MATHEMATICS MCQ BOOKLET

Grade 10 · Chapter 11 · Practical Geometry of Circles

FBISE / National Book Foundation Model Textbook companion

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Independent MCQs on locating circle centres, circles through three points, completing arcs, drawing tangents, and common tangents to two circles. Not copied from the book exercise. Total: 108 questions. Each item has four options, the correct letter, and a short explanation of why it is correct.

A. Important / Main Topics

1. To locate the centre of a given circle, the standard construction uses:

(A) right (perpendicular) bisectors of two chords
(B) angle bisectors of two chords
(C) parallel lines through the centre
(D) tangents only

Correct Answer: A

Explanation: To locate the centre of a given circle, the standard construction uses right (perpendicular) bisectors of two chords.

2. The centre of a circle is equidistant from:

(A) only one point on the circle
(B) every point on the circumference
(C) only the endpoints of one chord
(D) external tangents only

Correct Answer: B

Explanation: All radii from the centre to the circle have equal length.

3. Exactly one circle can pass through:

(A) any three points
(B) three collinear points
(C) three non-collinear points
(D) two points only always

Correct Answer: C

Explanation: Exactly one circle can pass through three non-collinear points.

4. To draw a circle through three non-collinear points A, B, C, first join them to form:

(A) a straight line
(B) a square
(C) two parallel chords
(D) triangle ABC

Correct Answer: D

Explanation: The triangle's circumcentre is the required circle centre.

5. The circumcentre of triangle ABC is found where:

(A) perpendicular bisectors of the sides meet
(B) medians meet
(C) altitudes meet
(D) angle bisectors meet

Correct Answer: A

Explanation: Each side's right bisector is the locus of points equidistant from that side's endpoints.

6. When completing a circle from a given arc by finding the centre, you:

(A) guess the radius
(B) take three points on the arc and locate the circumcentre of the triangle they form

(C) draw only one chord
(D) use 120° angles only

Correct Answer: B

Explanation: Three points on the arc determine the same circumcircle as the full circle.

7. To complete a circle without finding its centre (method 1), you repeatedly construct:

(A) parallel tangents
(B) only diameters
(C) congruent triangles along the arc and join their vertices
(D) random radii

Correct Answer: C

Explanation: To complete a circle without finding its centre (method 1), you repeatedly construct congruent triangles along the arc and join their vertices.

8. In the without-centre method using 120° angles, the figure built inside is a:

(A) square
(B) equilateral triangle only
(C) octagon always
(D) regular hexagon

Correct Answer: D

Explanation: In the without-centre method using 120° angles, the figure built inside is a regular hexagon.

9. Each interior angle of a regular hexagon inscribed in steps of equal chords is:

(A) 120°
(B) 60°
(C) 90°
(D) 180°

Correct Answer: A

Explanation: Regular hexagon interior angles are 120°.

10. To draw a tangent at the midpoint P of a given arc (without centre), construct:

(A) a diameter through P
(B) the perpendicular bisector of a chord through P; that bisector is the tangent
(C) any secant
(D) parallel to a random chord

Correct Answer: B

Explanation: At the midpoint of an arc the tangent is perpendicular to the chord through P.

11. To draw a tangent at an endpoint of a given arc without the centre, use:

(A) only a protractor at 90°
(B) two parallel lines
(C) perpendicular to the chord at that endpoint
(D) the circumcentre first

Correct Answer: C

Explanation: The tangent at an arc endpoint is perpendicular to the chord drawn from that endpoint.

12. To draw a tangent through point P outside a given arc, construct:

(A) a secant only
(B) parallel to the chord
(C) angle 120° at P
(D) a circle on the arc's chord as diameter; tangents from P to that auxiliary circle give the required tangent

Correct Answer: D

Explanation: Thales' circle on the chord helps locate the tangent direction from an external point.

13. To draw a tangent from point P on the circumference, the radius at P is:

(A) perpendicular to the tangent

(B) parallel to the tangent
(C) equal to the tangent length
(D) twice the tangent

Correct Answer: A

Explanation: Radius and tangent are perpendicular at the point of contact.

14. To draw a tangent from external point P to a circle with centre O, triangle OPA is:

(A) acute at A
(B) right-angled at A (contact point)
(C) obtuse always
(D) degenerate

Correct Answer: B

Explanation: Radius OA is perpendicular to tangent PA at contact A.

15. To draw two tangents to a circle meeting at a given angle at external point P:

(A) ignore the angle at P
(B) draw only one tangent
(C) use the angle at P and the fact that radii to contact points are perpendicular to tangents
(D) use 120° only

Correct Answer: C

Explanation: To draw two tangents to a circle meeting at a given angle at external point P use the angle at P and the fact that radii to contact points are perpendicular to tangents.

16. Direct common tangents to two separate circles are also called:

(A) internal tangents
(B) transverse tangents only
(C) diameters
(D) external (direct) common tangents

Correct Answer: D

Explanation: Direct common tangents to two separate circles are also called external (direct) common tangents.

17. Transverse common tangents to two separate circles are also called:

(A) internal (transverse) common tangents
(B) direct external tangents
(C) parallel tangents only
(D) radii

Correct Answer: A

Explanation: Transverse common tangents to two separate circles are also called internal (transverse) common tangents.

18. For two equal circles of radius 2.5 cm with centres 6 cm apart, direct common tangents are found by:

(A) joining centres only
(B) drawing diameters perpendicular to AB and joining the outer endpoints
(C) bisecting AB at the contact point
(D) using 120° hexagon

Correct Answer: B

Explanation: Perpendicular diameters at each centre give the contact points for horizontal direct tangents.

19. For two equal circles radius 3 cm, centres 7 cm apart, transverse tangents use:

(A) only diameters parallel to AB
(B) three non-collinear points on one circle
(C) bisecting AB and constructing auxiliary circles at midpoints of the half-segments
(D) a hexagon of 120°

Correct Answer: C

Explanation: The standard transverse construction bisects AB and uses auxiliary circles through midpoints.

20. For transverse tangents to circles radii 2 cm and 1.3 cm, centres 5 cm apart, the large auxiliary circle at A has radius:

(A) 2 cm
(B) 1.3 cm
(C) 5 cm
(D) 3.3 cm

Correct Answer: D

Explanation: Auxiliary radius equals sum of the given radii: 2 + 1.3 = 3.3 cm.

21. In that transverse construction, AB is bisected at M and a circle with radius AM is used to locate points:

(A) on the auxiliary circle to define tangent directions
(B) on the given circles directly
(C) at infinity
(D) only at contact

Correct Answer: A

Explanation: In that transverse construction, AB is bisected at M and a circle with radius AM is used to locate points on the auxiliary circle to define tangent directions.

22. Lines BG and BH are drawn parallel to AE and AF respectively so that:

(A) centres coincide
(B) corresponding tangent points on the second circle are located
(C) radii double
(D) hexagon closes

Correct Answer: B

Explanation: Parallel transfer from the first circle locates tangent points on the second circle.

23. To draw a tangent to two unequal circles touching externally at C:

(A) ignore point C
(B) only join centres
(C) bisect AB, draw semicircle on AB, erect perpendicular at C to meet it, then use arc from D
(D) draw hexagon

Correct Answer: C

Explanation: To draw a tangent to two unequal circles touching externally at C bisect AB, draw semicircle on AB, erect perpendicular at C to meet it, then use arc from D.

24. When two circles touch externally at C, the common tangent at C is:

(A) parallel to AB
(B) equal to AB
(C) impossible to draw
(D) perpendicular to line AB of centres

Correct Answer: D

Explanation: At external contact the common tangent is perpendicular to the line joining centres.

25. A circle is symmetric about:

(A) its centre and any diameter
(B) only one tangent
(C) an external point only
(D) a chord only

Correct Answer: A

Explanation: A circle is symmetric about its centre and any diameter.

26. The perpendicular bisector of a chord passes through:

(A) a random point on the circle

(B) the centre of the circle
(C) only one endpoint
(D) an external tangent point

Correct Answer: B

Explanation: The centre is equidistant from the chord's endpoints.

27. If PQ □ QR with PQ = 4 cm and QR = 3 cm, a circle through P, Q, R has diameter:

(A) 4 cm
(B) 7 cm
(C) 5 cm
(D) 12 cm

Correct Answer: C

Explanation: Right angle at Q means PR is a diameter; PR = √(16 + 9) = 5 cm.

28. The radius of that circle through P, Q, R (legs 4 cm and 3 cm) is:

(A) 2 cm
(B) 5 cm
(C) 3.5 cm
(D) 2.5 cm

Correct Answer: D

Explanation: Radius is half the hypotenuse: 5/2 = 2.5 cm.

29. If AB = BC = 3 cm and □B = 120° in triangle ABC, the circumradius relates to side AC by:

(A) sine rule with R = AC/(2 sin B)
(B) Pythagoras only
(C) area formula only
(D) tangent length

Correct Answer: A

Explanation: Extended sine rule gives circumradius R = a/(2 sin A) for any triangle.

30. An arc-shaped tile has inner radius 7 in and arc length 2 in. One full circle needs about:

(A) 7 tiles
(B) 22 tiles
(C) 11 tiles
(D) 44 tiles

Correct Answer: B

Explanation: An arc-shaped tile has inner radius 7 in and arc length 2 in. One full circle needs about 22 tiles.

31. To find centre of a circular path inscribed in a 50 m square boundary, the radius is:

(A) 50 m
(B) 12.5 m
(C) 25 m
(D) 100 m

Correct Answer: C

Explanation: Inscribed circle diameter equals side length, so r = 50/2 = 25 m.

32. Locating the centre of an inscribed circular path in a rectangular boundary uses:

(A) only one corner
(B) a single tangent
(C) 120° hexagon
(D) perpendicular bisectors of chords or diagonals of the rectangle

Correct Answer: D

Explanation: Rectangle diagonals meet at the centre of the inscribed circle when the path is centred.

33. Completing a circle without centre by equal chords uses interior angle:

(A) 120° for regular hexagon method

(B) 60° for square
(C) 180° always
(D) 45° only

Correct Answer: A

Explanation: The textbook's second method uses 120° to step around with equal chords.

34. Drawing tangent at middle of arc without centre requires bisecting:

(A) the tangent
(B) a chord through the midpoint of the arc
(C) only the radius
(D) the external angle

Correct Answer: B

Explanation: Drawing tangent at middle of arc without centre requires bisecting a chord through the midpoint of the arc.

35. Drawing tangent at end of arc without centre is perpendicular to:

(A) the tangent at the other end
(B) line of centres
(C) the chord from that endpoint
(D) hexagon side

Correct Answer: C

Explanation: Tangent at arc endpoint is perpendicular to the chord drawn from that point.

36. For tangent from P outside arc, auxiliary construction often uses diameter on:

(A) any random segment
(B) the line of centres only
(C) two parallel tangents
(D) a chord of the arc

Correct Answer: D

Explanation: Semicircle on a chord helps locate the tangent from an external point.

37. Two tangents from external P to a circle are equal because:

(A) right triangles OPA and OPB are congruent
(B) radii differ
(C) P is on the circle
(D) tangents are parallel

Correct Answer: A

Explanation: Two tangents from external P to a circle are equal because right triangles OPA and OPB are congruent.

38. When constructing tangents at a given angle θ at P, the angle between the radii to contact points is:

(A) θ
(B) 180° − θ
(C) 360° − θ
(D) 90° − θ

Correct Answer: B

Explanation: Quadrilateral with two 90° angles at contacts gives central angle 180° − θ.

39. Direct tangents to equal circles never:

(A) touch both circles
(B) lie on the same side of both circles
(C) cross between the centres
(D) use perpendicular diameters

Correct Answer: C

Explanation: Direct tangents to equal circles never cross between the centres.

40. Transverse tangents to two separate circles always:

(A) are parallel to AB
(B) touch only one circle
(C) equal the sum of radii
(D) cross the segment AB between the circles

Correct Answer: D

Explanation: Transverse tangents to two separate circles always cross the segment AB between the circles.

41. If two equal circles have radius 2.5 cm and AB = 6 cm, direct tangents use vertical diameters because:

(A) AB is horizontal in the standard figure and diameters □ AB give tangent points
(B) radii must be parallel
(C) hexagon requires it
(D) centres must coincide

Correct Answer: A

Explanation: If two equal circles have radius 2.5 cm and AB = 6 cm, direct tangents use vertical diameters because AB is horizontal in the standard figure and diameters □ AB give tangent points.

42. Auxiliary circle radius r□ + r□ in transverse construction represents:

(A) difference of radii
(B) sum of radii for the large circle at first centre
(C) distance AB
(D) inscribed hexagon side

Correct Answer: B

Explanation: Auxiliary circle radius r□ + r□ in transverse construction represents sum of radii for the large circle at first centre.

43. Tangent to touching circles at C uses semicircle on AB because:

(A) C is irrelevant
(B) AB equals r□ + r□ always
(C) the right angle in the semicircle locates point D for the tangent arc
(D) hexagon closes

Correct Answer: C

Explanation: Tangent to touching circles at C uses semicircle on AB because the right angle in the semicircle locates point D for the tangent arc.

44. Practical geometry of circles applies to:

(A) only paper folding
(B) statistics only
(C) probability trees only
(D) athletic tracks, Ferris wheels, and machine parts

Correct Answer: D

Explanation: Real designs such as tracks and wheels use circle constructions.

45. The wheel invention is cited because circles provide:

(A) efficient rotation and symmetric motion
(B) only decoration
(C) right angles only
(D) zero friction always

Correct Answer: A

Explanation: Circular wheels roll smoothly because of uniform distance from the axle.

46. To trace a boat swing's circular path, the path is:

(A) a straight line
(B) an arc or full circle about the swing pivot

(C) a hexagon
(D) two parallel tangents

Correct Answer: B

Explanation: To trace a boat swing's circular path, the path is an arc or full circle about the swing pivot.

47. Three points on an arc DEF with DE = 3.5 cm, EF = 4.2 cm, angle 60° locate centre by:

(A) guessing
(B) only one perpendicular
(C) circumcentre of triangle DEF
(D) 120° stepping

Correct Answer: C

Explanation: Non-collinear arc points determine a triangle whose circumcentre is the arc's centre.

48. Right bisector of chord AB is the set of points equidistant from:

(A) centre and A only
(B) two tangents
(C) external P only
(D) A and B

Correct Answer: D

Explanation: Definition of perpendicular bisector: equal distance from A and B.

49. Compass width for circumcircle through A, B, C is set to:

(A) OA where O is circumcentre (distance from O to any vertex)
(B) AB only
(C) half of BC only
(D) perimeter of triangle

Correct Answer: A

Explanation: Once O is found, radius equals OA = OB = OC.

50. If only an arc is given, taking three points on the arc is necessary because:

(A) two points are always enough
(B) three non-collinear points fix the circle uniquely
(C) one point fixes radius
(D) arc has no centre ever

Correct Answer: B

Explanation: If only an arc is given, taking three points on the arc is necessary because three non-collinear points fix the circle uniquely.

51. Method (a) for completing arc uses finding centre; method (b) avoids centre by:

(A) ignoring the arc
(B) drawing only one radius
(C) stepping congruent triangles or 120° chords around the arc
(D) parallel tangents

Correct Answer: C

Explanation: Without-centre methods march equal geometry around the given arc.

52. In octagon stepping method, triangles BCD, CDE, etc. are built to be:

(A) right angled only
(B) always equilateral
(C) degenerate
(D) congruent to the initial triangle on the arc

Correct Answer: D

Explanation: In octagon stepping method, triangles BCD, CDE, etc. are built to be congruent to the initial triangle on the arc.

53. Tangent meeting angle 30° at P implies careful marking of:

(A) □APC = 30° at P between the two tangents
(B) only one radius
(C) hexagon vertices only
(D) AB distance

Correct Answer: A

Explanation: The given angle at P between tangents controls the entire construction.

54. Constructing □APC = 30° and tangent CD at C meeting first tangent at D gives □BDC:

(A) 60°
(B) 30°
(C) 90°
(D) 180°

Correct Answer: B

Explanation: The exercise result matches the given angle between tangents, 30°.

55. For unequal touching circles radii 2.5 cm and 2 cm, common tangent uses bisected AB and:

(A) parallel diameters only
(B) hexagon
(C) semicircle and perpendicular at contact C
(D) three random chords

Correct Answer: C

Explanation: Standard touching-circle tangent uses bisector, semicircle, and perpendicular at C.

56. Intersecting circles tangent construction differs from separate circles because:

(A) no tangents exist
(B) only hexagons work
(C) centres coincide
(D) circles overlap and construction uses their common region

Correct Answer: D

Explanation: Intersecting circles tangent construction differs from separate circles because circles overlap and construction uses their common region.

57. Transverse tangent construction for r = 2 and 1.3 cm uses auxiliary 3.3 cm at centre:

(A) A of larger circle
(B) B only
(C) midpoint only
(D) contact C

Correct Answer: A

Explanation: Large auxiliary circle is centred at the first given centre A with radius sum.

58. Direct tangent to equal circles: join outer diameter points E–D and F–C because those segments:

(A) pass through centres
(B) touch each circle at right angles and do not cross between centres
(C) are radii
(D) bisect AB

Correct Answer: B

Explanation: Direct tangent to equal circles: join outer diameter points E–D and F–C because those segments touch each circle at right angles and do not cross between centres.

59. Without-centre hexagon method: each new chord equals:

(A) half the arc
(B) diameter always
(C) the first chord AB on the arc
(D) sum of radii

Correct Answer: C

Explanation: Equal chord steps of the same length as the starting chord close the.

60. 120° interior angle in stepping method comes from:

(A) square corners
(B) right triangle only
(C) tangent perpendicularity alone
(D) regular hexagon geometry

Correct Answer: D

Explanation: 120° interior angle in stepping method comes from regular hexagon geometry.

61. To locate centre of round object traced on paper:

(A) mark three points on edge and bisect two chords
(B) use one mark only
(C) draw tangent only
(D) use 120° without points

Correct Answer: A

Explanation: To locate centre of round object traced on paper mark three points on edge and bisect two chords.

62. Arc completion by centre method: radius after finding O is:

(A) always AB chord
(B) OB or OA to any point on arc
(C) half AB only
(D) external tangent length

Correct Answer: B

Explanation: Any point on the arc is distance R from the located centre.

63. Practical geometry differs from pure tangent theorems by emphasizing:

(A) only proofs without diagrams
(B) probability
(C) compass-and-ruler construction steps
(D) ogives

Correct Answer: C

Explanation: Practical geometry differs from pure tangent theorems by emphasizing compass-and-ruler construction steps.

64. Given arc only, method (a) finds centre; method (b) uses repeated:

(A) secants through centre
(B) parallel lines only
(C) ogive points
(D) congruent polygon steps along the arc

Correct Answer: D

Explanation: Given arc only, method (a) finds centre; method (b) uses repeated congruent polygon steps along the arc.

65. Two tangents at given angle meeting at P require marking P:

(A) outside the circle
(B) inside the circle
(C) at the centre
(D) on a diameter only

Correct Answer: A

Explanation: Two tangents from one external point meet at P outside the circle.

66. For transverse tangents, final lines EG and FH in the textbook construction are:

(A) radii
(B) the required common tangents crossing between circles
(C) parallel to AB only

(D) diameters

Correct Answer: B

Explanation: Those joined segments are the transverse tangents touching both circles.

67. Touching circles tangent at C: perpendicular CD to AB meets semicircle at D; arc from D with radius CD finds:

(A) centre O
(B) hexagon vertex
(C) tangent points E and F on the circles
(D) external P

Correct Answer: C

Explanation: Arc from D locates where the common tangent meets each circle.

68. Circle through three points fails if points are:

(A) vertices of acute triangle
(B) on a minor arc
(C) non-collinear
(D) collinear

Correct Answer: D

Explanation: Circle through three points fails if points are collinear.

69. Perpendicular bisectors of triangle sides meet at exactly:

(A) one circumcentre
(B) three points
(C) no point for obtuse triangle off circle
(D) the in-centre always

Correct Answer: A

Explanation: Circumcentre is unique for any non-degenerate triangle.

70. Engineer with 50 m square and circular path locates centre at:

(A) corner of square
(B) intersection of diagonals of square
(C) midpoint of one side only
(D) external tangent point

Correct Answer: B

Explanation: Centre of inscribed circle in rectangle/square is at diagonal inter.

71. Inner radius 7 in, arc 2 in per tile: total circumference ≈:

(A) 14 in
(B) 22 in
(C) 44 in
(D) 7 in

Correct Answer: C

Explanation: $2\pi r \approx 43.98$ in, nearest whole tile count context uses ~22 tiles covering ~44 in - circumference ~44 in.

72. Bisecting AB in transverse construction finds midpoint for:

(A) direct tangent only
(B) in-centre
(C) hexagon side
(D) auxiliary circle that helps locate tangent directions

Correct Answer: D

Explanation: Bisecting AB in transverse construction finds midpoint for auxiliary circle that helps locate tangent directions.

73. Parallel lines AE and BG in transverse construction ensure:

(A) corresponding angles locate tangent point G on second circle

(B) equal radii
(C) centres merge
(D) diameter doubles

Correct Answer: A

Explanation: Parallel transfer aligns the tangent direction from the first to the second circle.

74. Practical geometry circle unit pairs with chapter 10 because:

(A) both ignore tangents
(B) chapter 10 proves tangent facts; chapter 11 constructs them
(C) both are statistics
(D) neither uses compass

Correct Answer: B

Explanation: Practical geometry circle unit pairs with chapter 10 because chapter 10 proves tangent facts; chapter 11 constructs them.

75. To draw tangent when P is outside the circle (centre known), compass at O, radius to tangent foot gives:

(A) secant
(B) hexagon
(C) right triangle with OP as hypotenuse
(D) ogive

Correct Answer: C

Explanation: Known centre: right triangle OPA with OA □ tangent at A.

76. Drawing two tangents meeting at 60° at P gives central angle between radii of:

(A) 60°
(B) 180°
(C) 240°
(D) 120°

Correct Answer: D

Explanation: Drawing two tangents meeting at 60° at P gives central angle between radii of 120°.

77. Completing circle from arc without centre: joining C to D, D to E, … eventually:

(A) closes the full circumference through polygon vertices
(B) forms a straight line only
(C) finds ogive
(D) bisects AB only

Correct Answer: A

Explanation: Stepping around connects vertices that lie on the completed circle.

78. When P is on the circle, exactly one tangent exists because:

(A) radii are parallel
(B) only one line is perpendicular to the radius at P
(C) P is outside
(D) two tangents always

Correct Answer: B

Explanation: One unique line through P is perpendicular to radius OP.

79. External point P yields two tangents because:

(A) circle has two centres
(B) radii differ
(C) two symmetric right triangles OPA and OPB are possible
(D) P is on circle

Correct Answer: C

Explanation: External point P yields two tangents because two symmetric right triangles OPA and OPB are possible.

80. Direct common tangent length between contact points on horizontal layout equals:

(A) sum of radii
(B) difference of radii
(C) zero
(D) distance AB between centres for equal circles

Correct Answer: D

Explanation: Direct common tangent length between contact points on horizontal layout equals distance AB between centres for equal circles.

B. Less Important / Secondary Topics

81. A circle has rotational symmetry of order:

(A) infinite about its centre
(B) 1
(C) 2
(D) 6 only

Correct Answer: A

Explanation: A circle has rotational symmetry of order infinite about its centre.

82. The compass is essential in circle constructions for:

(A) measuring angles in degrees only
(B) transferring equal lengths (radii, chords)
(C) drawing histograms
(D) calculating mean

Correct Answer: B

Explanation: The compass is essential in circle constructions for transferring equal lengths (radii, chords).

83. Non-collinear means:

(A) on one straight line
(B) forming a right angle only
(C) not all on one line
(D) equilateral only

Correct Answer: C

Explanation: Non-collinear means not all on one line.

84. Circumcircle of a triangle passes through:

(A) midpoints of sides only
(B) only the orthocentre
(C) centre of earth
(D) all three vertices

Correct Answer: D

Explanation: Circumcircle of a triangle passes through all three vertices.

85. Inscribed circle in a triangle touches:

(A) three sides internally
(B) vertices
(C) circumference of circumcircle
(D) only one side

Correct Answer: A

Explanation: Incircle is tangent to each side; this chapter focuses on circum constructions.

86. Arc length s on radius r subtends angle θ (radians) with s =:

(A) r + θ
(B) rθ
(C) r/θ

(D) θ/r

Correct Answer: B

Explanation: Arc length s on radius r subtends angle θ (radians) with s = rθ.

87. For tile count, approximate π as 22/7 gives circumference 7 in tile more accurately as:

(A) 20
(B) 25
(C) 22
(D) 30

Correct Answer: C

Explanation: (22/7)×14 = 44 in; 44/2 = 22 tiles, so the correct choice is 22.

88. Bicycle wheels overlapping in the chapter illustration show:

(A) parallel tangents only
(B) ogives
(C) box plots
(D) intersecting circles in real objects

Correct Answer: D

Explanation: Bicycle wheels overlapping in the chapter illustration show intersecting circles in real objects.

89. Right bisector is another name for:

(A) perpendicular bisector
(B) angle bisector
(C) median
(D) altitude

Correct Answer: A

Explanation: Right bisector means perpendicular bisector in the textbook wording.

90. If construction arcs for bisector do not meet, likely error is:

(A) correct centre found
(B) compass width changed between arcs
(C) three collinear points used properly
(D) tangent drawn

Correct Answer: B

Explanation: If construction arcs for bisector do not meet, likely error is compass width changed between arcs.

91. Tangent construction from known centre O and external P starts by:

(A) bisecting OP blindly
(B) 120° hexagon
(C) finding midpoint of OP and drawing semicircle for right angle
(D) ogive

Correct Answer: C

Explanation: Tangent construction from known centre O and external P starts by finding midpoint of OP and drawing semicircle for right angle.

92. Athletic track inner and outer lanes use:

(A) only straight lines
(B) random segments
(C) Venn diagrams
(D) concentric circular arcs at bends

Correct Answer: D

Explanation: Lane curves are arcs of circles with different radii.

93. Mechanical gears often have:

(A) circular pitch circles for meshing
(B) square teeth only

(C) no circular parts
(D) only tangents without centres

Correct Answer: A

Explanation: Gear pitch surfaces are circular cylinders in cross-.

94. Completing arc by centre is generally more accurate when:

(A) arc is very short noise
(B) arc spans enough to define a stable circumcentre
(C) points are collinear
(D) no compass exists

Correct Answer: B

Explanation: Completing arc by centre is generally more accurate when arc spans enough to define a stable circumcentre.

95. Hexagon method suits when:

(A) only one point on arc
(B) circles touch internally only
(C) centre must never be found and arc allows equal chord stepping
(D) statistics grouped data

Correct Answer: C

Explanation: Hexagon method suits when centre must never be found and arc allows equal chord stepping.

96. Transverse tangents exist for two separate circles when:

(A) one circle is inside without overlap in some cases
(B) circles never have radii
(C) only equal radii forbidden
(D) circles are separate or appropriately nested

Correct Answer: D

Explanation: Transverse tangents exist for two separate circles when circles are separate or appropriately nested.

97. Direct tangents exist for:

(A) two circles that do not overlap internally in the usual external case
(B) nested circles only
(C) collinear points
(D) degenerate line

Correct Answer: A

Explanation: Direct tangents exist for two circles that do not overlap internally in the usual external case.

98. Given angle between tangents 90° at P, central angle between radii is:

(A) 180°
(B) 90°
(C) 270°
(D) 360°

Correct Answer: B

Explanation: 180° − 90° = 90° between radii when tangents are perpendicular at P.

99. Practical geometry safety tip: arc stepping without centre may accumulate:

(A) zero error
(B) exact π
(C) small compass error over many steps
(D) impossible overlap always

Correct Answer: C

Explanation: Repeated constructions can drift slightly if each step is not precise.

100. Chapter 11 real-life list includes recreational parks because:

(A) only straight paths exist

(B) no geometry applies
(C) only probability
(D) paths and flower beds use circular arcs

Correct Answer: D

Explanation: Chapter 11 real-life list includes recreational parks because paths and flower beds use circular arcs.

101. To check a constructed tangent, verify angle between radius and line is:

(A) 90°
(B) 0°
(C) 45°
(D) 180°

Correct Answer: A

Explanation: Tangent–radius test: 90° at contact, so the correct choice is 90°.

102. Three chords' perpendicular bisectors concur at:

(A) random point
(B) circumcentre if triangle non-degenerate
(C) always outside triangle for all triangles
(D) ogive quartile

Correct Answer: B

Explanation: Concurrency at circumcentre is the basis of centre location.

103. If AB = 6 cm and both circles radius 2.5 cm for direct tangents, vertical offset of contact from AB line is:

(A) 6 cm
(B) 0 cm in standard symmetric drawing
(C) 2.5 cm
(D) 11 cm

Correct Answer: C

Explanation: If AB = 6 cm and both circles radius 2.5 cm for direct tangents, vertical offset of contact from AB line is 2.5 cm.

104. Semicircle on AB in touching-circle tangent helps because angle in semicircle is:

(A) 45°
(B) 120°
(C) 180°
(D) 90°

Correct Answer: D

Explanation: Right angle locates the direction needed for perpendicular CD.

105. Tracing swing path records:

(A) circular arc motion about pivot
(B) linear motion only
(C) ogive of marks
(D) scatter plot

Correct Answer: A

Explanation: Swing bob follows a circular arc if rope length is fixed.

106. Equal circles transverse case AB = 7 cm, r = 3 cm: midpoint C of AB is:

(A) 3 cm from A
(B) 3.5 cm from A
(C) 7 cm from A
(D) 1 cm from A

Correct Answer: B

Explanation: Midpoint is 7/2 = 3.5 cm from each centre.

107. Construction title 'Practical Geometry' signals focus on:

(A) proofs only without drawing
(B) calculator statistics only
(C) accurate drawings with instruments
(D) memorizing π digits

Correct Answer: C

Explanation: Construction title 'Practical Geometry' signals focus on accurate drawings with instruments.

108. When completing circle from arc, dashed part of final figure shows:

(A) removed error
(B) tangent only
(C) histogram bar
(D) portion of circumference not originally given

Correct Answer: D

Explanation: Given arc is solid; completed remainder is often shown dashed.