

Answer key of final Exam.
Class - 7th
Subject - Maths

Case study 1

- (i) $-\frac{4}{3}$ (a) (iii) (d) Positive
(ii) $\frac{8}{3}$ (d) (iv) $-\frac{5}{3}$ (b)

Case study 2.

- (i) c, (11.2 cm) (ii) b (22 cm)
(iii) c (75.46 cm²) (iv) c (1)

Case study 3

- (i) c (Rs 72) (ii) c (Rs 75)
(iii) a (Principal + S.I) (iv) a $\left(T = \frac{S.I \times 100}{R \times P}\right)$

Case study 4

- (i) $-\frac{3}{5}$ (b) (ii) $-x$ (b)
(iii) $-8yx$ (b) (iv) $14xy, 42yx$ (b)

Case study 5

- (i) 151 cm (a) (ii) 23 cm (b) (iii) 141.4 cm (b) (iv) 5 (b)

Case study 6

- (i) b^4 (a) (ii) 5×10^7 (c) (iii) 6^5 (b) (iv) 3 (c)

Q7. ratio 15 kg to 210 g is —

$$\frac{15 \text{ kg}}{210 \text{ g}} = \frac{15 \times 1000 \text{ g}}{210 \text{ g}} = 500:7$$

or

$$\frac{\text{Days}}{\text{hours}} = \frac{30 \text{ days}}{36 \text{ hours}} = \frac{30 \times 24 \text{ hours}}{36 \text{ hours}} = 20:1$$

Q8

$$\frac{100}{9999}$$

Q9

$$\frac{65}{84}$$

Q9. Rational Number (Positive Rational Number)

Q10. Area of Rectangle = length $\times$ Breadth

$$= 5.5 \times 2.4$$
$$= 13.20 \text{ m}^2$$

or

$$\begin{aligned} \text{Area of Square} &= \text{Side} \times \text{Side} \\ &= 1.2 \times 1.2 \\ &= 1.44 \text{ cm}^2 \end{aligned}$$

Q11. Mode of scores in Mathematics test = 20.

Q12. Range of data = Highest value - lowest value

$$= 148 - 130$$
$$= 18$$

or

$$\begin{aligned} \text{Mean} &= \frac{\text{Sum of all observations}}{\text{No of observation}} = \frac{0+1+2+3+4}{5} \\ &= \frac{10}{5} = 2 \end{aligned}$$

co-efficient of x in expression $4x+3y$ is 4 (d)

Q14. (b) $-xy^2, -2xy^2$
or

$$a+b-x+b-x+x+1-2b = 2b+1-2b = 1$$

(a) 1.

Q15. $7^3 = 343 \neq 243$ (False)

Q16. $(-2) \times (-3)^3 \neq -2 \times -27 = 54$ (True)

Q17. True.

Q18. $18 - 2x + 12 = 8x$
 $\Rightarrow 30 = 8x + 2x \Rightarrow 30 = 10x \Rightarrow x = \frac{30}{10}$
 $x = 3$ (c)

Q19. One fourth of n is 3 more than 2.
 $\frac{n}{4} = 3 + 2 \Rightarrow \frac{n}{4} - 2 = 3$ (a)

Q20. (c) 9.

Q21. True

Q22. $\frac{a+b}{2}$

Part-B

Q23. The given situation varies directly

$$\frac{x_1}{y_1} = \frac{x_2}{y_2}, \quad \frac{\text{Computers}}{\text{No. of Students}} \Rightarrow \frac{3}{6} = \frac{x_2}{24}$$

$$\frac{3 \times 24}{6} = x_2 \Rightarrow x_2 = 12$$

24 students needs 12 computers, $\left\{ \begin{array}{l} \text{Unitary Method} \\ \text{also use} \end{array} \right\}$

or

$$15\% \text{ of } 250 \\ = \frac{15}{100} \times 250 = \frac{15}{2} = 37.5$$

Q 24 (i) $-\frac{3}{8} < 0$

ii $\frac{4}{-9} > \frac{3}{-7}$

$$-\frac{4}{9} < \frac{3}{7}$$

Q 25.

Area of a wall = length $\times$ Breadth

$$= 3\text{m} \times 4\text{m}$$

$$= 12\text{m}^2$$

$$1\text{m}^2 = 10000\text{cm}^2$$

$$\text{Area of tiles} = \frac{120000\text{cm}^2}{10\text{cm} \times 12\text{cm}}$$

$$= 120\text{cm}^2$$

$$\text{No of tiles} = \frac{\text{Area of wall}}{\text{Area of tiles}} = \frac{120000}{120} = 1000 \text{ tiles}$$

Q 26

or

$$\text{Side of square field} = 179\text{m}$$

$$\text{Area of square field} = 179 \times 179$$

$$= 32041\text{m}^2$$

$$\text{Cost of raising a lawn} = \text{rate} \times \text{Area}$$

$$= 1.5/\text{m}^2 \times 32041\text{m}^2$$

$$= ₹ 48061.5$$

Q 26.

(i) $-\frac{6}{7} < \frac{1}{13}$

$$\frac{-3}{5} > \frac{-5}{6}$$

$$-18 > -25$$

$$\{(2^3)^4 \times 2^8\} \div 2^{12}$$

$$(a^m)^n = a^{mn}$$

$$(2^{3 \times 4} \times 2^8) \div 2^{12}$$

$$a^m \times a^n = a^{m+n}$$

$$(2^{12+8}) \div 2^{12}$$

$$= 2^{20-12}$$

$$a^m \div a^n = a^{m-n}$$

$$= 2^8$$

Q 28 Sum of $3x^2 - 2x$ and $3x + 7$

$$= 3x^2 - 2x + 3x + 7$$

$$= 3x^2 + x + 7$$

Sum of $2x^2 - 3x + 1$ and $3x^2 + x + 7$

$$2x^2 - 3x + 1 + 3x^2 + x + 7$$

$$= 5x^2 - 2x + 8$$

Q 29

Part-3

Insert six rational numbers $\frac{3}{8}$ and $\frac{3}{5}$

Take L.C.M of 5, 8 = 40

$$\frac{3 \times 5}{8 \times 5}, \frac{3 \times 8}{5 \times 8},$$

$$\frac{15}{40}$$

$$\frac{24}{40}$$

$$\frac{15}{40}, \frac{16}{40}, \frac{17}{40}, \frac{18}{40}, \frac{19}{40}, \frac{20}{40}, \frac{21}{40}, \frac{22}{40}, \frac{23}{40}$$

Q 30 (i) 3.84×10^8

(ii) 1.2756×10^7

OR

$$\frac{9^n \times 3^2 \times 3^n - (27)^n}{(3^3)^5 \times 2^3} = \frac{1}{27}$$

$$\Rightarrow \frac{3^{2n+2+n} - (3^3)^n}{3^{3 \times 5} \times 8} = \frac{1}{27}$$

$$\Rightarrow \frac{3^{3n+2} - 3^{3n}}{3^{15} \times 8} = \frac{1}{27}$$

$$\Rightarrow \frac{3^n (3^2 - 1)}{3^{15} \times 8} = \frac{1}{27}$$

$$\Rightarrow \frac{3^{3n} \times 8}{3^{15} \times 8} = \frac{1}{27}$$

$$\Rightarrow 3^{3n} = \frac{3^{15}}{3^3}$$

$$\Rightarrow 3^{3n} = 3^{15-3}$$

$$\Rightarrow 3^{3n} = 3^{12}$$

$$\therefore 3n = 12$$

$$n = 4$$

Q 33.

$$x = 5$$

Multiply it by 2

$$2x = 5 \times 2$$

$$2x = 10$$

①

Add 4 both sides

$$x + 4 = 5 + 4$$

$$x + 4 = 9$$

Subtract 7 from both sides

$$x - 7 = 5 - 7$$

$$x - 7 = -2$$

③

Many More ---

Q 34 (i) Highest Marks =

$$\text{Lowest Marks} = 39$$

(ii) Range of marks.

$$= \text{highest Marks} - \text{lowest Marks}$$

$$\text{Range} = 95 - 39$$

$$= 56$$

(iii) Mean Marks obtained by group

$$= \frac{\text{Sum of observations}}{\text{No of observations}}$$

$$= \frac{90 + 85 + 39 + 48 + 56 + 95 + 81 + 45 + 85 + 76}{10}$$

=

$$\frac{730}{10} = 73$$

Q 32 Subtract $6x^3 - 7x^2 + 5x - 3$ from $4 - 5x + 6x^2 - 8x^3$

$$- 8x^3 + 6x^2 - 5x + 4$$

$$6x^3 - 7x^2 + 5x - 3$$

$$- \quad + \quad - \quad +$$

$$- 14x^3 + 13x^2 - 10x + 7 \text{ Ans}$$

OR

$$y^3 - 3xy^2 - 4x^2y$$

$$- y^3 + 6xy^2 + 2x^2y + x^3$$

$$+ \quad - \quad - \quad -$$

$$2y^3 - 9xy^2 - 6x^2y - x^3 \text{ Ans}$$

4. Marks of Palak = x
Marks of Abha = $2x$
A.T.O

$$2(2x) + 3(x) = 280$$

$$4x + 3x = 280$$

$$7x = 280$$

$$x = \frac{280}{7} = 40$$

$$x = 40$$

Hence marks of Abha = 2×40
 $= 80$

Part-3

Q 35

(i) Ratio of calcium, carbon and oxygen = $10:3:12$
Ratio Sum = $10+3+12$
 $= 25$

$$\text{Percentage of carbon in chalk} = \frac{3}{25} \times 100$$
$$= 12\%$$

(ii) Weight of carbon = $3g$.

Percentage of carbon = 12% .

Let total weight of carbon = x

$$12\% \text{ of } x = 3g$$

$$\frac{12}{100} \times x = 3g$$

$$x = \frac{3 \times 100}{12}$$

$$x = 25g$$

Q.26

Principal amount = ₹ 1200

Time = 3 years

Rate = 12% p.a.

$$S.I = \frac{P \times R \times T}{100}$$

$$= \frac{1200 \times 3 \times 12}{100}$$

$$= ₹ 432$$

$$\text{Amount} = \text{Principal} + S.I$$

$$= 1200 + 432 = ₹ 1632$$

(ii) Principal = ₹ 7500

Time = 3 years

Rate = 5% p.a.

$$S.I = \frac{P \times R \times T}{100}$$

$$= \frac{7500 \times 3 \times 5}{100}$$

$$S.I = ₹ 1125$$

$$\text{Amount} = 7500 + 1125$$

$$= ₹ 8625$$

Q.36.

Side of a square

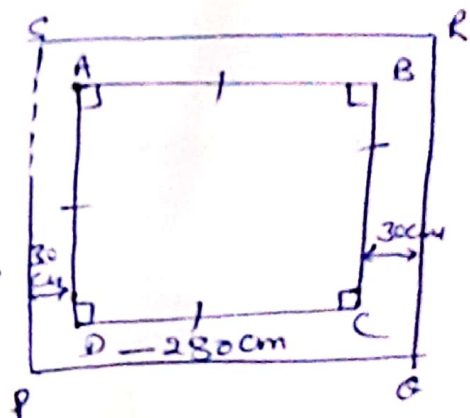
flower bed = 2m 80cm

$$= 280 \text{ cm}$$

Area of Square = Side $\times$ Side

$$= 280 \times 280$$

$$= 78400 \text{ cm}^2$$



Side of new square PQRS = 280 + 30 cm + 30 cm

$$= 340 \text{ cm}$$

Area of new square = 340 $\times$ 340

$$= 115600 \text{ cm}^2$$

Increase in Area of flower bed = Area of PQRS -

area of ABCD

$$= 115600 \text{ cm}^2 - 78400$$

$$= 37200 \text{ cm}^2$$

$$= 3.72 \text{ m}^2$$