

CHAPTER 18 MAP REDUCTION AND ENLARGEMENT

Objectives

At the end of this chapter, students should be able to; i. Describe map scales in relation to size ii. Enlarge or reduce maps accurately iii. Distinguish between small scale map and large scale map iv. Manipulate map scale

18.1 Map scale in relation to size

Map scale varies in size, as a result we have small scale, medium scale and large scale maps. Small scale maps cover large areas and show few details. Examples of such map are atlas and globe. Medium scale maps are between the small and large scale maps. Usually topographical maps are drawn on medium scale. But, large scale maps are maps that cover small areas, but show detail features of an area. They include cadastral maps or plans. One significant problem confronting map makers is the problem of space. This always necessitates that a map be reproduced either by reduction or enlargement. When a map is reduced or enlarged the scale changes. We reduce or enlarge map to focus attention on the pattern, trend or distribution of geographic features in a particular area of interest.

18.2 How to determine reduction or enlargement factor

To determine whether you are enlarging or reducing a map, use the formula below: $\frac{\text{Old scale}}{\text{New scale}}$

For example, if the old scale is 1:50,000 and the new scale is 1:100,000. The enlargement or reduction factor will

$$\text{be: } \frac{50,000}{100,000} = \frac{1}{2}$$

which means you are reducing by half.

If the old scale is 1:50,000 and the new scale is 1:25,000. Then, enlargement factor will be $\frac{50,000}{25,000} = 2$

Which means you are enlarging twice. Enlargement factor is usually a whole number, whereas reduction factor is usually a fraction.

18.3 Map Enlargement

1. Carefully take note of the enlargement factor and the scale of the map.
2. Draw a network of squares on the map you are to enlarge if it does not have on the piece of paper on which you are to reproduce the map, draw network of squares using the enlargement factor.
3. Draw in the details of the map, square by square at points which correspond with the original map. Certain symbols need not be enlarged, because some features such as roads, rivers, canals, railway lines are not drawn to scale.
4. Gently erase the network of squares imposed on your piece of paper and ink your drawing if necessary.

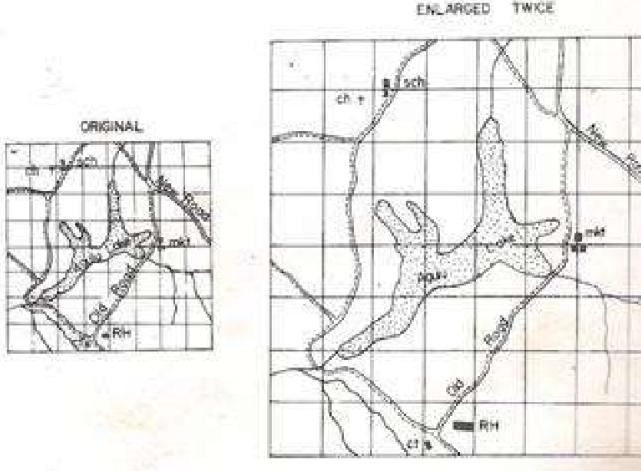


Figure 18.1: Enlargement by method of square

Source: Okoye, 1977.

18.4 Map Reduction

The method of map reduction is similar to the one discussed under map enlargement; however you must take note of the reduction factor and manipulate the scale accordingly. For example if you are to reduce a map of 8cm x 8cm with a scale of 1:100,000 to half, then your new map area will be 4cm x 4cm and the new scale will be 1:200,000. The simple rule is when you are reducing to half; your scale is multiplied by 2. Similarly if you are enlarging twice, your new scale will be half of the old scale.

Summary

In this chapter you have learnt that;

- Map scale varies in size.
- Small scale maps are maps that cover large areas and show few details.
- Examples of small scale maps are atlas and globe.
- We reduce or enlarge map to focus attention on the pattern, trend or distribution of geographic features in a particular area of interest.

Revision Questions

Use the map provided in Figure 18.2 to answer questions 1-

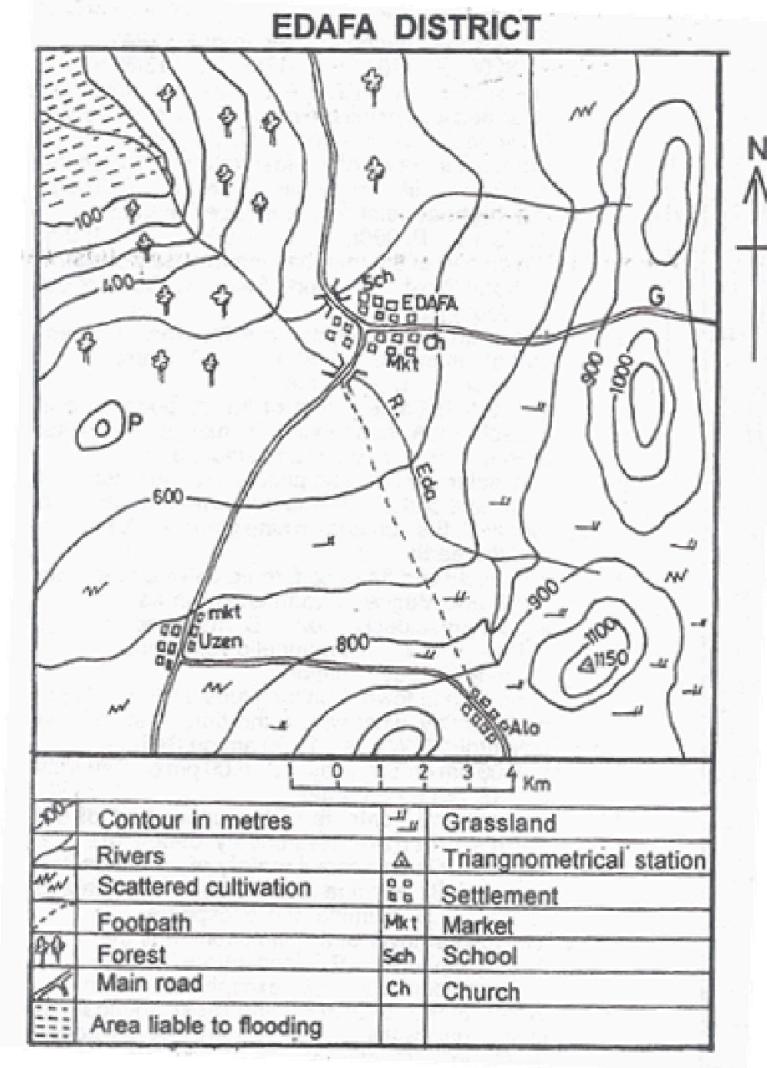


Figure 18.2 Map of EDAFA District

Source: WAEC, June 2011.

1. The scale of the map is; A. 1:10,000
B. 1:1,000,000
C. 1:101,000
D. 1:100,000
2. If the map is enlarged twice its size, the new scale will be; A. 1:100,000
B. 1: 200,000
C. 1:50,000
D. 1:5,000
3. If the map is reduced to half of its original size, the scale will be A. 1:100,000
B. 1:200,000
C. 1:300,000
D. 1:450,000
4. If the length of river Eda is 15.5cm on the map, what is the length in kilometres; A. 7.5kilometres B. 15.5 kilometres C. 5 kilometres D. 25 kilometres
5. River Eda flows from; A. Southeast to Northwest B. Southwest to Northwest C. Northwest to Southwest D. Northeast to Southeast
6. What is the bearing of Uzen from EDAFA A. 320^0
B. 210^0
C. 170^0

D. 130^0

A map of 4cm 8cm square, with a scale of 1:25,000 was enlarged twice; 7. What is the new scale of the map A.

1:25,000

- B. 1:12,500
- C. 1:125, 000
- D. 1: 50,000

8. What is the size of the new map?

- A. 16cm by 16cm B. 8cm by 16cm C. 8cm by 8cm D. 8cm by 4cm
- 9. An example of large scale map is A. 1:100,000
- B. 1:50,000
- C. 1:2,500
- D. 1:25,000

10. One significant problem confronting map makers is A. The problem of space.

- B. The problem of colour.
- C. The problem of time.
- D. The problem of calculation.

Answers

1. D 2. C 3. B 4. B 5. A 6. B 7. B 8. B 9. C 10. A

Essay Questions

1. Why do we enlarge maps?
2. If you are to reduce a map drawn on a scale of 1:100,000 to half, highlights steps you will follow.
3. Enlarge the map of EDAFA district twice its size.
4. Measure the size of area liable to flooding in EDAFA district using the square method and strip method. What are the advantages of square method over strip method?
5. Distinguish between small scale, medium scale and large scale maps.