

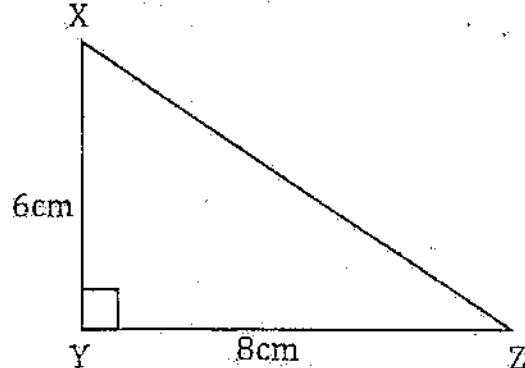
- a. Using a scale of 2.1, draw an enlarged diagram of the triangle XYZ  
 b. Measure the length of XZ on your diagram and write it down

MANEB 2012

- a. Enlargement (multiply)

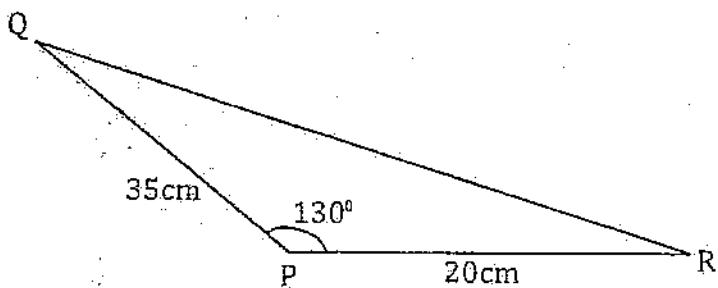
$$YZ = 4\text{cm} \times 2 = 8\text{cm}$$

$$XY = 3\text{cm} \times 2 = 6\text{cm}$$



b.  $XZ = 10\text{cm}$

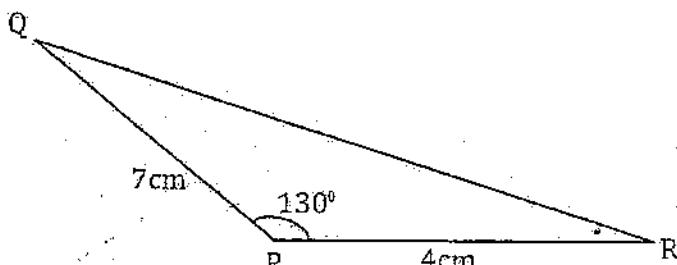
121. The figure is a triangle PQR in which  $PQ = 35\text{cm}$ ,  $PR = 20\text{m}$  and angle QPR =  $130^\circ$



- a. Draw the figure accurately using a scale of 1cm representing 5 metres

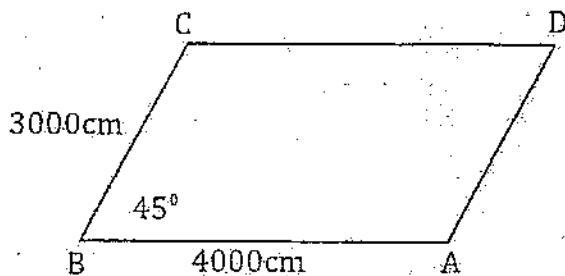
- b. Find angle PRQ and side QR

a.  $PQ = 35\text{cm} \div 5 = 7\text{cm}$   
 $PR = 20\text{m} \div 5 = 4\text{cm}$



- b(i) Angle PRQ  
 (ii) side QR =

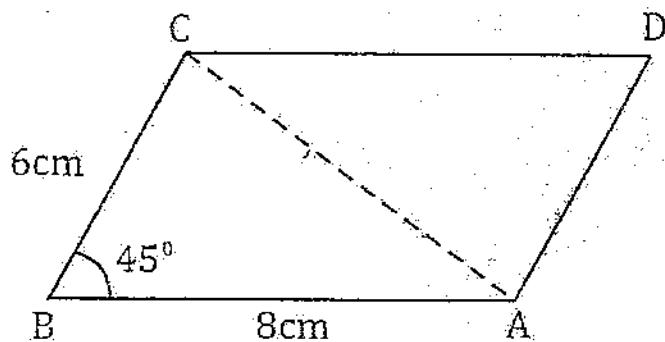
122. The figure shows a garden ABCD which has the shape of a parallelogram. AB = 4000cm, BC = 3000cm and angle ABC =  $45^\circ$



- a. Draw the figure accurately using a scale of 1cm representing 500cm

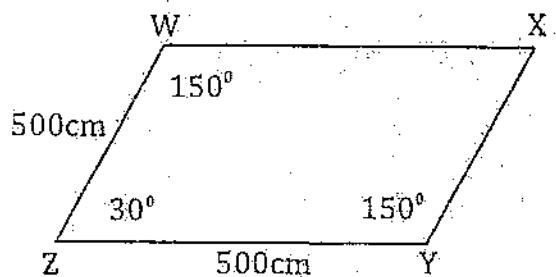
- b. Measure AC on your diagram and state its length

a.  $4000\text{cm} \div 500\text{cm} = 8\text{cm}$   
 $3000\text{cm} \div 500\text{cm} = 6\text{cm}$



b.  $AC = 5.5\text{cm}$

123. The figure shows a plot WXYZ in which angle W =  $150^\circ$ , angle Y =  $150^\circ$ , angle Z =  $30^\circ$  and  $WZ = ZY = 500\text{m}$ .



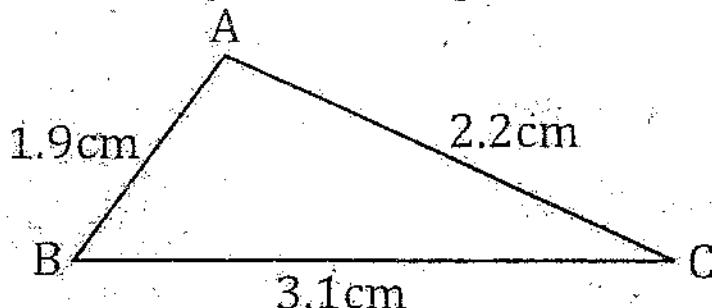
- a. Draw the figure accurately using a scale of 1cm representing 50m

- b. Measure WY on your diagram and state its length

- c. Find the actual length of WY on the plot

MANEB 2007

115. The figure shows a triangle ABC



Name the type of triangle ABC

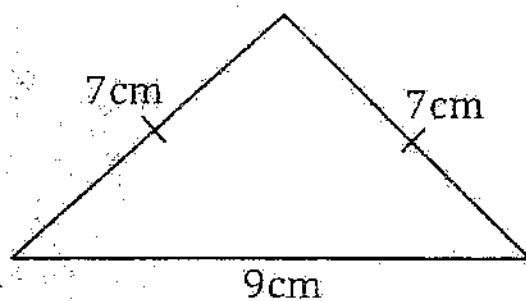
- A. Right angled
- C. Isosceles
- B. Equilateral
- D. Scalene

MANEB 2009

All sides are different, so the triangle is scalene

Answer D

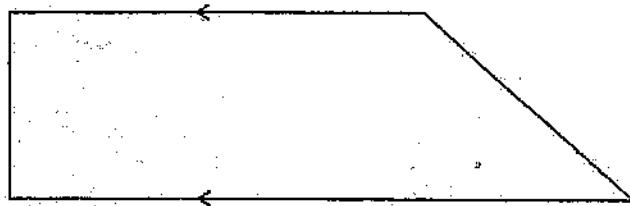
116. What type of triangle is shown in the figure? MANEB 2008)



- A. Equilateral triangle
- B. Isosceles triangle
- C. Scalene triangle
- D. Right – angled triangle

The triangle has two equal sides of 7cm each. It is isosceles triangle. Answer B

117. What is the name of the figure below?



- A. Kite
- C. Rectangle
- B. Parallelogram
- D. Trapezium

The quadrilateral has one pair of opposite sides parallel. This is the property of a trapezium. Answer D

118. Which of the following properties of a square?

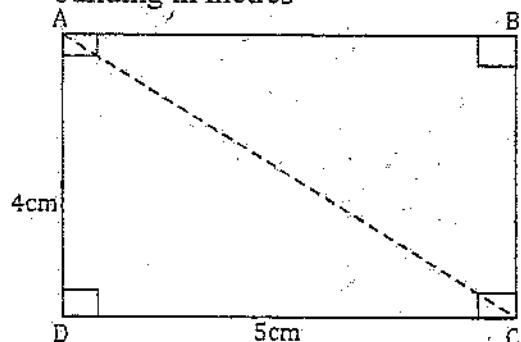
- 1. It has four right angles
  - 2. All angles add up to  $180^\circ$
  - 3. All sides are equal
  - 4. It has two parallel sides
- A. 1, 2 and 3
  - C. 2, 3 and 4
  - B. 1, 3 and 4
  - D. 1, 2 and 4

Out of the four properties, three are correct but one is not. Statement 2 not correct. Therefore number 1, 3 and 4 are correct.

Answer B

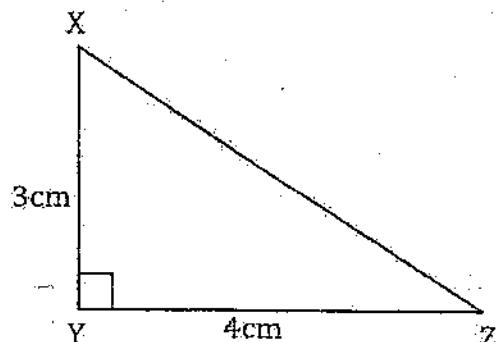
119. A rectangular building measured 20m by 16m. MANEB 2011

- a. Draw a plan using a scale 1cm representing 4 metres.
- b. Measure the diagonal AC
- c. State what AC represent on the building in metres



- d. diagonal  $AC = 6.4\text{cm}$
- e. AC on the plan =  $6.4\text{cm} \times 4$   
= 25.6 metres

120. The figure shows a triangle XYZ with  $XY = 3\text{cm}$  and  $YZ = 4\text{cm}$  and  $\angle XYZ = 90^\circ$



- The turn shown is \_\_\_\_\_ turn
- $\frac{1}{4}$
  - $\frac{3}{4}$
  - $\frac{1}{3}$
  - 1

The marked angle with an arrow shows a  $\frac{3}{4}$  turn.

Answer C

108. Measure accurately angle ABC. How many degrees is this angle?



- 55°
- 60°
- 120°
- 135°

MANEB 2008

When measuring, take great care choosing the number on protractor, it must be bigger than because the type of an angle question is obtuse.

It is 135°

Answer D

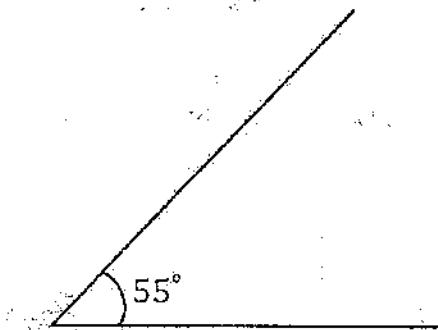
109. Express 540° in a right angle  
MANEB 2012

- 3
- 6
- 9
- 12

A right angle 90°. In 540°, there are 6 right angles. ( $540^\circ \div 90^\circ = 6$ )

Answer B

110. The figure shows the type of an angle



111. What name is given to the type of the angle?  
(MANEB 2012)
- Acute angle
  - Obtuse angle
  - reflex angle
  - right angle

The angle is less than 90°, so it is called an acute angle.

Answer A

112. An Obtuse angle is an angle which is .....

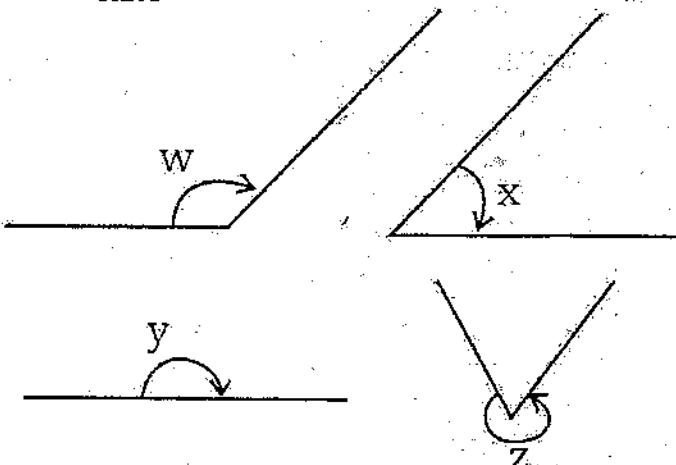
(MANEB 2010)

- Less than 90°
- Greater than 90° but less than 180°
- Greater than or equal to 90°
- Greater than 180° but less than 360°

The correct statement is B.

Answer B

113. The figure shows angles of different sizes



Arrange the angles in descending order

- W, Y, X, Z
- X, W, Z, Y
- Y, Z, W, X
- Z, Y, W, X

(MANEB 2011)

A descending order begins with the largest angle size, finishing with the smallest. The correct order is Z, Y, W, X

Answer D

114. Which of following is a property of an equilateral triangle?

- All sides are of different lengths
- All sides are of the same lengths
- One of its angles is a right angle
- Two of its sides are of equal lengths

MANEB 2012

- B. Gives correct statement. Answer

103. How many clay pots did Luso mould?

- A. 7                    C. 120  
B. 27                  D. 140

Solution:  $7 \times 20$

$$= 140$$

**Answer D**

104. Find the sum of clay pots moulded by Ngala, Bwino, Mzunga. **MANEB 2009**

- A. 25                  C. 360  
B. 18                  D. 500

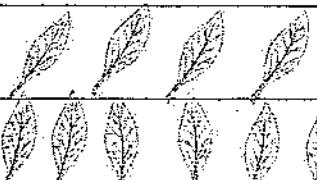
Solution:  $(8 + 4 + 6) \times 20$

$$= 18 \times 20$$

$$= 360$$

**Answer C**

105. The figure show a picture graph. Study it and answer the questions that follow

Year	Tobacco harvest
1997	
1998	
1999	

Key



represents 5,000kg of tobacco

(a) How much tobacco did the farmer harvest in 1997

$$1997 = 4 \times 5,000\text{kg} = 20,000\text{kg}$$

(b) How much more tobacco did he harvest in 1999 than in 1997?

$$\begin{aligned} 1999 &= 6 \times 5,000\text{kg} = 30,000\text{kg} \\ &= 30,000\text{kg} - 20,000\text{kg} \\ &= 10,000\text{kg} \end{aligned}$$

(c) Find the average harvest for the three years

$$\begin{aligned} (20,000\text{kg} + 30,000\text{kg} + 40,000\text{kg}) &\div 3 \\ &= 90,000\text{kg} \div 3 \\ &= 30,000\text{kg} \end{aligned}$$

(d) If  $\frac{1}{4}$  of the tobacco produced in 1998 was sold at an average price of K180 per kg and the rest an average price of K110 per kg, find the amount realized in the year.

$$\frac{1}{4} \text{ of } 8 \text{ leaves} = 2 \text{ leaves (6 left)}$$

$$= 2 \times 5,000\text{kg} \times \text{K180}$$

$$= \text{K1,800,000}$$

$$= 6 \times 5,000\text{kg} \times \text{K110}$$

$$= \text{K3,300,000}$$

$$= \text{K1,800,000} + \text{K3,300,000}$$

$$= \text{K5,100,000}$$

**MANEB 2010**

## GEOMETRY QUESTIONS

### Angles

An angle refers to the amount of turn not length of the lines. Angles are measured in degrees ( $\square$ ). Learners need to be equipped with the skill of drawing angles when given the sizes. There are five types of angles depending on size, these are:

- Right angle :  $90\square$
- Acute angle: Less than  $90\square$  (angles within the range of  $1\square$  -  $89\square$ )
- Straight angle:  $180\square$
- Obtuse angle: Between  $90\square$  and  $180\square$  (Angles within the range of  $91\square$  -  $179\square$ )
- Reflex angle: between  $180\square$  and  $360\square$  (Angles within the range of  $181\square$  -  $359\square$ )

106. Express  $\frac{2}{3}$  of a straight angle in degrees. **(MANEB 2009)**

- A.  $60\square$               C.  $120\square$   
B.  $90\square$               D.  $180\square$

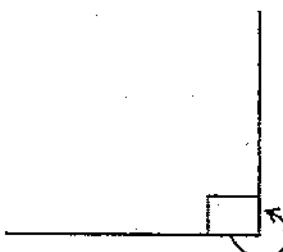
Work out  $\frac{2}{3}$  of a straight angle ( $180\square$ )

$$= \frac{2}{3} \times 180\square = 120\square$$

**Answer C**

107. The figure shows an amount of turn

**(MANEB 2006)**



$$y = K300$$

$$\begin{aligned}\text{Temwa's share} &= 2y = 2 \times K300 = K600 \\ \text{Malumbo's share} &= 500 - y \\ &= K500 - K300 = K200\end{aligned}$$

96. What is the solution to the inequalities  
 $x + 5 \leq 12$ ?

- A.  $x \leq 7$       C.  $x \leq 17$   
 B.  $x > 7$       D.  $x \leq 7$

Solution :  $x + 5 \leq 12$ ?

$$\begin{aligned}x &\leq -5 \\ x &\leq 7\end{aligned}$$

97. Write the correct inequality for the following statement: The sum of  $x$  and 5 less than or equal to 4  
 A.  $x + 5 \geq 4$       C.  $x + 5 < 4$   
 B.  $x + 5 \leq 4$       D.  $x + 5 > 4$

Here, the main question is to test you to name the symbol for less than or equal to ( $\leq$ ). The Answer is B.

### Statistics

Statistics is the method used to get meaning from data. Data refers to information (especially figures) obtained in activities such as surveys. Sometimes tallies are used to represent figures (one bunch of tallies stands for 5). Various types of averages are also used, these include, mean, median and mode. **Mean:** simply the same as average (Sum ÷ number of values). **Median:** the middle number when values are arranged in either ascending or descending order. **Mode:** The most occurring number in is given data

98. The table shows the number of eggs collected by a farmer in five days.

Day	Number of eggs collected
Monday	///    ///    ///    //
Tuesday	///
Wednesday	///    ///    /
Thursday	///    ///
Friday	///    //

- (a) What is the number of eggs collected on Wednesday?

11 eggs collected on Wednesday

- (b) On which day was there the least number of eggs collected?

On Tuesday, only three eggs collected

MANEB 2010

The table show number of cholera patients who were treated at a certain hospital for four days. Use It to answer the next two questions

Day	Tally
Monday	///    //
Tuesday	///    ///    ///    ///
Wednesday	///    ///    ///    ///
Thursday	///    ///    ///

99. Which day was the highest number of cholera patients?

- A. Monday      C. Wednesday  
 B. Tuesday      D. Tuesday

Tuesday has the biggest number (20)  
**Answer D**

100. Which day was the highest number of cholera patients treated per day?

- A. 12      C. 20  
 B. 15      D. 25

MANEB 2006

101. The picture graph show clay posts moulded by standard 6 pupils

$$\begin{aligned}\text{To find average add numbers } (7 + 20 + \\ 18 + 15) \text{ patients} \div 4 \text{ days.} \\ = 60 \div 4 \\ = 15\end{aligned}$$

**Answer B**

102. The picture graph shows clay post moulded by standard 6 pupils

Pupil	Number of pots moulded
Luso	▲▲▲▲▲▲▲
Ngala	▲▲▲▲▲▲▲
Bwino	▲▲▲▲
Mzunga	▲▲▲▲▲▲

Scale: ▲ Represents 20 clay pots

16:84 changes into  $\frac{16}{84}$ , dividing each number by 4 simplifies to  $\frac{4}{21}$  Answer B.

89. A bus left M at 7:30am and reached at 10:30am. If it was travelling at an average speed of 90km/h, what distance did it cover? MANEB 2010

From 7:30 am to 10:30am = 3 hours at an average speed of 90km/h

$$\text{Distance} = \text{speed} \times \text{time} = 90\text{km/h} \times 3\text{h} = 270\text{km}$$

From 7:30 am to 10:30am = 3 hours at an average speed of 90km/h  $\times 3\text{h} = 270\text{km}$

90. A train covers a distance of 240km between 8:30am and 11:30am. Find its speed in km per hour? MANEB 2008

Distance = 240km

Time = 11:30am - 8:30am = 3 hours

$$\text{Speed} = \frac{\text{distance}}{\text{Time}}$$

$$= \frac{240\text{km}}{3\text{h}} = 80\text{km/h}$$

91. Three boys fill water in a tank as follows

The first tap fills it in 3 hours, second tap fills in 4 hours and the third tap fills in 6 hours. If they run together, how long will they take to fill the tank?

In 1 hour, 1<sup>st</sup> tap fill  $\frac{1}{3}$  of the tank, the 2<sup>nd</sup> tap fills  $\frac{1}{4}$  of the tank, the 3<sup>rd</sup> tap fills  $\frac{1}{6}$  of the tank

$$\begin{aligned} \text{Together they fill } & \frac{1}{3} + \frac{1}{4} + \frac{1}{6}, \\ & = \frac{4+3+2}{12}, \\ & = \frac{9}{12}, \\ & = \frac{3}{4} \text{ of the work} \end{aligned}$$

Now ask yourself; If  $\frac{3}{4} = 1$  hour

$$\begin{aligned} \therefore \frac{4}{4} = ? \text{ more} \\ & = 1\text{h} \times \frac{4}{4} \div \frac{3}{4} \\ & = 1\text{h} \times \frac{4}{4} \times \frac{4}{3} \\ & = \frac{4}{3} \text{ hours} \end{aligned}$$

$$= 1 \frac{1}{3} \text{ hours}$$

92. Four people can clear a garden in 36 days. How many people would be required to clear the same garden in 24 days? MANEB 2008

A. 6	C. 48
B. 3	D. 216

If 36 days = 4 people

$$\therefore 24 \text{ days} = ? \text{ More (indirect proportion)}$$

$$= \frac{4 \text{ people} \times 36 \text{ days}}{24 \text{ days}}$$

$$= 6 \text{ people}$$

93. Solve the inequality  $3+3 \leq 15$

Let each sex be represented by  $x$  the then Women = ( $x = 86$ ) men =  $x$  only

Formulate an equation:

$$(x + 86) + x = 954$$

$$x + 86 + x = 954$$

$$2x = 954 - 86$$

$$2x = 868$$

$$\therefore \frac{2x}{2} = \frac{868}{2}$$

$$x = 434$$

$$(x + 86) = \text{women}$$

$$434 + 86 = 520 \text{ women}$$

94. Yamikani has  $x + 12$  mangoes and Thokozani had  $x - 2$  mangoes. If there were 40 mangoes altogether calculate the number of mangoes represented by  $x$ . MANEB 2009

$$x + 12 + x - 2 = 40 \text{ mangoes}$$

$$2x + 12 - 2 = 40 \text{ mangoes}$$

$$2x = 40 - 10 \text{ mangoes}$$

$$\therefore \frac{2x}{2} = \frac{30}{2} \text{ mangoes}$$

$$x = 15 \text{ mangoes}$$

95. After a competition, Temwa received  $2y$  kwacha and Malumbo ( $500 - y$ ) kwacha. If they received K800 altogether, how much did each receive?

MANEB 2010

$$2y + (500 - y) = \text{K800}$$

$$2y + 500 - y = \text{K800}$$

$$y = \text{K800} - \text{K500}$$

$$= \frac{1}{2} \times 10 \\ = 5\%$$

**Answer B**

### RATE, RATIO AND PROPORTION

Rate is the comparison between two different units that are used together. A good example of rate can be speed in km/h, cost of meat in Kwachas/kg, etc

Ratio refers to the comparison of two or more different amounts of the same nature, e.g K20, K30, K50 is the same as 2:3:5 in its simplest form.

Proportion is the comparison of two equal ratios and finding a missing number. Your work here is to find a missing number in two equivalent fractions. There are two types of proportion, these are: direct proportion and indirect proportion. Direct proportion is increasing one quantity if the other has been increased or decreasing one quantity if the other has been decreased. Indirect proportion is increasing one quantity if the other has been increased, doing the opposite.

83. For every three pieces of bread that Natowa eats, Chimwemwe eats one piece. How many pieces of bread did Chimwemwe eat if they both ate a total of 100 pieces? **MANEB 2006**

- A. 25 pieces
- B. 33 pieces
- C. 67 pieces
- D. 75 pieces

The two shared 100 pieces of bread in the ratio 1:3. In each and every turn 4 pieces of bread are eaten by the two. i.e  $1:3 = 1+3 = 4$

But Chimwemwe has one part of the 4.

$$\frac{100}{4} \times 1 = 25 \text{ pieces}$$

**Answer A**

84. What is the smaller share if 132 is shared in the ratio 5:6? **MANEB 2006**

- A. 12
- B. 60
- C. 72
- D. 110

$$\text{Solution: } \frac{132}{11} \times 5 = 12 \times 5 = 60$$

**Answer B**

85. Carton contains guavas and mangoes in the ration 5:2 respectively. If the carton

contains 140 guavas, calculate the number of the mangoes in the carton?

- A. 40
- B. 56
- C. 84
- D. 100

**(MANEB 2008)**

The word "respectively" mean in that order. So, the share of guava is 5, share of mangoes is 2

$$\text{If } 5 = 140$$

$\therefore 2 = ? \text{ Less}$

$$= \frac{140 \times 2}{5} = \frac{280}{5}$$

$$= 56 \text{ Mangoes}$$

**Answer B**

86. A boy sold 150 oranges. Find the amount he paid as a market fee he was charged 20t on each orange sold. **MANEB 2010**

- A. K7.50
- B. K30.00
- C. K300.00
- D. K3000.00

$$1 \text{ orange sold} = 20t \text{ market fee}$$

$$\therefore 150 \text{ oranges} = 20t \times 150$$

$$= 3,000t$$

$$= K30.00$$

**Answer B**

87. Six packets of sugar can be used in 3 weeks and 3 days. How many packets will be needed in 8 days?

**MANEB 2008**

- A. 2
- B. 18
- C. 32
- D. 48

First, change 3 weeks and 3 days into days.

$$= 3 \times 7 + 3$$

$$= 21 + 3$$

$$= 24 \text{ days}$$

If 24 days = 6 packets of sugar

$\therefore 8 \text{ days} = ? \text{ Less}$

$$= \frac{6 \times 8}{24}$$

$$= 2 \text{ packets of sugar}$$

**Answer A**

88. Change 16:84 to a fraction.

**MANEB 2011**

- A.  $\frac{4}{25}$
- B.  $\frac{4}{21}$
- C.  $\frac{21}{25}$
- D.  $\frac{21}{4}$

**Mr. Bonongwe Cash Account**

Dr	CR				
DATE	RECEIPTS	AMOUNT	DATE	PAYMENTS	AMOUNT
Jan, 2006		K t	Jan, 2005		K t
1	Balance b/f	5,000.00	5	Water	1,500.00
2	Sold fish	2,000.00	10	Clothes	1,250.00
17	Sold fish	1,980.00	22	Banked	2,000.00
			30	Workers	2,500.00
			31	Balance c/d	1,730.00
		8,980.00			8,980.00
1 <sup>st</sup> Feb	Balance b/d	1,730.00			

80. On 1<sup>st</sup> June, Chifundo had K8,000 in bank. The following transactions were made in the month

June 2 withdrew K3,705

June 4 received K2,000 by cheque and banked it

June 8 paid K1,500 for electricity by cheque

June 17 sold goods by cheque worth K1,050 and banked it

Prepare Chifundo's bank account and bring down the balance to be used on 1<sup>st</sup> July. (MANEB 2008)

**Chifundo's Bank Account**

Dr	Cr				
Date	Income	Amount	Date	Expenditure	Amount
Jun, 2008		K t	Jun, 2008		K t
1	Balance b/d	8,000.00	2	Withdrawal	3,705.00
4	Sold fish	2,000.00	8	Electricity	1,500.00
17	Sold fish	1,050.00	30	Balance c/d	5,845.00
		11,050.00			11,050.00
1 <sup>st</sup> July,	Balance b/d	5,845.00			

= K144,000

81. The table shows the premium on insured property

Type	Premium per months in Kwacha
Truck	K5,000
Saloon car	K2,000

If a company insured two trucks and a saloon car, calculate the total insurance paid for one year. (MANEB 2010)

Insurance paid per month

$$= 2 \times K5000 + K2000$$

$$= K10,000 + K2000$$

$$= K12,000$$

$$\therefore 1 \text{ year} = 12 \times K12,000$$

82. By what percentage should 460 be increased to give 483? (MANEB 2006)

- A. 0.05%      C. 95%  
 B. 5%          D. 105%

You have to answer the question, what is 483 percentage of 460?" Since 483 is bigger than 460, the answer is over 100%. The number over 100% is the increase.

Now, start by working out how much is 483 greater than 460 ie

$$483 - 460 = 23$$

Then work out the percentage of 23 to 460

$$23/460 \times 100$$

The table below shows Lits's cash account. (MANEB 2009)  
**LITA'S CASH ACCOUNT**

Dr	RECEIPTS	AMOUNT	DATE	PAYMENTS	Cr	AMOUNT
Nov 1	Balance in hand	K 6 005.00	Nov 10	Bought bulls by cash	K 2200.00	
3	Was given	1 000.00	15	Bought fertilizer by cash	1,350.00	
6	Sold maize for cash	2 000.00	20	Bought groundnuts by cash	300.00	
19	Sold millet for cash	500.00				
21	Sold peas for cash	200.00				

76. How much money did Lita spend in the month of November?

- A. K3,850.00      C. 6,005.00  
 B. K5,855.00      D. K9,705.00

What was spent is the total payments.

$$K2,200 + K1,350 + K300 = K3,850.00$$

**Answer A**

77. How much money did Lita have by 1<sup>st</sup> December.

- A. K3,700      C. K6,955.00  
 B. K5,855      D. K9,705.00

Here you are asked to calculate the balance  
 Receipts - Payments

$$K9,705 - K3,850 = K5,855$$

78. Benja started business on 1<sup>st</sup> July 2009 with K52,000 in bank. During the month, Benja's transactions were as follows:

2 <sup>nd</sup> July withdraw	K40,000
7 <sup>th</sup> July bought maize	K30,000
10 <sup>th</sup> July sold maize	K45,000
15 <sup>th</sup> July banked	K33,000

(a) Prepare Benja's cash account

### BENJA'S CASH BOOK

DATE	RECEIPTS	CASH	BANK	DATE	PAYMENTS	CASH	BANK
July, 2009		K t	K t	July, 2009		K t	K t
1	Balance b/f		5 200	2	Withdrawal		40 000
2	Withdrawal	40 000		7	Bought maize	30 000	
10	Sold maize	45 000		15	Banked	33 000	
15	Banked		33 000	31	Balance c/d	22 000	45 000
1 <sup>st</sup> August	Balance b/d	85 000	85 000			85 000	85 000
		22 000	45 000				

(b) What was Benja's capital on 1<sup>st</sup> August (MANEB 2010)

Benja's capital on 1<sup>st</sup> August was K22 000 cash + K45000 at the bank.

79. Mr. Bonongwe started business with K5,000 cash in hand on 1<sup>st</sup> January 2006. The following transactions were made during the month of January.

January 2 sold fish for K2,000

January 5 paid K1,500 cash for water  
 January 10 bought clothes for K1,250  
 January 17 sold fish for K1,980  
 January 22 banked K2,000  
 January 30 paid K2,500 to workers

Prepare Mr. Bonongwe's cash account and bring down the balance to be used on 1<sup>st</sup> February

The question uses the concept of simple interest ( $\frac{PTR}{100}$ ) where the main aim is to find amount (principal + Interest), i.e.

$$\begin{aligned}
 &= \text{Principal} + \text{interest} \\
 &= \text{Principal} + \frac{PTR}{100} \\
 &= 94,000 + \left( \frac{94,000 \times 9 \times 6}{100 \times 2 \times 12} \right) \\
 &= 94,000 + (235 \times 3 \times 3) \\
 &= 94,000 + 2115 = 96,115
 \end{aligned}$$

**Answer B**

71. What principal must be invested to yield K120 interest at  $1\frac{1}{2}\%$  per annum simple interest in 5 years **MANEB 2002**

- A. K360      C. K800  
B. K400      D. K1,600

$$\begin{aligned}
 \text{Principal} &= \frac{1 \times 100}{T \times R} \\
 &= \frac{K120 \times 100}{5 \times 1.5} \\
 &= \frac{K120 \times 100}{5 \times 15} \\
 &= K8 \times 200 \\
 &= K1,600
 \end{aligned}$$

**Answer D**

72. Calculate the compound interest on K70,000 for 2 years at 10% per annum **(MANEB 2010)**

$$\begin{aligned}
 \text{Principal 1st year} &= K70,000 \\
 &= \frac{PTR}{100} \\
 &= \frac{K70,000 \times 1 \times 10}{100} \\
 &= K7,000
 \end{aligned}$$

$$\begin{aligned}
 \text{Principal 2nd year} &= K70,000 + K7,000 \\
 &= K77,000 \\
 &= \frac{PTR}{100} \\
 &= \frac{K77,000 \times 1 \times 10}{100} \\
 &= K7,700
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Compound interest} &= K7,000 + K7,700 \\
 &= K14,700
 \end{aligned}$$

73. Calculate the amount to be paid on a loan of K80,000 at the rate of 10% per annum for 2 years compound interest

$$\begin{aligned}
 \text{Principal 1st year} &= K80,000 \\
 &= \frac{PTR}{100} \\
 &= \frac{K80,000.00 \times 1 \times 10}{100} \\
 &= K8,000
 \end{aligned}$$

$$\begin{aligned}
 \text{Principal 2nd year} &= K80,000 + K8,000 \\
 &= K88,000 \\
 &= \frac{PTR}{100} \\
 &= \frac{K88,000 \times 1 \times 10}{100} \\
 &= K8,800
 \end{aligned}$$

$$\begin{aligned}
 \therefore \text{Compound interest} &= K8,000 + K8,800 \\
 &= K16,800
 \end{aligned}$$

**∴ Amount**

$$\begin{aligned}
 &= \text{Compound interest} + \text{principal 1st year} \\
 &= K80,000 + K16,800 \\
 &= K96,800
 \end{aligned}$$

74. A farmer received a cheque worth K15,500 and deposit it into his account. He deposited again K12,000 after selling his bags of beans and the bank deducted K1,200 as bank charges. How much money remained in his account?

**(MANEB 2011)**

- A. K4,700      C. K27,500  
B. K26,300      D. K28,700

Subtract the bank charges from the total receipts i.e.

$$\begin{aligned}
 &K15,500 + K12,000 - K1,200 \\
 &= K27,500 - K1,200 \\
 &= K26,300
 \end{aligned}$$

**Answer B**

75. You want to withdraw K2,500 from your Malawi Savings Bank Account number 401277100. Complete the withdraw slip shown below.

**(MANEB 2012)**

$$\begin{aligned} &= \frac{K2,000 \times 100}{125} \\ &= K1,600 \end{aligned}$$

64. A shop allowed a discount of  $7\frac{1}{2}\%$  for cash paid on each radio bought. If Dalo received a discount of K86.10, find the marked price on the radio. (MANEB 2002)

If  $7\frac{1}{2}\% = K86.10$   
 $\therefore 100\% = ?$  More (note: Marked Price % = 100%)  
 $= K86.10 \times 100\% \div 7\frac{1}{2}\%$   
 $= K8610 \div \frac{15}{2}$   
 $= \frac{K8610 \times 2}{15}$   
 $= K1,148$

Use the table below which shows some exchange rates for the following questions

Currency	Buying	Selling
United States Dollar (\$)	139.10	141.89
British Pound Sterling (£)	282.95	294.27
South African Rand (R)	18.80	19.74
European Countries (€)	223.47	232.40
Botswana Pula (P)	21.74	22.24

65. Convert \$2100 to Malawi Kwacha  
To change forex to MK  
Multiply by buying rate.  
If \$1 = K139.10  
 $\therefore \$2100 = ?$  More  
 $= K139.10 \times \$2100$   
 $= \frac{\$1}{\$1}$   
 $= K292,110$

66. How much money in euros can a Malawian buy with K732,060.00.  
To change MK forex  
Divide by selling price

If K232.40 = €1  
 $\therefore K732,060.00 = ?$  more  
 $= \frac{\text{€1} \times K732,060.00}{K232.40}$   
 $= \frac{\text{€3,150}}{K2324}$   
 $= \frac{K732,0600}{6972}$

$$\begin{array}{r} 3486 \\ - 2324 \\ \hline 11620 \\ - 11620 \\ \hline 00 \end{array}$$

$$= €3,150$$

67. Find the simple interest on K1,400 for 4 years at the rate of 5% per annum.  
A. K28.00      C. K280.00  
B. K70.00      D. K350.00

(MANEB 2006)

$$\begin{aligned} \text{Simple interest} &= \frac{PTR}{100} \\ &= \frac{K1,400 \times 4 \times 5}{100} \\ &= K280 \end{aligned}$$

Answer C

68. Calculate the simple interest on K800 at the rate of 10% per annum for 3 months  
A. K20      C. 240  
B. K24      D. K2,000

(MANEB 2008)

$$\begin{aligned} \text{Simple interest} &= \frac{PTR}{100} \\ &= \frac{K800 \times 3 \times 10}{12 \times 100} \\ &= K20 \end{aligned}$$

Answer A

69. In what time will K400 amount to K472 at 6% per annum simple interest  
(MANEB 2002)

$$\begin{aligned} \text{Time} &= \frac{I \times 100}{PxR} \\ &= \frac{K72 \times 100}{K400 \times 6} \\ &= 3 \text{ years} \end{aligned}$$

70. A district has 94,000 people. If the population increases at the rate of  $4\frac{1}{2}\%$  per year, calculate the number of people after 6 months  
A. 95,880      C. 98,230  
B. 96,115      D. 119,380

(MANEB 2002)

year the sale increased by 10%. How much did the farmer get in the year 2000?

**MANEB 2006**

- |            |            |
|------------|------------|
| A. K3,600  | C. K33,000 |
| B. K32,000 | D. K39,600 |

10% increase

$$= (100\% + 10\%) \text{ of K}36,000.00$$

$$= 110\% \text{ of K}36,000.00$$

$$= \frac{110 \times \text{K}36,000}{100}$$

$$= \text{K}39,600$$

**Answer D**

59. A trader bought eggs at K270.00 and sold them at a profit of 25%. What was the selling price?

**MANEB 2006**

- |            |            |
|------------|------------|
| A. K276.75 | C. K202.50 |
| B. K67.50  | D. K337.50 |

$$\begin{aligned} \text{Selling price} &= \text{Cost price} + \text{profit} \\ &= \text{K}270.00 + (25\% \text{ of K}270.00) \\ &= \text{K}270.00 + \left( \frac{25}{100} \times \text{K}270 \right) \\ &= \text{K}270.00 + \text{K}67.50 \\ &= \text{K}337.50 \end{aligned}$$

**Answer D**

60. The price of fuel has increased by 15%. If the original price was K150.00 per litre, calculate the new price for two litres.

(MANEB 2009)

- |            |            |
|------------|------------|
| A. K172.50 | C. K322.50 |
| B. K300.00 | D. K345.50 |

Original price for 2 litres

$$= 2 \times \text{K}150$$

$$= \text{K}300$$

15% increase

$$= (15\% + 100\%) \text{ of K}300$$

$$= \frac{115 \times \text{K}300}{100}$$

$$= 115 \times \text{K}3$$

$$= \text{K}345$$

**Answer D**

61. A vendor bought 240 eggs for K6,000.00. Calculate the profit percent made, if 22 eggs were broken and the rest were sold at K30.00 each

**MANEB 2011**

Total cost price of 240 eggs

$$= \text{K}6,000$$

$$\text{Total SP of } 240 - 22 \text{ eggs}$$

$$= 218 \times \text{K}30$$

$$= \text{K}6,540$$

$$\therefore \text{Actual profit} = \text{SP} - \text{CP}$$

$$= \text{K}6,540 - \text{K}6,000$$

$$= \text{K}540$$

$$\therefore \text{Profit \%} = \frac{\text{Profit} \times 100}{\text{K}6,000}$$

$$= \frac{\text{K}540 \times 100}{\text{K}6,000}$$

$$= 9\%$$

62. Mphatso underestimated a given distance by 15% and Chikondi overestimated the same distance by 10% and got 880 metres. What did Mphatso get?

**MANEB 2009**

- |         |         |
|---------|---------|
| A. 660m | C. 648m |
| B. 680m | D. 800m |

Start with Chikondi because his estimate is known

$$\text{He was } 10\% \text{ over} = 110\%$$

$$\text{If } 110\% = 880 \text{ metres}$$

$$\therefore 100\% = ? \text{ less}$$

$$\begin{aligned} &= \frac{100 \times 880}{110} \text{ metres} \\ &= 100 \times 8 \\ &= 800 \text{m} \end{aligned}$$

$\therefore$  Mphatso's estimate is 15% less

$$= (100\% - 15\%) \text{ of } 800 \text{m}$$

$$= \frac{85 \times 800}{100} \text{ metres}$$

$$= 85 \times 8$$

$$= 680 \text{m}$$

**Answer B**

63. A shirt was sold at K2,000.00. If it was sold at profit of 25%, calculate the cost price

(MANEB 2012)

$$\text{SP \%} = \text{profit \%} + \text{CP \%}$$

$$= 25\% + 100\%$$

$$= 125\%$$

$$\text{If } 125\% = \text{K}2,000:$$

$$\therefore 100\% = ? \text{ Less (note: Cost Price \%} = 100\%)$$

each. The sixth basket was sold at K680, find the total profit Mr. Banda made.

$$\text{Total CP} = 6 \times \text{K780}$$

$$= \text{K4,680}$$

$$\text{Total SP} = 3 \times \text{K950} + 2 \times \text{K1,200} + \text{K680}$$

$$= \text{K5,930}$$

$$\therefore \text{Profit} = \text{SP} - \text{CP}$$

$$= \text{K5,930} - \text{K4,680}$$

$$= \text{K1,250}$$

52. A vendor is given commission of 20% for goods sold. How much commission did the vendor receive if K112,000 worth of goods were sold? (MANEB 2006)

- A. K11,200      C. K89,600  
B. K22,400      D. K99,000

Simply work out 20% of K112,000

$$= \frac{20}{100} \times \text{K112,000}$$

$$= \text{K22,400}$$

**Answer B**

53. An auctioneer gets a commission of K3650 on every K100,000 sales made. Calculate the commission on sales worth K16,520,000.

$$\text{K100,000 sales} = \text{K3,650}$$

$$\therefore \text{K16,520,000 Sales} = ? \text{ More}$$

$$= \frac{\text{K3650} \times \text{K16,520,000}}{\text{K100,000}}$$

$$= \text{K365} \times 1652$$

$$= \text{K602,980}$$

54. A seller received 5% commission on goods sold. If he received K540 as commission. Find the value of the goods sold.

$$5\% = , \text{K540}$$

$\therefore 100\% = ? \text{ More}$

$$= \frac{100}{5} \times \text{K540}$$

$$= \text{K10,800}$$

55. How much tax does a person who receives a salary of K40,000 per month pay? Use the tax table below.

Income tax rates

Salary (Income) per month	Rate for tax
First K9,000	0% (tax free)
Next K3,000	15%
Excess (over) K12,000	30%

Salary	Tate for tax	Tax
K40,000		
- K 9,000	= 0% of K9,000	= K0.00
<u>K31,000</u>		

- K3,000	= $\frac{15}{100} \times \text{K3,000}$	= K450
----------	---	--------

K28,000	= $\frac{30}{100} \times \text{K28,000}$	= K6,400
---------	--	----------

$\therefore \text{Monthly tax} = \text{K6,850}$

56. Bwemba gets a commission of K600 for K10,000.00 on items sold. Find the total commission Bwemba would get after selling items worth K35,000.00

(MANEB 2010)

- A. K1,500      C. K2,400  
B. K2,100      D. K2,700

$$\text{K10,000 sales} = \text{K600 commission}$$

$$\therefore \text{K35,000 sales} = ? \text{ more}$$

$$= \frac{\text{K35,000} \times \text{K600}}{\text{K10,000}}$$

$$= \text{K2,100}$$

**Answer B**

57. An insurance company charges a premium of K9.00 for every K1000.00 of furniture per year. Calculate the total premium paid on furniture worth K20,000.00 (MANEB 2009)

$$\text{K1,000.00} = \text{K9.00}$$

$$\therefore \text{K20,000.00} = ? \text{ More}$$

$$= \frac{\text{K20,000} \times \text{K9.00}}{\text{K1,000}}$$

$$= \text{K180}$$

58. In 1999 a farmer sold his crops amounting to K36,000.00. In the following

$$= K112,500$$

(MANEB 2012)

Profit, loss discount, commission premium, taxes, exchange rates & other monetary problems.

**Trade** means a lot in as far as business is involved. The main aim of business people is to maximize profits, however they may make losses in the process. Discount and commission is another skill in business which ensures fast trade. Knowing in that some of you will become business tycoons, examiners have no choice but to include such questions year after year. Hope you will keep on practicing beyond the limits of this books!

45. A radio is sold at K400 at a discount of 20%. Calculate the cash discount

(MANEB 2008)

- |         |         |
|---------|---------|
| A. K80  | C. K480 |
| B. K320 | D. K500 |

Cash discount

$$\begin{aligned} &= \text{Marked price} - \text{Selling price} \\ &= K400 - (100\% - 20\%) \text{ of } K400 \\ &= K400 - \frac{80}{100} \times K400 \\ &= K400 - K320 = K80 \end{aligned}$$

Answer A

46. A bed was sold at a loss of K1650. If the cost price of the bed was K3510, what was the selling price of the bed.

(MANEB 2008)

- |          |          |
|----------|----------|
| A. K1860 | C. K4160 |
| B. K1960 | D. K5160 |

$$\begin{aligned} \text{Loss} &= \text{CP} - \text{SP} \text{ (normal formula for loss)} \\ \text{K1650} &= \text{K3510} - \text{SP} \text{ (substitute loss & SP)} \\ \text{K1650} + \text{SP} &= \text{K3510} \text{ (-SP moves to left of = sign)} \\ \text{SP} &= \text{K3510} - \text{K1650} \text{ (make + SP subject)} \\ &= \text{K1860.} \end{aligned}$$

Answer A

47. Tayamika bought 20 mangoes at 4 for 40 t and sold them at 5 for 60t. What was her profit?

(MANEB 2011)

$$\text{CP} = 20 \times \frac{40t}{4} = 200t$$

$$\text{SP} = 20 \times \frac{60t}{5} = 240t$$

$$\begin{aligned} \text{A. Profit} &= \text{SP} - \text{CP} \\ &= 204t - 200t \\ &= 40t \end{aligned}$$

48. A grocer bought 100 packets of yeast at K126.50 per unit. If the yeast was sold at a profit of K2.50 per packet, calculate the total selling price. (MANEB 2009)

- |          |          |
|----------|----------|
| A. K1015 | C. K1290 |
| B. K1265 | D. K1515 |

$$\text{CP of 100 packets} = \frac{100}{10} \times \text{K126.50} = \text{K1265.00}$$

$$\text{Profit on 100 packets} = \text{K100} \times \text{K2.50} = \text{K250.00}$$

$$\text{Total Selling Price} = \text{CP} + \text{profit}$$

$$= \text{K1265.00} + \text{K250}$$

$$= \text{K1515}$$

Answer D

49. A shopkeeper bought loaves of bread at K350 per unit and sold each loaf at K45. Find the profit made per unit.

- |         |         |
|---------|---------|
| A. K10  | C. K190 |
| B. K100 | D. K305 |

A unit = 10 loaves of bread

CP of 1 unit

$$= \text{K350}$$

$$\text{SP of 1 unit} = \text{K45} \times 10,$$

$$= \text{K450}$$

$$\text{So, profit} = \text{SP} - \text{CP}$$

$$= \text{K450} - \text{K350}$$

$$= \text{K100}$$

50. By selling a goat for K1,700 a farmer made a loss of 15t in every kwacha. Find the cost price. (MANEB 2008)

- |           |           |
|-----------|-----------|
| A. K225   | C. K1,955 |
| B. K1,445 | D. K2,000 |

The loss is 15t on every kwacha,

$$\text{Loss} = 0.15 \times \text{K1,700} = \text{K255}$$

$$\text{CP} = \text{SP} + \text{loss}$$

$$= \text{K1,700} + \text{K255} = \text{K1,955}$$

Answer C

51. Mr. Banda bought 6 baskets of tomatoes at K780 each. He sold three of the baskets at K950 each, the other two at K1,200

$$1000 + 100 + 20 + 5 = 1,125$$

## PERCENTAGES

Percentages are ratios, fractions or decimals in which one of the numbers is 100. The word is formed by combining two words 'per' for each / for every 'cent' stands for the number 100 (one hundred)

36. Express the ratio 3:4 as a percentage

- |        |        |
|--------|--------|
| A. 30% | C. 34% |
| B. 40% | D. 75% |

**Solution:** change ratio 3:4 to a fraction =  $\frac{3}{4}$

Then multiply it by 100 i.e  $\frac{3}{4} \times 100 = 75\%$

37. Express 0.83 as a percentage.

**Solution**

: Simplify multiply 0.83 by 100  
 $0.83 \times 100 = 83.00 = 83\%$

38. Express 60% as a fraction

- |                  |                   |
|------------------|-------------------|
| A. $\frac{3}{4}$ | C. $\frac{9}{16}$ |
| B. $\frac{3}{5}$ | D. $\frac{1}{2}$  |

**Solution:**  $60\% = \frac{60}{100} = \frac{3}{5}$  Answer B

39. Jane scored 19 out of 25 and Dorothy scored 14 out of 25 marks in an English test. Calculate the difference between their scores in percentage (MANEB 2009)

- |        |        |
|--------|--------|
| A. 5%  | C. 56% |
| B. 20% | D. 76% |

**Solution:**  $(\frac{19}{25} - \frac{14}{25}) \times 100 = \frac{5}{25} \times 100 = 20\%$

40. At a school of 800 students, 25% are girls. If 75% of the girls stay at the boarding, find the number of girls who do not stay at the boarding (MANEB 2007)

First, find number of girls

(25% of 800 students)

$$\frac{25}{100} \times 800 = 25 \times 8 = 200 \text{ girls}$$

Next, work out 75% of 200 girls

$$\frac{75}{100} \times 200 = 75 \times 2 = 150 \text{ girls}$$

Finally subtract boarders from the total number of girls

$$200 \text{ girls} - 150 \text{ girls} = 50 \text{ girls}$$

41. During a one hour radio program there were 18 minutes of talking and the rest was music. What percentage of the program was music?

First, find number of minutes to music alone

$$1 \text{ hour} - 18 \text{ min} = 42 \text{ min of music}$$

$$\text{Percentage of music} = \frac{42}{60} \times 100 = 70\%$$

MANEB 2007

42. In a school 55% of the learners are girls.

If there are 306 boys calculate the total number of learners in the school.

- |        |        |
|--------|--------|
| A. 443 | C. 556 |
| B. 495 | D. 680 |

**Solution**

If 55% are girls then 45% are boys.

$$45\% = 306$$

$$\text{If } \frac{45}{100} = 306$$

Then  $\frac{100}{45} = ? \text{ more}$

$$\frac{100}{45} \times 306 = 680 \text{ Answer D}$$

(MANEB 2008)

43. Fire destroyed 96% of books in a library.

If 200 books were not destroyed, calculate the original number of books in the library

If 96% was destroyed, then 4% was not destroyed by the fire.

$$4\% = 200 \text{ books}$$

$$\therefore 100\% = ? \text{ more}$$

$$= 200 \times \frac{100}{4}$$

$$= 5000 \text{ books}$$

MANEB 2012

44. A vendor has property worth K1,500,000.00 and would like to insure it against fire. If the premium rate is at  $7\frac{1}{2}\%$ . Calculate the premium paid.

$$7\frac{1}{2}\% \text{ of K1,500,000.00}$$

$$\frac{15}{2} \times \underline{\text{K1.500,000}}$$

$$2 \quad 100$$

28. Simplify  $2\frac{1}{2} + 1\frac{1}{4} \times \frac{1}{3}$  (MANEB 2012)

$$\begin{aligned}2\frac{1}{2} &\div 1\frac{1}{4} \times \frac{1}{3} \\ \frac{5}{2} &\div \frac{5}{4} \times \frac{1}{3} \\ \frac{5}{2} \times \frac{4}{5} &\times \frac{1}{3} \\ = \frac{2}{3} &\end{aligned}$$

29. Simplify  $5 - 3\frac{1}{8}$  (MANEB 2008)

First, make all the numbers improper fractions

$$\begin{aligned}5 - 3\frac{1}{8} &= \frac{5}{1} - \frac{25}{8} \\ &= \frac{40 - 25}{8} \\ &= \frac{15}{8} \\ &= 1\frac{7}{8}\end{aligned}$$

30. In a class each pupil receives  $\frac{1}{4}$  litre of 'phala' if there was 20 litres, how many pupils received the 'phala'?

(MANEB 2009)

$$\begin{aligned}20 \text{ litres} &\div \frac{1}{4} \\ 20 \times 4 &= 20 \times 4 = 80 \text{ pupils}\end{aligned}$$

31. Simplify  $\frac{1}{6} - \frac{8}{15} + \frac{2}{7} \div 1\frac{7}{8} \times 2\frac{5}{8}$

$$\begin{aligned}\frac{1}{6} - \frac{8}{15} + \left( \frac{2}{7} \div 1\frac{7}{8} \times 2\frac{5}{8} \right) &= \frac{1}{6} - \frac{8}{15} + \left( \frac{2}{7} \div \frac{15}{8} \times \frac{21}{8} \right) \\ \frac{1}{6} - \frac{8}{15} + \left( \frac{2}{7} \times \frac{8}{15} \times \frac{21}{8} \right) &= \frac{1}{6} - \frac{8}{15} + \frac{2}{5} \\ \frac{5+12+12}{30} &= \frac{30}{30} \\ \frac{5+12-16}{30} &= \frac{1}{30} \\ &= \frac{1}{30}\end{aligned}$$

32. A woman gives  $\frac{1}{4}$  of a cake to her daughter,  $\frac{1}{6}$  to her son and  $\frac{1}{3}$  to her husband. What fraction of the cake is left?

(MANEB 2007)

- A.  $\frac{3}{4}$   
B.  $\frac{1}{3}$   
C.  $\frac{1}{4}$   
D.  $\frac{1}{6}$

How many cakes are there? 'One cake!'

$$\begin{aligned}1 - \frac{1}{4} - \frac{1}{6} - \frac{1}{3} &= \frac{12-3-2-4}{12} = \frac{3}{12} = \frac{1}{4}\end{aligned}$$

Answer C

### ROMAN NUMERALS

The Hindu - Arabic numerals were invented by Indians and Arabs, along with the place value system that makes it easy to show all numbers. But before that, much of the world used Roman numerals invented by the Romans. Roman numerals use the following letter; I = 1; V = 5; X = 10, L = 50; C = 100; D = 500; M = 1000

There are atleast four simple rules that explains how roman numerals work.

1. A value letter can be repeated up to 3 times except or V, L and D e.g  $xx = 10 + 10 = 20$ ; CCC =  $100 + 100 + 100 = 300$ ; but  $VV = 5 + 5 = 10$  is wrong!
2. A value letter should not be repeated more than 3 times, e.g CCC is correct but CCCC is wrong!
3. To show 4 or 9 you put 1 to the left of the highest numeral letter, e.g IV = 4; IX = 9, XCIX = 94, etc. this is called subtractive approach where a less value letter is placed to the left of the bigger value letter.
4. You add roman numerals by placing a less value letter to the right of the bigger value letter e.g DC =  $500 + 1000 = 600$ ; XII =  $10 + 2 = 12$ , etc

33. Convert LXIV to Hindu Arabic numerals. (MANEB 2012)

- A. 54  
B. 55  
C. 64  
D. 66

Solution : L = 50; X = 10; IV = 4

$$50 + 10 + 4 = 64$$

Answer C

34. Arrange the following roman numerals in descending order VI, IX, V, VIII

Solution: VI = 6, IX = 9, V = 5 VIII = 8  
Correct order is V, VI, VIII, IX

(MANEB 2011)

35. What is MCXXV in Hindu - Arabic numerals?

- A. 11,115  
B. 1,125  
C. 1,115  
D. 175

Solution :

$$M = 1000; C = 100; XX = 20; V = 5$$

$$\therefore \text{HCF} = 2 \times 7 = 14$$

## FRACTIONS

Fractions are not whole numbers, they are just part of a whole. Fractions are presented in two forms. These are common (vulgar) fractions or decimal fractions. However the recent times common fractions are being called fractions whereby decimal fractions are simply called decimals.

Size of fractions depend on the nature in which they are given to you. For example:

- If two fractions have same denominator then the one with the bigger numerator is the bigger.
- If two fractions have the same numerator then the one with the smaller denominator is bigger.
- For fractions with different denominators and numerators you need to work out the common denominator and then follow the first rule.

As candidates, you need to know how to add, subtract, multiply and divide fractions in order for you to do well in your final examinations. So practice with keen interest.

23. Change  $3\frac{3}{8}$  to a decimal number

- |          |           |
|----------|-----------|
| A. 3.375 | C. 0.3375 |
| B. 4.125 | D. 0.4125 |

**Solution:**  $(8 \times 3 + 3) \div 8$   
 $(24 + 3) \div 8$   
 $27 \div 8 = 3.375$       Answer A

24. Write 17.025 as a mixed number in its lowest form

**Solution:** the number of decimal places determines the number of zeros that a 1 will carry together with it as a divisor of the decimal number in the absence of the decimal point i.e.

$$17.025 = \frac{17025}{1000} = \frac{681}{40} = 17\frac{1}{40}$$

25. Which of the following fractions is the largest      (MANEB 2008)

$$\frac{3}{5}, \frac{5}{8}, \frac{3}{10}, \frac{7}{20}?$$

$$= \frac{24, 25, 12, 14}{40} = \frac{25}{40} = \frac{5}{8}$$

26. Arrange the following fractions in order of size, starting with the smallest

(MANEB 2008)

$$\frac{5}{8}, \frac{49}{80}, \frac{13}{20}, \frac{9}{16}$$

$$= \frac{50, 49, 52, 45}{80}$$

$$= \frac{9}{16}, \frac{42}{80}, \frac{5}{8}, \frac{13}{20}$$

27. Which of the following is a correct arrangement of fractions starting with the biggest?

A.  $\frac{2}{3}, \frac{3}{4}, \frac{3}{5}$

B.  $\frac{3}{4}, \frac{2}{3}, \frac{3}{5}$

C.  $\frac{3}{5}, \frac{3}{4}, \frac{2}{3}$

D.  $\frac{3}{5}, \frac{2}{3}, \frac{3}{4}$

**Solution:** change each of the three fractions into decimals

$$\frac{2}{3} = 2 \div 3 = 0.66$$

$$\frac{3}{4} = 3 \div 4 = 0.75$$

$$\frac{3}{5} = 3 \div 5 = 0.6$$

Biggest is 0.75, next is 0.66 and finally 0.6

So, the order is :  $\frac{3}{4}, \frac{2}{3}, \frac{3}{5}$       Answer B

18. Find the least length of cloth that can be cut into pieces of 9cm, 15 cm and 25cm long

- A. 3cm              C. 450cm  
 B. 45cm              D. 225

**Solution:**  $9 = 3 \times 3$ ;  $15 = 3 \times 5$ ;  $25 = 5 \times 5$

To find LCM, we need two 3's and two 5's so the answer is  $3 \times 3 \times 5 \times 5 = 225$

**Answer D**

19. Three bells ting at interval of 15 minutes, 20 minutes and 30 minutes respectively. If they ring together at 7:30 am in the morning, at what time will they next ring together? (MANEB 2005)

**Solution:** find the LCM of 15 min, 20 min and 30 min.

$$15 = 15, 30, 45, 60, 75, 90, 105, 120, \dots$$

$$20 = 20, 40, 60, 80, 100, 120, 140, \dots$$

$$30 = 30, 60, 90, 120, 150, 180, \dots$$

Add the LCM of 15 min, 20 min and 30 min to 7:30am i.e.

$$7:30\text{am} + 60\text{min} = 7:30\text{am} + 1 \text{ hour} = 8:30\text{am}$$

### FACTORS AND HCF

Factors are numbers that divide other numbers without leaving any remainder. For example 2, 3, 5, 6, 10, 15 and 30 are factors of 30. Do you remember about the prime factors Refer the types of numbers topic at the beginning of this book!

**Highest Common Factors (HCF)** is a biggest factor in the list of common factors for two or more numbers. The common factors for 12 and 18 are 2, 3 and 6 so the HCF of 12 and 18 is 6 because it is the biggest factor in the list of common factors of 12 and 18. There are several methods of working out HCF of two or more numbers.

20. Calculate the HCF of 210 and 350

10	210	350
7	21	35
	3	5

$$\therefore \text{HCF} = 10 \times 7 = 70$$

There are no more common factors for 3 and 5. So the highest common factor is  $10 \times 7 = 70$

21. Use continued division method to find the HCF of 473, 344 and 559

**Step 1 – Arrange numbers in ascending order.** 344, 473 and 559

**Step 2 – Divide smaller into the middle.**

$$\begin{array}{r} 1 \\ 344 \longdiv{473} \\ -344 \\ \hline 129 \end{array}$$

**Step 3 Divide the remainder into the smaller**

$$\begin{array}{r} 2 \\ 129 \longdiv{344} \\ -258 \\ \hline 86 \end{array}$$

**Step 4 – Divide remainder into 1<sup>st</sup> remainder**

$$\begin{array}{r} 1 \\ 86 \longdiv{129} \\ -86 \\ \hline 43 \end{array}$$

**Step 5 - Divide remainder into larger number**

$$\begin{array}{r} 13 \\ 43 \longdiv{559} \\ -43 \\ \hline 129 \\ -129 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of } 344, 473 \text{ and } 559 = 43$$

22. Find the largest number of people who could share equally 56 cows, 70 goats and 112 chickens

2	56	7	112
7	28	35	56
	4	5	8



**ADDITION AND SUBTRACTION**

Everyone of you can subtract numbers well, but you also need to know when to add or subtract as well as what to add or subtract.

- From what number must 6 489 be subtracted to give 654? (MANEB 2009)
- |          |          |
|----------|----------|
| A. 5,335 | C. 7,033 |
| B. 6,835 | D. 7,143 |

Let's use Algebra where the unknown number is represented by the letter X,  
i.e  $X - 6,489 = 654$

$$\begin{aligned}\therefore X &= 6,489 + 654 \\ &= 7,143.\end{aligned}$$

**Answer D**

- The mass of a tin and peas is 52.52kg. if the mass of peas is 49.56kg, find the mass of the tin. (MANEB 2011)

$$\begin{aligned}\text{Mass of tin and peas} &= 52.52\text{kg} \\ \text{Mass of peas alone} &= 49.56\text{kg} \\ \therefore \text{Mass of tin alone} &= 52.52\text{kg} - 49.56\text{kg} \\ &= 2.96\text{kg}\end{aligned}$$

- The temperature of a certain area was  $68^{\circ}\text{C}$  less than the boiling point of water. If the boiling point of water is  $100^{\circ}\text{C}$ , find the temperature of the area. (MANEB 2012)

- |                         |                          |
|-------------------------|--------------------------|
| A. $32^{\circ}\text{C}$ | C. $125^{\circ}\text{C}$ |
| B. $37^{\circ}\text{C}$ | D. $42^{\circ}\text{C}$  |

$$\text{Solution: } 100^{\circ}\text{C} - 68^{\circ}\text{C} = 32^{\circ}\text{C}$$

**Answer A**

- If 3 is subtracted from a certain number, the result is 18. Number. (MANEB 2008)
- |       |       |
|-------|-------|
| A. 6  | C. 21 |
| B. 15 | D. 54 |

$$\text{Solution: } X - 3 = 18$$

$$\begin{aligned}X &= 18 + 3 \\ &= 21\end{aligned}$$

**Answer C**

- Subtract 0.00986 from 0.058
- |            |            |
|------------|------------|
| A. 0.04814 | C. 0.04914 |
| B. 0.04824 | D. 0.05186 |

$$\begin{array}{r} 0.058 \\ - 0.00986 \\ \hline 0.04814 \end{array}$$

**Answer A**

- Evaluate  $2.6 + 0.52 + 30$  (MANAB 2007)

**Solution:** Line up the place value correctly.

$$\begin{array}{r} 2.6 \\ 0.52 \\ + 30 \\ \hline 33.12 \end{array}$$

**MULTIPLICATION**

It refers to the process of repeated addition. It is the shortest way of adding when all the numbers are the same. There are several methods of multiplying numbers. One secret for mastering multiplication is memorizing the multiplication table at the back of your note book

- There are 26 cartons of biscuits. In each carton there are 400 packets of biscuits. How many packets of biscuits are there altogether? (MANEB 2002)
- |            |          |
|------------|----------|
| A. 208,000 | C. 8,000 |
| B. 10,400  | D. 520   |

$$\text{Solution: } 26 \times 400 = 10,400$$

**Answer B**

- Find the product of 17,496 and 12. Correct your answer to the nearest tenths.

**Solution:** A product is the answer to the multiplication of numbers as shown below

$$17.496 \times 12 = 209.952$$

To the nearest tenths = 210.0

**DIVISION**

This is the reverse of multiplication

"Divide" means share or how many are there? Division becomes easy if one is good at multiplication. However, the exact meaning of division is 'repeated subtraction'. Division involves both multiplication and subtraction

- How many K500 notes are there in K8,000? (MANEB 2012)

## UNIT I

### RECOGNISING WHOLE NUMBERS

Whole numbers are sometimes called natural numbers. It is hoped that learners already know how to write them from zero up to nine. Emphasize writing figures zero up to nine as follow

0 1 2 3 4 5 6 7 8 9.

Counting from 0 up to 9

	●	● ●	● ● ●	● ● ● ●	● ● ● ● ●	● ● ● ● ● ●	● ● ● ● ● ● ●	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ●
0	1	2	3	4	5	6	7	8	9
zero	one	two	three	four	five	six	seven	eight	nine

When counting, the number zero, no object is placed in the corresponding box. This represents an empty case. The procedure can be repeated using various objects, e.g stones, bottles tops or sticks.

### TYPES OF WHOLE NUMBERS

There are several types or sets of whole numbers. Some of the most important at primary school level are as listed below.

- Even Numbers: these are all the numbers that do not leave a remainder when divided by 2. Examples of such numbers include 2, 4, 6, 8 10 etc. they are multipliers of 2. Odd numbers can be characterized by their last digit, if they end with an even number as in 16, 30, 108 etc.
- Odd numbers: These are all the numbers that leave a remainder of 1 when divided by 2. Examples of such numbers include 1, 3, 5, 7 etc. they are not multiples of 2. Odd numbers can be characterized by their last digit, if they end with an odd number as in 31, 1009, 17, 55 etc.
- Prime numbers: A prime number is a number that has two factors only, 1 and the number itself. Note 1 is not a prime number. Below are prime numbers from 0 to 20, (the prime numbers have been circled).

1 (2) 3 4 (5) 6 (7) 8 9 10 (11) 12 (13) 14 15 16 (17) 18 (19) 20

Note that all prime numbers are odd numbers except 2. Learners can be asked to work out other prime numbers beyond 20 depending on class level. Prime numbers can also be called prime factors if they have been used to divide other numbers. For example: 2, 3 and 5 are prime factors of 30.

### PSLCE QUESTIONS AND THEIR SOLUTIONS

The following are some of the Primary School Leaving Certificate Examination (PSLCE) questions and their solutions that have proven to be an effective working tool to a candidate who is to sit for the examination. Questions include both MANEB and various mock questions. The solutions have short notes where possible. The notes are simply explanations to you, and are not intended, to confuse you but hasten the understanding of the concepts. As a leaner, you automatically need someone probably your mathematics teacher) or classmates to guide you in areas of difficulty. Consult when you need help.

Wishing you the best success out of this pamphlet. Remember, '*knowledge is power*'

### IMPORTANT NOTICE

This pamphlet is not allowed in your examination room, or you will be disqualified. It is just there for practice purpose, nothing else.

## **MALAWI PRIMARY SCHOOLS**

### **BASIC MATHEMATICS**

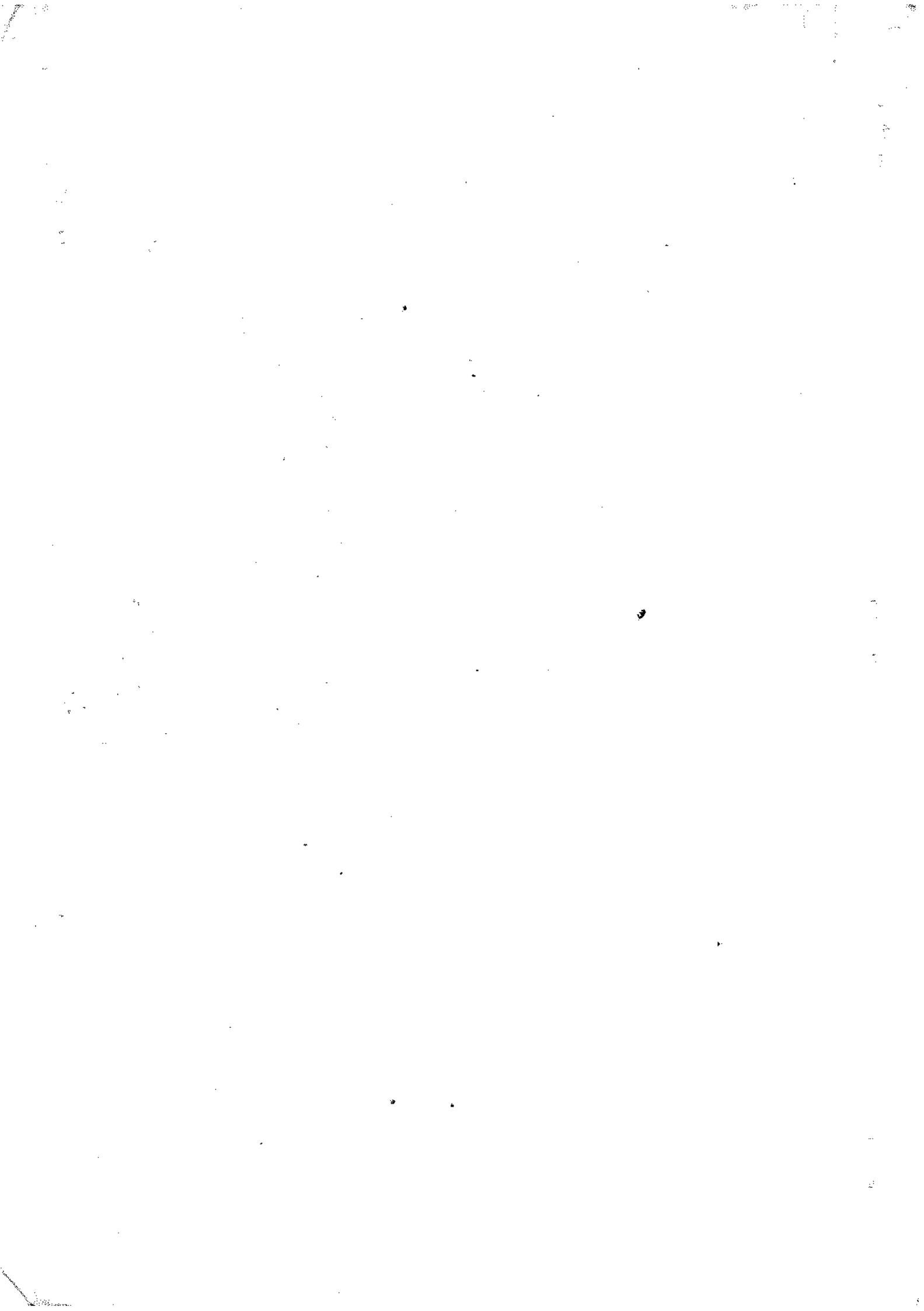
Mathematics is one of the subjects feared by most learners especially girls. This book has been designed in such a way that both teachers and learners (students) will find it very useful in removing such fears and create more challenging minds towards the subject. Soon on later children will discover that Mathematics is one of the simplest subjects than the rest. This book can help prepare primary school boys and girls to start secondary school education confidently.

Careful use of this book will help learners achieve the required level of mastery provided if one is not lazy. So, practice mathematics daily. When practicing make sure you have all the required mathematical instruments with you.

The writer took into great consideration the learners whose abilities are below average. He researched learners' needs such that the book is hoped to meet those needs.

Sometimes learners are missed by teachers, more especially when teachers are forced to teach the subjects. However, if you want to be more successful, seek advice and help from most able Mathematics teachers within our schools, surrounding primary / Secondary schools or colleges.

Any comments, criticism and contributions are most welcome.



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**THE END**

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- D. MATHS WILL NO LONGER BE A TOUGH NUT TO CRACK.**

**DO IT!      GET IT!      IT IS POSSIBLE!**

**\*\*IMPOSSIBLE IS A WORD FOUND IN A POOR DICTIONARY\***

**COMPILED BY: R.P. KALUNGUSHA NKHOMA**

**CELL: 0997036607.**

# **PSLCE**

# **MATHEMATICS**

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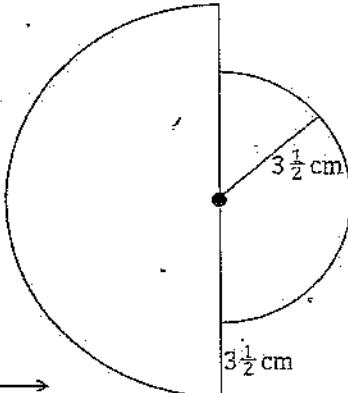
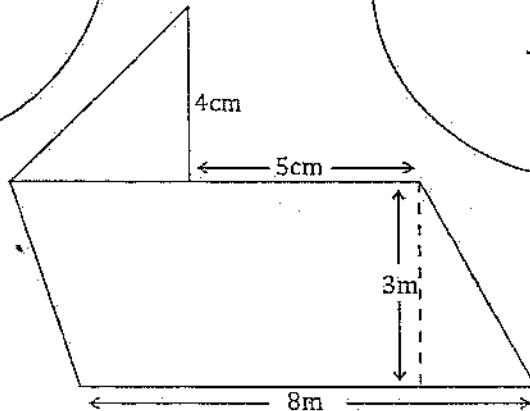
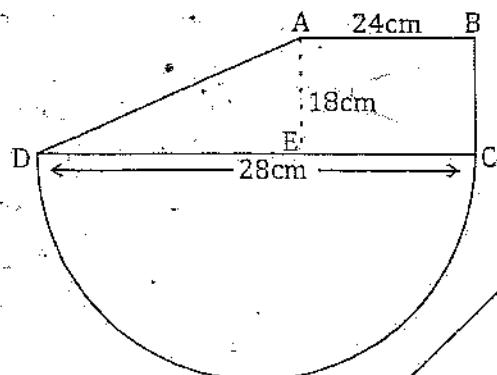
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**QUESTIONS**  
&  
**ANSWERS**

# **PRIMARY MATHEMATICS**

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**Made Simple**

**Questions**

**And**

**Answers**

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