SA1 - 1 (2014-15) Mathematics (Set -A) Marking Scheme

Date: **Class:VIII**

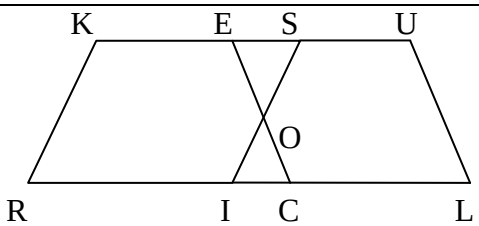
Time: 3 hours **M.M : 90**

General Instructions:

1. *Read the question paper carefully and answer legibly.*
2. *All questions are compulsory.*
3. *The question paper consists of 31 questions divided into four sections A, B, C and D.*
4. *Section A comprises of 4 questions of 1 mark each, Section B comprises of 6 questions of 2 marks each, Section C comprises of 10 questions of 3 marks each and Section D comprises of 11 questions of 4 marks each.*
5. *Use of calculators is not permitted.*

	Section A	
Q.1 Ans.	Write the rational numbers that are their own reciprocals? 1 and – 1.	1
Q.2 Ans.	If $\frac{4x}{3}+\frac{7}{6}=\frac{15}{2}$, then find the value of *x*. $\frac{4x}{3}+\frac{7}{6}=\frac{15}{2} \quad \Rightarrow \quad x=\frac{19}{2}$	1
Q.3 Ans.	Find the number of diagonals of an octagon. No. of diagonals = $\frac{n\,(n-3)}{2}=\frac{8\,(8-3)}{2}$ = 20.	1
Q.4 Ans.	How many numbers lie between the squares of the numbers 85 and 86? No. of numbers between the squares of n and (n + 1) = 2n = $2 \times 85 = 170$	1
	Section B	
Q.5 Ans.	Find the sum of the multiplicative inverse and the additive inverse of $\frac{-3}{5}$ Multiplicative inverse of $\frac{-3}{5}=\frac{-5}{3}$ Additive inverse of $\frac{-3}{5}=\frac{3}{5}$ Sum = $\frac{-5}{3}+\frac{3}{5}=\frac{-16}{15}$	2
Q.6 Ans.	Solve the equation: $\frac{0.2y-6}{1.1y-1}=\frac{2}{5}$ $\frac{0.2y-6}{1.1y-1}=\frac{2}{5} \Rightarrow 5\,(0.2y-6)=2\,(1.1y-1)$ $\Rightarrow y-30=2.2y-2$ $\Rightarrow 1.2y=-28$ $\Rightarrow y=-23.3$	2
Q.7 Ans.	The sum of two angles of a quadrilateral is 145°. The other two angles are in the ratio 2 : 3. Find these angles. Let other two angles be 2x and 3x respectively. By angle sum property of a quadrilateral, we have 145° + 2x + 3x = 360° ⇒ x = 43° Hence other two angles are: 2x = 86° and 3x = 129°.	2
Q.8 Ans.	Construct a frequency distribution table for the data on marks of 20 students of a class using intervals 30 – 35, 35 – 40 and so on. 40, 38, 33, 48, 47, 33, 31, 46, 34, 36, 49, 41, 36, 49, 49, 42, 44, 47, 38, 39	2

Class intervals	Tally marks	Frequency
30 – 35		4
35 – 40		5
40 – 45		4

	45 – 50 | | 7 Half mark for each class interval	
Q.9 Ans.	A welfare association collected Rs.122500 as donation from the residents. If each paid as many rupees as there were residents, find the number of residents. Let number of residents = x Amount paid by each resident = x Total amount paid = 122500 $\Rightarrow x^2 = 122500$ $\Rightarrow x = \sqrt{122500} = 35$	2
Q.10 Ans.	Find the smallest number that should be multiplied by 6750 to get a perfect cube. Prime factorization of $6750 = 2 \times 3 \times 3 \times 3 \times 5 \times 5 \times 5$ Since the prime factor 2 is not occurring in triplet, therefore 6750 should be multiplied by 2×2 i.e. by 4 to get a perfect cube.	2
	Section C	
Q.11 Ans	Using the properties of rational numbers, find $\frac{5}{48} + \frac{3}{8} \times \left(-\frac{2}{9}\right) - \frac{3}{8} \times \frac{5}{3}$. $\frac{5}{48} + \frac{3}{8} \times \left(-\frac{2}{9}\right) - \frac{3}{8} \times \frac{5}{3} = \frac{5}{48} + \frac{3}{8} \times \left(-\frac{2}{9} - \frac{5}{3}\right)$ (by distributive property of × over +) $= \frac{5}{48} + \frac{3}{8} \times \left(\frac{-2-15}{9}\right)$ $= \frac{5}{48} + \frac{3}{8} \times \left(\frac{-17}{9}\right)$ $= \frac{5}{48} + \frac{-17}{24}$ $= \frac{-29}{48}$	3
Q.12	The sum of three consecutive multiples of 9 is 378. Find the multiples. Let the required multiples of 9 be x, x+ 9 and x + 18 ATQ, x + x + 9 + x + 18 = 378 $\Rightarrow 3x = 378 - 27$ $\Rightarrow x = 351/3 = 117$ Hence the multiples are: x = 117 x + 9 = 126 x + 18 = 135	3
Q.13 Ans.	RISK and CLUE are parallelograms, $\angle RKE = 110^\circ$ and $\angle CLU = 80^\circ$. Find $\angle EOS$.  In parallelogram RISK, $\angle RKS + \angle KSO = 180^\circ$ (Co-interior angles) $\Rightarrow \angle ESO = 180^\circ - 110^\circ = 70^\circ$ In parallelogram CLUE, $\angle SEO = \angle CLU = 80^\circ$. (opposite angles of parallelogram) In Δ ESO, $\angle EOS = 180^\circ - 70^\circ - 80^\circ = 30^\circ$ (by ASP of Triangle)	3
Q.14	Construct a Rectangle CAKE, where CA = 7.2 cm and KA = 5.1 cm. Writing properties of triangle (1) steps of construction (1/2 mark each)	3

Q.15 Solve for *x*: $\frac{(x-5)}{4} - \frac{(x+4)}{3} = 1 + \frac{x+7}{6}$ — 3

Ans.

$\Rightarrow \quad \frac{(x-5)}{4} - \frac{(x+4)}{3} - \frac{x+7}{6} = 1$

$\Rightarrow \quad \frac{3(x-5) - 4(x+4) - 2(x+7)}{12} = 1$

$\Rightarrow \quad \frac{3x - 15 - 4x - 16 - 2x - 14)}{12} = 1$

$\Rightarrow \quad \frac{-3x-45}{12} = 1$

$\Rightarrow \quad x = -19$

Q.16 Construct a quadrilateral FONT, where FO = 3 cm, ON = 4.5 cm, NT = 3.8 cm, TF = 4.3 cm and FN = 6 cm. — 3

Ans. steps of construction (1/2 mark each)

Q.17 The number of workers in various age groups in a town is given in the following table: — 3

Age group (in years)	0-10	10-20	20-30	30-40	40-50	50-60
No. of persons (in 1000s)	40	50	75	65	60	40

Represent the above information on a histogram.

Ans. Drawing the axes and writing information on them and scale (1)

Drawing the histogram (2)

Q.18 Find the least square number, exactly divisible by each one of the numbers 8, 10, 12 and 15. — 3

Ans. LCM of the given numbers = 120 $(1\frac{1}{2})$

Prime factorization of 120 = 2 × 2 × 2 × 3 × 5

Since the prime factors 2, 3 and 5 are not occurring in pairs

Therefore 120 should be multiplied by 30 to get a perfect square (1)

Hence the perfect square no. is 120 × 30 = 3600 which is divisible by all of the given nos. (1/2)

Q.19 A farmer had enough food to feed 15 cows for 60 days. Due to unhealthy conditions, few cows died and the food lasted for 75 days. Find the number of cows that died. — 3

Ans. Let the decreased no. of cows be x

As increase in the number of days will lead to the decrease in the no. of cows.

Hence it is the case of inverse proportion

Therefore 15× 60 = x × 75

$\Rightarrow$ x = 12

Hence no. of cows died = 15 – 12 = 3

Q.20 Find the least number which must be added to 37460 to make it a perfect square. Also find the square root of the number so obtained — 3

By long division method we get the no. to be added = 176 to make the given no. a perfect square.

Ans. Square root of the no. so obtained = $\sqrt{37636}$ = 194

Section D

Q.21 (a) Represent $-\frac{8}{5}$ on the number line. — 4

Ans. Plotting the nos. on the no. line with equal intervals and marking arrows on both sides $(1\frac{1}{2})$

Encircling the no. (1/2)

Ans. (b) Find two rational numbers between $\frac{-1}{2}$ and $\frac{-1}{3}$.

Finding LCM and writing their equivalent nos. (1)

	Writing two nos. between them (1)	
Q.22 Ans.	One of the digits of a two digit number is twice the other digit. The sum of the original number and the number formed by reversing the digits is 99. Find the number. Let the digit at one's place be x and then the digit at ten's place = 2x Original no. = x + 20x = 21x On interchanging the digits at the two places, new no. obtained = 2x + 10x = 12x ATQ, 21x + 12x = 99 We get, x = 3 Hence the two digit no.= 21x = 63 or 12x = 36	4
Q.23 Ans.	(a) Is it possible to have a regular polygon with a measure of each exterior angle as 14°? Why? (b) Can it be an interior angle of a regular polygon? Explain. (a) sum of all the exterior angles of any polygon of n sides = 360^o Therefore 14 n = 360^o We get, n = $360^o/14^o$, which is not a natural no. Since the no. of sides of any polygon can never be a fraction hence the given situation is not possible. (b) by linear pair, we get each interior angle of the given polygon = $180^o - 14^o = 166^o$ 166^o n = (n - 2)180^o Which gives n as a fraction and hence this cannot be an interior angle of the given polygon.	4
Q.24 Ans.	Construct a quadrilateral PLAN with PL = 4cm, LA = 6.5cm, ∠P = 90^o, ∠A = 110^0, ∠N = 85^o. Finding missing angle (1) each step of construction (1/2)	4
Q.25 Ans.	Numbers 1 to 18 are written on fifteen separate slips are kept in a box and mixed well. One slip is chosen from the box without looking into it. What is the probability of : (a) Getting a number greater than 0 = 1 (b) Getting a number less than 6 = 5/ 18 (c) Getting a number greater than 12 = 6/18 = 1/3 (d) Getting a 2-digit number = 9/18 = 1/2	4
Q.26 Ans.	A girl distributed some sweets on her birthday. The half of the sweets she had were distributed in her school and three-fourth of the remaining were distributed in the bus. The rest 40 were distributed among the poor children living in the slums. Find the number of sweets she had. What quality of the girl is depicted by this act of hers? Let the no. of sweets the girl had be x ATQ x - $\frac{x}{2}$ - $\frac{3x}{8}$ = 40 x = 320. (3) Writing the value depicted by this act of the girl (1)	4
Q.27 Ans.	If 2.5 kg of rice contains 6×10^8 grains of rice, find: (a) the grains contained in 4 kg of rice? (b) the quantity of rice that contains 1.2×10^9 grains? This is the case of direct proportion, as the increase in the weight of rice will lead to the increase in the no. of grains (a) grains contained in 4 kg of rice = 9.6×10^8 (b) quantity of rice that contains1.2×10^9 grains = 2.5 kg	4
Q.28	The production of agricultural products of a state are as under: **Agricultural Products** | **Production in thousand quintals** Wheat | 800 Rice | 600 Cotton | 500	4

	Maize | 400	
Ans.	Represent the above data on a pie chart. drawing table showing central angles (0.5 × 4 = 2) drawing the pie chart = (2)	
Q.29 Ans.	Five persons could fit new windows in a house in 8 days. (a) One of the persons fell ill before the work started. How long would the job take now? (b) How many persons would be needed to fit the window in two days? This is the case of inverse proportion, as the increase in the no. of persons will lead to the decrease in the no. of days (a) the job would take 10 days now (b) in one day the no. of persons needed = 20	4
Q.30 Ans.	Construct a Rhombus whose diagonals are 5.2cm and 6.4 cm. Writing properties of rhombus (1) Constructing the rhombus (3)	4
Q.31 Ans.	(a) The volume of a cubical box is 32.768 cubic meters. Find the length of a side of the box. (b) Simplify: $\sqrt[3]{-2300 \times 5290}$. (a) The length of the side of the box = $\sqrt[3]{32.768}$ = 3.2 m (b) $\sqrt[3]{-2300 \times 5290} = \sqrt[3]{(-1)^3 \times 23 \times 23 \times 23 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5}$ $= -1 \times 230 = -230$	4