



SETS - 1

1	<p><b>Write the following sets in the roster form.</b></p> <p>(a) <math>A = \{x : x \in W, x \leq 5\}</math> (b) <math>B = \{x : x \in N, -3 &lt; x &lt; 3\}</math> (c) <math>C = \{x : x \text{ is divisible by } 12\}</math> (d) <math>D = \{x : x = 3p, p \in W, p \leq 3\}</math> (e) <math>E = \{x : x = a^2, a \in N, 3 &lt; a &lt; 7\}</math> (f) <math>F = \{x : x = n/(n + 1), n \in N \text{ and } n \leq 4\}</math> (g) <math>G = \{x : x \in N, 3x - 2 &lt; 5\}</math> (h) <math>J = \{x : x \in N, x^2 &lt; 16\}</math> (i) <math>K = \{x : x \text{ is a prime number which is a divisor of } 42\}</math> (j) <math>H = \{x : x \text{ is a 2-digit natural number such that the sum of its digits is } 5\}</math></p>
2	<p><b>Write the following sets in the set builder form.</b></p> <p>(a) <math>A = \{2, 4, 6, 8\}</math> (b) <math>B = \{3, 9, 27, 81\}</math> (c) <math>C = \{1, 4, 9, 16, 25\}</math> (d) <math>D = \{1, 3, 5, \dots\}</math> (e) <math>E = \{4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, \dots, 52\}</math> (f) <math>F = \{-10, \dots, -3, -2, -1, 0, 1, 2, \dots, 5\}</math> (g) <math>G = \{0\}</math> (h) <math>P = \{\}</math> (i) <math>H = \{-5, 5\}</math> (j) <math>Q = \{V, I, B, G, Y, 0, R\}</math></p>
3	<p><b>Are the following pairs of sets equal?</b></p> <p>(a) <math>A = \{2\}</math>                                  <math>B = \{x : x \in N, x \text{ is an even prime number}\}.</math> (b) <math>P = \{1, 4, 9\}</math>                              <math>Q = \{x : x = n^2, n \in N, n \leq 3\}</math> (c) <math>X = \{x : x \in W, x &lt; 5\}</math>                      <math>Y = \{x : x \in N, x \leq 5\}</math> (d) <math>M = \{a, b, c, d\}</math>                              <math>N = \{p, q, r, s\}</math> (e) <math>D = \{x : x \text{ is a multiple of } 30\}</math>              <math>E = \{x : x \text{ is a factor of } 10\}</math></p>

4	<p><b>Find the cardinal number of the following sets.</b></p> <p>(a) <math>A = \{x : x \in \mathbb{N}, 2 &lt; x &lt; 7\}</math>  (b) <math>B = \{x : n \in \mathbb{N}, x = n^2, n &lt; 3\}</math>  (c) The set of months in a year  (d) <math>C = \{x : x \in \mathbb{Z}^+, x &lt; 100\}</math>  (e) <math>D = \{x : x = n^3, n \in \mathbb{W}, n &lt; 5\}</math>  (f) The set of letters in the word MALAYALAM</p>
5	<p><b>Write the following in interval form.</b></p> <p>1) <math>\{x : x \in \mathbb{R}, -4 &lt; x \leq 6\}</math>  2) <math>\{x : x \in \mathbb{R}, 0 \leq x &lt; 7\}</math>  3) <math>\{x : x \in \mathbb{R}, 3 \leq x \leq 4\}</math></p>
6	<p><b>Write all subset of the following</b></p> <p>1) <math>\{1, 2\}</math>  2) <math>\{a, b, c\}</math>  3) <math>\Phi</math></p>
7	<p><b>Let <math>A = \{1, 2, \{3, 4\}, s, d, \theta\}</math>, Which of the following statements are true / false and why?</b></p> <p>(1) <math>3 \in A</math>  (2) <math>\{1, \{3, 4\}\} \in A</math>  (3) <math>\{1, 2, 3\} \subset A</math>  (4) <math>\Phi \in A</math>  (5) <math>1 \subset A</math> (1 score each)</p>
8	<p><b>Show by Venn diagrams the relationship between the following</b></p> <p>Let <math>M = \{\text{Natural numbers between 10 and 40; each divisible by 3}\}</math>  <math>N = \{\text{Natural numbers upto 40; each divisible by 4}\}.</math></p> <p>(i) Write each in roster form.  (ii) Draw a Venn-diagram showing the relationship between sets M and set N.</p>