Q] Write the statement reading which describes below Syntax & draw it's diagrammatic layout.

Q.1]
```
int no = 10;
int * p = &no;
int * q = &no;
int **a = &p;
```
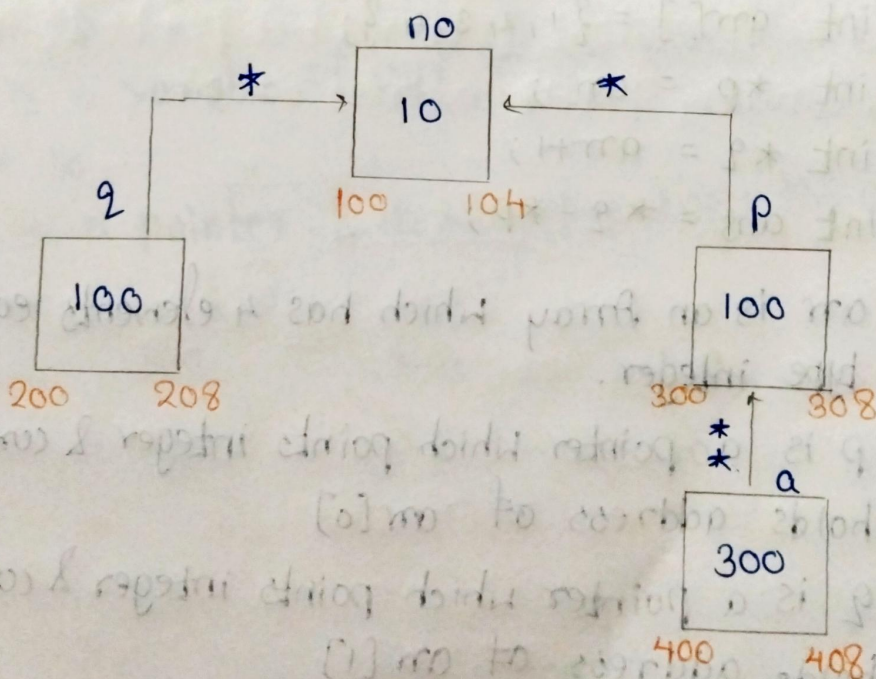
statement

no is a variable of type integer initialised with value 10.

p is a pointer which points to integer & currently it holds address of no.

q is a pointer which points to integer & currently it holds address of no.

a is a pointer which points to pointer & currently it holds address of p.

Layout

Q2]
```
float value = 3.14;
float *p = &value;
float *q = p;
float ans = *p + *q;
```
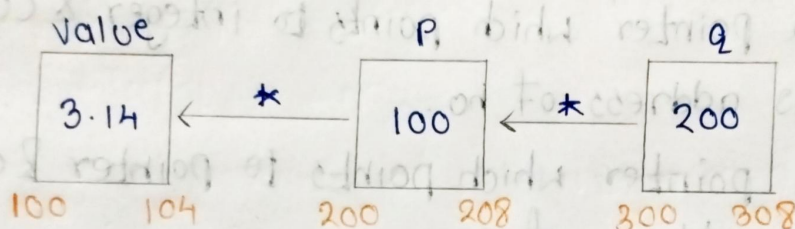
Statement

value is a variable of type float initialised with value 3.14

p is a pointer which points to float & currently it holds address of value.

q is a pointer which points to float & currently it holds address of p

$*p + *q \rightarrow$ Not Allowed

Layout

value $\quad\quad$ p $\quad\quad$ q

3.14 $\longleftarrow$ * $\quad$ 100 $\longleftarrow$ * $\quad$ 200

100 $\quad$ 104 $\quad\quad$ 200 $\quad$ 208 $\quad\quad$ 300 $\quad$ 308

Q3]
```
int arr[] = {1, 2, 3, 4};
int *p = arr;
int *q = arr+1;
int ans = *q - *p;
```

Statement

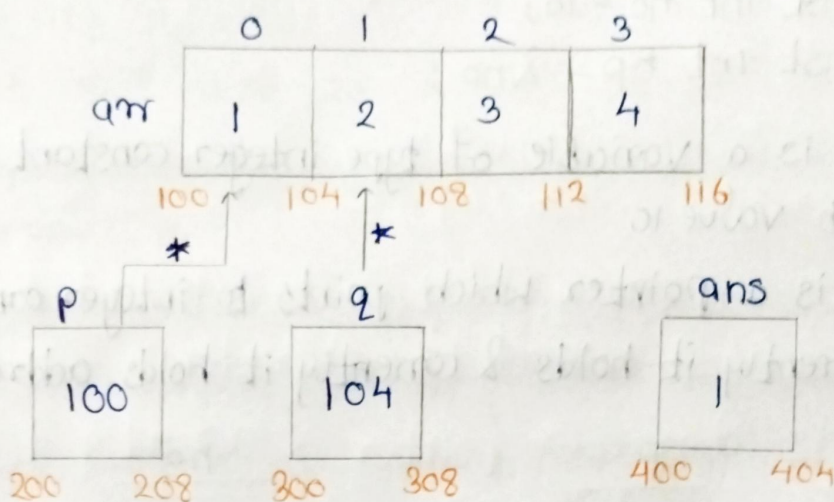arr is an Array which has 4 elements each of type integer.

p is a pointer which points integer & currently it holds address of arr[0]

q is a pointer which points integer & currently it holds address of arr[1]

ans is a variable of type integer initialised with value of $*q - *p$

	0	1	2	3
arr	1	2	3	4

100   104   108   112   116

*   *

p		q		ans	
100		104		1	

200   208   300   308   400   404

Q4]

```
int no1 = 10;
int no2 = 20;
int no3 = 30;
int * Arr[] = {&no1, &no2, &no3};
```
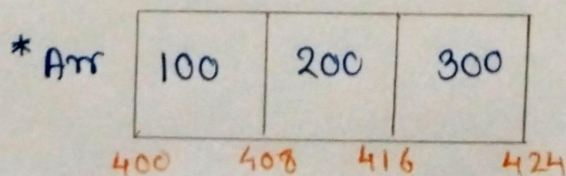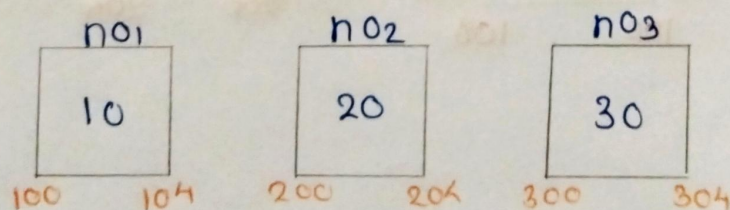
Statement

no_1 is a variable of type integer initialised with value 10

no_2 is a variable of type integer initialised with value 20

no_3 is a variable of type integer initialised with value 30

Arr is a pointer & it currently holds the addresses of no_1, no_2 & no_3

no1		no2		no3	
10		20		30	

100   104   200   204   300   304

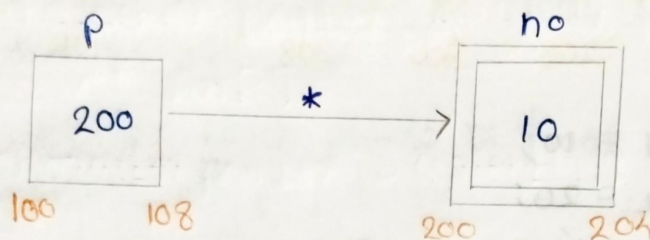| *Arr	100	200	300

400   408   416   424

Q5]
```
const int no = 10;
const int *p = &no;
```

Statement

no is a variable of type integer constant initialised with value 10

p is a pointer which points to integer constant & currently it holds & currently it holds address of no.
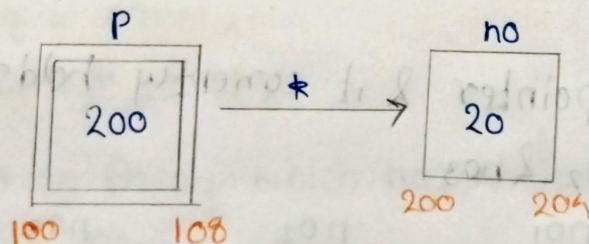
Layout

P

200

100   108

*

no

10

200   204

Q6]
```
const int no = 20;
int * const p = &no;
```

Statement

no is a variable of type integer constant initialised with value 20.

p is a constant pointer which points to integer & currently it holds address of no

Layout

P

200

100   108

*

no

20

200   204

Q7]
```
const int no = 30;
const int* const p = &no;
```

no is a variable of type integer constant initialised with value 30

p is a constant pointer; which points to integer constant & currently it holds address of no

```
        P                        no
   ┌──────────┐            ┌──────────┐
   │   200    │ ──── * ──→ │   30     │
   └──────────┘            └──────────┘
  100        108          200        204
```

Q8]
```
const int no = 50;
int const * const p = &no;
```

no is a variable of type integer constant initialised with value 50

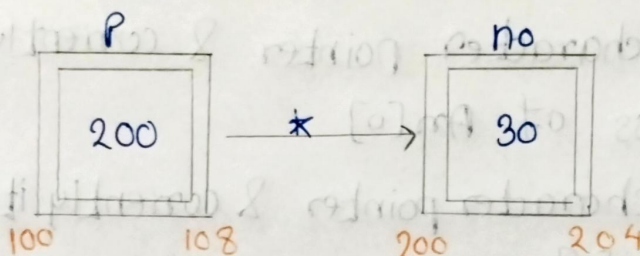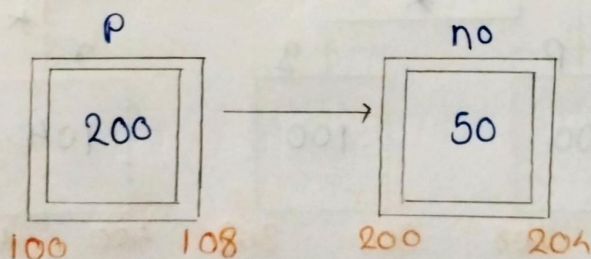P is a constant pointer which points to integer & currently it holds address of no.

```
        P                        no
   ┌──────────┐            ┌──────────┐
   │   200    │ ────────→  │   50     │
   └──────────┘            └──────────┘
  100        108          200        204
```

Q9]
```
char Arr [] = { 'a', 'b', 'c', 'd', 'e'};
char *p = Arr;
char *q = &(Arr[0]);
char *r = &(Arr[4]);
```
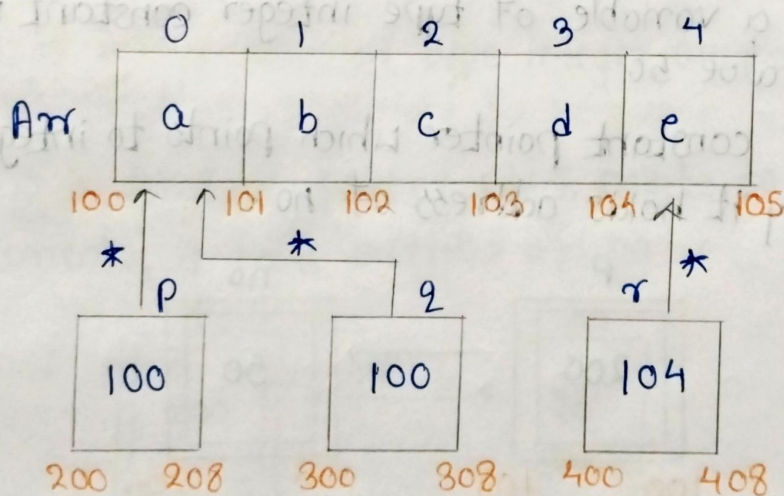
State ment

Arr is an Array of type character which contains 5 elements each of type character.

P is character pointer & currently it holds address of Arr[0]

q is character pointer & currently it holds address of Arr[0].

r is character pointer & currently it holds address of Arr[4].

Layout

	0	1	2	3	4
Arr	a	b	c	d	e
	100	101	102	103	104	105

P	q	r
100	100	104
200 208	300 308	400 408

Q10]

```
double Arr[] = {10.5, 20.6, 30.2};
double *p = Arr;
double *q = &(Arr[0]);
double *r = &(Arr[2]);
```

Statement

Arr is an Array of type double which contains 3 elements each of type double.

P is a pointer of type double & currently it holds address of Arr[0]

q is a pointer of type double & currently it holds address of Arr[0]

r is a pointer of type double & currently it holds address of Arr[2].

Layout