## MECHANICAL DRAWING

due north of its starting-point. How many miles has it lost by being obliged to tack?

30. *CD* is a tower standing on the inclined plane AC; *AB* is a base line in this plane; at *A* the angle of elevation of the top of the tower is 45°, and at *B* it is 63°. *AB* is 112 feet long and inclined 20° to the horizon. Find the height of the tower.

31. A man measures AB, one side of a triangular field, and finds it to be 200 meters; he measures the angle at Band finds it to be 72°; he walks from B to C, but neglects cto measure BC; he finds the angle at C to be 46°. Draw a plan of the field and find how long BC is.

32. Three vessels left the same port and sailed in different directions. How far apart will they be after the first sails 10 kilometers to the south, the second 14 kilometers to the southwest, and the third 18 kilometers to the northeast?

33. The angle of elevation of the top of a tower to a person standing on the opposite bank of a river is  $60^{\circ}$ . When he has retired 100 feet in a straight line from the river, the angle of elevation is  $45^{\circ}$ . Find the breadth of the river and the height of the tower.

34. A ladder placed at an angle of  $75^{\circ}$  with the ground just reaches the sill of a window 27 feet above the ground on one side of the street. On turning the ladder over without moving its foot, it is found that when it rests against a wall on the other side of the street it is at an angle of  $15^{\circ}$  with the ground. Find the breadth of the street.

35. ABCDE is a field having the following dimensions : AB 200 yards, BC 240 yards, CD 250 yards, DE 300

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