CBSE Board
Class VI Mathematics

Time: 2 ½ hours   Total Marks: 80

General Instructions:

1. **All** questions are **compulsory**.
2. **Section A** comprises of **12** questions carrying 1 mark each.
3. **Section B** comprises of **12** questions carrying 2 marks each.
4. **Section C** comprises of **8** questions carrying 3 marks each.
5. **Section D** comprises of **5** questions carrying 4 marks each.

Section A
(Questions 1 to 12 carry 1 mark each)

1. Value of expression $1 - 2 + 3 - 4 + 5$ is
   A. 3
   B. −3
   C. zero
   D. −1

2. 2, 3, 9, when used once, can be arranged to form _____ distinct 3-digit numbers.
   A. 3
   B. 4
   C. 5
   D. 6

3. Which of the following numbers is a prime number?
   A. 161
   B. 111
   C. 139
   D. 203

4. $\frac{3}{4} + \frac{(-2)}{4} + \frac{5}{4} + \frac{(-1)}{4} =$

   A. $\frac{5}{4}$

   B. $\frac{15}{4}$

   C. $\frac{6}{4}$

   D. $\frac{2}{4}$

5. The fraction equivalent to $\frac{15}{27}$ is

   A. $\frac{30}{27}$

   B. $\frac{45}{9}$

   C. $\frac{3}{9}$

   D. $\frac{5}{9}$

6. To add 4 on a number line,
   A. move 4 steps to the left of 0
   B. move 4 steps to the right of 0
   C. move 0 steps to the right of 1
   D. move 0 steps to the left of 1.

7. The estimation of the product of 52 and 188 is equal to
   A. 9500
   B. 20000
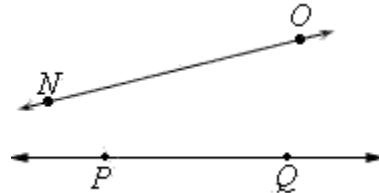   C. 9000
   D. 10000

8. Prime factorisation of number 36 is
   A. 2 × 2 × 3 × 3
   B. 2 × 2 × 9
   C. 2 × 6 × 3
   D. 4 × 3 × 3

9. 13 + (12 − 6 × 3) =
   A. 8
   B. 6
   C. 5
   D. 7

10. NO and PQ are
    A. parallel lines
    B. intersecting lines
    C. rays
    D. line segments

11. The sum of 267 + 132 to nearest ten is
    A. 500
    B. 400
    C. 300
    D. 200

12. The greatest number that will divide 10 and 18 is
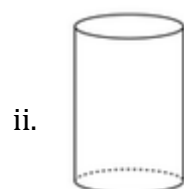   A. 4
    B. 2
    C. 5
    D. 3

Section B
(Questions 13 to 24 carry 2 marks each)

13. Evaluate the difference between the place values of two 9's in the number 79520986.

14. How many vertices do the following shapes have?

i.

ii.

15. Anna is standing on a rock that is 7 feet above sea level. She jumps off the rock and hits another rock 3 feet below and then walks 2 feet down. How many feet did she come down in all?

16. Find the sum: (−13) + (−19) + (+15) + (−10).

17. Write a 9 digit number in Indian system (in Numerals) and then write it in words according to International system.

18. What are parallel lines? Does the distance between them vary over their length?

19. A village has a population of 13295 people. It increases by an average number of 400 people every year. In a recent survey, it was realised that the population of the village would increase by one less than the average number. What will be the population of village in the successive year assuming that nobody dies in the village in the considered years?

20. The volume of a box is found by multiplying its length l, width w and height h. If the measure of the volume of a box is 455 cubic cm, what could its dimensions be?

21. Find the L.C.M. of 24, 45 and 54.

22. Add: $5\dfrac{2}{7}+3\dfrac{1}{2}$

23. Evaluate 7 − (−3) with the help of a number line.
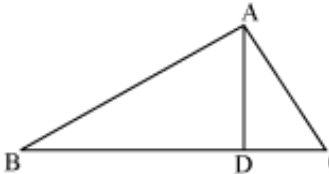
24. Find the H.C.F of 54, 45 and 72

Section C

(Questions 25 to 32 carry 3 marks each)

25. Solve (−8 + 12 - 2) using number line.

26. Join all the diagonals of the given polygon. Also, name them.
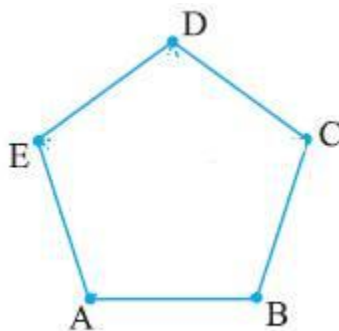
27. In New York, the temperature was −14oF in the morning. If the temperature dropped by 7oF, what is the temperature now?

28. A businessman is to receive Rs. 13550 and Rs. 26788 from two different sources. He has to pay Rs. 37000 to a supplier. Round off the money to nearest thousands and find whether he will be able to pay to his supplier with the money received.

29. Three people are going round a circular field of 360 km circumference. They can travel 48 km, 60 km and 72 km in a day. When will they meet?

30. Arrange the following roman numerals in ascending order:

    C, D, V, I, X, M

31. Where will the hand of a clock stop if it

    (a)   Starts at 12 and makes $\frac{1}{2}$ of a revolution, clockwise?

    (c)   Starts at 5 and makes $\frac{1}{4}$ of a revolution, clockwise?

    (d)   Starts at 5 and makes $\frac{3}{4}$ of a revolution, clockwise?

32. Look at the figure and answer the following questions:

    (a) Identify three triangles in the figure.
    (b) Write the names of seven angles.
    (c) Which two triangles have ∠B as common?

33. A taxi driver filled his car petrol tank with 40 litres of petrol on Monday. The next day, he filled the tank with 50 litres of petrol. If the petrol costs Rs. 44 per litre, how much did he spend in all on petrol?
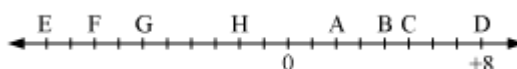
Section D

**(Questions 33 to 37 carry 4 marks each)**

34. Match the columns :

	Section A		Section B
1	The smallest two digit whole number	A	– 9999
2	The smallest three digit whole number	B	10
3	(−1111) × (9)	C	−10
4	5 + (−15)	D	100

35. Kirti bookstore sold books worth Rs 2, 85, 891 in the first week of June and books worth Rs 4, 00, 768 in the second week of the month. How much was the sale for the two weeks together? In which week was the sale greater and by how much?

36. Adjacent figure is a vertical number line, representing integers. Observe it and locate the following points:

(a) If point D is + 8, then which point is – 8?

(b) Is point G a negative integer or a positive integer?

(c) Which point marked on this number line has the least value?

(d) Arrange all the points in decreasing order of value.

37. Which direction will you face if you start facing
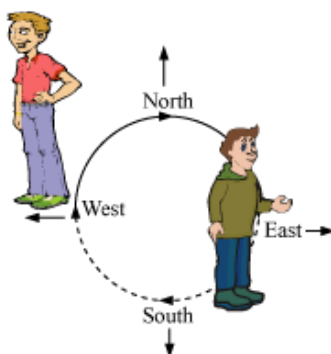
(a)   East and make $1\frac{1}{2}$ of a revolution clockwise?

(b)   South and make one full revolution?

(Should we specify clockwise or anti-clockwise for this last question? Why not?)

38. Subtract the sum of $3\frac{5}{9}$ and $3\frac{1}{3}$ from the sum of $5\frac{5}{6}$ and $4\frac{1}{9}$.

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Solution

Time: 2 ½ hours

Total Marks: 80

Section A

1. Correct Answer: A

    1 – 2 + 3 – 4 + 5 = 1 + 3 + 5 – 2 – 4 = 9 – 6 = 3

2. Correct Answer: D

    932, 923, 239, 293, 329, 392.

3. Correct Answer: C

    Out of the given numbers, 139 is a prime number as it has only two factors, namely, 1 and 139.

4. Correct Answer: A

    $$\frac{3}{4} + \frac{(-2)}{4} + \frac{5}{4} + \frac{(-1)}{4} = \frac{3-2+5-1}{4} = \frac{5}{4}$$

5. Correct Answer: D

    The HCF of 15 and 27 is 3. Hence,

    $$\frac{15}{27} = \frac{3 \times 5}{3 \times 9} = \frac{5}{9}$$

6. Correct Answer: B

    To add 4 on number line, move 4 steps to the right of 0.

7. Correct Answer: D

    Estimate the product by rounding off 52 to its nearest tens and 188 to its nearest hundreds.

    52 can be rounded off to its nearest tens as 50 and 188 can be rounded off to its nearest hundreds as 200.
    So, the required estimation of the product is 50 × 200 = 10000.

8. Correct Answer: A

```
2 | 36
2 | 18
3 |  9
3 |  3
   |  1
```

Thus, $36 = 2 \times 2 \times 3 \times 3$

9. Correct Answer: D

$13 + (12 - 6 \times 3) = 13 + (12 - 18) = 13 - 6 = 7$

10. Correct Answer: B

NO and PQ can be extended indefinitely on both sides, so they are lines. On extending, it can be seen that they would meet at a point. Hence, they are intersecting lines.

One and only one line passes through any two given points.

11. Correct Answer: B

267 can be estimated as 270.
132 can be estimated as 130.
Thus the required estimated sum = 270 + 130 = 400

12. Correct Answer: B

$10 = 2 \times 5$

$18 = 2 \times 3 \times 3$

HCF of 10 and 18 is 2.

Thus, 2 is the required number.

Section B

13. Place value of 9 at the Ten Lakhs place = 9000000
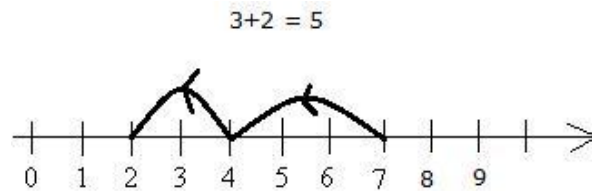Place value of 9 at the hundreds place = 900
Difference = 9000000 – 900 = 8999100

14. The number of vertices in the given shapes:
   i. Sphere : 0
    ii. Cylinder : 0

15. Anna is 7 feet above sea level. She jumps 3 feet down and walks another 2 feet down. Total distance travelled downwards = 3 + 2 = 5 feet.

3+2 = 5

16. (−13) + (−19) + (+15) + (−10)

= −13 − 19 + 15 − 10

= −13 − 19 − 10 + 15

= −42 + 15

= −27

17. A 9-digit numeral in Indian system = 94,50,27,983

In International system,
945,027,983 - Nine hundred forty five million twenty seven thousand nine hundred eighty three.

18. Two lines in the same plane which never intersect are called parallel lines.

Parallel lines maintain the same distance apart over their entire length.
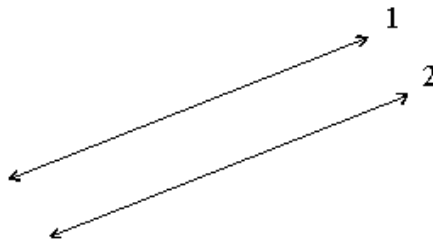
19. Population of the village = 13295

Increase in population= Average growth − 1 = 399

Population in the successive year = 13295 + 399 = 13694

20. Prime factorisation of 455 = 5 × 7 × 13

Therefore, the dimensions of the cuboid are

5 cm, 7 cm, 13 cm.

5	455
7	91
13	13
	1

21. L.C.M. of 24, 45 and 54 = 2 × 2 × 2 × 3 × 3 × 3 × 5 = 1080

2	24	45	54
2	12	45	27
2	6	45	27
3	3	45	27
3	1	15	9
3	1	5	3
5	1	5	1
	1	1	1

22. $5\dfrac{2}{7}+3\dfrac{1}{2}$

$=\dfrac{37}{7}+\dfrac{7}{2}$

$=\dfrac{37\times2}{7\times2}+\dfrac{7\times7}{2\times7}$
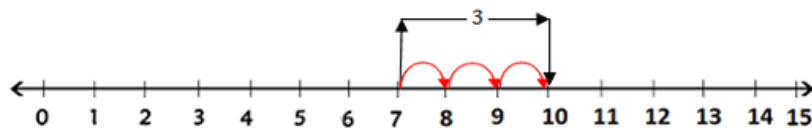
$=\dfrac{74}{14}+\dfrac{49}{14}$

$=\dfrac{123}{14}$

$=8\dfrac{11}{14}$

23. Subtracting a negative number is the same as adding its positive integer.

∴ 7 − (−3) = 7 + 3 = 10

24. To find the H.C.F of 77, 105 and 231.

7	77		3	105		3	231
11	11		5	35		7	77
	1		7	7		11	11
				1			1

77 = **7** × 11
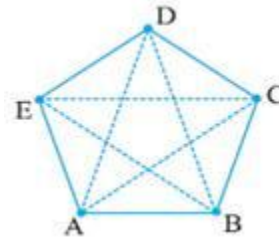
105 = 3 × 5 × **7**

231 = 3 × **7** × 11

Hence, H.C.F of 77, 105 and 231 is = 7

Section C

25. To solve using number line start with –8, move 12 steps right and then back 2 steps as shown below:

-8 + 12 = 4

4 - 2 = 2
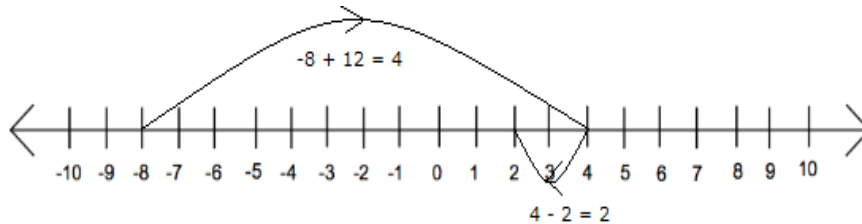
So, we reach at 2, therefore (–8 + 12 – 2) = 2

26. AC, AD, BD, BE and CE are diagonals.

27. Temperature in the morning = –14°F

Drop in temperature is written as –7°F

Temperature at present = –14°F + (–7°F) = –14°F – 7°F = –21°F

28. Rs. 13550 estimated to nearest thousands = Rs. 14000

Rs. 26788 estimated to nearest thousands = Rs. 27000

Total estimated money (to be received) = Rs. (14000 + 27000) = Rs. 41000

He has to pay Rs. 37000.

And 41000 > 37000

Therefore, he will be able to pay to his supplier with the money received.

29. First we find the LCM of 48, 60, 72.

$48 = 2 \times 2 \times 2 \times 2 \times 3$

$60 = 2 \times 2 \times 3 \times 5$

$72 = 2 \times 2 \times 2 \times 3 \times 3$

$LCM = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 720$

Hence, they will meet after $\dfrac{720}{360} = 2$ rounds.

30. C stands for 100

    D stands for 500

    V stands for 5

    I stands for 1

    X stands for 10

    M stands for 1000

    In ascending order, the numbers can be arranged as

    1 < 5 < 10 < 100 < 500 < 1000

    Thus, the given roman numerals can be arranged in ascending order as

    I < V < X < C < D < M

31. We may observe that in 1 complete clockwise revolution, hand of a clock will rotate by 360º.

    (a) When hand of clock starts at 12 and makes $\frac{1}{2}$ of a revolution clockwise, it will rotate by 180º and hence it will stop at 6.

    (b) When hand of clock starts at 5 and makes $\frac{1}{4}$ of a revolution clockwise, it will rotate by 90º and hence it will stop at 8.

    (c) When hand of clock starts at 5 and makes $\frac{3}{4}$ of a revolution clockwise, it will rotate by 270º and hence it will stop at 2.

32. (a) ΔABC, ΔACD, ΔADB

    (b) ∠ABC, ∠ADB, ∠ADC, ∠ACB, ∠BAD, ∠CAD, ∠BAC

    (c) ΔABD and ΔABC

33. Quantity of petrol filled on Monday = 40 *l*

    Quantity of petrol filled on Tuesday = 50 *l*

    Total quantity filled = (40 + 50) *l*

    Cost of petrol (per *l*) = Rs. 44

    Total money spent = 44 × (40 + 50) = 44 × 90 = Rs. 3960

Section D

34. The table after matching the columns will appear as given below:

	Section A		Section B
1	The smallest two digit whole number	B	10
2	The smallest three digit whole number	D	100
3	(–1111) × (9)	A	–9999
4	5 + (–15)	C	– 10

35. Value of Books sold in 1st week = Rs. 2,85,891

    Value of books sold in 2nd week = Rs. 4,00,768

    Total sale = Sale in 1st week + Sale in 2nd week = 2,85,891 + 4,00,768

 $$\begin{array}{r} 285891 \\ +400768 \\ \hline 686659 \end{array}$$

    The sale for the two weeks together was 6,86,659

   Since 4,00,768 > 2,85,891 sale in 2nd week was greater than 1st week.

    $$\begin{array}{r} 400768 \\ -285891 \\ \hline 114877 \end{array}$$

    ∴ Sale in 2nd week was larger than sales in 1st week by Rs 1,14,877

36. (a) Point F is –8

    (b) Negative integer (–6)

    (c) E has the least value as it represents –10

    (d) D > C > B > A > O > H > G > F > E

37. By revolving one complete round in either clockwise or anticlockwise direction, we will revolve by 360º and two adjacent directions are at 90º or $\frac{1}{4}$ of a complete revolution away from each other.

    (a) If we start facing East and make $1\frac{1}{2}$ of a revolution clockwise we will face the West direction.
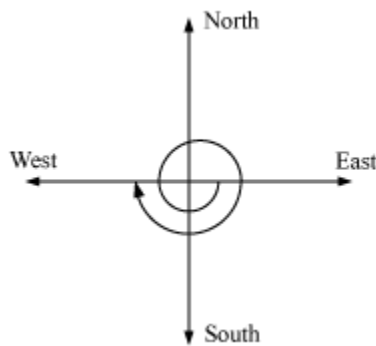
    (b) If we start facing South and make a full revolution we will again face the South direction.
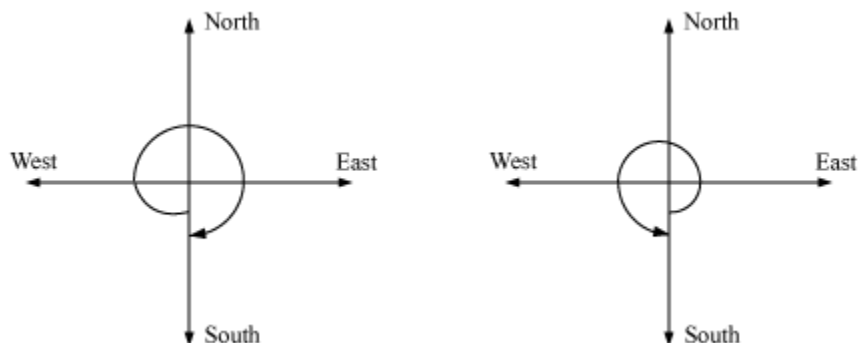
    In case of revolving by 1 complete round, in which direction we are revolving doesn't matter. In both cases clockwise or anticlockwise we will be back at our initial position.

38.

$$3\frac{5}{9}+3\frac{1}{3}$$

$$=\frac{32}{9}+\frac{10}{3}$$

$$=\frac{32+(10\times3)}{9} \quad \text{(LCM of 3, 9 = 9)}$$

$$=\frac{32+30}{9}$$

$$=\frac{62}{9}$$

We also have,

$$5\frac{5}{6}+4\frac{1}{9}$$

$$=\frac{35}{6}+\frac{37}{9} \quad \text{(LCM of 6, 9 = (2 × 3 × 3) = 18)}$$

$$=\frac{(35\times3)+(37\times2)}{18}$$

$$=\frac{105+74}{18}$$

$$=\frac{179}{18}$$

Now, $\dfrac{179}{18}-\dfrac{62}{9}$

$$=\frac{179-124}{18}$$

$$=\frac{55}{18}$$

$$=3\frac{1}{18}$$