Assignment 7

Chapter No.8 & 9:

Problems on Numbers, Calender,Clock

1. If March 1, 2006 was a Wednesday, which day was it on March 1, 2002?

A) Wednesday B) Thursday C) Friday D) Saturday

Total number of odd days between the years 2002 and 2006 = (2006 - 2002) + 1 = 5 odd days.

The year 2004 is a leap year, it has two odd days. So, one extra odd day is added.

So, if it was Wednesday on March 1, 2006, it would be (Wednesday - 5) Friday on March 1, 2002.

2. The angle between the minute hand and the hour hand of a clock when the time is 8.30, is

A) 80° B) 76° C) 75° D) 74°

Angle between hands of a clock

When the minute hand is behind the hour hand, the angle between the two hands at M minutes past H 'o clock

$= 30\left(H - \frac{M}{5}\right) + \frac{M}{2}$ degree

When the minute hand is ahead of the hour hand, the angle between the two hands at M minutes past H 'o clock

$= 30\left(\frac{M}{5} - H\right) - \frac{M}{2}$ degree

Here H = 8, M = 30 and minute hand is behind the hour hand.

Hence the angle

$= 30\left(H - \frac{M}{5}\right) + \frac{M}{2}$

$= 30\left(8 - \frac{30}{5}\right) + \frac{30}{2}$

= 30(8−6) + 15

= 30 × 2 + 15

= 75°

3. How many times in a day, are the hands of a clock in straight line but opposite in direction?

A) 22 B) 23 C)24 D) 25

4. What was the day of the week on 28th May, 2006?

A) Thursday B) Friday C) Saturday D) Sunday

28 May, 2006 = (2005 years + Period from 1.1.2006 to 28.5.2006)
Odd days in 1600 years = 0
Odd days in 400 years = 0
5 years = (4 ordinary years + 1 leap year) = (4 x 1 + 1 x 2) ≡ 6 odd days

Jan. Feb. March April May
(31 + 28 + 31 + 30 + 28) = 148 days

∴ 148 days = (21 weeks + 1 day) ≡ 1 odd day.
Total number of odd days = (0 + 0 + 6 + 1) = 7 ≡ 0 odd day.
Given day is Sunday

5. What will be the day of the week 15th August, 2010?
A) Sunday B) Monday C) Tuesday D) Friday
15th August, 2010 = (2009 years + Period 1.1.2010 to 15.8.2010)
Odd days in 1600 years = 0
Odd days in 400 years = 0
9 years = (2 leap years + 7 ordinary years) = (2 x 2 + 7 x 1) = 11 odd days ≡ 4 odd days.

Jan. Feb. March April Mayb June July Aug.
(31 + 28 + 31 + 30 + 31 + 30 + 31 + 15) = 227 days

∴ 227 days = (32 weeks + 3 days) ≡ 3 odd days.
Total number of odd days = (0 + 0 + 4 + 3) = 7 ≡ 0 odd days.
Given day is Sunday.

6. Today is Monday. After 61 days, it will be:
A) Wednesday B) Saturday C) Tuesday D) Thursday
Each day of the week is repeated after 7 days.
So, after 63 days, it will be Monday.
∴ After 61 days, it will be Saturday.

7. How many times in a day, the hands of a clock are straight?
A) 12 B) 24 C) 44 D) 56
Therefore, in 24 hours, the hands coincide or are in opposite direction 44 times a day.

8. On 8th February 2005, it was Tuesday. What was the day of the week on 8 February 2004?
A) Tuesday B) Monday C) Sunday D) Wednesday

The year 2004 is a leap year. It has 2 odd days.
∴ The day on 8th Feb, 2004 is 2 days before the day on 8th Feb, 2005.
Hence, this day is Sunday.

9. If the 3rd day of a month is Monday, which one of the following will be the fifth day from 21st of this month
A) Monday B) Tuesday C) Wednesday D) Friday
It's asking for the fifth day from 21st means indirectly it asking for the 26th day of the month.
So if the third day is Monday
Then after adding some 7s and taking it to the nearest Monday from 26th.
It would be 3+7+7+7 i.e. 24th.
Therefore 24th will also be Monday
So now 26th will be Wednesday.

10. March 1st is Wednesday. Which month of the same year starts with the same day?
A) October B) November C) December D) None of these
From March 1st to November 1st is 245 days which is a multiple of 7, 245/7 = 35 weeks,
thus November will also begin on a Wednesday.

11. If Arun's birthday is on May 25 which is Monday and his sister's birthday is on July 13. Which day of the week is his sister's birthday?
A) Monday B) Wednesday C) Thursday D) Friday
Reference day : May 25th Monday
Days from May 25th to July 13 = 6 + 30 +13 = 49
No of odd days : 49/7 = 0
Therefore, his sister's birthday will also be Monday.

12. By how many degrees does the minute hand move in the same time, in which the hour hand move by 280?
A) 168 B) 336 C) 196 D) 376
If we count from 12
The hour hand moves till 9 and then 10 degress
90 degrees - 3 h or 180 min
10 degress-20 min
So total min = 9 × 60 + 20 = 540 + 20 = 560 min
60 min - 360º
560 min- (360 × 560)/60
Total degrees= 3360 º

13. How many degrees will the minute hand move, in the same time in which the second hand move 4800?

A) 60 B) 40 C) 90 D) 80

1min = 60secs

∴ in 4800, 4800/60 mins will be covered

∴80 mins = 80 degrees

14. How many degrees does an hour hand move in 20 minutes?

A) 9 B) 10 C) 11 D) 10.5

For a minute, the hour hand rotates by 30/60 = 1/2 degrees. Hence, for 20 minutes it rotates by an angle of 20*1/2 = 10 degrees.

15. From noon, by how many degrees has the minute hand moved to 2:40 ?

A) 950° B) 960° C) 970° D) 980°

After noon to 2.40

Total minutes = 60x2 + 40

= 120 + 40

= 160 minutes

60 minutes = 360°

160 minutes = ?

(360x160)/60 = 960°

16. A clock loses 5 seconds an hour and is set right on Sunday at noon. What time will it indicate on the following Monday at noon?

A) 11:56 a.m. B) 11:58 a.m C) 12:02 p.m. D) 12:04 p.m

There are total 24 hours from Sunday noon to Monday noon

Clock loses 5 sec/hour

So it loses 120 seconds total, 120 seconds = 2 minutes

So at Monday noon it would be 11.58 am

17. The difference between a number and its three-fifth is 50. What is the number?

A) 75 B) 100 C) 125 D) None of these

Let the no. Be x

According to the question,

Number – (3/5)(of number) = 50

x – (3x/5) = 50

(5x – 3x)/5 =50

2x/5 = 50

2x = 50×5

x = 250/2

x = 125

18. A number is doubled and 9 is added. If the resultant is trebled, it becomes 75. What is that number?

A) 3.5 B) 6 C) 8 D) None of these

Let the number is x
It is doubled = 2x
Then added 9 = 2x+9
Resultant is tripled. = 3(2x+9)
According to the given question :
∴ 3(2x + 9) = 75
∴ 6x + 27 = 75
∴ 6x = 75 - 27
∴ 6x = 48
∴ x = 48/6 = 8.
∴ x = 8
Hence, the original number is 8.

19. Find the number which when multiplied by 15 is increased by 196.

A) 14 B) 20 C) 26 D) 28

Let the number be x,
Then,
We can say that,
⇒ 15x = x + 196
⇒ 15x – x = 196
⇒ 14x = 196
⇒ x = 196/14
⇒ x = 14.
∴ The number is 14. Which when multiplied 15, gets increased by 196.

20. A number whose fifth part increased by 4 is equal to its fourth part diminished by 10, is:

A) 240 B) 260 C) 270 D) 280

Let the number be x
(x/5) + 4 = (x/4) -10
(x/4) – (x/5) =10 + 4
5x – (4x/20) = 14
(x/20) = 14
x = 280

21. If the sum of a number and its square is 182, what is the number?

A) 15 **B) 26** **C) 28** **D) None of these**

Let's guess that number is x

here, $x^2 + x = 182$

$x^2 + x - 182 = 0$

$x^2 + 14x - 13x - 182 = 0$

$x(x + 14) - 13(x + 14) = 0$

$x - 13 = 0$ or $x + 14 = 0$

$\therefore x = 13$ $\therefore x = -14$

Therefore, the answer is none of these.

22. The product of two numbers is 45 and the sum of their squares is 106. The numbers are:

A) 3 and 15 **B) 5 and 9** **C) 45 and 1** **D) None of these**

For, 5 and 9,

(5)2 + (9)2 = 25 + 81 = 106

And,

9 x 5 = 45.

Hence, they satisfy the given condition.

23. The sum of the squares of three consecutive natural numbers is 2030. What is the middle number?

A) 25 **B) 26** **C) 27** **D) 28**

Let the numbers be x-1, x, x+1.

$(x-1)^2 + x^2 + (x+1)^2 = 2030$

$x^2 + 1 - 2x + x^2 + x^2 + 1 + 2x = 2030$

$3x^2 + 2 = 2030$

$3x^2 = 2028$

$x^2 = 676$

$x = 26$

24. The sum of digits of a two-digit number is 9 less than the number. Which of the following digits is at unit's place of the number?

A) 1 **B) 2** **C) 4** **D) Data inadequate**