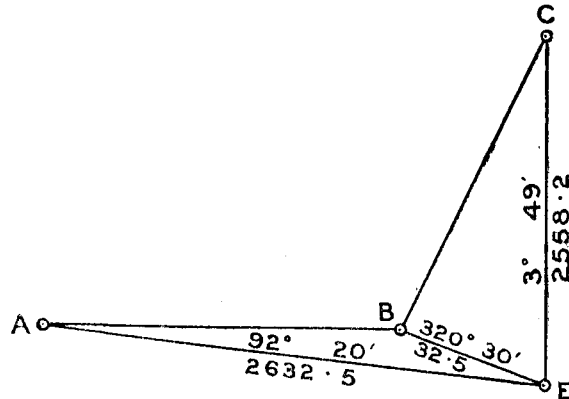


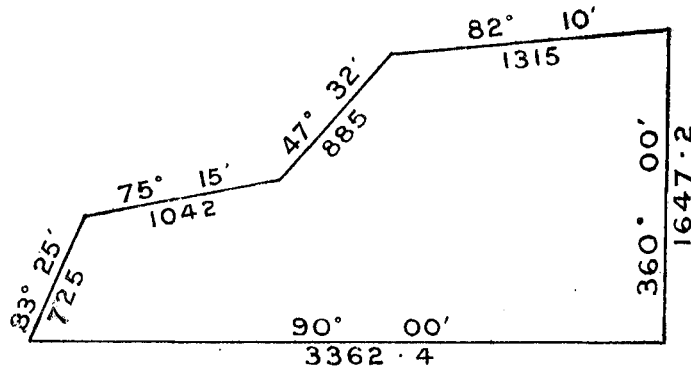
6. State briefly the requirements of the Coal-mines Act and amendments *re*—
- (a.) Ventilation of mines and quantity of air.
 - (b.) Examination of mines before miners enter workings.
 - (c.) The first duty of miners on entering their working-places.
 - (d.) The provisions for minimizing the danger from ignition of coaldust owing to blasting or other cause.
 - (e.) Give brief general outline of duties and responsibilities devolving on the managers of coal-mines and subordinate officers.

In answering the above the numbers of section in the Act, special rules or regulations applicable, to be given.

SUBJECT V.—*Surveying.*



1. The above diagram shows a traverse survey to fix the position of the boundary-lines AB and BC, with offset to the corner B: compute the bearings and lengths of the boundary-lines AB and BC. (The distances are given in links.)
2. The angles of elevation from A to E and E to C on the above diagram, allowing for height of instrument and signals, are $3^{\circ} 25'$ and $4^{\circ} 10'$ respectively: what is the difference of elevation between the stations A and C in feet?



3. The above diagram shows the survey of a mining claim: compute the area of the claim by the simplest and shortest method known to you. (The distances are given in links.)
4. Describe the methods of transferring the true bearing from the surface to the underground workings of a mine when there is one shaft, and when there are two shafts, giving diagrams.

SUBJECT VI.—*General and Applied Geology.*

1. Define the following terms: Syncline, anticline, unconformity, strike, dip, sedimentary rock, igneous rock. Illustrate your answer by diagrams in the case of the first five terms.
2. Briefly describe the geology of any coalfield with which you are familiar. In your answer give a table showing all the geological formations of the district in proper sequence.
3. Define the various kinds of rock mentioned in your answer to question No. 2.
4. Describe fully the action of running water in its threefold aspect—erosion, transport, and deposition.
5. Explain how strata which have originally been deposited in a horizontal or nearly horizontal position may become tilted, folded, or faulted.
6. Give your views concerning the origin and formation of coal. Illustrate your answer by reference to New Zealand or other coalfields.
7. An area of 980 acres has been shown by boring to contain a horizontal coal-seam, with an average thickness of 10 ft.: calculate the amount of coal in the ground on the basis of 1 cubic foot of coal weighing 80 lb.