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ST. LAWRENCE HIGH SCHOOL

THIRD TERM – 2018

SOLUTION KEY

FOR GOD AND COUNTRY

Sub : ARITHMETIC **Class : VI** **F.M. : 90**

Duration : 2 HR 30 MIN **Date : 15.11.18**

GROUP – A

1. **MCQ** [1x5=5]

1.1. Which of the following sums is the least?

a) (-10) + (-6)
c) (+16) + (-25)
b) (-13) + (+8)
d) (-11) + (+13)

Ans : (a) (-10) + (-6)

1.2 The ratio of the number of sides of a square to the number of edges of a cube is

a) 3 : 2
c) 1 : 2
b) 1 : 3
d) 3 : 1

Ans : (b) 1 : 3

1.3 If ab = 36, which of the following is correct?

a) a : 6 = b : 6
c) a : 9 = 4 : b
b) a : 2 = b : 18
d) 4 : a = 9 : b

Ans: (c) a : 9 = 4 : b

1.4 The cost price of an article is Rs 6250. Rekha sells it at a loss of 24%. Find the selling price.

a) Rs 1500
c) Rs 6210
b) Rs 4750
d) Rs 5000

Ans: (b) Rs 4750

1.5 Which of the following is the slowest speed?

a) $6\frac{1}{2}$ km/hr
c) $\frac{1}{2}$ km/min
b) 90 m/min
d) 3 km/sec

Ans: (b) 90 m/min

2. **State TRUE or FALSE for the following statements** [1x5=05]

a) Zero is not an integer as it neither positive nor negative.

ANS: FALSE

b) The sum of three different integers can never be zero.

ANS: FALSE

c) The product of a negative and a positive integer may be zero.

ANS: FALSE

d) b ϵ {a, e, i, o, u }

ANS: FALSE

e) If two sets are equal, they are equivalent.

ANS: TRUE

3. **Fill in the blanks** [1x03=03]

a) The greatest negative integer is _____.

ANS: -1

b) The _____ value of -16 and 16 is the same.

ANS: ABSOLUTE

c) 36 litre = _____ cm^3

ANS: 36000 cm^3

4. **Answer the following questions:** [1x12=12]

a) Write the opposite of (-20).

Ans: +20

b) Arrange the following sets of integers in increasing order: 2, -4, 0, -8, 1, 6.

Ans: -8, -4, 0, 1, 2, 6

c) State whether the following set is finite or infinite: {Number of people in India}

Ans: Infinite set

d) State whether the following set is a singleton set or not: {Capital of USA}

Ans: Singleton set

e) State whether the following set is an empty set or not : {The set of women army chief in India since 1947}

Ans: Empty set

f) What is the cardinal number of the following set: The set of weeks having 8 days.

Ans: Zero

g) State whether the following pairs of sets are equal sets or not: P = {a, b, c, d} and Q = { d, a, c, b}

Ans: Equal sets

h) Express the following in the language of ratio: Uma is thrice as tall as Shikha.

Ans: Uma's height : Shikha's height = 3 : 1

i) Express the following ratios in the simplest form: Rs 30 : Rs 35

Ans: 6 : 7

j) Write an integer to name the number in the given sentences: the elevator is 2 floors below the street level.

Ans: -2

k) Find the mean of the following data set: 3, 8, 5, 5, 7, 10, 4

Ans: 6 [calculation = (3 + 8 + 5 + 5 + 7 + 10 + 4) / 7]

l) Find the median of the following data set: 3, 8, 5, 5, 7, 10, 4

Ans: 5 [calculation 3, 4, 5, 5, 7, 8, 10]

GROUP – B

5) Answer the following : **(5X2 = 10)**

i) Define singleton set.
A: Set containing one element.

ii) When two sets are known as equivalent sets.
A: When number of elements are equal.

iii) What is the absolute valu of (-3)2 + (-32)
A: $9 - 9 = 0$

iv. Define perimeter of a closed figure.
A: The sum of the lengths of the sides of a closed figure.

v. Find the surface area of a cube whose age is 15 cm.
A: $a^3 = 216 \Rightarrow a = 6m$

6) Answer the following: (Any 5) :-- **(5X3 = 15)**

i) The ratio of boys to girls in a class is 3:2. If there are 33 boys, how many girls are there ?

A: $\frac{3}{2} = \frac{33}{x} => x = 22$

ii) Soumitra bought a bike for Rs. 50000and paid Rs 1000 as transportation charges. He sold it for Rs. 55000. Find the profit or loss.

A: Profit Rs. $\{55000 - (50000 + 1000)\} = \text{Rs.}\,4000$

iii) A car moves a speed of 54 km/hr. What is the speed of the car in meters per second?

A: $\frac{54\text{km}}{\text{hr}} = \frac{54000}{3600}\text{m/s} = 15\text{m/s}$

iv) Find the distance covered by a cycle moving along the boundary of a triangular park whose dimensions are 107m 54cm, 141 m 42 cm, 123 m 88cm in making one complete round.

A: 107 m 54 cm
141 m 42 cm
123 m 88 cm

372 m 84 cm

v) Find the surface area of a cube whose age is 15 cm.

A:Surface area = $6 \times 15^2 = 1350\text{cm}^2$

vi) Give an example of of pictograph

A: Any Suitable example

vii) Find cost of fencing a square of field of side 320m at a rate of Rs 35 per meter

A: Cost = $Rs.320 \times 435 = Rs.44800$

GROUP – C

7) Answer the following: (Any 8) :-- (8X5 = 40)

i) What is the cardinal number of the following sets :

a) The set of hours in a day – 24
b) The set of prime numbers less than 10 – 4
c) The set of months of the year with names that begin with letter 'S' – 1
d) The set of months having 31 days – 7
e) $X = \{\, letters\ in\ the\ word\ 'MADAM'\} -$ 3

ii) A carpenter had a rectangular board which measured 4m by 3m. He cut out a square piece of side 125cm. What is the ratio of the area of the cut out piece & the remaining piece?

A: Measurement of rectangular board: 4m = 400cm & 3m = 300cm
Area of rectangular board = $400cm \times 300cm = 120000cm^2$
Area of cut out square of side 125cm is = $125cm \times 125cm = 15625cm^2$
Area of remaining piece = $(120000 - 15625)cm^2 = 104375cm^2$
Ratio of the area of cut out piece and remaining piece =
$15625 : 104375 => 25 : 167$

iii) A television & a refrigerator were sold for Rs.12000 each. The television was sold at a loss of 20% & the refrigerator at a profit of 20% of the cost. How much was gained or lost in the entire transaction? Also find the profit or loss percentage.

A: SP of tv = Rs.12000, Loss = 20%
If CP of tv is rs.100, then SP of tv = Rs.80

Therefore, When SP = Rs.80, CP = Rs. 100

When SP = Rs. 12000, CP = $Rs.\left(\frac{100}{80} \times 12000\right) = Rs.15000$

Similarly, CP of refrigerator = Rs. 10000

Total SP = Rs.(12000+12000) = Rs. 24000

Total CP = Rs.(15000+10000) = Rs. 25000

Loss = Rs.(25000 – 24000) = **Rs. 1000**

Loss % = $\frac{Loss}{CP} \times 100 = \frac{1000}{25000} \times 100 = 4\%$

iv) A motor car starts with a speed of 70 Km/hr with its speed increasing every two hours by 10 Km/hr. How much time will it take to cover 345 Km?

A: Distance covered in first 2 hours = (70X2)km = 140 km

Distance covered in next 2 hours = (80X2)km = 160 km

Remaining distance = 345km – (140+160)km = 45 km

Speed in the 5th hour = 90km/hr

Time taken in covering 45 km = $\frac{Distance}{Speed} = \frac{45}{90} = \frac{1}{2} hr$

Total Time = $\left(2 + 2 + \frac{1}{2}\right) hr = 4\frac{1}{2}\,\boldsymbol{hr}$

v) A hall of 25m length & 15m breadth is surrounded by a verandah of uniform width of 3.5m. What is the area of the verandah? Also find the cost of flooring the verandah at Rs.30 per m^2.

A: Area of rectangle including verandah width of 3.5m:

(25+3.5+3.5)m X (15+3.5+3.5)m = (32 X 22)sq.m

Area of rectangle excluding Verandah = (25 X 15)sq.m

Therefore, **area of verandah** = (32 X 22)sq.m – (25 X 15)sq.m = **329 sq.m**

Cost of flooring = Rs.(329 X 30) = **Rs.9870**

vi) A solid cube of edge 20cm is melted & cast into a cuboid whose base measures 25cm by 20cm. Find the height of the cuboid.

A: Volume of cube of edge 20cm = (20X20X20)cm^3

Base measure of the casted cuboid = 25cm by 20 cm

Let height be 'h'

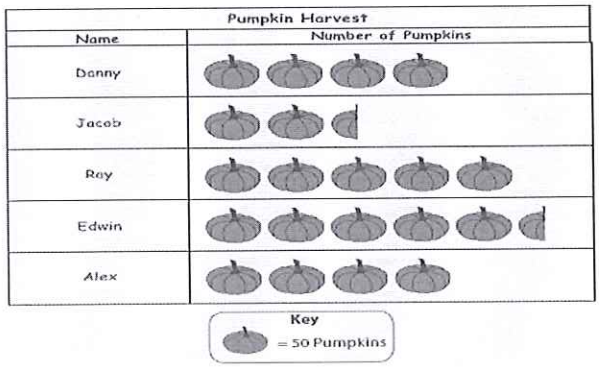
Therefore according to the problem:

25 X 26 X h = 20 X 20 X 20

Therefore h = 16

The height of the cuboid is 16cm

vii)



a) **Who harvested the most?** - Edwin
b) **How many pumpkins did Jacob harvest?** – 2.5 X 50 = 125
c) **Who harvested 250 pumpkins?** - Ray
d) **Name the farmers who have harvested the same number of pumpkins** – Danny & Alex
e) **Danny harvested more pumpkins than Ray. Is that true?** – No. The statement is false.

viii) **Fill in the blanks:**

a) **(+3) + (-5) = (-2)**
b) **(-16) + (+5) = (- 11)**
c) **(+27) + (-11) = (+16)**
d) **(+13) + (-13) = 0**
e) **(-12) + (-13) = (-25)**

ix) **A dealer purchased 20 chairs at Rs.225 per chair. He sold 12 chairs at Rs.275 per chair & the remaining at Rs.200 per chair. Find his gain per cent.**

A: CP of 20 chairs = (20 X 225) = Rs.4500
SP of 20 chairs = (12 X 275) + [(20-12) X 200] = Rs. 4900
Gain = Rs(4900 – 4500) = Rs.400
Gain % = $\frac{400}{4500} \times 100 = 8\frac{8}{9}\%$

x) **(a) Express the following speeds in km/hr**

(1) $12\frac{1}{2}\ m/s$ (2) 270m in 12 sec (3) 20m/s

A: Multiply each by $\frac{18}{5}$

(1) 45km/hr (2) 81km/hr (3) 72km/hr

(b) Express the following speeds in m/s

(1) $90km/hr$ (2)$12.6km/hr$

A: Multiply each by $\frac{5}{18}$

(1)25 m/s (2) 3.5 m/s

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