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Annual Examination 2024– 25

Class VI

Subject: Mathematics

Set B1/B2

Marking Key

Time allowed : 2.5 hours **Maximum Marks: 60**

GENERAL INSTRUCTIONS:

Read the following instructions carefully and follow them:

(i) This question paper contains **16** questions. All questions are compulsory.

(ii) Question paper is divided into **FIVE** sections–**Section A, B, C, D** and **E**.

(iii) In **section A** – question number **1** has 12 multiple choice questions (MCQs) of **1** Mark each.

(iv) In **section B** – question number **2** to **7** are Objective type questions of **2** marks each.

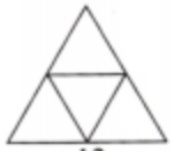
(v) In **section C** – question number **8** to **10** are Short Answer (SA) type questions carrying **3** marks each.

(vi) In **section D** – question number **11** to **13** are Long Answer (LA) type questions carrying **5** marks each.

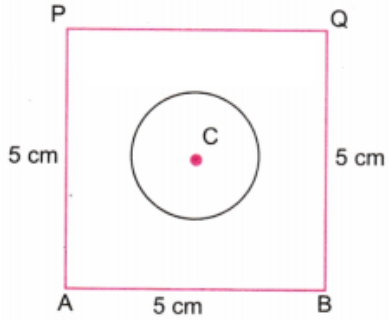
(vii) In **section E** – question number **14** to **16** are **source based/case study** questions carrying **4** marks each. Internal choice is provided in **2** marks question in each **source based/case study question**.

(viii) There is no overall choice. However, an internal choice has been provided in 1 question in Section **B**, 2 questions in Section **C** and 2 questions in Section **D.**

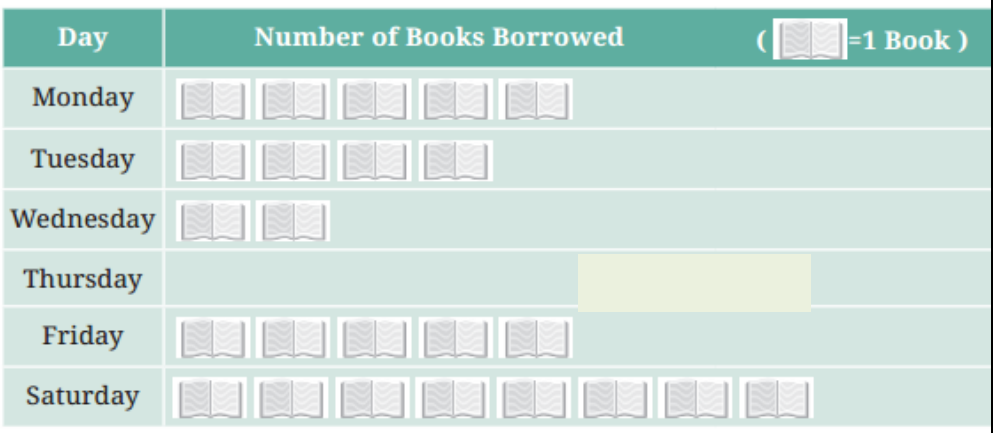
	SECTION-A **Question 1 consists of Multiple - Choice questions (i -xii) of 1 mark each.**		
Q. No. B1	**Q. No. B2**		**Marks**
1.(xii)	**1.(i)**	What kind of numbers are 1,3,6,10,15 ? **(a) triangular** (b) square (c) odd (d) cubes	**1**
(xi)	**(ii)**	Complete the sequence: 3,4,2,5,1,6,0,7 ,--- (a)1 **(b) −1** (c)20 (d) 21	**1**
(x)	**(iii)**	How many lines of symmetry does a equilateral triangle have ? **(a) 3** (b) 5 (c)4 (d) 2	**1**

(ix)	**(iv)**	The number of acute angles in the given figure  **(a) 12** (b)9 (c)10 (d)20	**1**
(viii)	**(v)**	A rectangle ABCD can also be written as: (a) ACDB **(b) DABC** (c) CABD (d) BDCA	**1**
(vii)	**(vi)**	A protractor is used to draw and measure **(a) angles** (b) line segments (c) triangle (d) squares	**1**
(vi)	**(vii)**	The equivalent fraction of $\frac{20}{36}$ with denominator 9 is (a) $\frac{4}{9}$ **(b)** $\frac{5}{9}$ (c) $\frac{7}{9}$ *(d)* $\frac{8}{9}$	**1**
(v)	**(viii)**	What is Kaprekar Constant for 4-digit numbers? (a) 6114 (b) 6147 (c) 6714 **(d) 6174**	**1**
(iv)	**(ix)**	What is the largest 5- digit number whose digit sum is 14? (a) 59000 **(b) 95000** (c) 68000 (d) 86000	**1**
(iii)	**(x)**	Using tally marks, which one of the following represents the number eight? (a) 𝍸 III (b) 𝍸 𝍸 (c) 𝍸 II (d) 𝍸 III Ans d	**1**
(ii)	**(xi)**	The area of a rectangular sheet of paper is 20 cm^2. Its length is 5 cm. Find its width. (a) 1 cm. (b) 2 cm (c) 3 cm **(d) 4 cm**.	**1**
(i)	**(xii)**	If a number is divisible by 10, then which of the following can be its one's digit? (a) 2 (b) 3 (c) 4 **(d) 0** A 1 D	**1**

	SECTION–B **Q2 to Q7 is Objective type questions of 2 marks each.**		
7.	**2.**	What happens when we multiply the triangular numbers by 6 and add 1 ? Which sequence do we get ? The triangular numbers are 1, 3, 6, 10, 15, 21,... After multiplying with 6 and adding 1, we get, 1 × 6 + 1 = 7, 3 × 6 + 1 = 19, 6 × 6 + 1 = 37, 10 × 6 + 1 = 61, 15 × 6+ 1 = 91,... These are Hexagonal numbers.	**2**
6.	**3.**	What is the sum of the smallest and largest 5-digit palindrome? What is their difference? Solution: Ans. Smallest 5 - digit palindrome number = 10001 Largest 5-digit palindrome number (different digits) = 99999 Sum = 10001 + 99999 = 110000 Difference = 99999 – 10001 = 89998.	**2**
5.	**4.**	Find all multiples of 40 that lie between 310 and 410. Solution: Here, multiples of 40 are 40, 80, 120, 160, 200, 240, 280, 320, 360, 400, 440 Hence multiples of 40 that lie between 310 and 410 are 320, 360 and 400.	**2**
4.	**5.**	Compare the following fractions and justify your answers: $\frac{8}{3}, \frac{5}{2}$ Solution: Given fractions are $\frac{8}{3}$ and $\frac{5}{2}$ Here LCM of denominators 3 and 2 is 6 then multiplying and dividing $\frac{8}{3}$ by 2 and $\frac{5}{2}$ by 3 then $\frac{8\times2}{3\times2}=\frac{16}{6}$, $\frac{5\times3}{3\times2}=\frac{15}{6}$ $\frac{16}{6}$ is greater than $\frac{15}{6}$ $\frac{8}{3}>\frac{5}{2}$ OR Write following fractions ascending order. $\frac{7}{10}, \frac{11}{15}, \frac{2}{5}$ **Solution:**	**2**

		The given fractions are $\frac{7}{10}, \frac{11}{15}, \frac{2}{5}$ Let us find LCM of denominator 10, 15, 5 2 | 10, 15 5 3 | 5 15 5 5 | 5 5 5 | 1 1 1 **∴ LCM of 10, 15 and 5 = 2 × 3 × 5 = 30** **Now let us make denominator of each fractions as LCM** $\frac{7\times3}{10\times3}, \frac{11\times2}{15\times2}, \frac{2\times6}{5\times6}$ $\frac{21}{30}, \frac{22}{30}, \frac{12}{30}$ Clearly $\frac{12}{30} < \frac{21}{30} < \frac{22}{30}$ $\Rightarrow \frac{2}{5} < \frac{7}{10} < \frac{11}{5}$	
3.	**6.**	Construct a "Square with a Hole" where a square is of side 5 cm and circular hole of radius 1.5 cm. Solution: The centre of a square is the point of intersection of its diagonals. With centre at C and a radius of 1.5 cm, say, draw a circle using a compass.  Fig. 3	**2**
2.	**7.**	Suppose you start with 0 rupees in your bank account, and then you have credits of ₹ 30, ₹ 40, and ₹ 50, and debits of ₹ 40, ₹ 50, and ₹ 60. What is your bank account balance now? Solution: Here, Credits = ₹ 30 + ₹ 40 + ₹ 50 = ₹ 120 and Debits = ₹ 40 + ₹ 50 + ₹ 60 = ₹ 150 ∴ Balance = Credits – Debits = ₹ 120 – ₹ 150 = – ₹30 Therefore, your bank account balance is – ₹ 30.	**2**
	SECTION–C Q8 to Q10 is short answer type questions of 3 marks each.		

10.	**8.**	The following pictograph shows the number of books borrowed by students, in a week, from the library of Middle School, Ginnori-	**3**



(a) On which day was the minimum number of books borrowed?

(b) What was the total number of books borrowed during the week?

(c) On which day were the maximum number of books borrowed? What may be the possible reason?

Solution:

(a) Thursday

(b) Total number of books borrowed = 5 + 4 + 2 + 0 + 5 + 8 = 24 books.

(c) Saturday

As the next day is the school holiday, they would have enough time to read the books.

OR

The length in centimeters of 20 carrots are given as follows :

15, 22, 21, 20, 22, 15, 20, 20, 15, 20, 18, 20, 22, 21, 20, 21, 18, 21,18, 20.

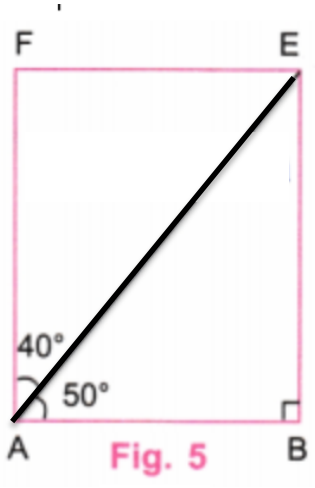
Arrange the above data in a table using tally marks and

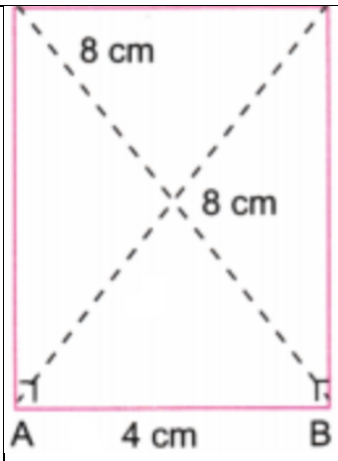
Answer the following question :

What is the number of carrots which have length more than 20 cm ?

Ans 7 carrots have length more than 20 cm.

15	3
18	3
20	7
21	4
22	3

9.	**9.**	Rahim mixes $\frac{2}{3}$ litres of yellow paint with $\frac{3}{4}$ litres of blue paint to make green paint. What is the volume of green paint he has made? Solution: Given quantity of yellow paint = $\frac{2}{3}$ litres And quantity of blue paint = $\frac{3}{4}$ litres Volume of green paint made = $\frac{2}{3}$ litres + $\frac{3}{4}$ litres Here LCM of 3 and 4 is 12 Now expressing as equivalent fractions with denominator 12, we get $\frac{17}{12}$ litres	**3**
8.	**10.**	Construct a rectangle in which one of the diagonals divides the opposite angles into 50° and 40°. Solutic  Fig. 5 OR Construct a rectangle one of whose sides is 4 cm and the diagonal is of length 8 cm. Solution:	**3**



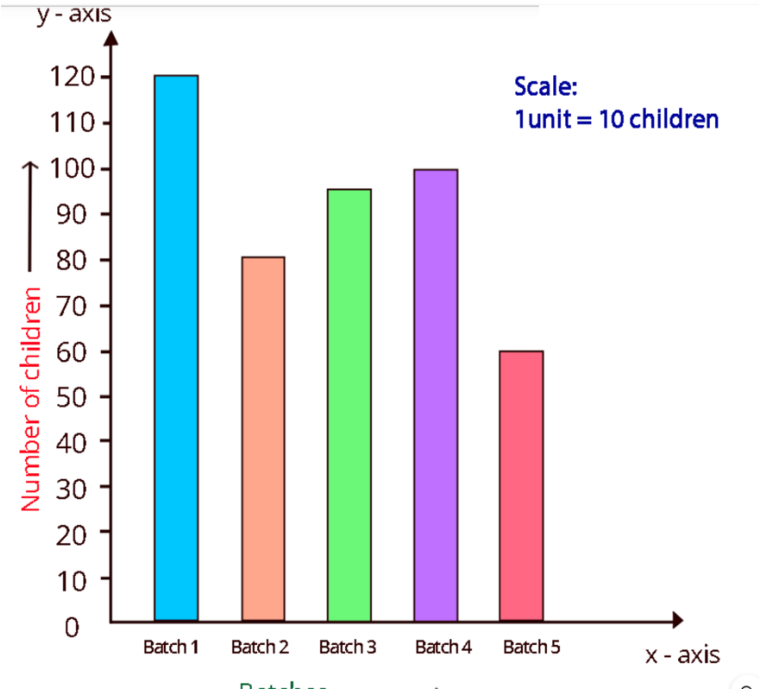
SECTION–D

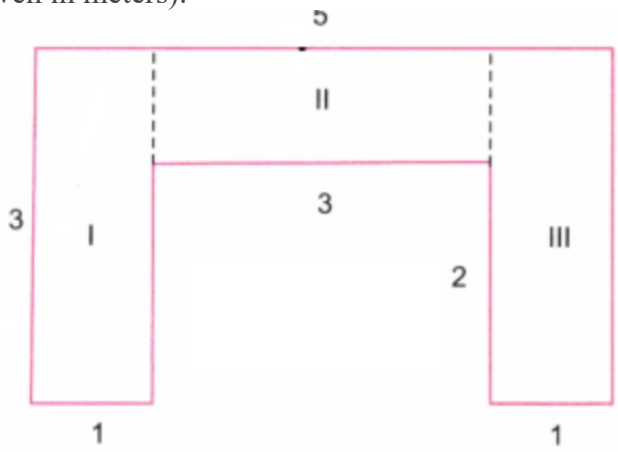
Q11 to Q13 is Long Answer type questions of 5 marks each.

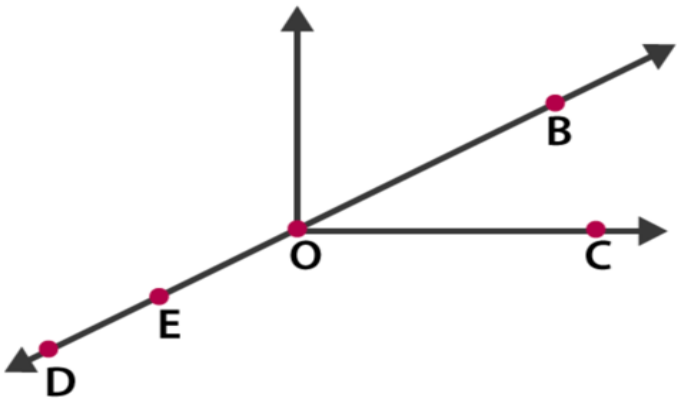
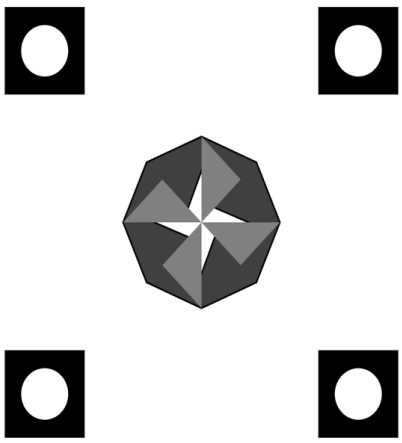
13. **11.** The following information about a school's five separate batches of students. Draw a bar graph to represent the following data. **5**

BATCHES	NUMBER OF STUDENTS
Batch 1	120
Batch 2	80
Batch 3	95
Batch 4	100
Batch 5	60

Solution



12.	**12.**	Find the prime factors of largest 4- digit number and smallest 4- digit number . Find their common factor . Ans largest 4- digit number = 9999 prime factors of 9999 = $3 \times 3 \times 11 \times 101$ smallest 4- digit number = 1000 prime factors of 1000 = $2^3 \times 5^3$ common factors = 1 OR In the treasure hunting game, Grumpy has kept treasures on 28 and 70. What jump sizes will land on both the numbers? Solution: Factors of 28 = 1, 2, 4, 7, 14, 28 Factors of 70 = 1,2, 5, 7, 10, 14, 35, 70 Common factors are 1, 2, 7 and 14 Hence jump sizes which will land at both 28 and 70 are 1, 2, 7 and 14.	**5**
11.	**13.**	A farmer has a rectangular field with having length of 230 m and a breadth of 160 m. He wants to fence it with 3 rounds of rope . What is the total length of rope needed? Ans . Solution: Perimeter of the rectangular field = 2(l + b) Here l = 230 m, b = 160 m ∴ P = 2(230 + 160) = 2 (390) = 780 m Distance covered by a farmer in one round = 780 m ∴ Total length of rope needed = 3 × 780 = 2340 m OR By splitting the following figures into rectangles, find their areas (all measures are given in meters):  Ans . Area of the rectangle I = length × breadth = 3 cm × 1 cm = 3 sq. cm Area of rectangle II = length × breadth = 3 cm × 1 cm = 3 sq. cm Area of rectangle III = length × breadth = 3 cm × 1 cm = 3 sq. cm The total area of the figure = 3 sq. cm + 3 sq. cm + 3 sq. cm = 9 sq. cm.	**5**

	SECTION– E **Q14 to Q16 is Case study-based questions of 4 marks each.**		
16.	**14.**	Five friends are standing on the 5 points as shown in the figure.  Answer the following questions, using the above figure. (i) Name a line in the given figure. (ii) Name all the points in the above figure. (iii) (a)Name any 4-line segments OR (iii)(b)Name any 2 rays in the given figure Ans (i). line DB (ii). D , E, O, B ,C (iii).(a) DE , EO , OB ,OC OR (iii)(b) Ray OB, OC	**1** **1** **2**
15.	Q15.	 The Magical Rangoli Competition In a school's annual Rangoli competition, students discovered an interesting pattern. The mathematics teacher explained that this year's theme is based on an ancient Rangoli design with a central octagon (representing unity), four corner squares (showing balance), and connecting triangles (depicting flow). Answer the following:	

		(i)How many lines of symmetry does the octagon in the centre have? (ii)How many lines of symmetry does the square have? (iii)(a) How many lines of symmetry does the circle have? Justify by answer by drawing the figure. OR (iii)(b) What is the angle of symmetry of a square? Justify by answer by drawing the figure. Ans (i). 8 (ii). 4 (iii)(a) . infinite OR (iii)(b) Angle of symmetry of square is 4. It looks same at 90 °,180° , 270° and 360°	**1** **1** **2**
14.	Q16.	A child was given 4 quiz tests and his scores were recorded as follows: – 3, +7, – 2, 6 (i) What is the lowest score the child got? (ii) What is the difference between the highest and the lowest score? (iii)(a) What is the sum of – 3, +7, – 2 , 6 ? OR (iii)(b) Find the sum of predecessor of 6 and successor of – 3. **Ans** (i). – 3 (ii). 10 (iii)(a) . 8 **OR** (iii)(b) 3	**1** **1** **2**