

Pattern and Marking Scheme				
Grade	Topic/Section	No. of Questions	Marks per Question	Total Marks
Grade 8	Mathematics	30	1	30
	Achiever's Section	10	2	20
Grand Total		40		50

The total duration of the exam is 60 minutes.

Mathematics (Each Question is 1 Mark)

- If N is divided by 5 leaves a remainder 0, then ones digit of N must be ?
 (a) Either 1 or 4 (b) Either 5 or 1
 (c) Either 0 or 5 (d) Either 0 or 4
- In $853 * 431$, which number should be replaced the $*$ to make the number divisible by 9?
 (a) 3 (b) 4
 (c) 5 (d) 9
- A rational number, which is less than every positive real number and greater than every negative rational number, is
 (a) -1 (b) 1
 (c) Can't say (d) 0
- Assertion** (A) $a - (b - c) = (a - b) - c$
Reason (R) Rational numbers are not associative under subtraction.
 Which of the following is true ?
 (a) Both (A) and (R) are true and (R) is correct explanation of (A)
 (b) Both (A) and (R) are false and (R) is not correct explanation of (A)
 (c) (A) is true and (R) is false
 (d) (A) is false and (R) is true
- A person borrowed some money from a friend and promised him to pay daily for 1 month. He will pay like Rs. 1 for first day, Rs. 3 for second day, Rs. 5 for third day and so on for 30 days. If he paid an interest of Rs. 150 included in the above amount, then the money borrowed by him is
 (a) Rs. 600 (b) Rs. 750
 (c) Rs. 900 (d) Rs. 1200
- It is given that $\sqrt{4761} = 69$, then the value of $\sqrt{4761} + \sqrt{0.4761}$ is
 (a) 77 (b) 75.59
 (c) 76.59 (d) 70.59
- To collect rainwater, Sonia made a cubical tank which can hold 10648 m^3 water. She uses this water for watering the plants of her garden. What is the height of the tank ?
 (a) 21 m (b) 22 m
 (c) 23 m (d) 27 m
- By what smallest number should 243 be divided, so that the quotient be a perfect cube?
 (a) 81 (b) 3
 (c) 9 (d) None of the above
- Assertion** (A) $2^5 + 2^2 = 8$
Reason (R) $a^m + a^n = a^{m+n}$, according to the exponent rule.
 Which of the following is true ?
 (a) Both (A) and (R) are true and (R) is the correct explanation of (A)
 (b) Both (A) and (R) are false and (R) is not the correct explanation of (A)
 (c) (A) is true and (R) is false

- (d) (A) is false and (R) is true
10. The cells of a bacterium double itself every hour. How many cells will there be after 10h, if initially it is one cell ?
 (a) 512 (b) 256
 (c) 1024 (d) 20
11. A candidate who gets 20% marks in an examination fail by 30 marks but another candidate who gets 32%, get 42 marks more than the pass marks. The percentage of pass marks is
 (a) 52% (b) 50%
 (c) 33% (d) 25%
12. Which is largest in $6\frac{2}{3}\%$, $\frac{3}{20}$ and 0.14 ?
 (a) $6\frac{2}{3}$ (b) $\frac{3}{20}$
 (c) 0.14 (d) None of the above
13. Observe the following and choose the correct option.

x	6	12	18	24	15	9
y	4	8	12	16	10	6

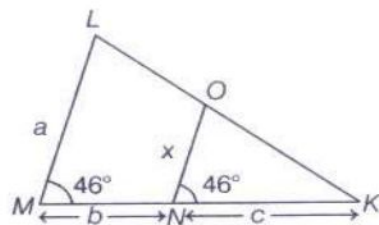
- (a) $x \propto y$ (b) $x \propto \frac{1}{y}$
 (c) $xy = K$ (d) $x \neq y$
14. A factory employing 300 men assembles a given number of TV sets weekly, the number of working hours being 60 per week. How many men would be required for the same production, if the working hours are 40 per week ?
 (a) 400 (b) 450
 (c) 500 (d) 300
15. Which of following is incorrect ?
 (a) $\text{Gain \%} = \frac{\text{Gain}}{\text{CP}} \times 100$ (b) $\text{Loss \%} = \frac{\text{Loss}}{\text{CP}} \times 100$
 (c) $\text{CP} = \frac{100}{(100 + \text{Loss\%})} \times \text{SP}$ (d) $\text{CP} = \frac{100}{(100 + \text{Gain \%})} \times \text{SP}$
16. A vendor purchased 40 dozen bananas for Rs. 250. Out of these, 30 bananas were rotten and could not be sold. At what rate per dozen should be sell the remaining bananas to make a profit of 20% ?
 (a) Rs. 20 (b) Rs. 15
 (c) Rs. 8 (d) Rs. 2.5
17. Find a and b, then match the following :

	Column I		Column II
I	SI = CI for T is equal to	i	4
II	$A = P \left(1 + \frac{R}{100}\right)^n$?	ii	n
III	P = 500, R = 10%, SI = 40, T is equal to	iii	1
IV	T = 2 yr, if CI calculated half yearly, then n is equal to	iv	$\frac{4}{5}$ yr

Codes

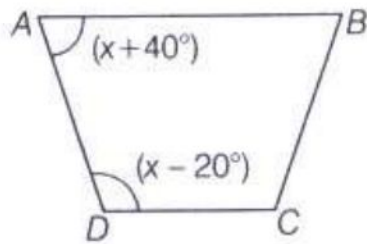
	I	II	III	IV
(a)	(i)	(ii)	(iii)	(iv)
(b)	(iii)	(ii)	(iv)	(i)
(c)	(iii)	(i)	(ii)	(iv)
(d)	(ii)	(i)	(iv)	(iii)

18. Anita borrowed a sum of money from Raju at the rate of 5% per annum at compound interest for 2 yr. She returned Rs. 5000 on the end of first year. At the end of second year, she returned Rs. 3820. The principal borrowed was
 (a) Rs. 8000 (b) Rs. 8500
 (c) Rs. 9000 (d) Rs. 7500
19. The perimeter of a triangle is $8p^2 - 9p + 9$ and two of its sides are $2p^2 - 3p + 1$ and $5p^2 - p + 4$. Then, third side of the triangle is
 (a) $29^2 - 6p + 5$ (b) $p^2 - 5p + 4$
 (c) $3p^2 - 20 + 1$ (d) $4p^2 + 3p + 6$
20. Which of the following is true
 (a) $9x^2 + 6y + 6x^2 - 3y + 2x - 5x^2 = 10x^2 + 3y - 2x$
 (b) $6x^2 + 6y + 9x^2 - 3y + 2x - 5x^2 = 10x^2 + 3y + 2x$
 (c) $5x^2 + 6y + 6x^2 - 3y + 2x + 9y^2 = 10x^2 + 3y + x$
 (d) $6y + 6x^2 - 3y + 2x - 9y^2 + 5x^2 = 10x^2 + 3y^2 + 2x$
21. After factorising $2x^2 - \frac{5}{6}x + \frac{1}{12}$, the factors can be written in the form of
 (a) $\left(\frac{x}{2} - \frac{1}{12}\right)(4x - 1)$ (b) $\left(\frac{x}{12} - 1\right)(4x + 2)$
 (c) $\left(\frac{x}{2} + \frac{1}{12}\right)\left(12 + \frac{4}{x}\right)$ (d) $\left(\frac{x}{2} - \frac{1}{12}\right)(4x + 6)$
22. Which method is used in the factorisation shown below ?
 (i) $x^2 + 8x + 16$
 (ii) $(x)^2 + (4)^2 + 2 \cdot x \cdot 4$
 (iii) $(x + 4)^2; (a + b)^2 = a^2 + b^2 + 2ab$
 (iv) $(x + 4)(x + 4)$
 (a) Splitting middle term (b) Algebraic identity
 (c) Both (a) and (b) (d) None of the above
23. The solution of the linear equation $3x + 2(x + 5) = 75$ is
 (a) $x = 13$ (b) $y = 8$
 (c) $x = 18$ (d) $y = 15$
24. Simplest form of the equation $\frac{6x+1}{3} + 1 = \frac{x-3}{6}$ is given by
 (a) $11x - 3 = 8$ (b) $11x + 8 = 3$
 (c) $11x + 8 = -3$ (d) $3x + 11 = 8$
25. In the following figure, x is equal to

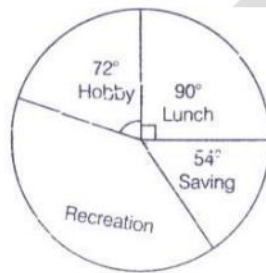


- (a) $\frac{ab}{a+c}$ (b) $\frac{ac}{a+b}$
 (c) $\frac{ac}{b+c}$ (d) $\frac{ab}{b+c}$

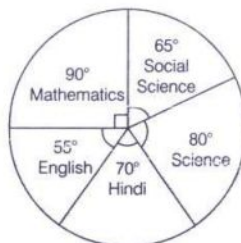
26. In the given trapezium, the value of x is



- (a) 80° (b) 120°
 (c) 60° (d) 90°
27. From a circular sheet of radius 14 cm, a circle of radius 5 cm is cut out. Calculate the area of the remaining sheet after the smaller circle is removed.
- (a) $153\pi \text{ cm}^2$ (b) $167\pi \text{ cm}^2$
 (c) $171\pi \text{ cm}^2$ (d) $176\pi \text{ cm}^2$
28. The pie-chart given below shows the expenses incurred and saving by a family in a month. What is the percentage of expenses incurred on account of recreation ?



- (a) $\frac{800}{17} \%$ (b) 20%
 (c) 35% (d) 40%
29. The area of a side of a box is 120 sq.cm. The area of the other side of the box is 72 sq.cm. If the area of upper surface of the box is 60 sq. cm, then the volume of the box is
- (a) 259200 cm^3 (b) 84000 cm^3
 (c) 86400 cm^3 (d) 720 cm^3
30. The following pie-chart gives the marks scored in an examination by a student in Hindi, English, Mathematics, Social Science and Science.



In which subject did the student score 105 marks ? Given if the total marks obtain by the students were 540.

- (a) Science (b) Hindi
 (c) English (d) Social Science

Achiever's Section (Each Question is 2 Marks)

31. A 2 digit number has 3 at ones place and the sum of its digits is $\frac{1}{7}$ of the number itself. Then, the number is
 (a) 43 (b) 53
 (c) 63 (d) 73
32. On subtracting the sum of $\frac{-4}{7}$ and $\frac{5}{14}$ from the sum of $\frac{9}{14}$ and $\frac{23}{14}$, we get
 (a) $\frac{2}{5}$ (b) $\frac{5}{7}$
 (c) $\frac{5}{2}$ (d) $\frac{3}{5}$
33. State "T" for true of "F" for false.
 I. The sum of two perfect squares is a perfect square.
 II. The sum of first n even numbers is n^2 .
 III. When a square number ends with 6, then the number whose square it is, will have either 4 or 7 in unit's place.
 IV. The general form of Pythagorean triplet is $m^2 - 1, m^2 + 1, 2m + 1$.
 V. The square of a prime number is not a prime number.

Codes

	I	II	III	IV	V
(a)	F	F	F	F	T
(b)	T	F	T	F	T
(c)	T	T	T	T	T
(d)	F	T	F	T	F

34. Three numbers are in the ratio 2:3:4 to one another. The sum of their cubes is 33957. Then, the difference in the cubes of greatest and smallest numbers is
 (a) 20000 (b) 21200
 (c) 19208 (d) 22208
35. Find the value of A + B by the given expression.
 $(6^{30} + 6^{-30})(6^{30} - 6^{-30})$
 $= 3^A \cdot 8^B - 3^{-A} \cdot 8^{-B}$ is
 (a) 30 (b) 40
 (c) 60 (d) 80
36. Gunpowder contains 75% nitre and 10% sulphur. Find the amount of gunpowder which carries 9 kg nitre. What amount of gunpowder would contain 2.5 kg sulphur ?
 (a) 24 kg and 27 kg (b) 10 kg and 18 kg
 (c) 15 kg and 27 kg (d) 12 kg and 25 kg
37. In the festive season, company A launches an offer on his products. The offer is, you can buy either two watches or three fans in Rs. 1500. Ram ants to buy 6 fans and 6 watches. How much money he needs to buy this ?
 (a) Rs. 10000 (b) Rs. 7500
 (c) Rs. 9000 (d) Rs. 10500
38. Fill in the blanks with the help of options, given in the box.

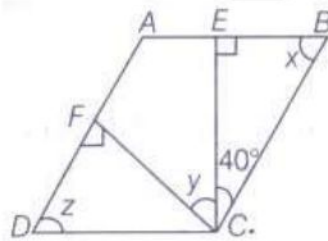
(i) 800,	(ii) 4.5
(iii) 195,	(iv) discount,
(v) 2.5,	(vi) $11\frac{1}{9}\%$,
(vii) 1000,	(viii) 199.5,
(ix) Sales tax,	(x) 10%

- I. ___ is charged on the sale of an item by the government and is added to the bill amount.
- II. A vendor loses the selling price of 4 oranges on selling 36 oranges. His loss % is ___
- III. The marked price of an article when it is sold for Rs. 880 after a discount of 12%, is ___
- IV. 5% sales tax is charged on an article marked Rs. 200 after allowing a discount of 5%, then amount payable is _____

Codes

	I	II	III	IV
(a)	(ix)	(x)	(vii)	(viii)
(b)	(i)	(iii)	(iv)	(v)
(c)	(vi)	(viii)	(ix)	(x)
(d)	(ii)	(vi)	(ix)	(i)

39. A sum of Rs. 1550 was lent partly at 5% and partly at 8% per annum simple interest. The total amount (interest) received after three years is Rs. 300. The ratio of the money lent on 5% and that of 8% are
- (a) 5 : 8
 (b) 8 : 5
 (c) 16 : 15
 (d) 31 : 6
40. If ABCD is a parallelogram, then the angles x, y and z respectively in the given figure are



- (a) $60^\circ, 60^\circ, 60^\circ$
 (b) $40^\circ, 50^\circ, 60^\circ$
 (c) $60^\circ, 70^\circ, 70^\circ$
 (d) $50^\circ, 50^\circ, 50^\circ$