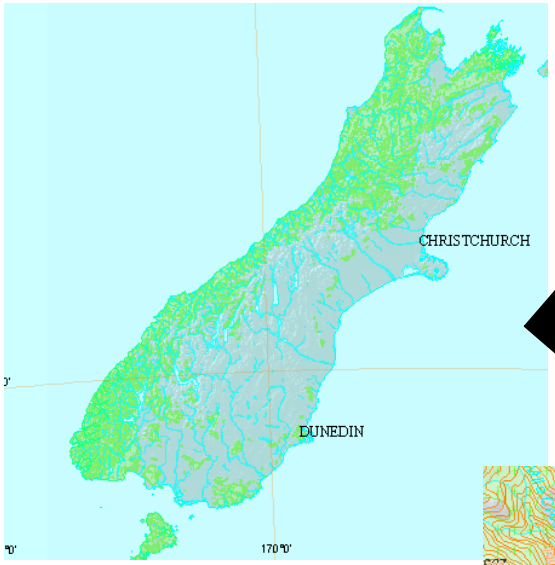
Scale and Distance

Scale is used to show how big the area of land is. The real size of the land can not be shown on a map, otherwise the map would be gigantic.

Simply defined, scale is the relationship between distance on the map and distance on the ground. A map scale usually is given as a fraction or a ratio—1/10,000 or 1:10,000.

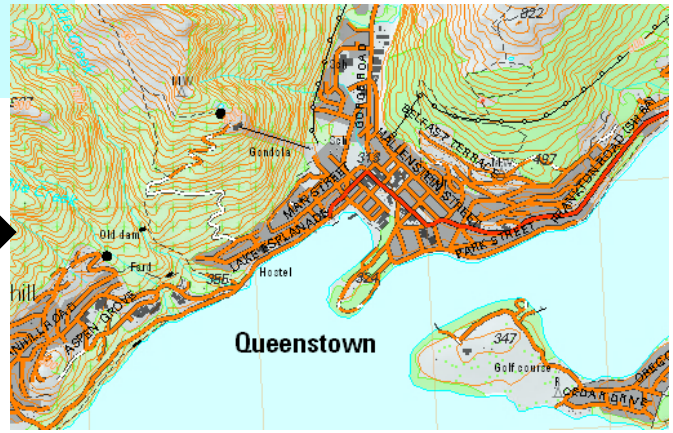
Maps are often known as large scale or small scale. A large scale map refers to one which shows greater detail because the ratio (i.e. 1:25,000 is a larger ratio than a small scale map which would have an ratio of 1:250,000. Maps of the world are very small scale. Maps of a suburb have a large scale

The larger the map the smaller the scale, the smaller the map, the larger the scale.



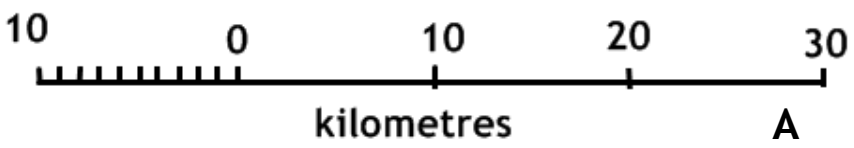
The scale of this map is 1:5,600,000. This is a large map of the South Island. The scale is small.

The scale of this map is 1:32,000. This is a map of Queenstown. Compared to the South Island map, it has a large scale.



Answer: 23km

All topographical maps have the scale written on them. It is usually found with the key, and may look like this:



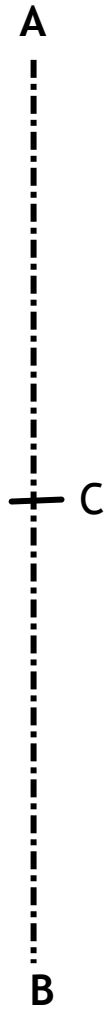
Sometimes it is also written as a ratio on the map e.g. 1:20,000

This means that 1cm on the map represents 20,000 cm in real life (on the ground) or 200 metres.

1:50,000 means that 1cm on the map represents 50,-000 cm in real life (on the ground) or 500 metres.

1:100,000 means that 1cm on the map represents 100,000 cm in real life (on the ground) or 1km/1000m

To measure distance on a map between two points, take a piece of paper and lay it between the two points. Mark on each point. Take the piece of paper and lay it on the the scale to work out the distance.
E.g. the distance from A to B on the line to the right, is 45km (if the scale above applied to this line.
Using the scale above, what is the distance from A to C? The answer is on the previous page.



A skill is geography, is to work out the scale on a map or an aerial photograph. There are a few simple steps to follow to do this:

Work, first of all, with the scale you have been given (it might be for an aerial photography or for a topo map).

On the following page is a topo map and an aerial photography of Abel Tasman National Park. Use them to follow through these steps:

Question: The photograph scale is 1:25,000. What is the scale of the map?

1. Start with the photo. Find 2 points/features, that are also very clear on the map.
2. Measure the distance between these 2 points, on the photo, with a ruler.
3. Use the scale you already have, 1:25,000 to find out the distance between the 2 points.

e.g.
(Note: these 'distance' numbers are made up):

1:25,000 means that 1cm on the photo is 250m on the ground.
From point X to point Z, it is 4cm. This means that on the photo it is really 1000m (4 x 250m = 1000m).

So now the photo is sorted, its time to move onto the harder bit - the map.

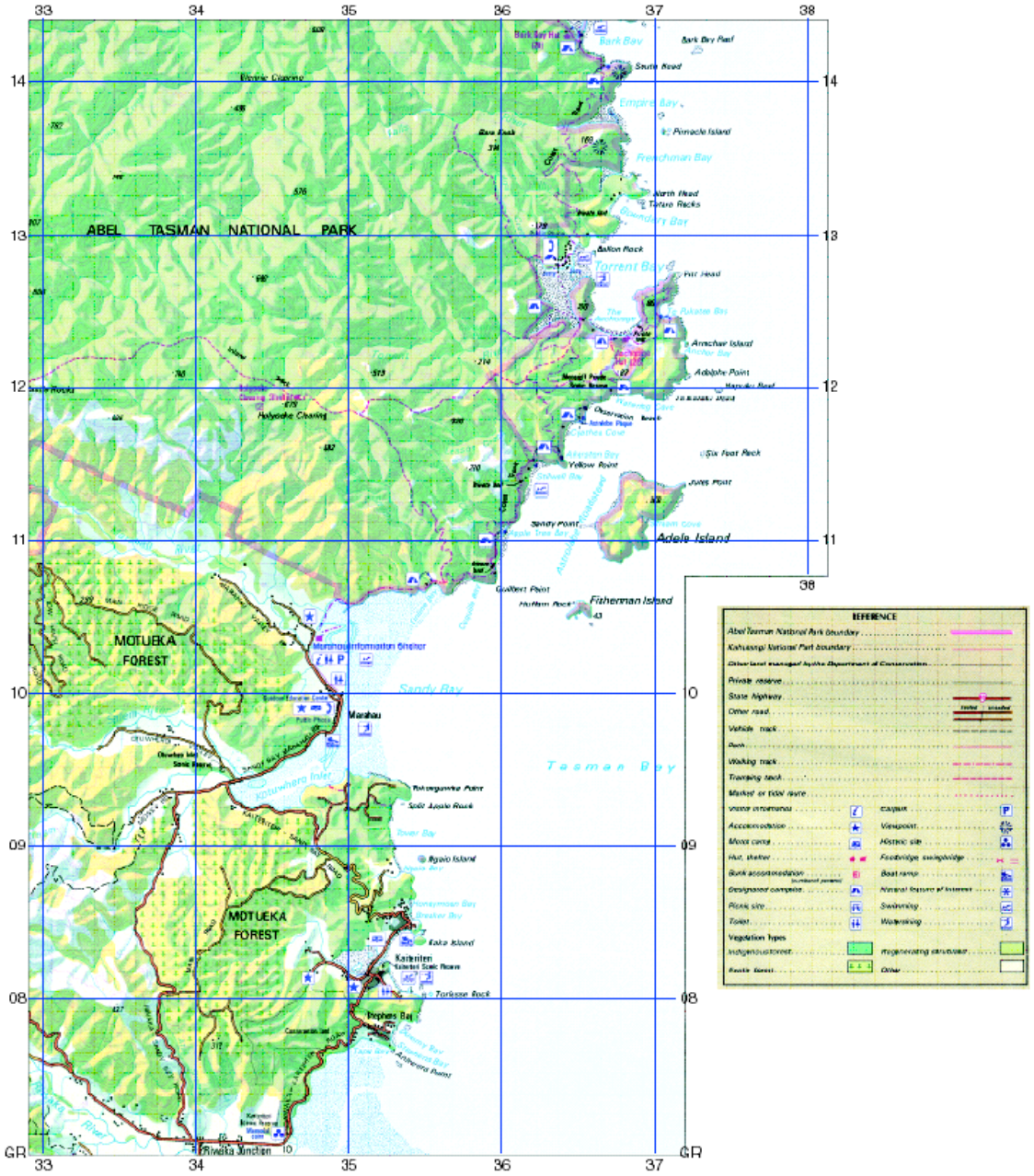
4. Measure the distance between the same 2 points, but on the map this time.
5. From point X to Z it is 2cm.

so this means that 2cm on the map = 100,000 cm on the ground, or 2:100,000 (because the real life distance would be the same on the photo and the map).

6. The ratio needs to be a 1. So now we have to divide the '2' to make it a '1'. If you divide it by 2 then that becomes a 1. We also need to divide the 100,000 by 2 to keep it all balanced. (see below)

$$\frac{2:100{,}000}{2} = 1:50{,}000$$ ← This is the answer

Topographical Map



Title: Apr 17 - 4:09 PM (4 of 5)

Aerial Photograph

Title: Apr 17 - 3:00 PM (5 of 5)