



Activity 8. Introducing Maps

To the teacher

A map represents features on the ground drawn to scale on paper or another medium. There are many types of maps. The Saltwatch program uses *topographic* maps. The activities that follow will introduce students to maps through simple to more complex tasks.

For further introductory mapping activities you might use one of the primary school atlas programs or refer to Years 1-10 Mathematics Source books. For secondary students mapping activities are found in most geography skills books.

Activity 8 a. Plan Viewing

Aim

To start students looking at and drawing things from above.

Materials required

- Paper, pencils
- Saltwatch equipment and other differently shaped items as listed below
- Copy of the farm diagram
- Multiple copies of plan view pictures.

Procedure

1. Draw some Saltwatch and other things below by looking down on them. Here are some suggestions.
 - Plopper
 - Bottle
 - Computer
 - EC meter
 - Bailer
 - Hat
 - Sunscreen
 - Lunchbox
 - Soft drink can
 - Apple

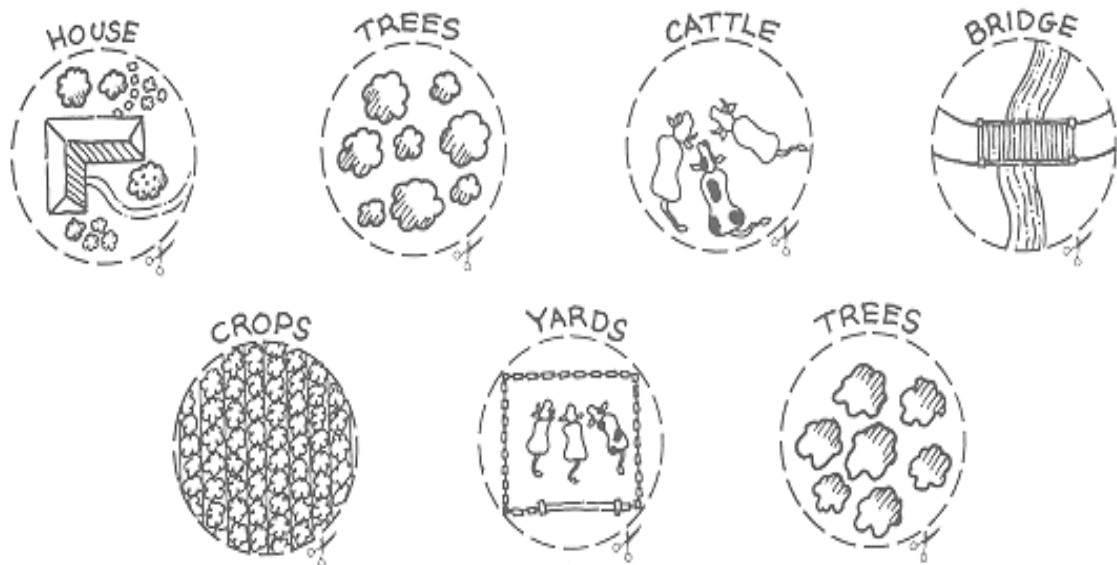
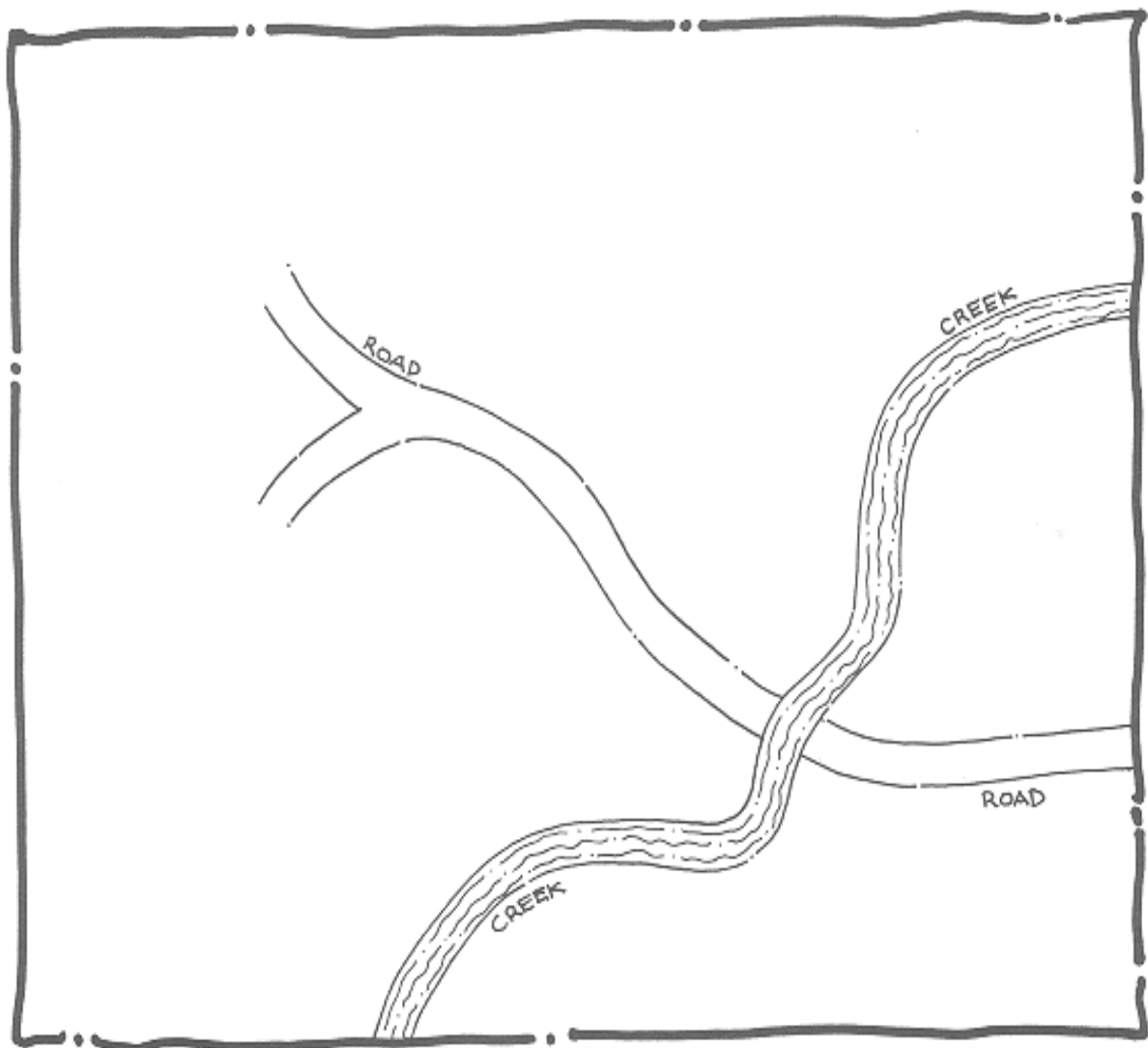


Figure 1. Plan viewing.

2. Either individually, or in groups, students should cut out the plan view pictures and paste them appropriate on the farm plan. Discuss with the students the best place for them to past on their pictures. They might like to add their own plan view drawings e.g. farm machinery, fences, to complete the farm diagram.

(For group work, an enlarged outline of the farm plan Figure 1 should be drawn on butcher's paper.)

Activity 9b. What makes a good map?

Aim

To identify the important features of a map and encourage students to include this information on any map they draw.

Materials required

- A number of maps, preferably large so that they are easy for students to read. They should be simple maps and all have a title, legend/key, direction of north, scale, and preferably a border.
- The topographic map for your area

Procedure

1. Study your maps carefully and list the **four** (4) important labels on your map:
 - 1.
 - 2.
 - 3.
 - 4.

(These 4 labels should be on any map that you use or draw.)

(* Teacher note: Answers – Title, legend/key, north point, scale)

Following up

1. See if you can see any maps that do not have these features.
2. Look at the topographic map you are going to use for Saltwatch. Identify each of the 4 labels on this map.

Activity 8c. Using the legend

Aim

To identify what a legend/key is and how it can be used.

Background

If you look at a map you will see that it has a *legend* or a *key*. This allows a lot of information to be shown on the map without cluttering it up with too many words.

Materials required

- Copies of the map of *Wyoming* (Figure 2)
- A copy of a topographic map

Procedure

1. Figure 2 has a legend or a key. See how many of the features in the legend you can find on the map. Check this with your neighbour.
2. What does the legend/key tell you about how this farmer uses his farm?
3. Discussion: Why are there some features in the legend that do not appear on your map?
4. Look at the legend on your topographic map and identify any symbols similar to those in Figure 2.
5. What are some of the different symbols? What do they represent?
6. Using your topographic map, study the legend carefully and:
 - a. work out how different colours are used to represent different types of features
 - b. identify some of the features around your home, school and local community.

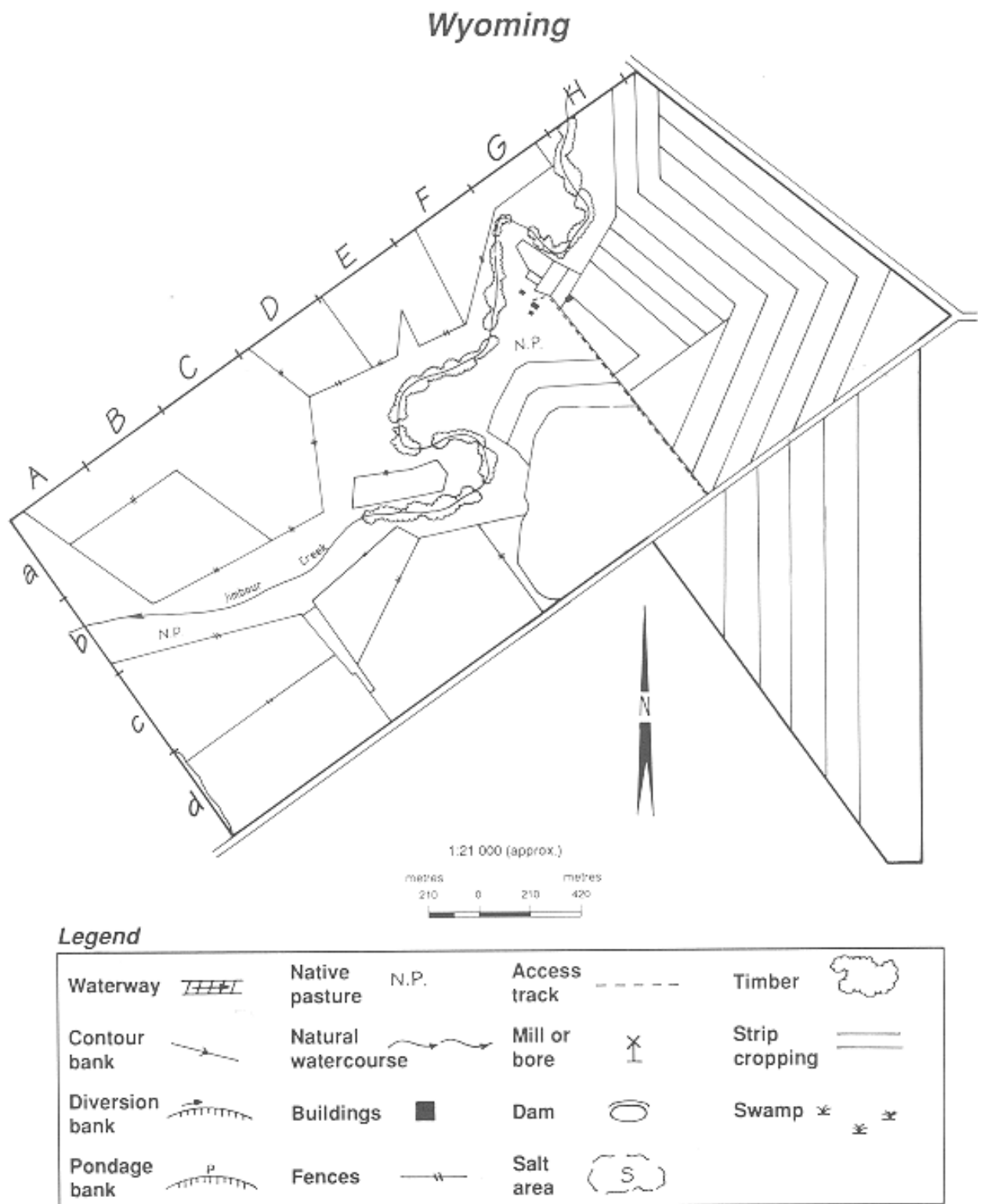


Figure 2. Property plan of Wyoming (from Landcare in the Field: Dalby Farm Studies)

Activity 9d. Drawing your own map

Aim

For students to see that plans/maps may be simple and are easy to draw.

Materials required

- paper, pencils and erasers

Procedure

1. Draw a square or rectangle to represent your classroom.
2. Use symbols, letters or colours to plot the following features on the map/plan:
 - blackboard
 - door
 - teacher's desk
 - student's desks/tables
3. Be sure to give you map a title eg. "My Classroom" and draw up a simple legend.

Following up

You might like to draw a map or plan of your favourite room at home.

Activity 9e. Scale... what is it?

Background

When areas are represented on a map or a plan they are drawn “to scale”, ie. the object which is drawn on the map is in proportion to the object it is representing on the ground. When you drew your plan of the classroom you estimated its shape and size. From your drawing it is not possible to work out the size of your classroom. If you drew it to scale you would be able to calculate distances and sizes.

Aim

For students to understand what a simple scale is and how it is used.

Materials required

- paper, pencils, eraser and ruler
- the diagram in this activity (Figure 3)
- a tape measure (preferably builder’s size)

Procedure

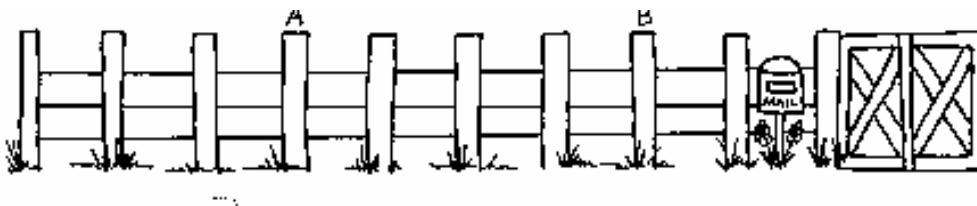
Calculating distance

1. The diagram of the fence below (Figure 3) has been drawn using a scale where 1 cm represents 1 metre.
 - a. How many centimetres long is the fence from point A to B?
 - b. If 1 cm represents 1 metre, how long is the fence in metres?
 - c. How many centimetres high are the tops of the fence posts from the ground?
2. Using the same scale 1 cm represents 1 m, how:
 - a. wide is the double gate?
 - b. high is the gate?
3. How far from the gate (approximately) is the letter box?
4. You have been given enough trees to plant at 1.5 metre intervals along the fence.
 - a. using the scale 1cm represents 1 m, mark on the fence where you will plant the trees.
 - b. How many trees will you be able to plant?

Drawing things to scale in the classroom

5. In groups of three (two groups using the tape measure and once recording the distances) measure the width and length of your classroom.
6. With your teacher, work out a suitable scale for your plan that you are going to draw.
7. Using this scale draw up a plan of your classroom.
8. Measure the doorway width and some of the windows and mark these on your plan.

If you are adventurous you might like to draw other features of your classroom (tables, etc.) to scale on your plan.



Vertical and horizontal scale:
1 cm represents 1 m

Figure 3

Activity 9f. Using a scale

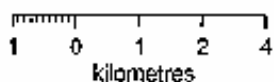
Aim

To understand how scale on a map is presented and used.

Background

There are three main ways that scale is shown on a map. They are:

1. As a ration, eg. 1:100 000 where the unit of measurement is the same on both sides of the ration symbol (:). It may be centimetres, metres, kilometres, etc.
2. As a statement, eg. 1 cm on the map represents 1 km on the ground.
3. As a linear or line scale.



Most maps will include the linear and the ration form. When you use these you often put them into statement form.

Note: A handy note to remember: There are 100 000 centimetres in a kilometre.

Materials required

- Topographic map being used for Saltwatch or other maps
- A ruler
- A pencil

Procedure

1. Using your topographic map find out the ways in which scale is shown on the map.
2. If there is a linear scale, work out how many kilometres to the centimetre there are. How many metres will there be for each centimetre?
3. Complete Figure 4 Table 9 of examples by filling in the gaps.
4. Using your Saltwatch map select some obvious locations or features and measure the distance “as the crow flies” (in a straight line directly from one point to the other) between these features. Use the scale on the map to calculate the distances in kilometres and metres.

Try some small distances, eg. 400 m, so that you use the smaller divisions on the linear scale.

Table 9.

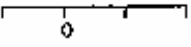
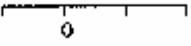
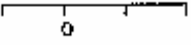
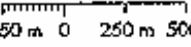
Ratio	Word/statement	Linear/line
1:250 000	1 cm represents _____	
1:100 000	1 cm represents 1 km	
_____	1 cm represents 0.5 km	
_____	_____	
1:10 000	_____	_____

Figure 4 – Table 9

Activity 9g. Finding locations on a map

Aim

To introduce students to locating features using a simple reference system.

Materials required

- Map Figure 2. *Wyoming*
- Street directory

Procedure

1. Using Figure 2 identify which feature is located at each of the reference points listed below. The letters on the reference refer to the upper and lower cast letters around the edge of the map.
 - (i) Ec
 - (ii) Fb
 - (iii) Gd
 - (iv) Cc
 - (v) Aa
 - (vi) Hc
2. Find the page in your street directory where your school is located. Identify some features in your area and work out the reference for them. Use the letters and numbers around the map.
3. Test your neighbour with the references you have worked out.
4. Why is it difficult to give references for the exact location of any feature when using only two numbers in the reference?

Activity 9h. Using 6-grid reference

Aim

To introduce students to the use of 6-figure and 9-figure grid references; ie. The Australian Mapping Grid Reference system (AMG).

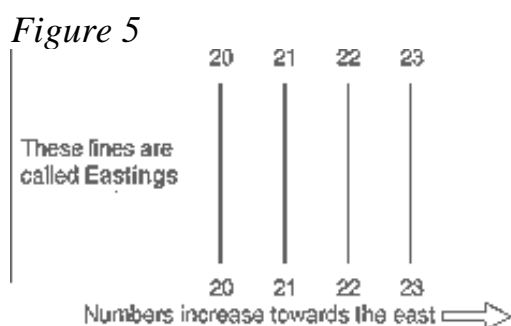
Background

The grid drawn over a map allows you to describe accurately the location of features on the map. The grid is numbered around the edge of the map using numbers from 00-99. These grid lines always have 2 digits so the ones below 10 are written as 01, 02 etc. the heavier grid lines (multiples of 10) are also numbered on the map. The AMG reference system is the name given to this system of using grid lines on a map.

The grid lines are spaced 1km apart, regardless of the scale of the map. Therefore, when you read a map using the AMG system you will know that the grid lines are 1 km apart.

Giving a location using the grid system is called a *grid reference*. Grid references can be given using 6 to 13 numbers. Generally for any mapping work you do at school you will only use 6-figure grid references. For Saltwatch and Waterwatch you need to use 9-figure grid references. This information tells where on the map the feature is located and which map in the AMG system is being used.

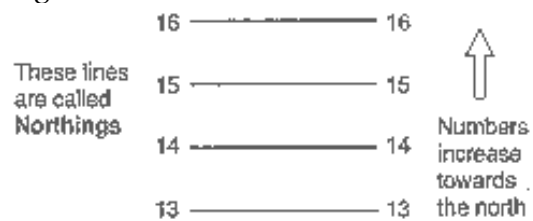
The grid reference consists of an **Easting** and a **Northing**. These grid lines are used to read the **Eastings** and **Northings**. **Eastings** increase in number towards the east and are represented by the vertical lines of the grid, as Figure 5 illustrates:



Northings increase in number towards the north and are represented by the horizontal lines of the grid, as Figure 6 illustrates.

The combination of the numbers from the **Eastings** and the **Northings** gives the grid reference: the **Eastings** are always given first.

Figure 6



E comes before N in the alphabet so always read the Eastings first

Choose a few place names on your Saltwatch map and have students provide the Eastings and Northings for those locations.