**JNV**

**MODEL QUESTION**

**MATHEMATICS: 1 NUMBERS**

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| **Class : X** |  |
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| 1 | Decompose 32760 into prime factors. |  |
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|  | ANS:     32760 = 2 × 2 × 2 × 3 × 3 × 5 × 7 × 13 = 23 × 32 × 5 × 7 × 13 |  |
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| 2 | Using Euclid’s division algorithm, find whether the pair of numbers 847, 2160 are coprimes or not. |  |
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|  | ANS:     Using Euclid’s division Lemma for 2160 and 847 we get 2160 = 847 × 2 + 466 Also 847 = 466 × 1 + 381 466 = 381 × 1 + 85 381 = 85 × 4 + 41 85 = 41 × 2 + 3 41 =3 × 13 + 2 3 = 2 × 1 + 1 2 = 1 × 2 + 0 C:\fake\image1.pngHCF = 1. Hence the numbers are co-prime. |  |
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| 3 | Write whether the square of any positive integer can be of the form 3m + 2, where m is a natural number. Justify your answer. |  |
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|  | ANS:     No, any positive integer is of the form 3k, 3k + 1 or 3k + 2 Now (3k)2 = 9k2 = 3m (Where m = 3k2) and (3k + 1)2 = 9k2 + 6k + 1 = 3p + 1 (where p = 3k2 + 2k) also (3k + 2)2 = 9k2 + 12k + 4 = 9k2 + 12k + 3 + 1 = 3q + 1 (where q = 3k2 + 4k + 1) |  |
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| 4 | Prove that C:\fake\image2.pngis irrational. |  |
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|  | ANS:     Let C:\fake\image3.png, where a and b are coprime integers, b ≠ 0. Squaring both sides, we get 3 = C:\fake\image4.png. Multiplying with b on both sides, we get C:\fake\image5.png LHS = 3 × b = Integer RHS = C:\fake\image6.png= Rational number C:\fake\image7.png  LHS ≠ RHS C:\fake\image8.png  Our supposition is wrong. C:\fake\image9.png  C:\fake\image10.png is irrational. |  |
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| 5 | Show that 5 – 2C:\fake\image11.png is an irrational number. |  |
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|  | ANS:     Let C:\fake\image12.pngbe a rational number. C:\fake\image13.pngwhich is contradiction because C:\fake\image14.pngis an irrational number and C:\fake\image15.pngis a rational. C:\fake\image16.png  Our supposition is wrong and hence, 5 – 2C:\fake\image17.png is irrational. |  |
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