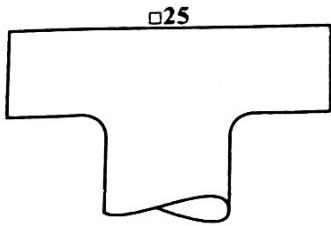


Item 1 refers to the following diagram.

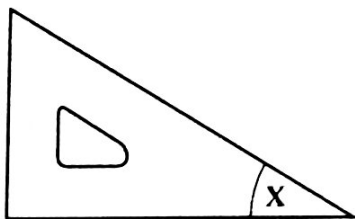


1. Which of the following are true about  $\square 25$  in the diagram above?

- I. It is an abbreviation for radius.
- II. It indicates that the surface is square.
- III. It avoids using a second dimension.
- IV. It indicates that the drawing is in first-angle projection.

- (A) I and II only
- (B) I and III only
- (C) II and III only
- (D) II and IV only

Item 2 refers to the following drawing instrument.



2. Which of the following represents the size of angle X in the drawing instrument shown above?

- (A)  $30^\circ$
- (B)  $45^\circ$
- (C)  $60^\circ$
- (D)  $90^\circ$

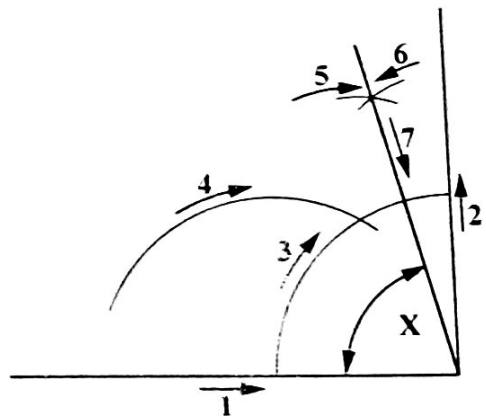
3. Which of the following lines is used to indicate a cutting plane on a drawing?

- (A)
- (B)
- (C)
- (D)

4. Short arrowheads are usually placed at right angles to the ends of which of the following types of lines?

- (A) Cutting plane
- (B) Phantom
- (C) Centre
- (D) Object

Item 5 refers to the following construction.



5. In the construction above, the angle X is

- (A)  $60^\circ$
- (B)  $65^\circ$
- (C)  $70^\circ$
- (D)  $75^\circ$

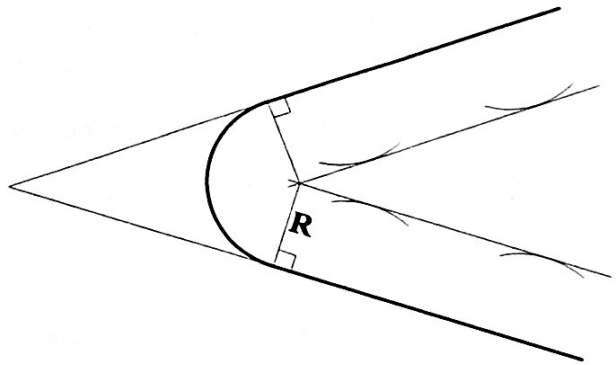
6. In shape description, centre lines are used to
- (A) locate hidden object lines
  - (B) determine the height of letters
  - (C) construct base lines vertical to surfaces
  - (D) locate positions and dimensions

Item 7 refers to the following lines.



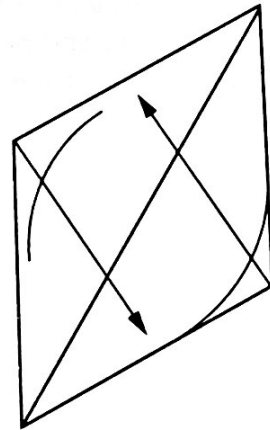
7. The lines shown above are conventions used on standard shapes for common bar stocks to indicate
- (A) the axes of symmetrical parts
  - (B) that the edges are to be measured
  - (C) the continuation of the objects
  - (D) that sections are to be removed
8. When a straight line touches an arc and forms a right angle with the radius of the circle
- (A) a chord is formed
  - (B) a point of tangency is formed
  - (C) the curve blends exactly
  - (D) the line and the arc are similar in shape
9. Which of the following is NOT a step in the process of bisecting an angle?
- (A) Marking parallel lines
  - (B) Drawing a perpendicular through the arcs
  - (C) Opening the compasses to any suitable radius
  - (D) Drawing a line through intersecting arcs

Item 10 refers to the following diagram.



10. The diagram above shows how to find the centre of an arc with radius R which is tangential to
- (A) a straight line
  - (B) a line and a circle
  - (C) two straight lines meeting at any angle
  - (D) two straight lines meeting at right angles

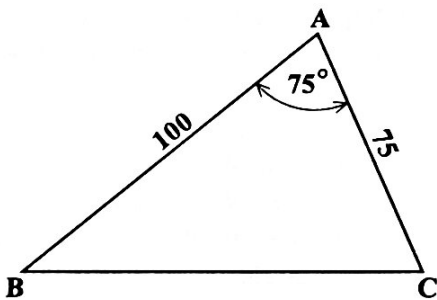
Item 11 refers to the following construction.



11. Which of the following constructions is illustrated above?
- (A) A square
  - (B) Irregular curves
  - (C) Circles in isometric
  - (D) Circles in perspective

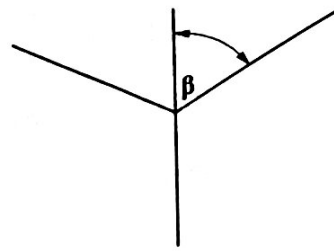
12. Which of the following statements BEST describes an equilateral triangle?
- (A) All the sides and angles are equal.
  - (B) All the sides are equal, but the angles are unequal.
  - (C) All the sides are unequal but the angles are equal.
  - (D) Neither the sides nor the angles are equal.

Item 13 refers to the following triangle.



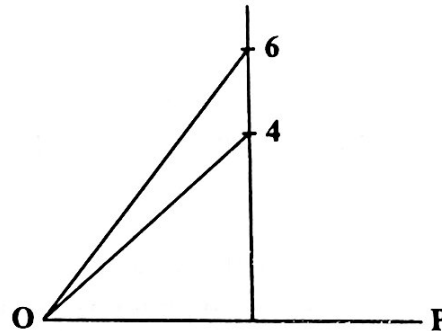
13. The triangle illustrated above can be BEST constructed with the use of
- (A) a ruler and protractor
  - (B) compasses and a protractor
  - (C) a set square and protractor
  - (D) compasses, a ruler and a pencil

Item 14 refers to the following diagram.



14. The diagram above shows the intersection of the three isometric axes. What is the value of the angle  $\beta$ ?
- (A)  $30^\circ$
  - (B)  $45^\circ$
  - (C)  $60^\circ$
  - (D)  $120^\circ$

Item 15 refers to the following diagram.



15. Which of the following is true about the construction of any regular polygon as illustrated above?
- (A) 4 is the  $45^\circ$  mark on the bisector of  $OP$
  - (B) 4 is the midpoint of the bisector of  $OP$
  - (C) 6 is the  $30^\circ$  mark on the bisector of  $OP$
  - (D) 6 is the  $75^\circ$  mark on the bisector of  $OP$

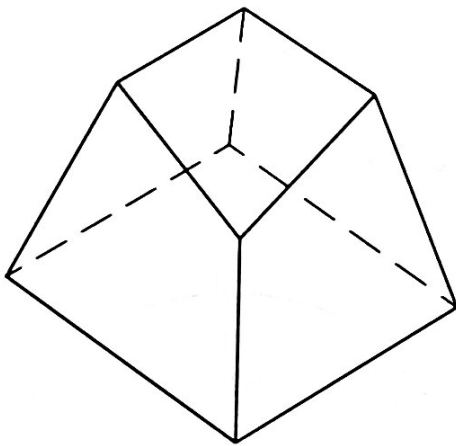
16. If the perimeter of a triangle is 120 mm and its sides are in the proportion 4:5:3 respectively, then the lengths of the sides, in mm, are

- (A) 20, 25 and 15
- (B) 40, 60 and 20
- (C) 35, 55 and 30
- (D) 40, 50 and 30

17. A quadrilateral with ONE pair of parallel sides is a

- (A) rhombus
- (B) rectangle
- (C) trapezium
- (D) parallelogram

Item 18 refers to the following drawing.



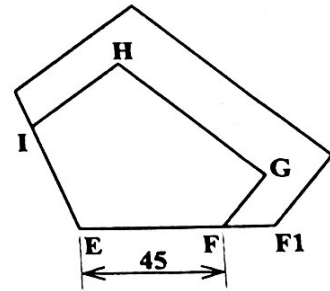
18. The drawing illustrated above represents

- (A) a truncated square pyramid
- (B) a part section of a right truncated pyramid
- (C) an oblique rectangular pyramid
- (D) a rectangular pyramid

19. Which of the following is used to draw an octagon if the length of one side is given?

- (A) A protractor, using the 40° angle
- (B) A protractor, using the 72° angle
- (C) A 60° set-square
- (D) A 45° set-square

Item 20 refers to the following diagram.



20. In the diagram above, EF to EF1 is in the ratio 3:4. The length of EF1 is

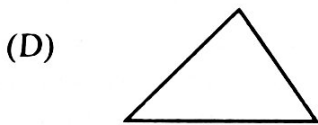
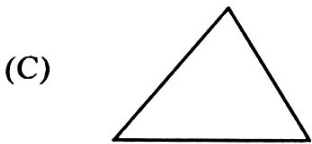
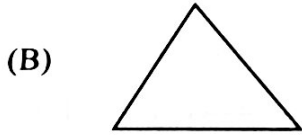
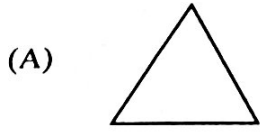
- (A) 15
- (B) 30
- (C) 60
- (D) 90

21. Given that one of the angles of a rhombus is 120°, which of the following is the value of one of the interior adjacent angles?

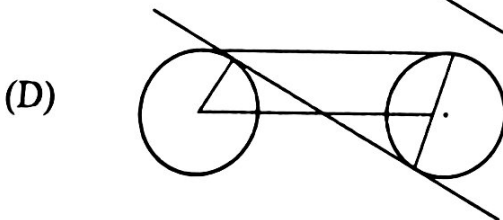
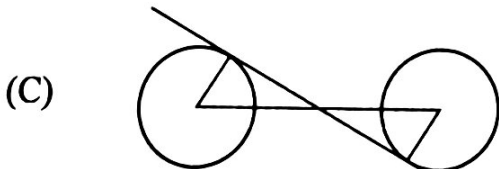
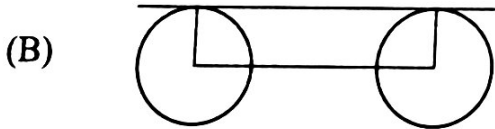
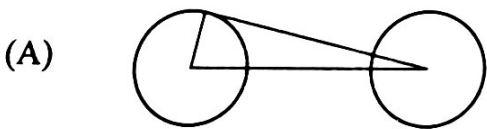
- (A) 40°
- (B) 51°
- (C) 60°
- (D) 81°



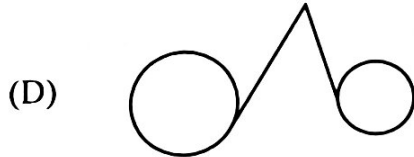
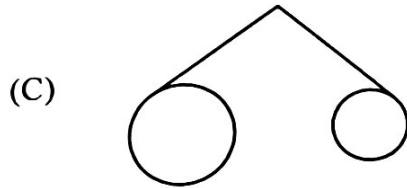
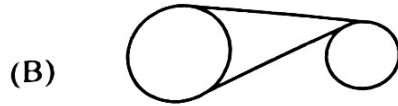
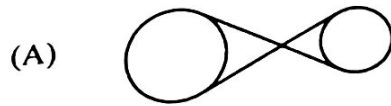
22. The line  $AB = 75$  mm is drawn. With centres A and B, and with radius AB, arcs are drawn to intersect at C. If C is joined to A and B, then the triangle is represented by



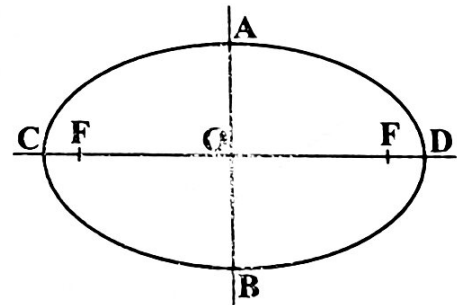
23. Which of the following drawings illustrates an internal tangent?



24. Which of the following diagrams BEST represents an external and an internal tangent?



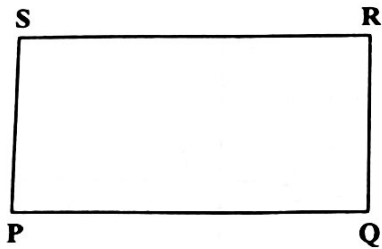
Item 25 refers to the following diagram.



25. A-B is equal to

- (A) major axis
- (B) minor axis
- (C)  $\frac{1}{2}$  major axis
- (D)  $\frac{1}{2}$  minor axis

Item 26 refers to the following rectilinear figure.



26. The rectilinear accuracy of the figures can be tested by measuring the

- (A) perpendiculars
- (B) diagonals
- (C) angle P
- (D) angle S

27. A netball court has a length of 30 m. A line representing this distance measures 3 cm. To what scale is the line drawn?

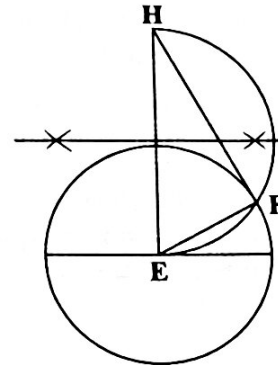
- (A) 1:1 000
- (B) 1: 500
- (C) 1: 200
- (D) 1: 100

28. Which of the following are MOST important when constructing a hexagon?

- I. It can be constructed using pencil and compass only.
- II. It can be constructed if given the diameter of the circumscribing circle.
- III. It can be constructed if given the across-flat dimension.
- IV. It can be constructed by drawing tangents to the circle with a 60° set square.

- (A) I, II and III only
- (B) I, III and IV only
- (C) II, III and IV only
- (D) I, II and IV only

Item 29 refers to the following diagram.



29. In the diagram above, the angle EFH is

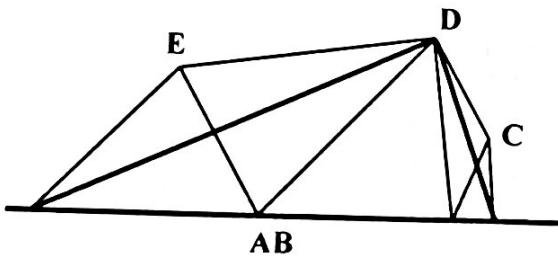
- (A) 30°
- (B) 45°
- (C) 60°
- (D) 90°

30. Which of the following diagrams represents the drawing of a tangent to a circle at a point on the circumference?

- (A)
- (B)
- (C)
- (D)

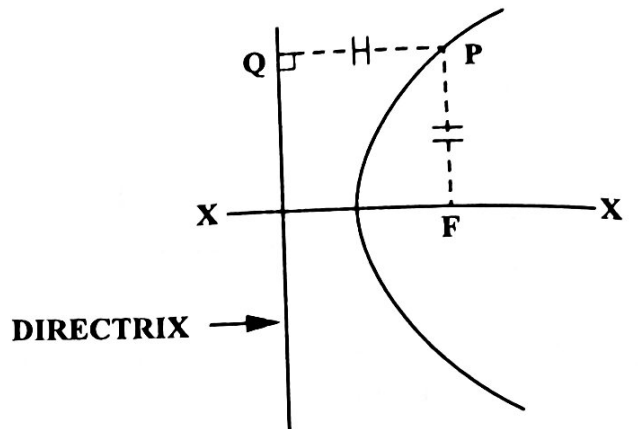
31. A man has to transform a 100 mm square drawing to the largest octagonal shape that it will contain. Which of the following instruments should he use to perform the exercise?
- (A) 30° set square
  - (B) Inside calipers
  - (C) Dividers and set square
  - (D) Outside calipers

Item 32 refers to the following diagram.



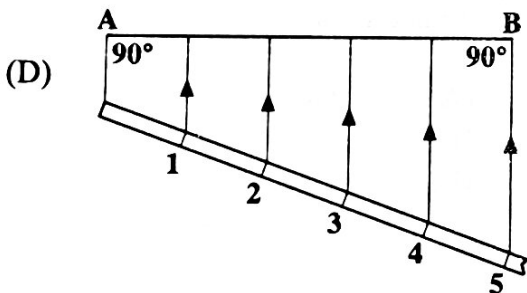
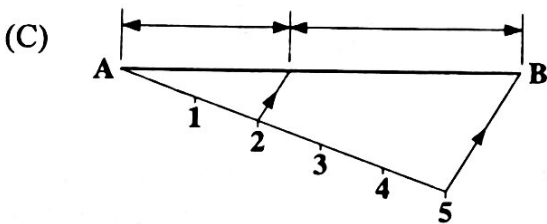
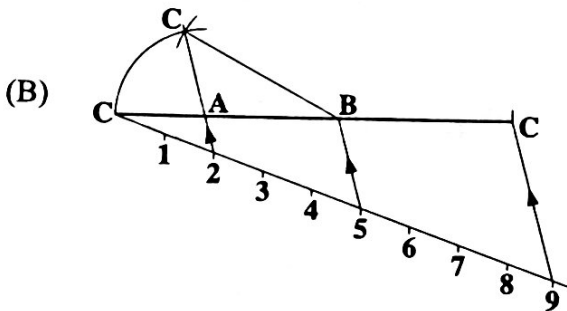
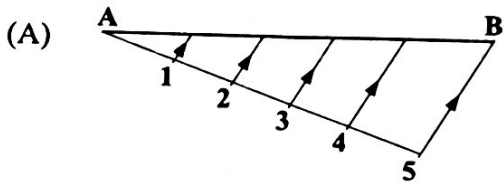
32. The diagram shows how to draw a
- (A) rectangle equal in area to a triangle
  - (B) square equal in area to a rectangle
  - (C) triangle equal in area to a polygon
  - (D) square equal in area to a triangle

Item 33 refers to the following diagram.



33. Which of the following is the eccentricity of  $FP:PQ$  in the diagram above?
- (A) 1:1
  - (B) 1:2
  - (C) 1:3
  - (D) 1:4

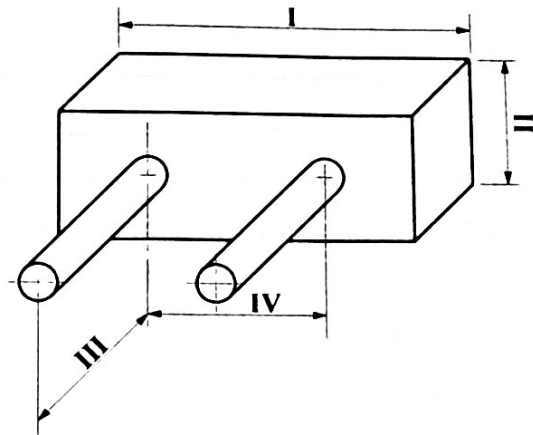
34. Which of the following constructions shows the correct division of a line (geometrically) into two parts in the ratio 2:3?



35. Which of the following instruments is used when drawing an irregular curve on a surface development?

- (A) Isometric template
- (B) French curve
- (C) Compass
- (D) Bow pen

Item 36 refers to the following drawing.



36. Which of the numbered dimensions above represents a location dimension?

- (A) I
- (B) II
- (C) III
- (D) IV

37. The perpendicular distance between lines PQ and RS of a trapezium, PQRS, is 3.5 cm. Which of the following lines would be parallel?





- (A) SP and QR
- (B) PR and QS
- (C) RS and PQ
- (D) PS and QR

38. In technical drawing, the phrase 'curves meeting each other tangentially' means that the curves

- (A) will meet smoothly
- (B) will not blend properly
- (C) have sufficient clearance
- (D) will meet at right angles



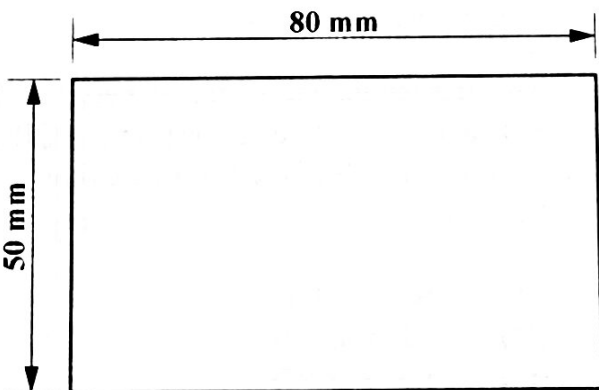
39. Which of the following lines is used to outline a finished drawing?

- (A) 
- (B) 
- (C) 
- (D) 

40. The fire emergency exit doors leading from a workshop should open

- (A) inwards
- (B) upwards
- (C) outwards
- (D) sideways

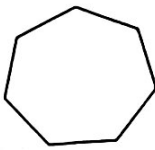
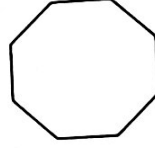
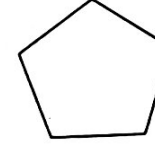
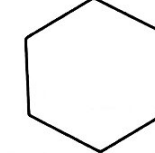
Item 41 refers to the following diagram.



41. The drawing above represents a room which measures 4000 mm × 2500 mm. The scale used in the drawing is

- (A) 1: 5
- (B) 1:10
- (C) 1:20
- (D) 1:50

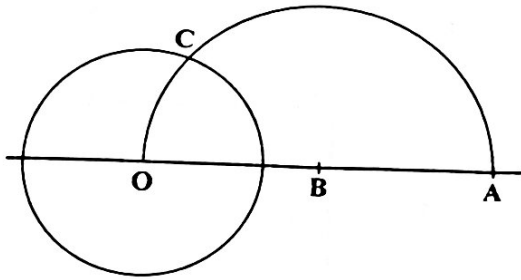
42. Which of the following shapes is a pentagon?

- (A) 
- (B) 
- (C) 
- (D) 

43. When a draftsman is drawing a true horizontal line, the pencil point should be guided by a

- (A) scale
- (B) T-square
- (C) set square
- (D) straight edge

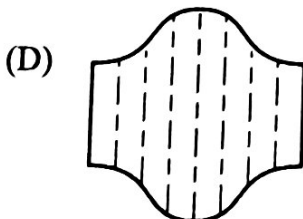
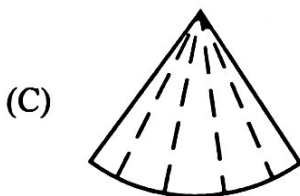
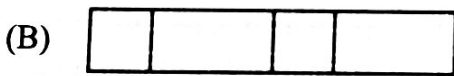
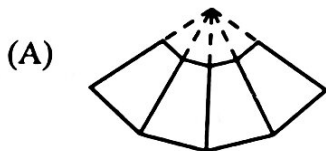
Item 44 refers to the following construction.



44. The purpose of the construction above, when completed, is to

- (A) draw an arc to pass through three points
- (B) draw a tangent to the circle from A
- (C) draw two tangents to the circle from B
- (D) find the mean proportional to AO and CO

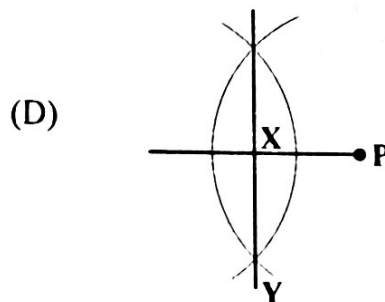
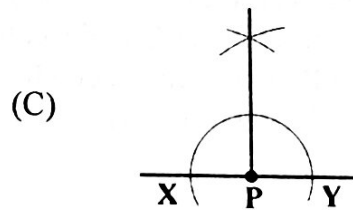
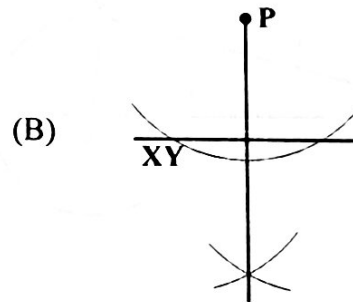
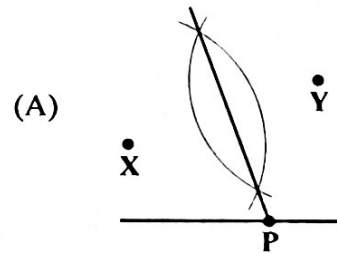
45. Which of the following developments shows a cylinder which is cut obliquely at both ends?



46. A student falls and hits his head hard against the edge of a technical drawing table. He is MOST likely to suffer from a

- (A) concussion
- (B) heart attack
- (C) nervous breakdown
- (D) laughing fit

47. Which of the following diagrams illustrates the procedure for drawing a perpendicular to a line from a point outside the line?



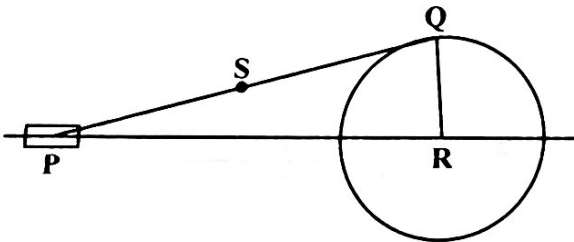
48. Which of the following scales would be used to produce the smallest drawing of a given object?

- (A) 1:2
- (B) 1:1
- (C) 5:1
- (D) 10:1

49. When designing a new product, which type of drawing is usually made FIRST?

- (A) Scale drawing
- (B) Sketch solution
- (C) Detailed solution
- (D) Engineering drawing

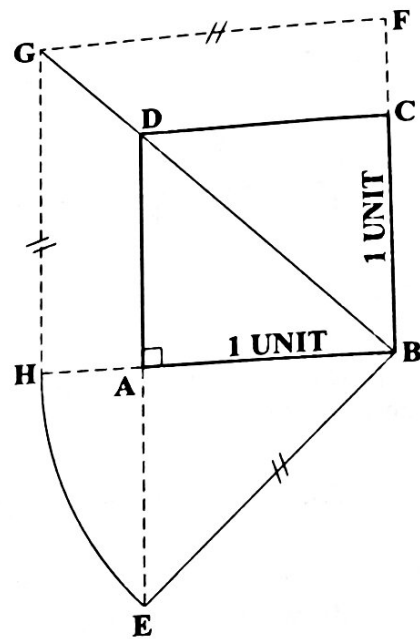
Item 50 refers to the following diagram.



50. In the diagram above, a crank, QR, rotates about a fixed centre, R. A rod, PQ, is pin-pointed to the crank at Q and freely slides in guides at P. The locus traced by point S for one revolution of QR is

- (A) a cone
- (B) an ellipse
- (C) a parabola
- (D) a hyperbola

Item 51 refers to the following construction.



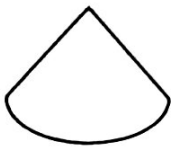
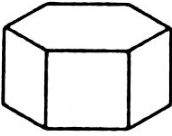
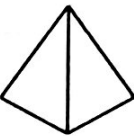
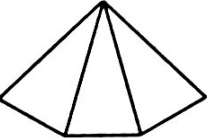
51. The construction shows that

- (A) HBFG is twice the area of ABCD
- (B) ABCD is twice the area of HBFG
- (C) ABCD is equal in area to AEB
- (D) BCDE is equal in area to BDE

52. When a plane figure has a linear reduction only, the

- (A) dimensions remain the same
- (B) proportions remain the same
- (C) proportions are changed
- (D) dimensions and proportions are changed

53. Which of the following is a view of a right, square pyramid?

- (A) 
- (B) 
- (C) 
- (D) 

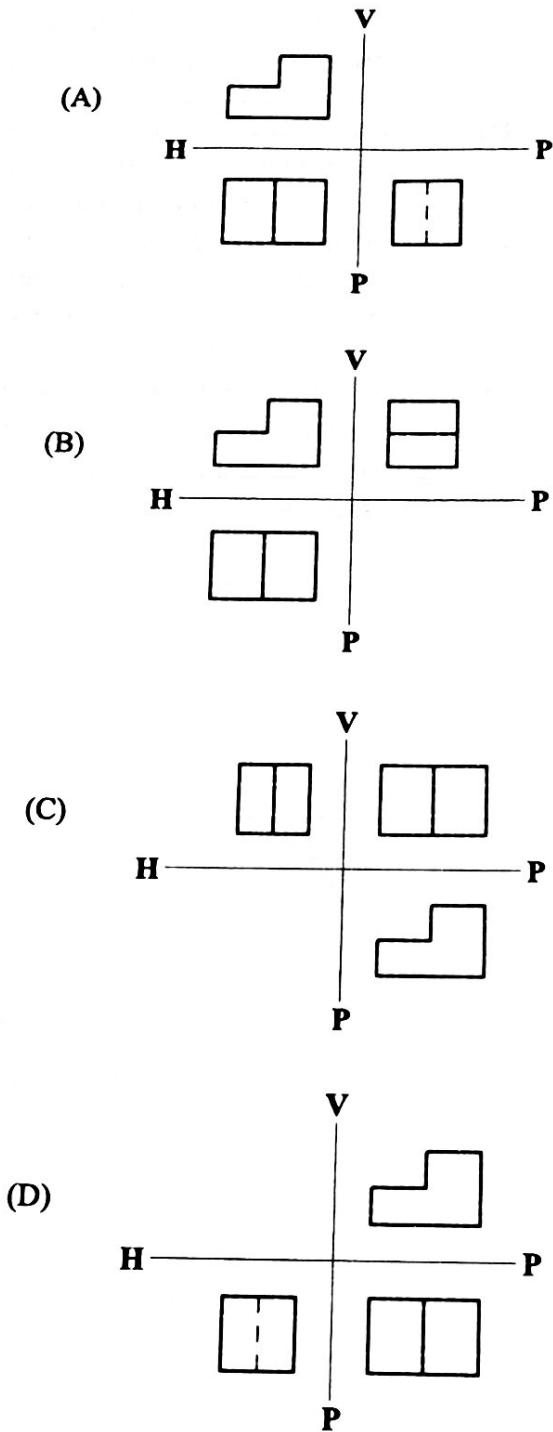
54. Which of the following views would show an object as if it were cut across, exposing inside details?

- (A) Frontal
- (B) Auxiliary
- (C) Exploded
- (D) Sectional

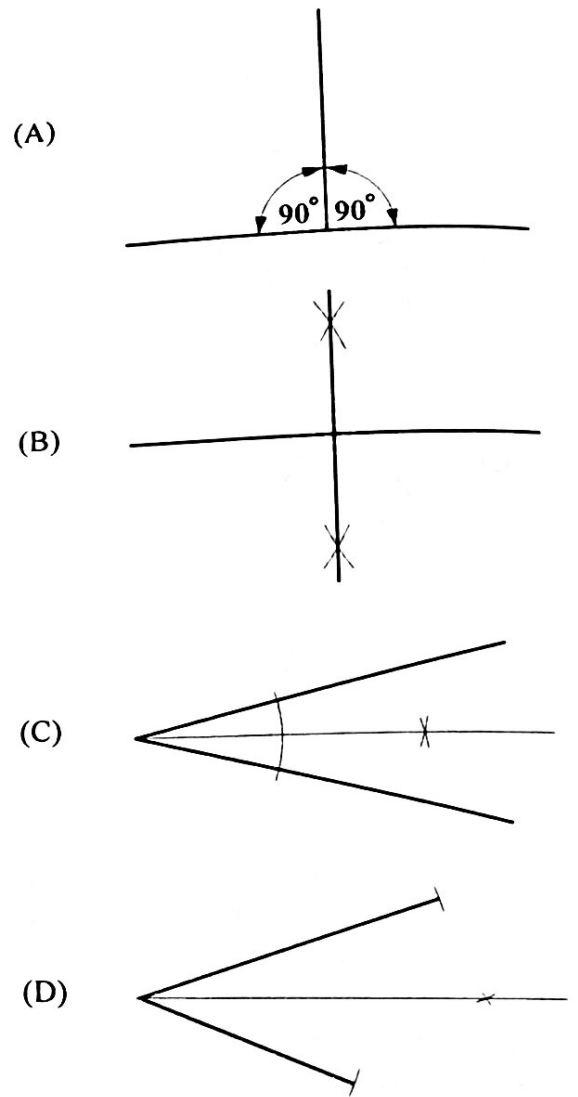
55. 'The spiral of Archimedes' is defined as

- (A) the path generated by a point travelling in a plane such that the difference of its distance from two foci is constant and equal to the transverse axis
- (B) a plane curve generated by a point on a taut cord as it is unwound from the perimeter of a polygon
- (C) a plane curve generated by the path of a point on the perimeter of a wheel as the wheel travels on a straight track
- (D) the path generated by a point which revolves uniformly about a pole and has a uniform motion away from it

56. Which of the following layouts represents the correct orthographic projection of a shaped block?



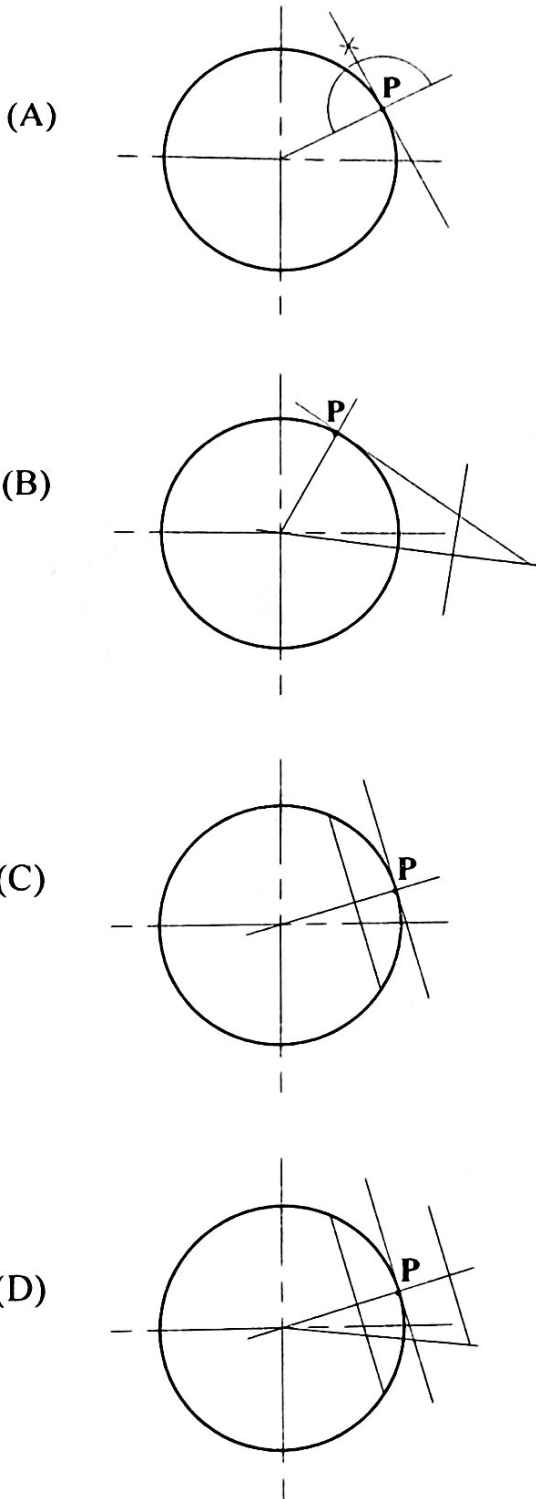
57. Which of the following shows how to divide an angle geometrically?



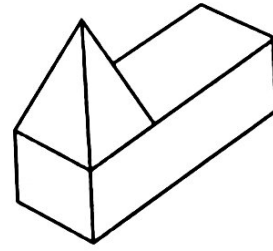
58. Which of the following methods of drawing an ellipse involves constructing a rectangle?

- (A) Concentric circle
- (B) Intersecting arcs
- (C) Intersecting line
- (D) Trammel

59. Given a point, P, on the circumference of a circle, which of the following diagrams BEST demonstrates the principle of constructing a tangent to a circle through the given point?



Item 60 refers to the following diagram.



60. Which of the following representations is correct for the first-angle orthographic projection of the object shown above?

