

Answer the questions

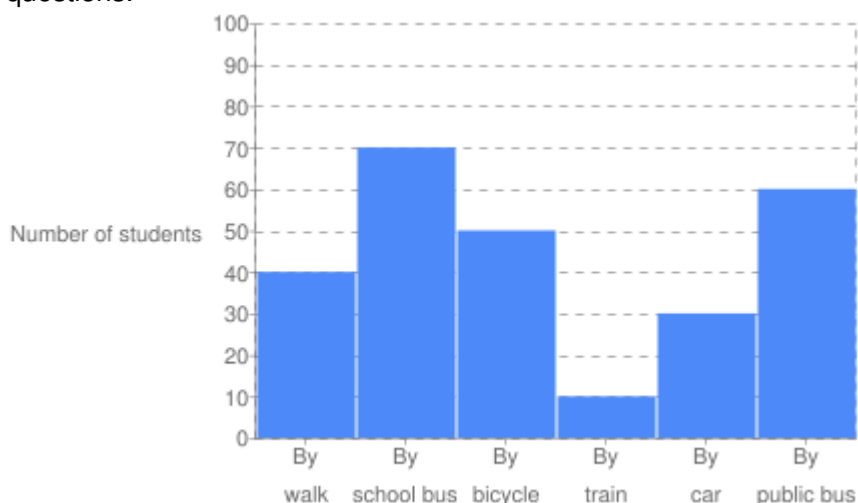
- (1) If 13 bananas are equally distributed among 3 friends, what does R1 represent in the box shown below?

$$13 \div 3 = 4 \text{ R}1$$

- (2) Find the rule for the pattern shown below.

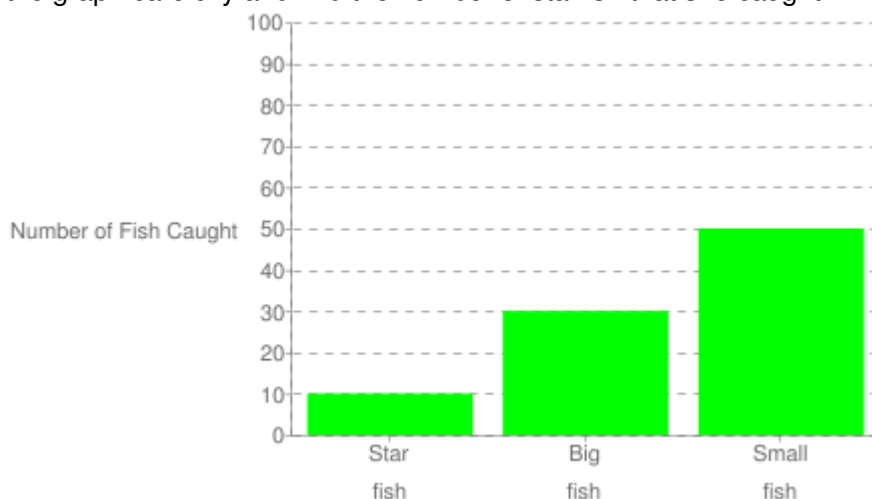
87 82 77 72 67 62

- (3) Ajoy made a graph to show the number of students who travel from home to school by walk, by school bus, by bicycle, by train, by car, and by public bus. Study the graph carefully and answer the following questions.



- (a) How many students travel by bicycle and train?
- (b) How many more students travel by school bus than walk?
- (c) How many girls travel by car, if 22 boys travel by car?
- (d) How many students travel by public bus?
- (4) Complete the pattern : ♦ ♣ ♥ ♦ ♣ ♥ ♦ ♣ ♥ ♦ _ _ _

- (5) Sanjana made a graph to show the number of starfish, big fish, and small fish that she caught. Study the graph carefully and find the number of starfish that she caught.



- (6) Aamir makes a rule to change any number to a new number. Find the rule used by Aamir, if the relationship between the original number and the new number is shown in the following table.

Numbers	New Numbers
40	37
45	42
24	21
38	35
28	25

- (7) A school has 24 blackboards and 13 computers. How many more blackboards are there than computers?
- (8) Akshiti has Rs. 150. She buys 4 apples and 4 burgers. How much money is left with her?

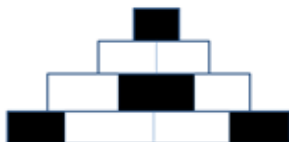


Rs. 19



Rs. 13

- (9) How many more parts should be shaded so that $\frac{8}{10}$ of the given figure is shaded?

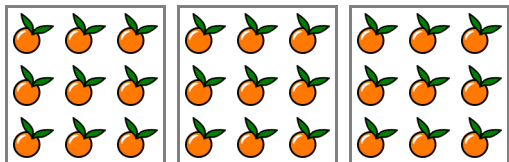


- (10) 12 pears were distributed equally in a class of 2 students. How many pears did each student get?

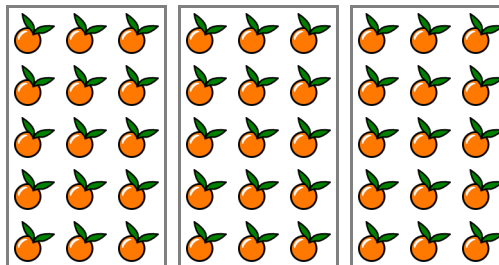
Choose correct answer(s) from the given choices

- (11) Pradip has 27 oranges to share equally among 3 friends. Which of the following shows the correct grouping of oranges?

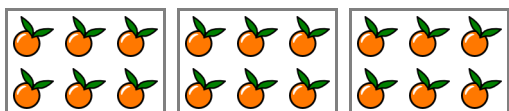
a.



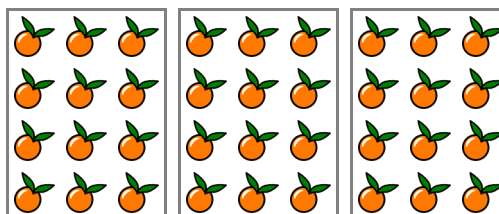
b.



c.



d.



- (12) Which of the following letter patterns follows the same rule as the shape pattern shown below?



a. PQRSQPQRSRPQ

b. PQRSPQRSPQ

c. QPQRSPQRSPQ

d. RPQRSPQRSPQ

- (13) Which of the following patterns shows the correct increasing order?

a. 187, 185, 183

b. 130, 130, 130

c. 116, 117, 113

d. 120, 126, 127

- (14) Ridhima walks to school every day. Which of following best describes the distance covered by her?

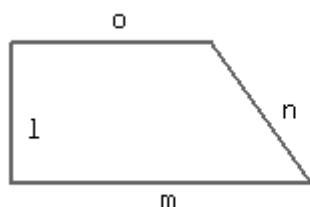
a. Hours

b. Seconds

c. Meters

d. Minutes

- (15) Which of the sides in the given figure seem to be perpendicular?



a. l and n

b. m and o

c. m and n

d. l and m

Answers

- (1) The number of bananas left after distribution among 3 friends.

Step 1

If we look at the box, we notice that each friend has 4 number of bananas.

Step 2

Therefore, R1 represents **The number of bananas left after distribution among 3 friends..**

- (2) Subtract 5

If we look at the pattern, we notice that every time 5 is being subtracted from the given number.
Therefore, the rule for the pattern is **subtract 5**.

- (3) (a) 60
(b) 30
(c) 8
(d) 60

Step 1

(a) Number of students who travel by bicycle = 50

Number of students who travel by train = 10

Therefore, the total number of students who travel by bicycle and train = $50 + 10 = 60$

Step 2

(b) Number of students who travel by school bus = 70

Number of students who travel by walk = 40

Therefore, the number of students who travel by school bus more than walk = $70 - 40 = 30$

Step 3

(c) The total number of students who travel by car = 30

Number of boys who travel by car = 22

Therefore, the number of girls who travel by car = $30 - 22 = 8$

Step 4

(d) Number of students who travel by public bus = **60**

- (4) ♣ ♥ ♦

If we look at the given pattern, we notice that the series of ♦ ♣ ♥ is repeating.
Therefore, the last three missing symbols are ♣ ♥ ♦ .

(5) 10

If we look at the graph, we notice that the number of starfish caught by her is equal to 10
Therefore, the number of starfish caught by her = **10**

(6) Subtracting 3 from the original number

If we look at the table, we notice that every time Aamir is subtracting 3 from the original number.
Therefore, the rule used by Aamir is **subtracting 3 from the original number**.

(7) 11

Step 1

Number of blackboards = 24

Step 2

Number of computers = 13

Step 3

Therefore, the additional number of blackboards = Number of blackboards - Number of computers
= **11**

(8) Rs. 22

Step 1

According to the question, Akshiti has a total of Rs. 150.

Step 2

She buys 4 apples and burgers.

Price of one apple = Rs. 19

Price of 4 apples = Rs. 19×4 = Rs. 76

Price of one burger = Rs. 13

Price of 4 burgers = Rs. 13×4 = Rs. 52

Step 3

Total money spend by Akshiti = Rs. 76 + Rs. 52 = Rs. 128

Money left with her = Total money with her - Total money spent by her

= $150 - 128$

= Rs. 22

Step 4

Therefore, Akshiti is left with **Rs. 22**.

(9) 4

Total number of parts in the figure = 10

Number of shaded parts in the figure = 4

If the given figure makes $\frac{8}{10}$ shaded, then the number of shaded parts = 8

Therefore, more parts that should be shaded so that the given figure makes $\frac{8}{10}$ shaded = $8 - 4 =$

4

(10) 6

Step 1

According to the question, some pears are distributed equally among the students. So, if we divide the number of pears by the number of students, we will get our answer.

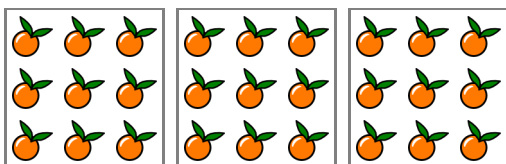
Step 2

On calculating the above, we get :

$$12 \div 2 = 6$$

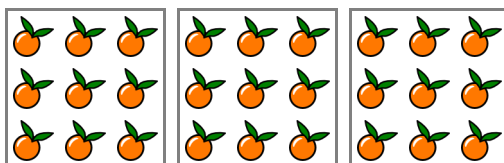
Hence, each student gets **6** pears.

(11) a.



Total number of oranges = 27





Number of oranges that each friend gets = $27 \div 3 = 9$



Therefore, is the correct grouping of oranges.

(12) a. PQRSQPQRSRPQ

Step 1

If we look at the options, we notice that  is represented by P,  is represented by Q,  is represented by R, and  is represented by S.

Step 2

Therefore, the letter pattern that follows the same rule is **PQRSQPQRSRPQ**.

(13) d. 120, 126, 127

Step 1

In order to find the increasing value of numbers in the given pattern, let us choose each option one by one.

Step 2

In option a, we notice that the given number follows an decreasing order. So, the given option is incorrect.

Step 3

In option b, we notice that the numbers remain the same. So, we can say that the given option does not follow any pattern.

Step 4

In option c, we notice that the given numbers first increase and then decrease. So, it does not follow the required condition.

Step 5

In option d, we notice that the given number follows an increasing order. So, we can say that this is the correct pattern of increasing order.

Step 6

Hence, **option d** is the correct answer.

(14) c. Meters

If we look at the options, we notice that the best measurement unit for calculating small distance is meter.

Therefore, **Meters** is the correct answer.

(15) d. l and m

If we look at the figure, we notice that sides l and m make an angle of 90° with each other.

Therefore, sides **l and m** are perpendicular.

Answers

(1) a.

31 and 310000

(2) c. 800

(3) b.

1 4 2 8 4 16

(4) A) 9 3

B) 62

C) 4 1

D) 16 3

(5) ones

(6) 4 5

(7) 86330

(8) ₹8.53

(9) two thousand eight hundred fourteen

(10) $\frac{2}{6}$



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Choose correct answer(s) from the given choices

- (1) Which pair of numbers can complete this condition?

$$\boxed{} \times 10000 = \boxed{}$$

a.

$\boxed{31}$ and $\boxed{310000}$

b.

$\boxed{301}$ and $\boxed{310000}$

c.

$\boxed{31}$ and $\boxed{31000}$

d.

$\boxed{310}$ and $\boxed{300001}$

- (2) The number of 25 paise coins in ₹200 is:

a. 900

b. 8000

c. 800

d. 80

- (3) Which of the following number patterns follows the rule "multiplication by 4 and division by 2" as shown in the box?

$\boxed{3 \ 12 \ 6 \ 24 \ 12 \ 48}$

a.

2 12 4 24 8 48

b.

1 4 2 8 4 16

c.

1 5 3 7 5 9

d.

3 7 5 9 7 11

Fill in the blanks

- (4) Fill in the blanks:

A) $39 \div 4 = \underline{} \text{ R } \underline{}$

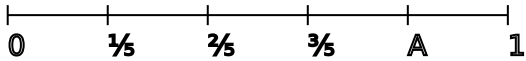
B) $\underline{} \div 8 = 7 \text{ R } 6$

C) $13 \div 3 = \underline{} \text{ R } \underline{}$

D) $83 \div 5 = \underline{} \text{ R } \underline{}$

- (5) The place value and the face value of a number is same at the $\underline{}$ place.

(6) The given figure shows a number line. The value of A is .



(7) The number that matches with the given clue is .

- 0 ones
- 3 hundreds
- 3 tens
- 6 thousands
- 8 ten thousands

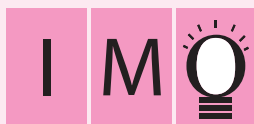
Answer the questions

- (8) Shyam paid a shopkeeper 4 ten-rupee notes for a ₹31.47 purchase. How much change did he get back?
- (9) The thousands digit is half the ones digit. The hundreds digit is double the ones digit. The tens digit is 1 which is 3 less than the ones digit. What is the number name for the number formed?
- (10) Gauri picked 2 of the flowers shown below. Find the fraction that correctly represents the number of flowers she picked.



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**SOF INTERNATIONAL
MATHEMATICS OLYMPIAD**

Total Questions : 35

Time : 1 hr.

PATTERN & MARKING SCHEME

Section	(1) Logical Reasoning	(2) Mathematical Reasoning	(3) Everyday Mathematics	(4) Achievers Section
No. of Questions	10	10	10	5
Marks per Ques.	1	1	1	2

SYLLABUS

Section – 1 : Patterns, Analogy and Classification, Alphabet Test, Coding-Decoding, Ranking Test, Grouping of Figures and Figure Matrix, Mirror Images, Geometrical Shapes, Embedded Figures, Days and Dates & Possible Combinations.

Section – 2 : Numerals, Number names and Number Sense (4-digit numbers), Computation Operations, Fractions, Length, Weight, Capacity, Temperature, Time, Money, Geometry, Data Handling.

Section – 3 : The Syllabus of this section will be based on the Syllabus of Mathematical Reasoning.

Section – 4 : Higher Order Thinking Questions - Syllabus as per Section – 2.

LOGICAL REASONING

1. Meena made this pattern with balls:



Which of the following uses a rule most different from Meena's pattern?



2. If Pawan has baseball practice every fourth day in the month of March, starting with March 1, then what date will be his last day of practice for the month?

- (A) March 28
(B) March 29
(C) March 30
(D) March 31

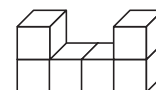
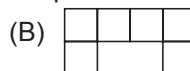
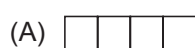
MARCH						
S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

3. Komal built a birdhouse at summer camp.
What shape is the piece of wood that was cut out to make the door of her birdhouse?

- (A) Triangle
(B) Square
(C) Circle
(D) Rectangle



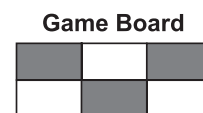
4. How would the given block model look from the top?



MATHEMATICAL REASONING

5. Tina shades in 3 parts on a game board. What fraction of the game board is shaded?

- (A) $\frac{3}{6}$
(B) $\frac{3}{5}$
(C) $\frac{3}{3}$
(D) $\frac{6}{3}$



6. What is the standard form of $7,000 + 800 + 20 + 5$?

- (A) 7,285
(B) 7,825
(C) 7,852
(D) 7,528

7. $8 \times 9 = \underline{\quad} + 9 + 9$. The missing number is $\underline{\quad}$.
 (A) 54 (B) 45 (C) 43 (D) 34
8. Tanya started watching television at 8 : 47 p.m. She decided to go to bed 1 hr 40 mins later. At what time did she go to bed ?
 (A) 10 : 27 p.m. (B) 10 : 17 a.m. (C) 9 : 27 p.m. (D) 9 : 27 a.m.
9. The product of a number and 6 is 240. The number is $\underline{\quad}$.
 (A) 40 (B) 80 (C) 144 (D) 1440

EVERYDAY MATHEMATICS

10. Sara and 3 of her friends together made a poster. They drew 8 rows of squares with 6 squares in each row. How many squares did Sara and her friends draw on the poster?
 (A) 48 (B) 42 (C) 40 (D) 17
11. Third-grade students went to a theatre in 8 buses. Each bus took 45 students. How many students went to the theatre?
 (A) 320 (B) 360 (C) 380 (D) 3240
12. A class collected seven hundred fourteen box tops. Which number represents seven hundred fourteen?
 (A) 704 (B) 714 (C) 740 (D) 741
13. If Rizvan sells 479 eggs each day, then how many eggs will he sell in a week ?
 (A) 486 (B) 2833 (C) 2838 (D) 3353

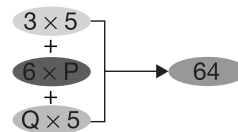
ACHIEVERS SECTION

14. Look at the given number bond.

Q is 1 more than P.

Then, $P + Q = \underline{\quad}$.

- (A) 1 (B) 5 (C) 6 (D) 9



15. Find the value of \star .

$\blacksquare + \blacksquare = 12$; $\bullet + \blacksquare = 17$; $\bullet - \text{Crescent} = 9$; $\star = \text{Crescent} \times \bullet - \blacksquare = ?$
 (A) 11 (B) 16 (C) 20 (D) 14

SPACE FOR ROUGH WORK

ANSWERS

1. (B) 2. (B) 3. (C) 4. (A) 5. (A) 6. (B) 7. (A) 8. (A) 9. (A) 10. (A) 11. (B) 12. (B) 13. (D) 14. (D) 15. (B)