11. Contour Maps and Landforms

In Standard V, you have gathered some information about how height and relief are shown on a map. Now carry out the following activity on the same topic under the guidance of your teacher.

Try this.

(For the teacher: Carry a few large potatoes to the class. Make groups of the students and distribute the potatoes among the groups.)

❖ Take a large oblate shaped potato and other required items as shown above.

❖ Observe how a potato appears when seen from the front and when seen from above? Draw an outline of the potato in your note book.

❖ Cut the potato into two parts so that each part has a flat base.

❖ Rest the cut half on its flat base and measure its height in millimetres.

❖ This is our ‘potato hill’. The tapering side of the potato is the hill top.

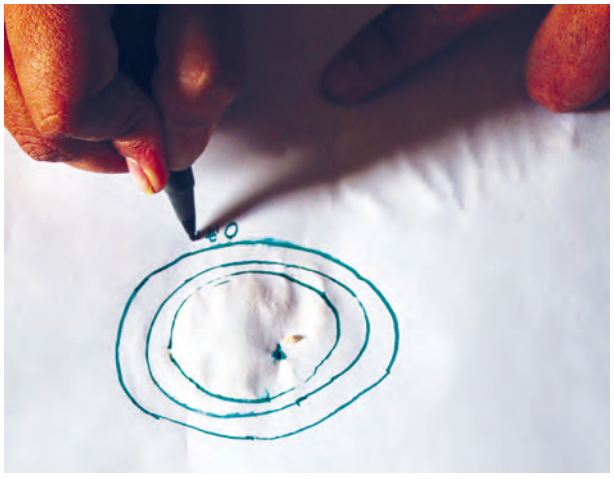
❖ Draw two circles, each going round the hill, one near the top, and the other close to the base. Keep sufficient distance between the circles. The circle near the top will be smaller.

❖ Now the teacher will slice the potato on these circles.

❖ Do not separate the slices. Insert a toothpick or a piece of pointed stick through the slices vertically.

❖ Without removing the toothpick, place the sliced potato on a piece of paper. Moving a pencil along the edge of the lowest slice draw, its outline. It will be nearly circular in shape.

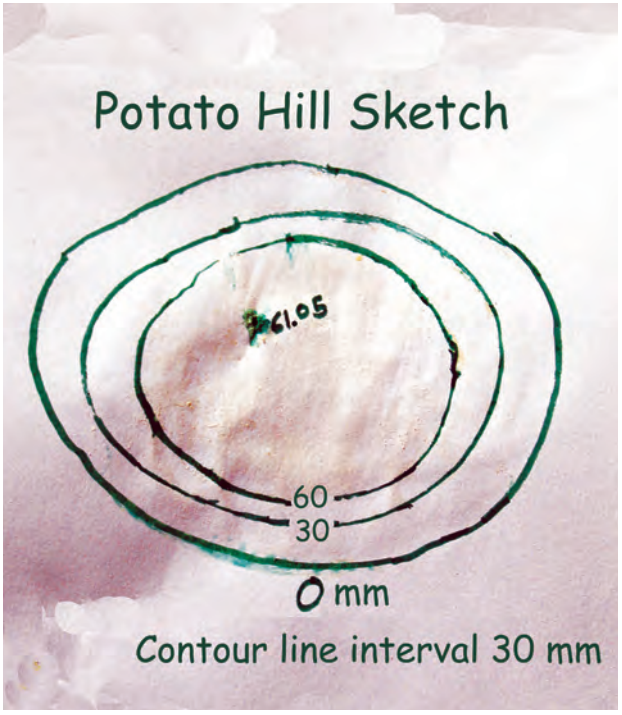
❖ After drawing the outline, pull the toothpick upwards. Remove the lowest slice delicately and keep it aside. Repeat the same procedure for the other two slices.



❖ Observe the figure that is formed after the exercise is complete. You will note that you have drawn three concentric circles.

Write the height of the potato that you had measured earlier in the centre of the innermost circle. Measure the thickness of all the slices you have kept side. Give value '0' (zero) to the outermost circle. How will you give the values to the other lines? Think about it. Do you think that the thickness of each slice that you have measured can help you?

After assigning values to each circle, our sketch of the potato hill will be complete.



Think about it.

☞ What did we achieve in this activity? We have transferred a three dimensional object – the potato – into a two dimensional picture.

In reality it is not possible to make the slices of a mountain or any other landform and place them on paper or on the ground to draw a two dimensional picture of that landform. For this, mathematical and survey methods are applied. You will learn about these methods if you study Geography as a special subject at a later stage.

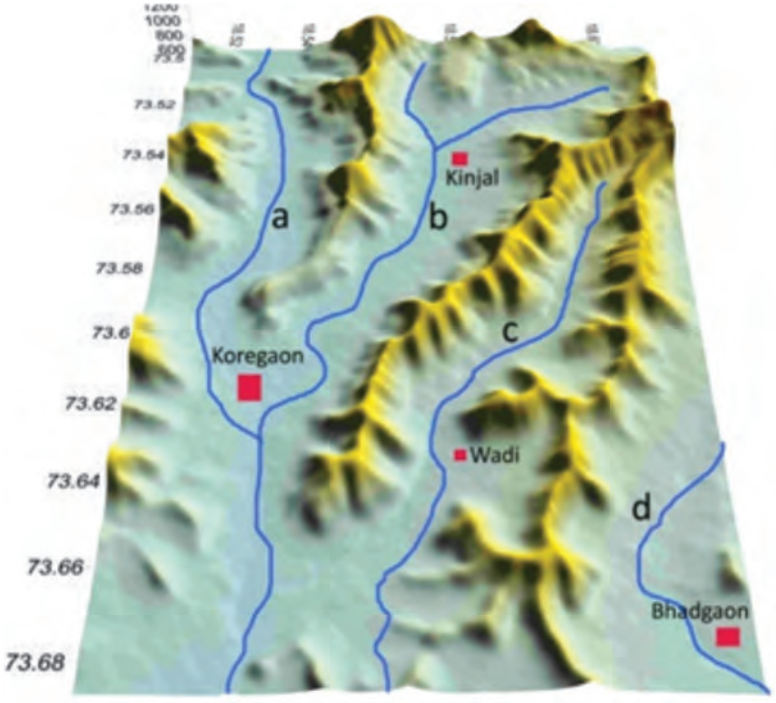


Figure 11.1 a : A model of the earth's surface

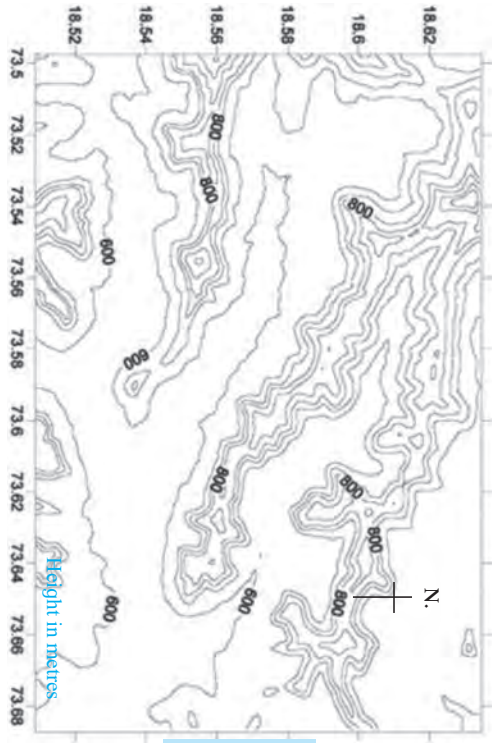


Figure 11.1 b : Contour line map

A model of the relief in an area is shown in fig 11.1 (a) given above. Observe it carefully and answer the following questions.

- Which landforms do you observe in the model?
- Which colours have been used on them?

Observe the map given in fig. 11.1 (b) and answer the following questions.

- What all do you see in the map?
- What is the general direction of the ranges shown in the map?
- Towards which direction is the flat land located in the map?
- What are the maximum and minimum values of the lines in the map?
- What do these values indicate?
- Do you find any similarities in the map and the model in fig. 11.1(a)? What are those?
- Which figure gives us more information and what is that information?
- Is there any similarity between this map and the sketch map of the potato hill?

Geographical explanation

While studying different landforms on the surface of the earth, one has to take into consideration various facets of landforms like altitude, relief, slope, direction of slope and the drainage. For this, maps prepared using particular methods are used. These are known as contour maps. These maps help us to understand the above characteristics of the landforms. These maps are of immense use to mountaineers, trekkers, soldiers, defense officers, etc. These maps prove to be of great use in the planning for a region too.

Use your brain power!

When one sees a landform on a contour map, what is the observer's position with respect to the landform? (For example, a hill is shown with the help of contours on a map. From where do you think you are looking at it?

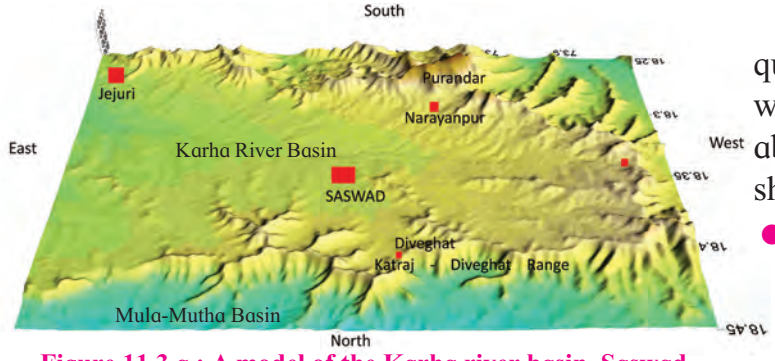


Figure 11.3 a : A model of the Karha river basin, Saswad

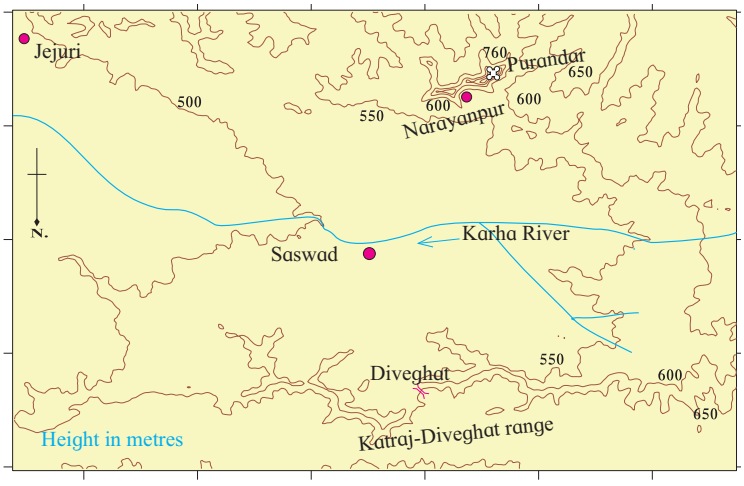


Figure 11.3 b : A map of the Karha river basin, Saswad

A 3D model is given in fig. 11.3 (a). The northern part of the model shows the basin of the rivers Mula-Mutha. To its south is the Katraj-Diveghat range extending from the west to the east. Beyond that some portion of Karha basin is seen.

(Observe this model and the map (fig. 11.3 (b)) given below it and answer the following questions.)

- In which direction does fort Purandar lie?
- What is the direction of flow of the river Karha?
- In which parts are the hill ranges not observed?
- Which part of the map is not seen in the model? Why?
- In which direction does the altitude of Katraj-Diveghat range decrease?
- In which direction are higher hill ranges located?

While finding answers to these questions, you will become familiar with the contour lines and you will be able to identify major landforms shown by the contour lines.

- Find the altitude of your place above mean sea-level (in metres).

You have to draw contour lines from mean sea-level to your place. The interval of the contour should not be more than 50 m. Determine how many lines you will draw for this.

- Friends, consider you have gone for mountaineering. You have to conquer a peak on the hill 'A'. A map of this hill is given (figure 11.4). Studying the contour lines in the map, find the side from which you will reach the peak safely and easily. Mark your path on the map with a pencil.

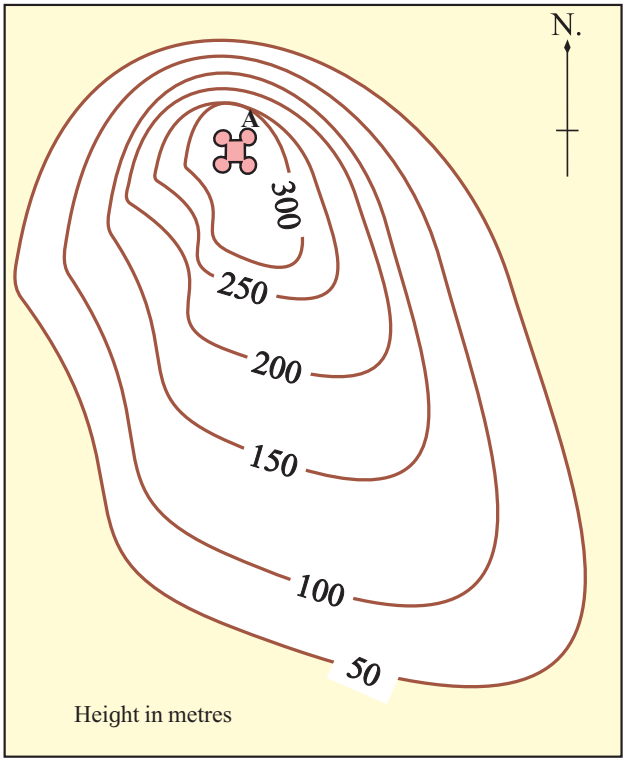


Figure 11.4 : Contours (Hill)

Always remember–

Contour lines join places with the same altitude on a map. Therefore, generally they do not cross each other.

Look for me elsewhere!

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Exercises

Q.1. Answer the following questions.

(1) How can the distribution of the height and landforms in a region be shown?

(2) To whom are the contour maps useful?

(3) What do you understand by observing contour lines?

(4) How will a contour map be useful for a farmer?

Q.2. Fill the blanks with appropriate words.

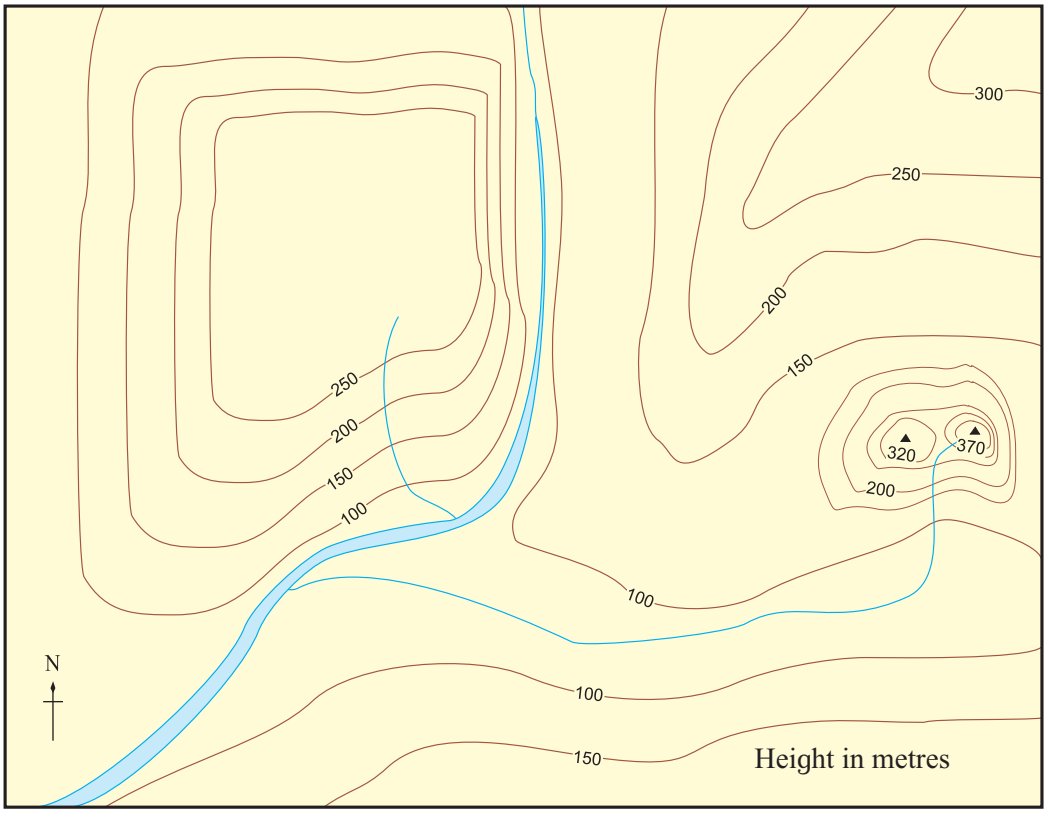
(1) If the contour lines are closer to each other, the slope is .....

(2) The contour lines on the map represent .....

(3) The slope can be understood from the distance between the .....

(4) If the distance between two contour lines is more, the ..... is gentle.

Q.3. Identify the landforms in the following map.



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