

TEACHER'S NAME:

NAME:

CLASS:

## 11.1 SET

## Nota

- A set is a collection of objects that have certain common characteristics.
- Each object in a set is called an element
- An empty set is a set that has no elements and is represented by a symbol or  $\{ \}$
- $a \in S$  means a is an element of S.
- $b \notin S$  means b is not an element of S.

A Describe the following set using listings.

Match the answers below





Set S is a factor of 12

 $S = \{3, 6, 9, 12, 15, 18\}$ 

Set S is a factor of 20

 $S = \{2, 4, 6, 8, 10\}$ Set S is a multiple of 3  
which is less than 20 $S = \{1, 4, 9, 16, 25, 36, 49\}$ Set S is an even number  
in the range  $1 < x \leq 10$  $S = \{1, 2, 4, 5, 10, 20\}$ The set S is a perfect square  
number in the range  $1 \leq x < 50$  $S = \{1, 2, 3, 4, 6, 12\}$

**B** Mark / on empty set and X if not empty set.

|   |   |
|---|---|
| <p>a) <math>A = \{ \text{The Pentagon has 6 sides} \}</math></p>             | <p>b) <math>B = \{ x : x \text{ is a common factor of 10 and 20} \}</math></p>       |
| <p>c) <math>C = \{ \text{A multiple of 10 is a multiple of 5} \}</math></p>  | <p>d) <math>D = \{ \text{Even numbers can be divided exactly by zero} \}</math></p>  |

**C** Choose the following using symbol  $\in$  or  $\notin$ . (Choose 1 answer)

|   |   |
|---|---|
| <p>a) <math>A = \{ \text{Factors of 20} \}</math></p> <p>10 <math>\in</math> / <math>\notin</math> A</p>          | <p>b) <math>B = \{ \text{Quadrilaterals} \}</math></p> <p>Cube <math>\in</math> / <math>\notin</math> B</p> |
| <p>c) <math>C = \{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 \}</math></p> <p>15 <math>\in</math> / <math>\notin</math> C</p> | <p>d) <math>D = \{ a, b, c, d, e, f, g, h \}</math></p> <p>m <math>\in</math> / <math>\notin</math> D</p>   |

**D** Determine the number of elements for the set below.

|  |   |
|--|---|
| <p>a) <math>A = \{ 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 \}</math></p> <p><math>n(A) =</math> <input type="text"/></p>                   | <p>b) <math>B = \{ 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 \}</math></p> <p><math>n(B) =</math> <input type="text"/></p>                        |
| <p>a) <math>C = \{ \text{Consonant letters in words RAINBOW} \}</math></p> <p><math>n(C) =</math> <input type="text"/></p>       | <p>b) <math>D = \{ x : x \text{ is a perfect square number and } x &lt; 100 \}</math></p> <p><math>n(D) =</math> <input type="text"/></p> |
| <p>c) <math>E = \{ x : x \text{ is an integer, } 10 \leq x \leq 20 \}</math></p> <p><math>n(E) =</math> <input type="text"/></p> | <p>d) <math>F = \{ \text{Vowel letters in the word MERPATI} \}</math></p> <p><math>n(F) =</math> <input type="text"/></p>                 |

E find the value of x if A = B.

|   |  |
|---|--|
| <p>a) <math>A = \{2, 4, 6, 8\}</math><br/> <math>B = \{4, 6, 8, x\}</math></p> <p>x = <input type="text"/></p>                  | <p>b) <math>P = \{4, 5, 6, 7\}</math><br/> <math>Q = \{7, x, 5, 4\}</math></p> <p>x = <input type="text"/></p>   |
| <p>c) <math>R = \{1^2, 2^2, 3^2, 4^2, 5^2\}</math><br/> <math>S = \{9, 16, 4, 1, x\}</math></p> <p>x = <input type="text"/></p> | <p>d) <math>D = \{2, 3, 5, 7, 11, 13, 17, 21, 23, 29, 31\}</math><br/> <math>E = \{3, 7, 13, 21, 29, 5, 11, 17, 23, 31, x\}</math></p> <p>x = <input type="text"/></p> |

## 11.2 VENN DIAGRAMS, UNIVERSALS SETS, COMPLEMENT OF A SET AND SUBSETS

Notes:

A universal set is a set that contains all the elements in a discussion and is represented by symbols  $\xi$ .

- A universal set is a set that contains all the elements in a discussion and is represented by symbols.
- If all the elements of set A are elements in set B, then A is a subset of set B.  $A \subset B$
- If  $A \not\subset B$  means set A is not a subset of set B.

F Match the set below with the correct set of universes.

$$A = \{a, b, e, g, h\}$$

$$A = \{K, P, S\}$$

$$A = \{7, 9, 11\}$$

$$A = \{x: x \text{ is a factor of } 10\}$$

$$\xi = \{K, I, P, A, S\}$$

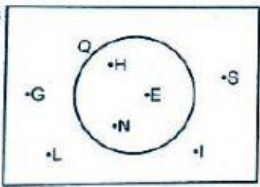
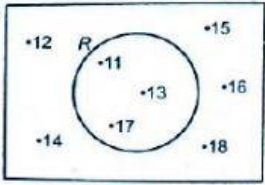
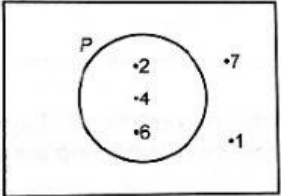
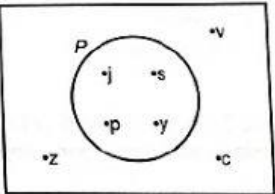
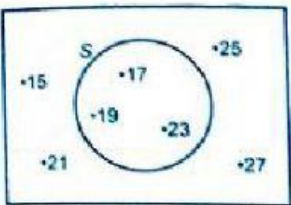
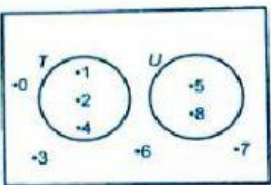
$$\xi = \{x: x \text{ is an integer and } x < 13\}$$

$$\xi = \{x: x \text{ is a factor of } 20\}$$

$$\xi = \{\text{Letters}\}$$

**G List all the elements of the complementary set below.**

(Write in alphabetical/number order)

|   |   |  |
|---|---|--|
| <p><b>a)</b></p>  <p><b>Q =</b> <input type="text"/></p> <p><b>Q' =</b> <input type="text"/></p> | <p><b>b)</b></p>  <p><b>R =</b> <input type="text"/></p> <p><b>R' =</b> <input type="text"/></p> | <p><b>c)</b></p>  <p><b>P =</b> <input type="text"/></p> <p><b>P' =</b> <input type="text"/></p>  |
| <p><b>d)</b></p>  <p><b>P =</b> <input type="text"/></p> <p><b>P' =</b> <input type="text"/></p> | <p><b>e)</b></p>  <p><b>S =</b> <input type="text"/></p> <p><b>S' =</b> <input type="text"/></p> | <p><b>f)</b></p>  <p><b>T =</b> <input type="text"/></p> <p><b>T' =</b> <input type="text"/></p> <p><b>U =</b> <input type="text"/></p> <p><b>U' =</b> <input type="text"/></p> |

## H Exercises

**a) Determine the number of elements in each of the following sets. (Choose 1 answer)**

i)  $A = \{\text{consonant letters in words INOVATIF}\}$

4

6

8

ii)  $\{\text{multiple of 7 is less than 40}\}$

4

5

6

b) Mark / on the correct statement and X for the incorrect statement.

Given  $\xi = \{x : 20 < x \leq 50\}$ ,  $x$  is an integer,  
 $P = \{\text{Prime Numbers}\}$  dan  $Q = \{\text{Multiple of } 4\}$

|   |  |  |
|---|--|--|
| a | The number of subsets of set P is 128    |  |
| b | The number of elements in the set Q is 8 |  |
| c | One of the subsets in set Q is { }       |  |
| d | $P = \{ \}$                              |  |

c) Match the correct region for the set below.

