Huawei Test 3

1
A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is:

( ) 1 /13
( ) 2 /13
( ) 1 /26
( ) 1 /52

Explanation: Here, \( n(S) = 52 \).

Let \( E \) = event of getting a queen of club or a king of heart. Then, \( n(E) = 2 \).

\[
P(E) = \frac{n(E)}{n(S)} = \frac{2}{52} = \frac{1}{26}.
\]

2
A bag contains 4 white, 5 red and 6 blue balls. Three balls are drawn at random from the bag. The probability that all of them are red, is:

( ) 1 /22
( ) 3 /22
( ) 2 /91
( ) 2 /91

Explanation: Let \( S \) be the sample space.

Then, \( n(S) \) = number of ways of drawing 3 balls out of 15

\[
= \binom{15}{3} = \frac{15 \times 14 \times 13}{(3 \times 2 \times 1)} = 455.
\]

Let \( E \) = event of getting all the 3 red balls.

\[
n(E) = \binom{5}{3} = \frac{5 \times 4}{(2 \times 1)} = 10.
\]

\[
P(E) = \frac{n(E)}{n(S)} = \frac{2}{455} = \frac{2}{91}.
\]
3
Two cards are drawn together from a pack of 52 cards. The probability that one is a spade and one is a heart, is:

- $\frac{3}{20}$
- $\frac{29}{34}$
- $\frac{47}{100}$
- $\frac{13}{102}$

Explanation: Let S be the sample space.

Then, $n(S) = \binom{52}{2} = \frac{52 \times 51}{2 \times 1} = 1326$.

Let $E$ = event of getting 1 spade and 1 heart.

$n(E)$ = number of ways of choosing 1 spade out of 13 and 1 heart out of 13

$= \binom{13}{1} \times \binom{13}{1} = 169.$

$P(E) = \frac{n(E)}{n(S)} = \frac{169}{1326} = \frac{13}{102}.$

4
One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card?

- A. $\frac{1}{13}$
- B. $\frac{3}{13}$
- C. $\frac{1}{4}$
- D. $\frac{9}{5}$

Explanation: Clearly, there are 52 cards, out of which there are 12 face cards.

$P$ (getting a face card) $= \frac{12}{52} = \frac{3}{13}$

5
A bag contains 6 black and 8 white balls. One ball is drawn at random. What is the probability that the ball drawn is white?

- A. $\frac{3}{4}$
- B. $\frac{4}{7}$
- C. $\frac{1}{8}$
- D. $\frac{3}{7}$

Explanation: Let number of balls = $(6 + 8) = 14$.

Number of white balls = 8.

$P$ (drawing a white ball) $= \frac{8}{14} = \frac{4}{7}$
6
The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?
A. 3 : 3 : 10
B. 10 : 11 : 20
C. 23:33:60
D. 32 :43:53

Let A = 2k, B = 3k and C = 5k.

A’s new salary = \(\frac{115}{100}\) of 2k = \(\frac{115}{100} \times 2k\) = \(\frac{23k}{10}\)
B’s new salary = \(\frac{110}{100}\) of 3k = \(\frac{110}{100} \times 3k\) = \(\frac{33k}{10}\)
C’s new salary = \(\frac{120}{100}\) of 5k = \(\frac{120}{100} \times 5k\) = \(\frac{6k}{2}\)

\[\text{New ratio} = \left(\frac{23k}{10} : \frac{33k}{10} : \frac{6k}{2}\right) = 23 : 33 : 60\]

Explanation:

7
If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?
A. 2 : 5
B. 3 : 7
C. 5 : 3
D. 7 : 3

Explanation:

Let 40% of A = \(\frac{2}{3}\) B

Then, \(\frac{40}{100} A = \frac{2B}{3}\)

\(\Rightarrow\) \(2A/5 = 2B/3\)

\(\Rightarrow\) \(A/B = \left[\frac{2}{3} \div \frac{5}{2}\right] = \frac{5}{3}\)

A : B = 5 : 3.
The fourth proportional to 5, 8, 15 is:
A. 18
B. 24
C. 19
D. 20

Explanation:
Let the fourth proportional to 5, 8, 15 be $x$.

Then, $5 : 8 : 15 : x$

$5x = (8 \times 15)$

$x = \frac{(8 \times 15)}{5} = 24$

Two numbers are in the ratio 3 : 5. If 9 is subtracted from each, the new numbers are in the ratio 12 : 23. The smaller number is:
A. 27
B. 33
C. 49
D. 55

Explanation: Let the numbers be $3x$ and $5x$.

Then, \( \frac{(3x-9)}{(5x-9)} = \frac{12}{13} \)

$23(3x - 9) = 12(5x - 9)$

$9x = 99$

$x = 11.$

The smaller number $= (3 \times 11) = 33.$
10
In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there?

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<td>A. 50</td>
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<td>D. 200</td>
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**Explanation:**

Let the number of 25 p, 10 p and 5 p coins be $x, 2x, 3x$ respectively.

Then, sum of their values = Rs\left(\frac{25x}{100} + \frac{10 \times 2x}{100} + \frac{5 \times 3x}{100}\right) = Rs \frac{60x}{100}

\[60x/100 = 30 \Rightarrow x = \frac{(30 \times 100)}{60} = 50\]

Hence, the number of 5 p coins = (3 x 50) = 150.

---

11
In a certain school, 20% of students are below 8 years of age. The number of students above 8 years of age is \( \frac{4}{3} \) of the number of students of 8 years age which is 48. What is the total number of students in the school?

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<td>B. 80</td>
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<td>C. 120</td>
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<td>D. 100</td>
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**Explanation:** Let the number of students be $x$. Then,

Number of students above 8 years of age = \( \frac{100 - 20}{100} \times x = 80\% \times x \).

\[80\% \times x = 48 + \frac{2}{3} \times 48\]

\[\frac{80}{100} \times x = 80\]

\[x = 100.\]
12
The difference between the length and breadth of a rectangle is 23 m. If its perimeter is 206 m, then its area is:

( ) A. 1520 m²
( ) B. 2420 m²
( ) C. 2480 m²
( ) D. 2520 m²

Explanation:
We have: \((l - b) = 23\) and \(2(l + b) = 206\) or \((l + b) = 103\).

Solving the two equations, we get: \(l = 63\) and \(b = 40\).

Area = \((l \times b) = (63 \times 40)\) m² = 2520 m².

13
The length of a rectangle is halved, while its breadth is tripled. What is the percentage change in area?

( ) A. 25% increase
( ) B. 50% increase
( ) C. 50% decrease
( ) D. 75% decrease

Explanation: Let original length = \(x\) and original breadth = \(y\).

Original area = \(xy\).

New length = \(x/2\).

New breadth = \(3y\).

New area = \([(x/2) \times 3y] = (3/2)xy\)

Increase % = \([((1/2)xy - (1/xy) \times 100] = 50\%\)
The product of two numbers is 9375 and the quotient, when the larger one is divided by the smaller, is 15. The sum of the numbers is:

A. 380  
B. 395  
C. 400  
D. 425

Explanation: Let the numbers be x and y.

Then, \(xy = 9375\) and \(x/y = 15\)

\[
\frac{x}{y} = \frac{9375}{15}
\]

\[y^2 = 625.\]

\[y = 25.\]

\[x = 15y = (15 \times 25) = 375.\]

Sum of the numbers = \(x + y = 375 + 25 = 400.\)

A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

A. Rs. 375  
B. Rs. 400  
C. Rs. 600  
D. Rs. 800

Explanation:

C's 1 day's work = \(\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right)\)

\[= \frac{1}{3} - \frac{7}{24} = \frac{1}{24}.\]

A's wages : B's wages : C's wages = \(\frac{1}{6} : \frac{1}{8} : \frac{1}{24} = 4 : 3 : 1.\)

\[\therefore \text{C's share (for 3 days)} = \text{Rs.} \left(3 \times \frac{1}{24} \times 3200\right) = \text{Rs.} 400.\]
16

women can complete a work in 7 days and 10 children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?

( ) A. 3
( ) B. 5
( ) C. 7
( ) D. Cannot be determined

Explanation:
1 woman's 1 day's work = 1/70

1 child's 1 day's work = 1/140

(5 women + 10 children)'s day's work = 5/70 + 10/140 = 1/14 + 1/14 = 1/7

5 women and 10 children will complete the work in 7 days.

17

DEF, DEF2, DE2F2, _____, D2E2F3

( ) A. DEF3
( ) B. D3EF3
( ) C. D2E3F
( ) D. D2E2F2

Explanation:
In this series, the letters remain the same: DEF.

The subscript numbers follow this series:

111, 112, 122, 222, 223, 233, 333, ...
18
B2CD, _____, BCD4, B5CD, BC6D
( ) A. B2C2D
( ) B. BC3D
( ) C. B2C3D
( ) D. BCD7

Explanation:
Because the letters are the same, concentrate on the number series, which is a simple 2, 3, 4, 5, 6 series, and follows each letter in order.

19
Look carefully for the pattern, and then choose which pair of numbers comes next. 8 11 21 15 18 21 22
( ) A. 25 18
( ) B. 25 21
( ) C. 25 29
( ) D. 24 21

Explanation:
This is an alternating addition series, with a random number, 21, interpolated as every third number. The addition series alternates between adding 3 and adding 4. The number 21 appears after each number arrived at by adding 3.

20
A hollow iron pipe is 21 cm long and its external diameter is 8 cm. If the thickness of the pipe is 1 cm and iron weighs 8 g/cm³, then the weight of the pipe is:
( ) A. 3.6 kg
( ) B. 3.696 kg
( ) C. 36 kg
( ) D. 36.9 kg

Explanation: External radius = 4 cm,
Internal radius = 3 cm.
Volume of iron=[(22/7)*((4^2-3^2)*21)]cm^3
== 462 cm³
Weight of iron = (462 x 8) gm = 3696 gm = 3.696 kg.
What will be the output of the program?

```c
#include<stdio.h>

void fun(int **p);

int main()
{
    int a[3][4] = {1, 2, 3, 4, 4, 3, 2, 8, 7, 8, 9, 0};

    int *ptr;
    ptr = &a[0][0];
    fun(&ptr);
    return 0;
}

void fun(int **p)
{
    printf("%d\n", **p);
}
```

A. 1  
B. 2  
C. 3  
D. 4

Explanation:  
Step 1: int a[3][4] = {1, 2, 3, 4, 4, 3, 2, 8, 7, 8, 9, 0}; The variable a is declared as a multidimensional integer array with size of 3 rows 4 columns. 

Step 2: int *ptr; The *ptr is a integer pointer variable.

Step 3: ptr = &a[0][0]; Here we are assigning the base address of the array a to the pointer variable *ptr.

Step 4: fun(&ptr); Now, the &ptr contains the base address of array a.

Step 4: Inside the function fun(&ptr); The printf("%d\n", **p); prints the value '1'.

because the *p contains the base address or the first element memory address of the array a (ie. a[0])

**p contains the value of *p memory location (ie. a[0]=1).

Hence the output of the program is '1'.
#include<stdio.h>

int main() {
    int a[3][4] = {1, 2, 3, 4, 4, 3, 2, 1, 7, 8, 9, 0};
    printf("%u, %u\n", a+1, &a+1);
    return 0;
}

( ) A. 65474, 65476
( ) B. 65480, 65496
( ) C. 65480, 65488
( ) D. 65474, 65488

Explanation:
Step 1: int a[3][4] = {1, 2, 3, 4, 4, 3, 2, 1, 7, 8, 9, 0}; The array a[3][4] is declared as an integer array having the 3 rows and 4 columns dimensions.

Step 2: printf("%u, %u\n", a+1, &a+1);

The base address (also the address of the first element) of array is 65472.

For a two-dimensional array like a reference to array has type "pointer to array of 4 ints". Therefore, a+1 is pointing to the memory location of first element of the second row in array a. Hence 65472 + (4 ints * 2 bytes) = 65480

Then, &a has type "pointer to array of 3 arrays of 4 ints", totally 12 ints. Therefore, &a+1 denotes "12 ints * 2 bytes * 1 = 24 bytes".

Hence, beginning address 65472 + 24 = 65496. So, &a+1 = 65496

Hence the output of the program is 65480, 65496
23
What will be the output of the program?

```c
#include<stdio.h>

int main()
{
    int arr[5], i=0;
    while(i<5)
        arr[i]=++i;
    for(i=0; i<5; i++)
        printf("%d, ", arr[i]);
    return 0;
}
```

( ) A. 1, 2, 3, 4, 5,
( ) B. Garbage value, 1, 2, 3, 4,
( ) C. 0, 1, 2, 3, 4,
( ) D. 2, 3, 4, 5, 6,

Explanation: Since C is a compiler dependent language, it may give different outputs at different platforms. We have given the TurboC Compiler (Windows) output.

24
What will be the output of the program?

```c
#include<stdio.h>

int main()
{
    int arr[1]={10};
    printf("%d\n", 0[arr]);
    return 0;
}
```

( ) A. 1
( ) B. 10
( ) C. 0
( ) D. 6

Explanation:
Step 1: int arr[1]={10}; The variable arr[1] is declared as an integer array with size ‘2’ and it’s first element
is initialized to value '10'(means arr[0]=10)

Step 2: printf("%d\n", 0[arr]); It prints the first element value of the variable arr.

Hence the output of the program is 10.

25
Point out the error in the program?

struct emp
{
    int ecode;
    struct emp *e;
};

( ) A. Error: in structure declaration
( ) B. Linker Error
( ) C. No Error
( ) D. None of above

Explanation:
This type of declaration is called as self-referential structure. Here *e is pointer to a struct emp.

26
Are the following declarations same?
char far *far *scr;
char far far** scr;

( ) A. Yes
( ) B. No

Explanation:
Here the type name mystruct is known at the point of declaring the structure, as it is already defined.
27
Point out the error in the program?

```c
#include<stdio.h>

int main()
{

struct a
{

category:5;

scheme:4;

};

printf("size=%d", sizeof(struct a));

return 0;
}
```

( ) A. Error: invalid structure member in printf
( ) B. Error: bit field type must be signed int or unsigned int
( ) C. No error
( ) D. None of above

28
Point out the error in the program? #include int main() { struct a { category:5; scheme:4; }; printf("size=%d", sizeof(struct a)); return 0; }

( ) A. Error: invalid structure member in printf
( ) B. Error: bit field type must be signed int or unsigned int
( ) C. No error
( ) D. None of above

Explanation:
The structure emp contains a member e of the same type.(i.e) struct emp. At this stage compiler does not know the size of structure.
29

Point out the error in the program?

```c
#include<stdio.h>

int main()
{
struct emp
{
    char name[20];
    float sal;
};
struct emp e[10];
int i;
for(i=0; i<=9; i++)
    scanf("%s %f", e[i].name, &e[i].sal);
return 0;
}
```

( ) A. Error: invalid structure member
( ) B. Error: Floating point formats not linked
( ) C. No error
( ) D. None of above

Explanation:
At run time it will show an error then program will be terminated.

Sample output: Turbo C (Windwos)
30 Which header file should be included to use functions like malloc() and calloc? 

( ) A. memory.h  
( ) B. stdlib.h  
( ) C. string.h  
( ) D. dos.h  

Explanation:  
This type of declaration is called as self-referential structure. Here *e is pointer to struct emp.

31 What is the purpose of fflush() function.

( ) A. flushes all streams and specified streams.  
( ) B. flushes only specified stream.  
( ) C. flushes input/output buffer.  
( ) D. flushes file buffer.  

Explanation:  
Here the type name mystruct is known at the point of declaring the structure, as it is already defined.

32 Which of the statements is correct about the program?

```
#include<stdio.h>
int main()
{
  int arr[3][3] = {1, 2, 3, 4};
  printf("%d\n", *(*(*(arr))));
  return 0;
}
```

( ) A. Output: Garbage value  
( ) B. Output: 1  
( ) C. Output: 3  
( ) D. Error: Invalid indirection  

Explanation:  
This type of declaration is called as self-referential structure. Here *e is pointer to struct emp.
33
Point out the error in the program?

struct emp
{
int ecode;
struct emp e;
};

A. Error: in structure declaration
B. Linker Error
C. No Error
D. None of above

Explanation:
The structure emp contains a member e of the same type (i.e.) struct emp. At this stage compiler does not know the size of structure.

34
What will be the output of the program?

#include<stdio.h>

int main()
{
struct emp
{
char *n;
int age;
};
struct emp e1 = {"Dravid", 23};
struct emp e2 = e1;
strupr(e2.n);
35
What will be the output of the program?
#include<stdio.h>

int main()
{
int x=30, *y, *z;
y=&x; /* Assume address of x is 500 and integer is 4 byte size */
z=y;
*y++=*z++;
x++;
printf("x=%d, y=%d, z=%d\n", x, y, z);
return 0;
}

( ) A. x=31, y=502, z=502
( ) B. x=31, y=500, z=500
( ) C. x=31, y=498, z=498
( ) D. x=31, y=504, z=504

Explanation:
This type of declaration is called as self-referential structure. Here *e is pointer to struct emp.
36
Point out the error in the program?

typedef struct data mystruct;

struct data
{
    int x;

    mystruct *b;
}

( ) A. Error: in structure declaration
( ) B. Linker Error
( ) C. No Error
( ) D. None of above

Explanation:
Here the type name mystruct is known at the point of declaring the structure, as it is already defined.

37
What will be the output of the program?
#include<stdio.h>

int main()
{
    void *vp;
    char ch=74, *cp="JACK";
    int j=65;
    vp=&ch;
    printf("%c", *(char*)vp);
    vp=&j;
    printf("%c", *(int*)vp);
    vp=cp;
    printf("%s", (char*)vp+2);
    return 0;
}

( ) A. JCK
( ) B. J65K
( ) C. JAK
( ) D. JACK
38
Point out the error in the program?
struct emp
{
    int ecode;
    struct emp e;
};

( ) A. Error: in structure declaration
( ) B. Linker Error
( ) C. No Error
( ) D. None of above

Explanation:
The structure emp contains a member e of the same type (i.e) struct emp. At this stage compiler does not know the size of structure.

39
Point out the error in the program?
#include<stdio.h>
int main()
{
    struct emp
    {
        char name[20];
        float sal;
    };  
    struct emp e[10];
    int i;
    for(i=0; i<=9; i++)
        scanf("%s %f", e[i].name, &e[i].sal);
    return 0;
}

( ) A. Error: invalid structure member
( ) B. Error: Floating point formats not linked
( ) C. No error
( ) D. None of above

Explanation:
At run time it will show an error then program will be terminated.
Sample output: Turbo C (Windwos)
Sample
12.123
scanf : floating point formats not linked
Abnormal program termination
What will be the output of the program?

```c
#include<stdio.h>

int main()
{
    int i;
    char c;
    for(i=1; i<=5; i++)
    {
        scanf("%c", &c); /* given input is 'b' */
        ungetc(c, stdout);
        printf("%c", c);
        ungetc(c, stdin);
    }
    return 0;
}
```

Explanation: The `ungetc()` function pushes the character `c` back onto the named input stream, which must be open for reading.

This character will be returned on the next call to `getc` or `fread` for that stream.

One character can be pushed back in all situations.

A second call to `ungetc` without a call to `getc` will force the previous character to be forgotten.