

REG-TTC-2425-ASM-SET 3-MATH**Suggested solutions****Multiple Choice Questions**

1. B	2. D	3. D	4. D	5. C
6. D	7. D	8. A	9. B	10. B
11. C	12. C	13. D	14. A	15. D
16. A	17. B	18. C	19. C	20. C
21. A	22. D	23. D	24. B	25. A
26. C	27. D	28. A	29. B	30. C

1. B

$$\angle BCD = \angle EBD = 70^\circ$$

$$\angle CDB = \angle EBD = 70^\circ$$

$$\angle CBD = 180^\circ - 70^\circ - 70^\circ = 40^\circ$$

2. D

$$\angle EDB = \angle EBA = 50^\circ$$

$$\angle EBD = \angle BDC = 60^\circ$$

$$\angle BED = 180^\circ - 50^\circ - 60^\circ = 70^\circ$$

3. D

$$\angle BCE = \angle CEG = 70^\circ$$

$$\angle CBE = \angle CEG = 70^\circ$$

$$\angle BEC = 180^\circ - 70^\circ - 70^\circ = 40^\circ$$

$$\angle ABE = \angle BEC = 40^\circ$$

$$\angle ADE = \angle ABE = 40^\circ$$

4. D

$$\text{Let } \angle OBA = x.$$

$$\angle OAT = 90^\circ$$

$$\angle TAB = 90^\circ - x$$

$$\angle ACB = \angle TAB = 90^\circ - x$$

$$\angle OCB = \angle ACB - 13^\circ = 77^\circ - x$$

$$\angle TCA + \angle TAC + \angle ATC = 180^\circ$$

$$[13^\circ + (77^\circ - x)] + [(90^\circ - x) + (x + 13^\circ)] + 40^\circ = 180^\circ$$

$$x = 53^\circ$$

5. C

$$\angle BAC = 90^\circ$$

$$\angle ABC = 180^\circ - 90^\circ - 35^\circ = 55^\circ$$

$$\angle CAP = \angle ABC = 55^\circ$$

6. D

$$\angle ADC = 180^\circ - 74^\circ = 106^\circ$$

$$\text{Since } \widehat{AD} = \widehat{DC}, \text{ we have } AD = DC \text{ and } \angle DCA = \frac{180^\circ - 106^\circ}{2} = 37^\circ.$$

$$\angle ACB = \angle SAB = \angle ABC = 74^\circ$$

$$\angle BCD = 74^\circ + 37^\circ = 111^\circ$$

7. D

$$\angle CDB = \angle DAC = 34^\circ$$

$$\angle DCB = \frac{180^\circ - 34^\circ}{2} = 73^\circ$$

$$\angle BDA = 180^\circ - 73^\circ - 34^\circ - 34^\circ = 39^\circ$$

8. A

$$\angle BEF = \angle FBC = 40^\circ$$

$$\angle EBF = \angle EFG - \angle BEF = 95^\circ - 40^\circ = 55^\circ$$

$$\angle DBE = \angle EBF = 55^\circ \quad \angle ABD = 180^\circ - 55^\circ - 55^\circ - 40^\circ = 30^\circ$$

9. B

$$\text{Let } \angle ABC = x.$$

$$\angle CAT = \angle ABC = x$$

$$\angle BAC = \angle ACB = \angle ATC + \angle CAT = x + 48^\circ$$

Consider $\triangle ABC$.

$$x + 2(x + 48^\circ) = 180^\circ$$

$$x = 28^\circ$$

10. B

$$\angle ADB = \angle TAB = 42^\circ$$

$$\frac{\angle BDC}{\angle ADB} = \frac{\widehat{BC}}{\widehat{AB}}$$

$$\frac{\angle BDC}{42^\circ} = \frac{2}{3}$$

$$\angle BDC = 28^\circ$$

$$\angle ADC = 28^\circ + 42^\circ = 70^\circ$$

11. C

$$\angle ADE = \angle CAE = 80^\circ$$

$$\angle ADF = \angle AEF = 36^\circ$$

$$\angle EDF = 80^\circ - 36^\circ = 44^\circ$$

12. C

$$\angle DBA = \angle BED$$

$$\angle BED + (\angle DBA + 51^\circ) + 37^\circ = 180^\circ$$

$$2\angle BED + 88^\circ = 180^\circ$$

$$\angle BED = 46^\circ$$

13. D

Draw line segments BD and AB .

$$\angle CDB = \angle CBQ = 39^\circ$$

$$\angle BDA = 79^\circ - 39^\circ = 40^\circ$$

$$\angle ABD = \angle DAP = 42^\circ$$

$$\angle DAB = 180^\circ - 42^\circ - 40^\circ = 98^\circ$$

$$\angle BCD = 180^\circ - 98^\circ = 82^\circ$$

14. A

$$\angle DAC = 90^\circ$$

$$\angle ACD = 180^\circ - 90^\circ - 48^\circ = 42^\circ$$

$$\angle DAT = \angle ACD = 42^\circ$$

15. D

$$\angle QPS = 180^\circ - 123^\circ = 57^\circ$$

$$\angle PQS = 180^\circ - 57^\circ - 48^\circ = 75^\circ$$

$$\angle APS = \angle PQS = 75^\circ$$

16. A

$$\text{Let } \angle BAQ = x. \angle ADB = \angle BAQ = x$$

$$\angle PAB + \angle PBA = \angle BAQ = x$$

$$\angle APB = \angle ABP = \frac{x}{2}$$

$$\angle DAB = 180^\circ - 57^\circ$$

$$57^\circ + x + \frac{x}{2} = 180^\circ$$

$$x = 38^\circ$$

17. B

$$\angle SPQ = 180^\circ - 123^\circ = 57^\circ$$

$$\angle SQP = 180^\circ - 57^\circ - 48^\circ = 75^\circ$$

$$x = \angle SQP = 75^\circ$$

18. C

$$PA = PB$$

$$\angle PAB = \frac{180^\circ - 46^\circ}{2} = 67^\circ$$

$$\angle ACB = \angle PAB = 67^\circ$$

$$\angle ABC = 180^\circ - 67^\circ - 28^\circ = 85^\circ$$

$$\angle ADC = 180^\circ - 85^\circ = 95^\circ$$

19. C

$$AB = AD$$

$$\angle ADB = \frac{180^\circ - 80^\circ}{2} = 50^\circ$$

$$\angle BCD = \angle ADB = 50^\circ$$

$$\angle DBC = 180^\circ - 50^\circ - 45^\circ = 85^\circ$$

20. C

$$EC = EA$$

$$\angle ECA = \angle EAC = 36^\circ$$

$$FA = FD$$

$$\angle FDA = \angle DAF = 28^\circ$$

$$\angle ADC = \angle EAC = 36^\circ$$

$$\angle ACD = \angle FAD = 28^\circ$$

$$\angle CBD = 180^\circ - (36^\circ + 28^\circ) - (36^\circ + 28^\circ) = 52^\circ$$

21. A

$$\angle ABT = \angle ACB = 68^\circ$$

$$TA = TB$$

$$\angle BAT = \angle ABT = 68^\circ$$

$$\angle ATB = 180^\circ - 68^\circ - 68^\circ = 44^\circ$$

22. D

$$EB = EC$$

$$\angle EBC = \frac{180^\circ - 72^\circ}{2} = 54^\circ$$

$$\angle BAC = \angle EBC = 54^\circ$$

$$\angle ACF = \angle ABC = 63^\circ$$

$$AB = AC$$

$$\angle ABC = \frac{180^\circ - 54^\circ}{2} = 63^\circ$$

$$\angle DBE = 90^\circ$$

$$\angle CBD = 90^\circ - 54^\circ = 36^\circ$$

$$\angle CAF = \angle CBD = 36^\circ$$

$$\angle AFC = 180^\circ - 36^\circ - 63^\circ = 81^\circ$$

23. D

$$TA = TB$$

$$\angle BAT = \angle ABT = \angle ACB = x$$

Consider $\triangle ABT$.

$$x + x + y = 180^\circ$$

$$2x + y = 180^\circ$$

24. B

$$\angle BCA = \angle BAC = \frac{180^\circ - 30^\circ}{2} = 75^\circ$$

$$\angle CDE = \angle ACB = 75^\circ$$

$$\angle DCE = 180^\circ - 2 \times 75^\circ = 30^\circ$$

$$\angle ECA = 180^\circ - 75^\circ - 30^\circ = 75^\circ$$

$$\angle EFA = 180^\circ - 75^\circ = 105^\circ$$

25. A

$$\angle ABG = \angle BEG = 75^\circ$$

$$\angle CBG = 180^\circ - 75^\circ = 105^\circ$$

26. C

$$\angle DAC = \angle ABC$$

$$\triangle ABC \sim \triangle DAC$$

$$\frac{AC}{CD} = \frac{BC}{AC}$$

$$\frac{AC}{6} = \frac{18 + 6}{AC}$$

$$AC^2 = 144$$

$$AC = 12 \quad \text{or} \quad -12 \text{ (rejected)}$$

27. D

Let O be the centre of the circle.

Let E be the mid-point of BC such that $OE \perp BC$.

$$\angle OAD = 90^\circ$$

$$\angle OAC = 90^\circ - 65^\circ = 25^\circ$$

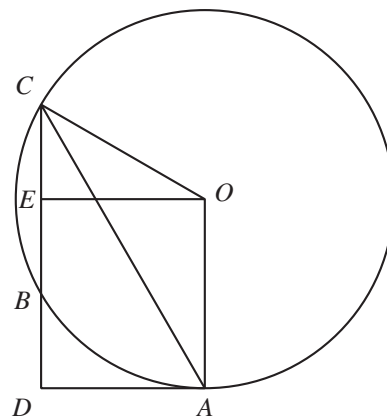
$$\angle AOC = 180^\circ - 25^\circ - 25^\circ = 130^\circ$$

$$\angle COE = 130^\circ - 90^\circ = 40^\circ$$

$$CE = \frac{BC}{2} = 4 \text{ cm}$$

$$\text{Radius} = \frac{4}{\sin 40^\circ}$$

$$\approx 6.2 \text{ cm}$$



28. A

$$\angle ABE = \angle QAE = x$$

$$\angle EDC = \angle ABE$$

$$y = x$$

29. B

$$\angle APB = 90^\circ$$

$$\angle APB = \angle ABP = 68^\circ$$

$$\angle OPA = 90^\circ - 68^\circ = 22^\circ$$

$$\angle BOP = 180^\circ - 68^\circ - 68^\circ = 44^\circ$$

$$\angle ORP = \angle BOP = 44^\circ$$

$$\angle POR = 180^\circ - 44^\circ - 22^\circ = 114^\circ$$

$$\angle RQP = 180^\circ - 114^\circ = 66^\circ$$

30. C

$$OP = OB$$

$$\angle OBP = \angle BPQ = 12^\circ$$

$$\angle BOQ = 2\angle BPQ = 24^\circ$$

$$\angle OCB = \angle BOQ = 24^\circ$$

$$\angle BOC = 180^\circ - 24^\circ - 12^\circ = 144^\circ$$

$$\angle BAC = 180^\circ - 144^\circ = 36^\circ$$