**JNV**

**MODEL QUESTIONS**

**MATHEMATICS: 6 SIMILAR TRIANGLE**

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| 1 | In ΔABC, D and E are points on sides AB and AC respectively such that DE || BC and AD : DB = 3 : 1. If EA = 6.6 cm then find AC. | 1 |
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|  | ANS:   |  |  | | --- | --- | | AD : DB = 3 : 1 In ΔABC, DE || BC C:\fake\image1.pngC:\fake\image2.png(By BPT) C:\fake\image3.pngC:\fake\image4.png C:\fake\image5.png  EC = C:\fake\image6.png= 2.2 cm AC = AE + EC = 6.6 + 2.2 = 8.8 cm | C:\fake\image7.png | |  |
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| 2 | In fig. C:\fake\image8.pngM = C:\fake\image9.pngN = 46°, express x in terms of a, b and c, where a, b and c are lengths of LM, MN and NK respectively.  C:\fake\image10.png | 1 |
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|  | ANS:     In ΔLMK and ΔPNK C:\fake\image11.pngM = C:\fake\image12.pngN (each 46°) C:\fake\image13.pngK = C:\fake\image14.pngK (common) C:\fake\image15.png  ΔLMK ~ ΔPNK (AA similarity) C:\fake\image16.pngC:\fake\image17.png |  |
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| 3 | In fig. AB || DE and BD || EF. Prove that DC2 = CF × AC C:\fake\image18.png | 2 |
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|  | ANS:     Given : ΔABC in which DE || AB and BD || EF. To prove : DC2 = CF × AC Proof. In Δ ABC, DE || AB C:\fake\image19.pngC:\fake\image20.png...(i) (Basic Proportionality Theorem) Again in Δ CDB, EF || BD C:\fake\image21.pngC:\fake\image22.png... (ii) (Basic Proportionality Theorem) From (i) and (ii), we get C:\fake\image23.pngC:\fake\image24.pngCD2 = CF × AC Hence proved. |  |
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| 4 | In the given figure, given that ΔABC ~ ΔPQR and quad. ABCD ~ quad. PQRS. Determine the values of x, y, z in each case. C:\fake\image25.png | 2 |
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|  | ANS:     (i) ΔABC ~ ΔPQR C:\fake\image26.png  C:\fake\image27.png C:\fake\image28.png  C:\fake\image29.png  C:\fake\image30.png12y = 90 and 12x = 63 x = C:\fake\image31.png (ii) Given : C:\fake\image32.pngABCD ~ C:\fake\image33.pngPQRS C:\fake\image34.pngC:\fake\image35.png C:\fake\image36.png  C:\fake\image37.png C:\fake\image38.png C:\fake\image39.png |  |
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| 5 | Let ΔABC ~ ΔDEF, ar(ΔABC) = 169 cm2 and ar(ΔDEF) = 121 cm2. If AB = 26 cm, then find DE. | 2 |
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|  | ANS:     C:\fake\image40.png  ΔABC ~ ΔDEF C:\fake\image41.png  C:\fake\image42.png C:\fake\image43.png  C:\fake\image44.png C:\fake\image45.pngC:\fake\image46.png C:\fake\image47.pngC:\fake\image48.png C:\fake\image49.png  ­ C:\fake\image50.png C:\fake\image51.pngDE = 22 cm. |  |
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| 6 | In figure, BA || QR, and CA || SR. C:\fake\image52.pngProve that C:\fake\image53.png | 3 |
|  | (iv) |  |
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|  | ANS:   |  |  | | --- | --- | | In ΔPRQ, AB || RQ C:\fake\image54.png  C:\fake\image55.png...(i) In ΔPRS, CA || SR C:\fake\image56.png  C:\fake\image57.png...(ii) From (i) and (ii) C:\fake\image58.png | C:\fake\image59.png | |  |
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| 7 | In an equilateral triangle ABC, D is a point on side BC such that 4BD = BC. Prove that 16AD2 = 13BC2. | 4 |
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|  | ANS:   |  |  | | --- | --- | | In equilateral ΔABC . 4 BD = BC Construction : Draw AE ⊥ BC.  C:\fake\image60.pngBE = C:\fake\image61.pngBC. In right ΔAED, AD2 = DE2 + AE2 C:\fake\image62.pngAE2 = AD2 – DE2 ... (i) In right ΔAEB, AB2 = AE2 + BE2 C:\fake\image63.pngAB2 = AD2 – DE2 + BE2 [Using (i)] C:\fake\image64.pngAB2 + DE2 – BE2 = AD2 C:\fake\image65.pngAB2 + (BE – BD)2 – BE2 = AD2 C:\fake\image66.pngAB2 + BE2 + BD2 – 2BE . BD – BE2 = AD2 C:\fake\image67.pngAB2 + C:\fake\image68.png= AD2 C:\fake\image69.pngAB2 + C:\fake\image70.pngBC2 – C:\fake\image71.pngBC2 = AD2  C:\fake\image72.pngBC2 – C:\fake\image73.pngBC2 = AD2 (C:\fake\image74.png  AB = BC) C:\fake\image75.png  C:\fake\image76.png= AD2 C:\fake\image77.png  13 BC2 = 16 AD2 | C:\fake\image78.png | |  |
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