# Activities

Q1. Draw the elevation and complete the plan of the cone and find the true shape of the section (parabola), Fig. 8.16.
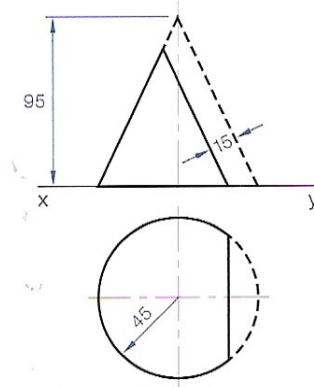


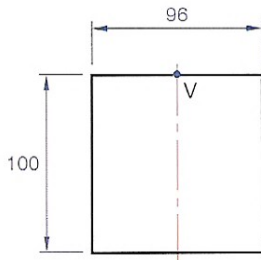Fig. 8.16

Q2. Construct a parabola in the given rectangle having its vertex in the position shown, Fig. 8.17.



Fig. 8.17

Q3. Construct a parabola in the given rectangle having its vertex in the position shown, Fig. 8.18.
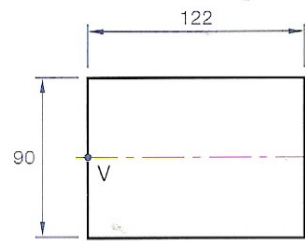


Fig. 8.18

Q4. Given the directrix and the focus construct the parabola using the compass method, Fig. 8.19.
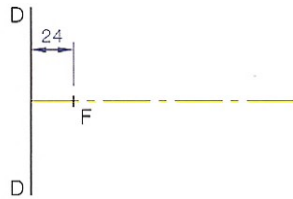


Fig. 8.19

Q5. Given the directrix and the vertex construct the parabola using the eccentricity method, Fig. 8.20.
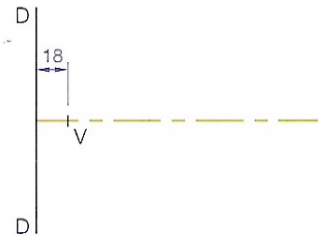


Fig. 8.20

Q6. Construct the given parabola. Draw a tangent to the curve at the given point P, Fig. 8.21.
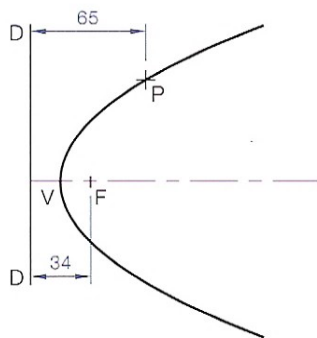


Fig. 8.21

Q7. Given the directrix, axis and a tangent to a parabola. Point P is the point of contact. Draw the parabola, Fig. 8.22.
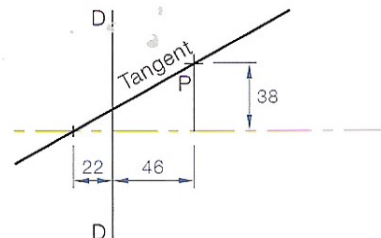


Fig. 8.22

Q8. Given the directrix, axis, tangent and point of contact P of a parabola. Find the focus and draw the parabola, Fig. 8.23.
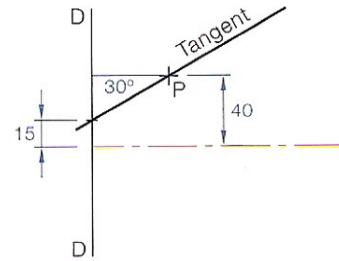


Fig. 8.23



Fig. 8.24

Q9. Given the axis, vertex and point of contact for a tangent. Construct the tangent, find the focus and directrix and draw a portion of the parabola, Fig. 8.24.
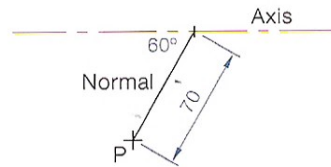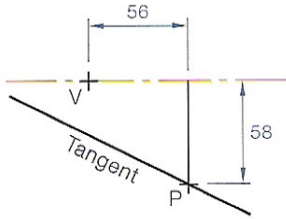**Hint:** See points of interest about the parabola, Fig. 8.11.

Q10. Given the axis, a normal and its point of contact to a parabola. Find the vertex, the focus and the directrix. Draw a portion of the curve, Fig. 8.25.
**Hint:** See points of interest about the parabola, Fig. 8.11.



Fig. 8.25



Fig. 8.26

Q11. Given the axis, the vertex and a point P on the curve of a parabola. Draw a portion of the curve, Fig. 8.26.
**Hint:** See Figures 8.9 and 8.11.
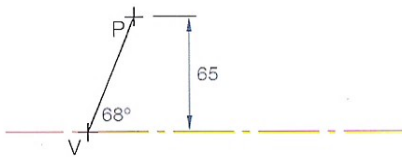
Q12. Given a tangent to a parabola, the point of contact and the axis. Find the vertex, focus, and the directrix. Draw a portion of the curve, Fig. 8.27.
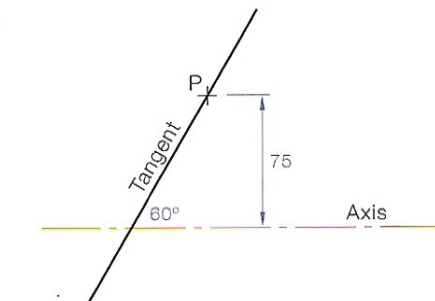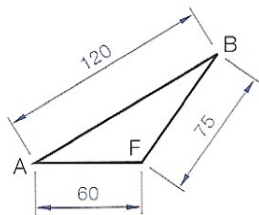**Hint:** See Figures 8.9 and 8.115.



Fig. 8.27

Q13. Draw the triangle AFB shown. Points A and B are points on the curve of a parabola and F is its vertex. Draw a portion of the curve. Construct a tangent at point A, Fig. 8.28.



Fig. 8.28

Q14. Given the axis, focus and a point P on the curve of a parabola. Draw a portion of each of the two curves that will satisfy these conditions, Fig. 8.29.
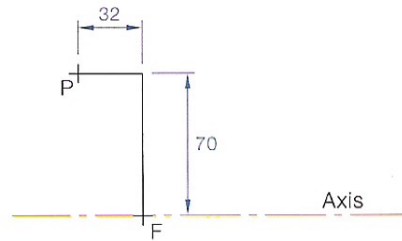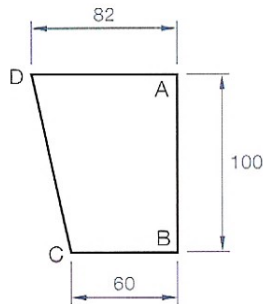


Fig. 8.29

Q15. Draw the given quadrilateral ABCD. Side AB is the directrix of a parabola and points C and D are points on the curve. Draw either one of the two curves that will satisfy these conditions, Fig. 8.30.



Fig. 8.30

Q16. Given the cone in Fig. 8.31 which is sectioned as shown. Construct the focal sphere and hence find the focus, vertex and directrix of the parabola. Draw a portion of the curve.
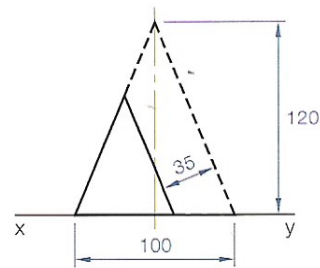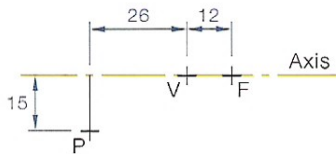


Fig. 8.31

Q17. Given the vertex, focus and a point P outside the directrix. Draw a portion of the curve and draw tangents to the parabola from point P, Fig. 8.32.



Fig. 8.32

Q18. Given two tangents to a parabola, the axis and the vertex. Construct a portion of the curve, and locate the points of contact, Fig. 8.33.
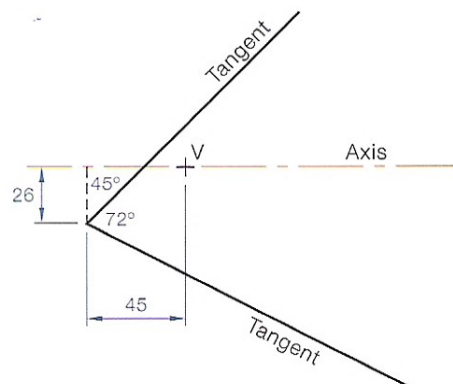**Hint:** See construction, Fig. 8.14.



Fig. 8.33

Q19. AB and AC are two tangents to a parabola. They meet at an angle of 70°. The focus of the parabola is 45 mm from AB and 35 mm from AC. Draw a portion of the curve.

Q20. Draw a triangle ABF. AB = 140 mm, AF = 95 mm and BF = 70 mm. If AB is a tangent to a parabola having A on the directrix, and F is the focus, determine the axis, directrix and draw the curve.