Date: 16-May-2024

⇒ Percentage ⟶ century (latin) ⇒ 100 hundred
↓
divide (/) per person

sign → %.

statistic

~~Population ranked~~ Pakistan ranke First in the world diabetes index
↓
Diabetes → 30%.

out of 100 → 30

Percentage = % = $\frac{1}{100}$

1 percent = 1% = $\frac{1}{100}$

$\frac{1}{1}\% = \frac{1}{100}$

$\% = \frac{1}{100}$

Change from percentage in to common fraction

40% → $\frac{40}{100} = \frac{2}{\cancel{40}} \times \frac{1}{\cancel{100}_{5}} = \frac{2}{5}$

$80\% = \frac{\overset{4}{\cancel{80}}}{\cancel{100}} \times \frac{1}{\cancel{100}} = \frac{4}{5}$

Change in to percentage

$\frac{4}{\cancel{5}} \times \frac{\overset{20}{\cancel{100}}}{1} = 80\%$

$\frac{145}{\times 2}$ 90 $\frac{91}{2}$

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$\frac{120}{80} \times 100 = 25\%$

Change $45\frac{1}{2}$ in to simple fraction

$\frac{91}{2} \times \frac{1}{100} = \frac{91}{200}$

→ multiplication

What is 25% of 80?

$25 \times 4 = 100$
$20 \times 4 = 80$

$25\%(80)$

$25 \times \frac{1}{100} \times 80 = 20$

What is the percentage rate of 5:4

$\frac{5}{4} \times 100 = 125\%$

A fruit seller has some apples. He sells 40% of apples and still has 420 apples. How many apples he had in total?

$= 168$

$100\%(x) = 420$

$(100\% - 40\%)x = 420$

$60\% x = 420$

$60 \times \frac{1}{100} \times x = 420$

$x = 420 \times \frac{5}{3} = 700$

$140 \times 5 = 700$

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GK-I → PA → 40

GK-II → CA → 40

GK-III → GSA → 40

GSA → 100 → 60%. theoritical
40%. Marks

MPT = 200 → 60 → Math

what is 70%. of a Kg?

70%. (1000)

$70 \times \frac{1}{100} \times 1000$

$= 70 \times 10 = 700$ g

gram → Kg
Kg → gram
Mass
length
time

What percent of 40 is 14

$x\%.(40) = 14$

$x \times \frac{1}{100} \times 40 = 14$

$x \frac{4}{10} = 14$

$x = \frac{14 \times 10}{4}$

$= \frac{140}{4} = 35\%.$

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Q) Angela love to travel. She spend 25% of the year on vacation and works the rest of the year. What fraction of the year does she travel?

Sol:-

Time spend by angela is travelling

$25\%\,(12) \qquad \frac{1}{4}(12)$

$25 \times \frac{1}{100} \times 12 =$

$\frac{1}{4}(12) = \frac{1}{4}$ angela travel one fourth year on vacation

Q) In a flower vase, there are 20 flowers there are 5 lilies and 15 roses. What percent of flowers are lilies?

Sol:-

① Give data
② Require data
③ Solution
④ Hence

$= x\%\,(20) = 5$

$x \times \frac{1}{100}(20) = 5$

$x = 5 \times 5$

$x = 25\%$

=> ——
=> ——
=> ——
=> ——

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Q) When 40% of a number is added to 42 the result is the no. itself. Find the number

Sol:-

Let the number = x

$40\% (x) + 42 = x$

$40 \times \frac{1}{100} (x) + 42 = x$

$\frac{4}{10}(x) + 42 = x$

$\frac{4x}{10} + 42 = x$

$\frac{4x}{10} - x = -42$

$\frac{4x - 10x}{10} = -42$

$\frac{-6x}{10} = -42$

$x = \frac{42 \times 10}{6_1}$

$x = 70$

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(CSS 2017)

Q) A man buys 5 Kg of meat at Rs 500/Kg. In addition for every Kg he purchased he has to pay a consumption tax of 6% on the selling price. calculate the total amount of money that he has to pay?

Sol:-

total Kg of meat the man has bought = 5kg

total price of meat = $500 \times 5 = 2500$

consumption tax = 6%.

$= 6\%.(500)$

$= \frac{6 \times 1}{100}(500)$

$= 30 \times 5 = 150$

Total tax on 5 Kg = 150

the total amount of money that he has to pay is = $2500 + 150 = 2650$

(selling Price, tax)

70

Date:

(CSS 2023)

Q) Ali ~~bought~~ buy an ovean for Rs 36800 and sell it at a gain of 8.5%. For how much does he sells it?

Sol:-

cost price of oven = 36800

profit/gain % = 8.5%.

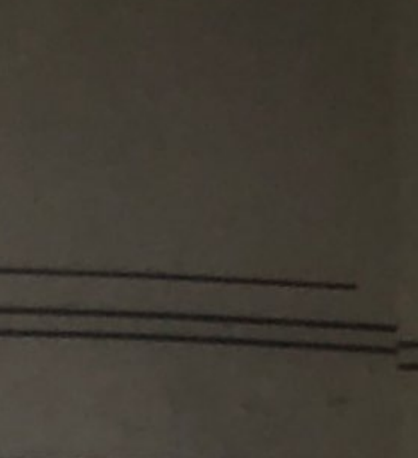
8.5% (36800)

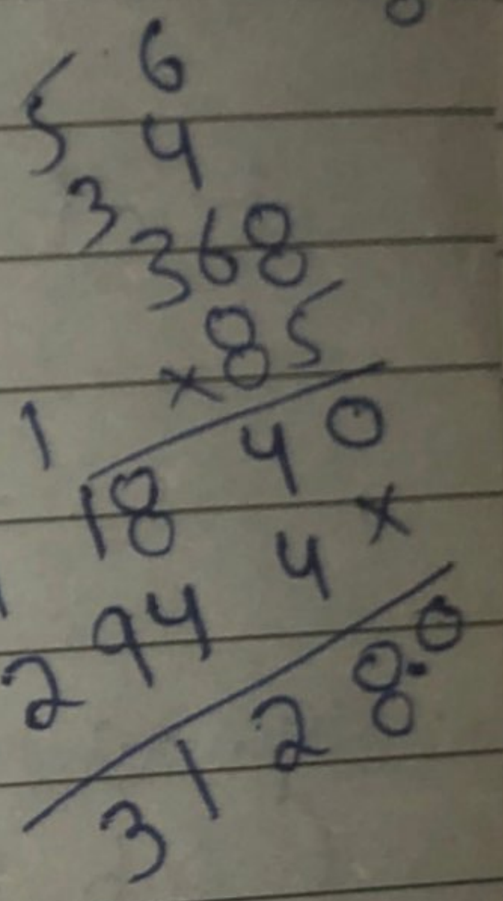
$8.5 \times \frac{1}{100} \times 36800$

3128

$= 36800 + 3128$

$= 39928$





Add given, asked, solution, formula, and answer

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Sets:-

It is the collection of well defined object. object of elements are referred as elements.

→ sets are denoted by capital letters/alphabets.
→ elements of sets are denoted by small alphabets.
→ Domain/boundary of set is denoted by curly brackets

{ }

set of natural number less than 10

$V = \{1, 2, 3, \cdots 9\}$

$V = \{a, e, i, o, u\}$

Symbols of sets:-

$\in$ → belongs to
$\notin$ → does not belongs to
$\emptyset$ → Null or empty set
$\cup$ → union of sets and denoted by capital U
$\cap$ → Intersection of sets
Z → integer
N → natural
W → whole

Representation of sets → Statment form
→ Rooster form
→ set builder form/notation

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① Statment form :-

An the form a well defined statment is written e.g

set of vowell

set of natural numbers

set of capital set in the written form

② Roostes form

$N = \{1, 2, 3, \cdots 9\}$

$E = \{0, 2, 4, 6, 8 \cdots 10\}$

③ set-builder notation

A mathematical notation for describing a set by numerating its property, which te element must satisfy.

$S = \{x / \text{criteria}\}$

↓ name of set

↓ element of set

→ roster form

$A = \{1, 2, 3, 4, 5\}$

$A = \{x \in N, 1 \leq x < 5\}$

↓ set builder form

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⇒ types of Sets

① Empty set:-

A set which has no element is called empty set.

$A = \{\}$

set of prime number less than 2

$P = \{\}$ → empty set

or

$\emptyset$

② finite set:-

A set which has limited number of elements is called finite set

$A = \{1, 2, 3, 4, 5\}$

③ infinit set:-

A set in which has unlimited number of elements is called infinite set.

$A = \{1, 2, 3, 4, 5 \ldots\}$

Equal set

- Two sets can be called equal sets of they have the same elements even though they could be out of order e.g

$A = \{a, b, c, d, e\}$

$B = \{b, a, e, d, c\}$

Equivalent set

- Two sets can be set equivalent if they have the same number of elements the element can be different of row one anothe e.g

$A = \{1, 2, 3, 4, 5\}$ no's of element

$B = \{a, e, i, o, v\}$ no's of element

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universal set:-

A set containing all the element of the set under discussion is called universal set

$A = \{1, 2, 3\}$

$B = \{4, 5, 6\}$

$U = \{1, 2, 3, 4, 5, 6 \dots 10\}$

operation on sets

① union of sets:-

It is the combination of sets

$A = \{1, 2, 3, 4, 5, 6\}$

$B = \{7, 8, 9\}$

$A \cup B = \{1, 2, 3, \dots, 9\}$

② intersection of sets:-

common element in both sets is called intersection of sets.

$A = \{1, 2, 3, 4\}$ $A \cap B = \{2, 4\}$

$B = \{2, 4, 6, 8\}$

③ complement of set:-

When are subset a set form universal set is called complement of a set it is denoted by '

$A' = U - A$

$U = \{1, 2, 3 \dots 10\}$

$A = \{2, 4, 6, 8, 10\}$

$A' = U - A \Rightarrow \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\} - \{2, 4, 6, 8, 10\}$

$A' = \{1, 3, 5, 7, 9\}$

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subset::

$A = \{1,2,3,4,5\}$

$B = \{1,2\}$

when element of the set all completely present another sets is called subset.

$B \subseteq A$

proper subset

when few element of a set all present in another set.

$A = \{a,e,i,o,v\}$

$B = \{a,e\}$

$B < A$

improper subset

when all element of a set all present in another set is called improper subset.

$A = \{1,2,3\}$

$B = \{1,2,3\}$

$A \leq B$

Power set:-

it is the combination of all possible subset of a set. it is denoted by P

$A = \{1,2,3\}$

Formula = $2^n \rightarrow$ element of set

$= 2^3 = 8$

$P(A) = \{\{\emptyset\}, \{1\}, \{2\}, \{3\}, \{1,2\}, \{1,3\}, \{2,1\}, \{2,3\}\}$

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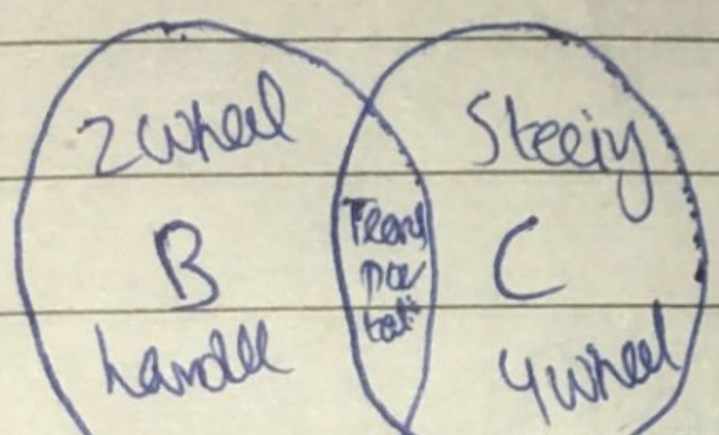
Venn diagram

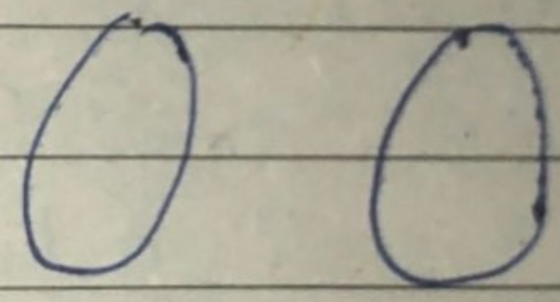
A diagram that shows a connection b/w finite elements of sets

Bike
Two wheel
handle
transportation

Car
4 wheel
Steering
transportation



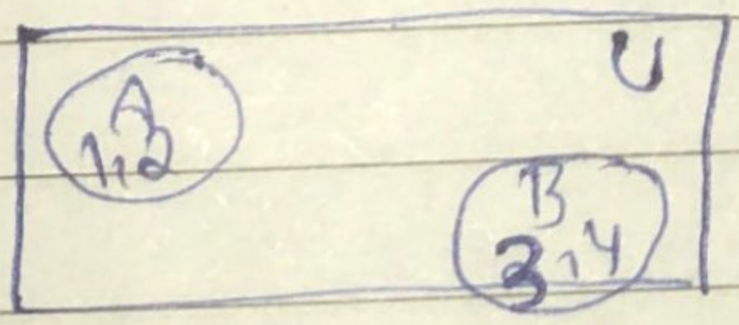
Joint/overlapping sets



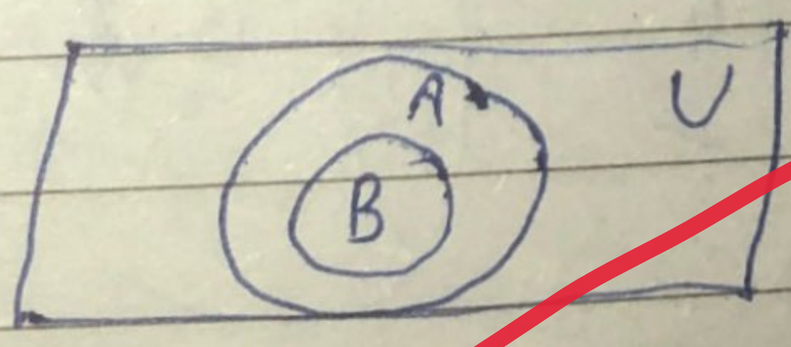
disjoint sets

disjoint sets:-

$U = \{1, 2, 3, \dots 10\}$
$A = \{1, 2\}$
$B = \{3, 4\}$



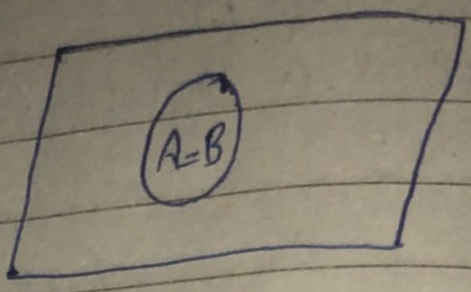
Proper subset:-



$U = \{1, 2, 3, 4, 5 \dots 10\}$
$A = \{1, 2, 3, 4, 5\}$
$B = \{1, 2\}$

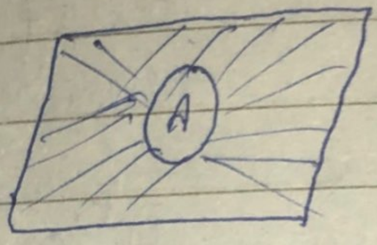
Date:

Equal set



Compliment of a set:-

$A' = U - A$

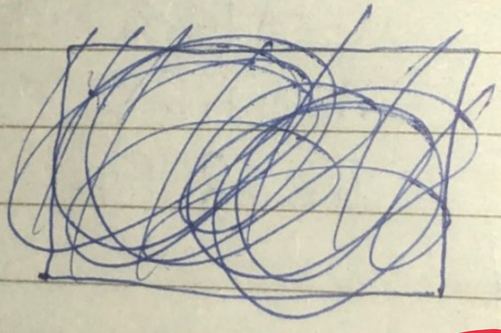


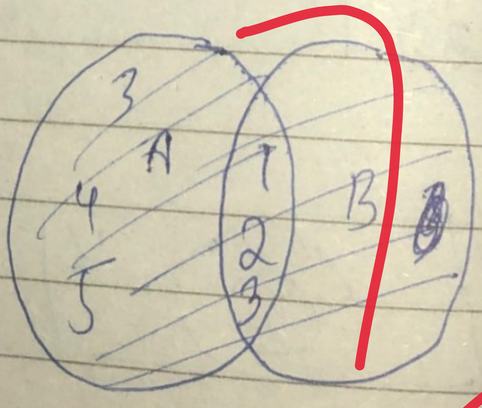
Union of set :-

$A = \{1, 2, 3, 4, 5\}$

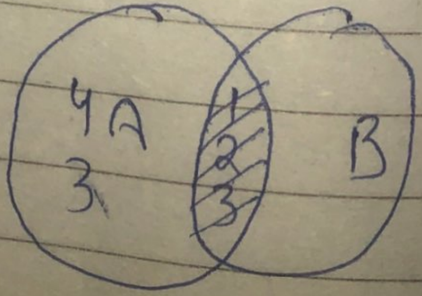
$B = \{1, 2, 3\}$

$A \cup B = \{1, 2, 3, 4, 5\}$





$A \cap B = \{1, 2, 3\}$



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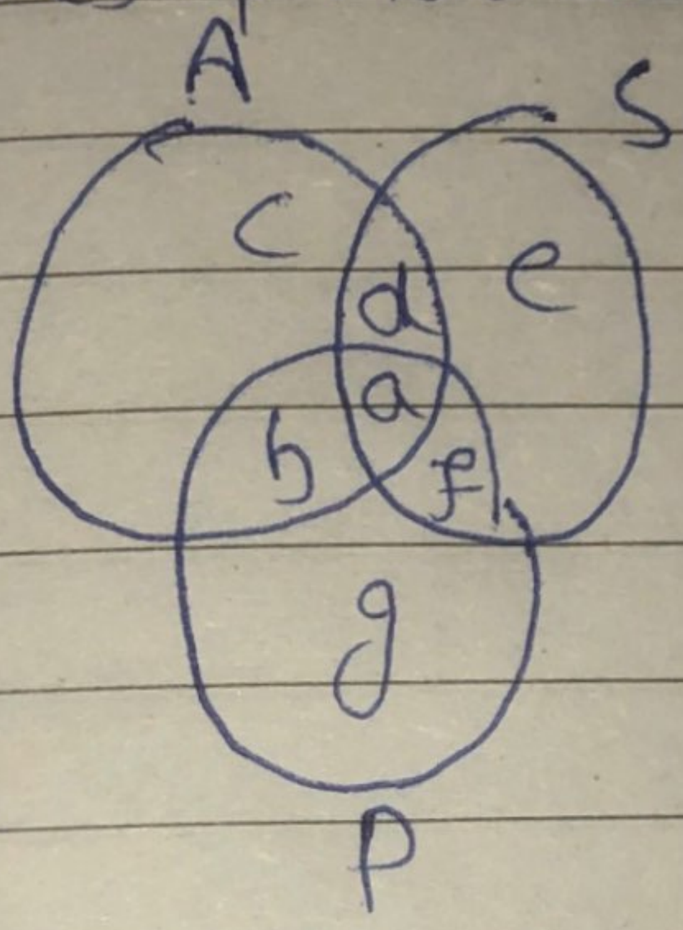
(CSS 2019)

Q) In the following diagram A represent American S represent scientists and P represents politicans



(i) American those are politicam but not scientist will be.

b

(ii) Scientist which are politican but not American will be

f

H.W (

U = { whole number from 0 to 24 }

A = { Even number }

B = { number divisble by 5 }

$A \cap B = ?$

U