WEEK 10 NOTES & EXERCISES

GRID REFERENCES

The latitude/longitude system can become unwieldy when we are working in a small area –particularly on land. A system was developed to cope with this. Topographic maps are provided with systems of squares, called a grid, so that positions on the map may be described in a similar way. These grid lines don't correspond to lines of latitude and longitude nor are they parallel to them (grid lines are straight while lines of latitude and longitude are curved). This is known as the Australian Map Grid.

The following notes, examples and exercises refer to "ACT Special" topographical map. To give a grid reference we need to quote a number of things. The first are the sheet number and name. These are usually found at the top of the sheet. In this case the sheet name is CANBERRA and the sheet number is 8727. We then need to give "easting" – the grid line from the left hand edge that is closest to the object but not past it. This is followed by the "northing" – the grid line from the bottom of the map to the object but not past it. A grid reference is a combination of the easting followed by the northing ie go along the base of the map and then move up.

An example: Black Mountain has easting - 90 and northing - 94

This is an example we can improve on. Each grid square can be divided into tenths. We then estimate how many tenths past the initial easting and northing the feature is. For the example Black Mountain, it is approximately 7/10 past 90 and 4/10 past 94. Our easting and northing now becomes easting - 907 and northing - 944.

These are combined to give a digit grid reference.

Black Mountain – 907944

Grid references are always given as a 6-digit number, the first three digits represent the easting and the second three the northing.

Examples:	Governors Hill	265084
	One Tree Hill	904090 (the 0 is included even though the feature is actually on the grid line as grid references are 6-digit numbers)

Exercise Set 1

Q1. Name or describe the feature located at the following grid references.

a) 843715 b) 180744 c) 003091

d) 986150 e) 065218

Q2. Give the grid references for the following features.

a) the centre of Parliament House

b) the intersection of the runways at Canberra Airport

c) Scrivener Dam (holding back Lake Burley Griffin)

d) Hawker College

e) Captain Cook Memorial Water Jet (on Lake Burley Griffin)

Scale

The map scales available to us are;

1 : 1 000 000 this scale takes 52 maps to cover Australia

1 : 250 000 this scale takes544 maps to cover Australia

1 : 100 000 ACT Special

1 : 50 000

1 : 25 000 this scale takes 50 000 maps to cover Australia

The description of scale refers to the ratio of the size of a feature on the map to the real size of the feature.

Thus, even though 25 000 is smaller than 100 000 the ratio 1 : 25 000 is larger than 1 : 100 000.

A scale is interpreted in the following way. In a scale of 1 : 100 000 (ACT Special) the 1 represents the map distance and the large number represents the ground distance. Thus, 1 unit on the ground means 100 000 on the ground eg 1 cm on the map means 100 000 cm on the ground (which is 1000 metres or 1 km).

In this instance, as there are 100 000 cm in one kilometre, the scale may also be stated as

"one centimetre to the kilometre"

We can know draw up a table to show what 1 cm represents in each scale.

Scale	1 cm to kilometre
1 : 1 000 000	10 km
1 : 250 000	2.5 km
1 : 100 000	1 km
1 : 50 000	500 m (1/2 km)
1 : 25 000	250 m (1/4 km)

Exercise Set 2

Q1. Use the Canberra 8727 map to follow the sentences, filling in the blanks. Then complete the table.

On a recent bush walking expedition we climbed 961948. From here we could see 983981 to the North East and 907944 almost directly _____ .

My father, who was born on a property at 018170, used to go fishing at 890164. He now lives in a nursing home in 870870.

The 948915 is on _____ . I canoed from here down the _____ river to 025867. I looked up and could see 009829.

Position	Place
961948	
983981	
907944	
018170	
890164	
870870	
948915	
025867	
009829	

Exercise Set 3

For the **Canberra 8727** map;

Q1. What is the scale?

Q2. How far apart are the grid lines?

Q3. Name or describe the features located at the following grid references.

a) 930205

b) 888742

c) 058072

d) 168202

e) 168702

f) 16119

g) 892057

h) 89193

i) 823893

k) 925005

Q4. Give the grid references for:

a) Bungendore Village

b) Jamison Shopping Centre

c) Mount Painter (near Cook)

d) Cockington Green Model Village

e) Belconnen Mall

f) Geary's Gap (on Lake George)

Q5. Find the distance joining:

a) Hawker College to Belconnen Mall

b) Red Hill to Black Mountain

c) Parliament House and Norwood Park Crematorium

d) Government House and Duntroon Military College

e) Hawker College and Hall Sports Ground

f) The centre of Hall and the centre of Bungendore

g) The bridge crossing the Queanbeyan River in Queanbeyan and Gunderoo.

h) Parliament House and the War Memorial.