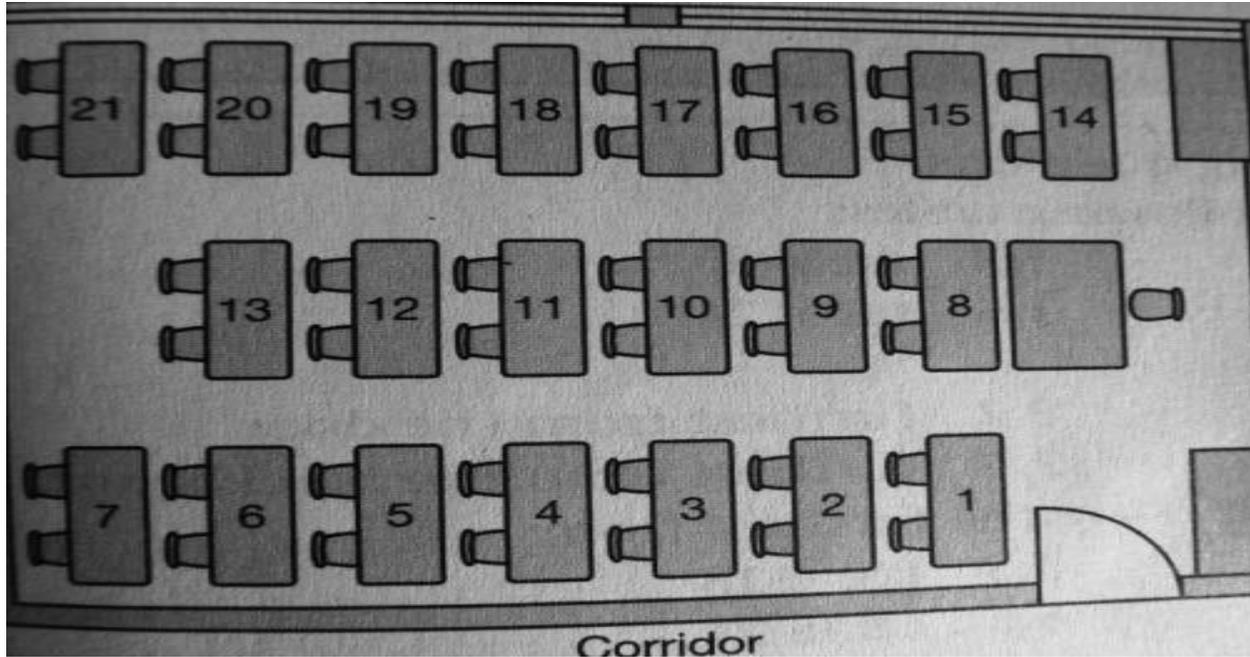




<b>SUBJECT and GRADE</b>	Mathematical Literacy                      Grade 10	
<b>TERM 2</b>	<i>Week 6</i>	
<b>TOPIC</b>	MAPS, PLANS & OTHER REPRESENTATION	
<b>AIMS OF LESSON</b>	To interpret and analyze maps, plans and assemble models	
<b>RESOURCES</b>	<i>Paper based resources</i>	<i>Digital resources</i>
	Mind the GAP: Page 110 – 112 Answer Series <b>Also use:</b> Via Afrika / Platinum Or any CAPS approved textbook. Look under Maps, Plans and other representation	<i>Youtube mathematical literacy grade 10. Go to maps and scale</i>
<b>INTRODUCTION</b>	<p><b><u>By the end of the week you need to be able to work with the following maps:</u></b></p> <ul style="list-style-type: none"> <li>• Maps showing the seating plan and/or layout of a classroom</li> <li>• Maps showing the layout of the buildings and/or sports fields at a school</li> <li>• Map showing the layout of the stores in a shopping center</li> <li>• Seating plans of cinemas and a sports stadium</li> </ul> <p>In order to:</p> <ul style="list-style-type: none"> <li>• Describe the position of an object in relation to the surrounding objects</li> <li>• Describe the position of a building in relation to the surrounding buildings</li> <li>• Using mapping references systems and/or techniques such as: <ul style="list-style-type: none"> <li>- Directional indicators “left”, “right”, “along”, “straight”, “up”, and “down”, “north”, “south”, “west”, “east”</li> <li>- House and/or building numbering systems</li> <li>- Numbering systems used for seating in a sports stadium</li> </ul> </li> </ul>	

	<p>Use instruction/assembly diagrams, containing words and/or pictures, found in manuals for:</p> <ul style="list-style-type: none"> <li>• Plugs</li> <li>• Plastic models</li> <li>• Unassembled wooden furniture units</li> <li>• Cell-phones (e.g. Installing a battery and sim card)</li> <li>• Electrical appliances that require individual components (connecting speakers to a Hi-fi)</li> <li>• Children toys</li> </ul> <p><b><u>Previous knowledge</u></b></p> <ul style="list-style-type: none"> <li>• Ratios</li> <li>• Determine perimeter, area and volume.</li> <li>• Operations with whole numbers and decimal numbers and without a calculator (<b>Brackets Of Divide Multiply Add Subtract.</b>)</li> <li>• Rounding-off: to specific number of decimal places, to the nearest whole number, up or down.</li> <li>• conversions</li> </ul>
<p>CONCEPTS AND SKILLS</p>	<p><b><i>Terminologies:</i></b> What is a map?</p> <ul style="list-style-type: none"> <li>• A map is a diagrammatic representation of an area of land showing landmarks like cities, roads etc.</li> <li>• We use words like “left”, “right”, “along”, “straight”, “up”, and “down”, “north”, “south”, “west”, “east” to indicate directions on a map.</li> <li>• We also use words like “around”. “past”, “behind”, and “between” to indicate direction.</li> </ul>
<p><b><u>Work Example 1:</u></b> In the layout of a classroom shown below, learners’ tables are numbered from 1 to 21 down the rows, from front to back, starting at the door.</p> <ol style="list-style-type: none"> <li>a) Which object is closest to the door?</li> <li>b) Describe the position of table 7.</li> <li>c) Write the table number closest to the pillar between the windows.</li> <li>d) Describe the shortest route from the door to table 21.</li> </ol>	

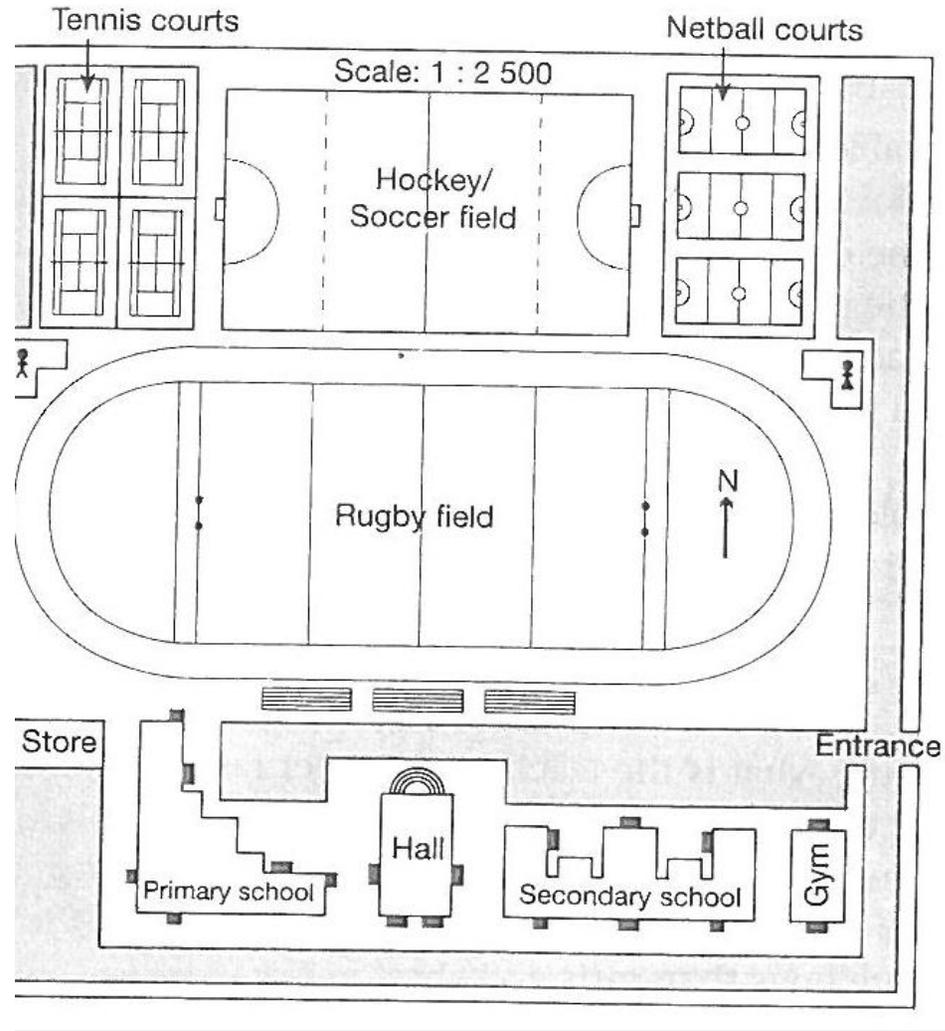
The map showing the layout for a classroom



**Solutions:**

- a) The cupboard is closest to the door.
- b) Table 7 is at the back of the first row.
- c) Table 17
- d) From the door of the classroom, turn right and walk forward until you reach table 21.

**Work Example 2:** Map showing the layout of a school ground



Use the map on the previous page and answer the following questions:

- a) Describe the position of the hall.
- b) Direct a driver from the entrance to the store.
- c) Describe the position of the tennis court.
- d) Describe the surroundings of the hockey/soccer field
- e) Direct a parent in her car from the netball courts to the front of the primary school.

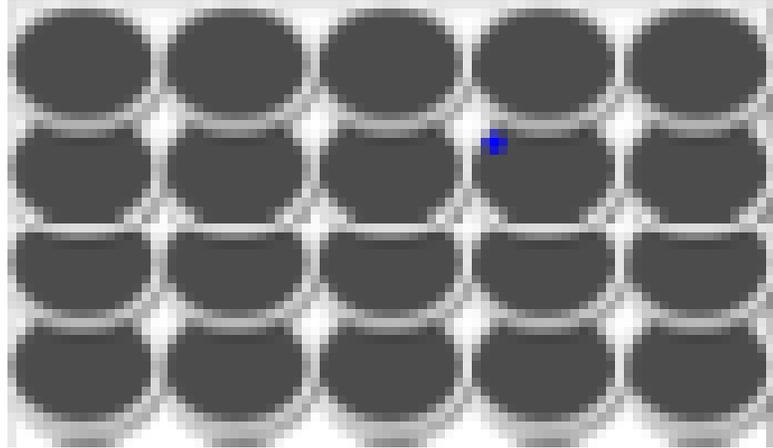
**Solutions:**

- a) The hall lies between the primary and secondary schools.
- b) At the entrance, turn left and follow the road past the gym, the secondary school, the hall and the primary school. The store is behind the primary school
- c) The tennis courts lie on the far side of the entrance to the school.
- d) The hockey/soccer field has the tennis courts on one side, the netball on the other and overlooks the rugby field.
- e) Follow the road and turn right at the entrance, then drive straight on until you reach the primary school.

**Models:**

- Determine the most appropriate way to package cans and/or boxes for optimal use of space.
- Determine the most cost-effective way to package a number of cans and/or boxes.
- Most of the goods we purchase are often packaged.
- Items can be packaged in cans, plastic, containers, glass bottles etc.

# Packaging



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From the top view of the box, there are **5 cans along the length** of the box and **4 cans along the breadth** of the box.

**Therefore**, there are **20 cans** in the base of the box.

### Example 3

A box has a length of **65 cm x 50 cm width and 45 cm height**.

There are small boxes of washing powder packed in the box with the dimensions of **15 cm x 10 cm x 3 cm**.

To calculate the number of boxes that will fit along the length,

$$65 \text{ cm: } = 65 \div 15 = 5$$

To calculate the number of boxes that will fit across the width,

$$50 \text{ cm: } = 50 \div 10 = 5$$

**Example 4:**

If a box is filled with cans of soda and its dimensions are length = 55 cm, breadth = 15 cm and the height = 66 cm. The dimensions of the cans: diameter = 5 cm and height = 11 cm

- a) Calculate how many cans will be packed into the base?
- b) How many cans will fit across the breadth?
- c) How many layers will be in the box?
- d) Determine the number of cans that can fit in the box.

**Solutions:**

- a)  $55/5 = 11$  cans
- b)  $15/5 = 3$  cans
- c)  $66/11 = 6$  cans
- d) Number of cans =  $11 \times 3 \times 6$   
 $= 198$  cans

**Assessment Questions**

A matchbox has dimensions: length = 5,3 cm; width = 3,8 cm and height = 1,5 cm. A big box in which the matchboxes are packaged, has dimensions: length = 21,5 cm; breadth = 11 cm and height = 9 cm.

Use the above information to answer question 1 to 4.

- 1) How many matchboxes will fit in the length of the big box?
- 2) How many matchboxes will fit in the width of the big box?

- 3) How many layers of matchboxes will in the height of the big box?
- 4) Calculate the number of matchboxes that can fit into the big box.
- 5) Tins with a diameter of 8 cm are packed upright in a box. What would the minimum length of the box have to be to ensure that four tins can be packed in a row along the length of the box?

**Solutions:**

- 1) 4 matchboxes
- 2) 2 matchboxes
- 3) 6 matchboxes
- 4) 48 matchboxes ( $4 \times 2 \times 6 = 48$ )
- 5) 32 cm

**Plans (instruction/assembly diagrams)**

**Concepts and Skills**

- Use instruction/assembly diagrams containing words and pictures for plugs and cell-phones.
- Complete the task presented in the instructions using everyday language.
- Explain what the instructions mean or represent using everyday language.
- **Instructions diagrams** use drawings and words to explain step-by-step how to complete a task, e.g. how to change a plug.
- **Assembly diagrams** use drawings or words (or both) to explain step-by-step how to assemble parts of an object, e.g. how to insert a battery and SIM card into a cell-phone.

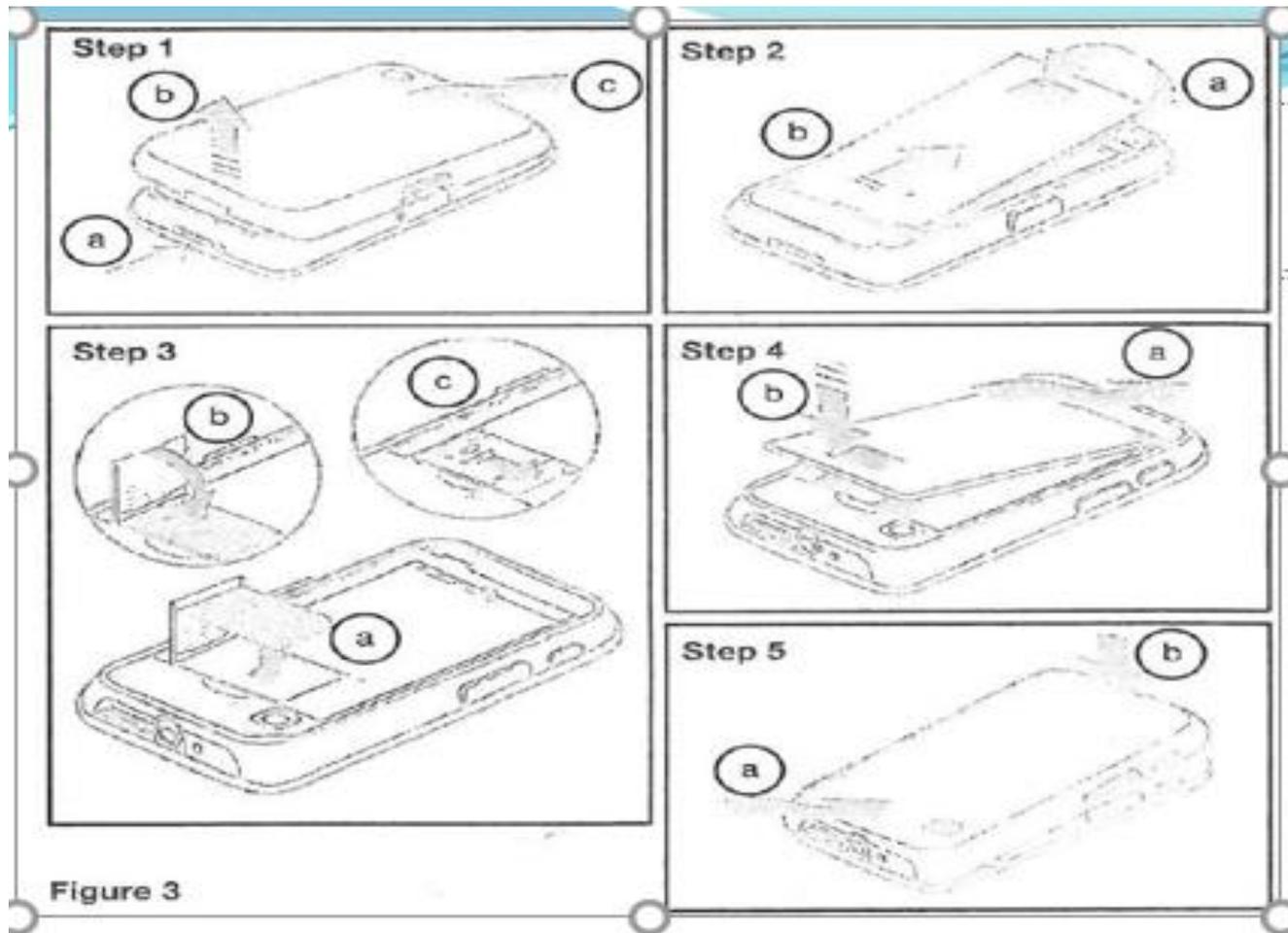
**Example 5:**

Use figure 3 on the next page to answer the following questions

- 1) What is shown by the series of pictures in figure 3?
- 2) Write down what you think is shown by the picture in:
  - a) Step 1
  - b) Step 3
  - c) Step 5

3) Write down instructions for step 2a and 2b.

4) Write down step 3a, 3b and 3c.



### Solutions of Example 5

1. The series of pictures show how to insert the SIM card and battery of a cell phone.
2. a) Step 1: How to remove the back cover.  
b) Step 3: How to insert a SIM card.  
c) Step 5: How to replace the back cover.
3. Step 2a: Lift the bottom of the battery upwards.  
Step 2b: Slide the battery downwards to release it from the battery connections.
4. Step 3a: Slide the SIM card holder backwards and lift it up.  
Step 3b: Insert the SIM card with its contact area downwards to lock it.

VALUES

Planning methodically to determine quantities of materials needed.  
Working precisely when working with maps and plans.  
Doing calculations accurately (scale).