

# ANSWERS AND EXPLANATIONS

## EXERCISE 1

1. (b) Number of transferred employees

$$= 40\% \text{ of } 1225$$

$$= \frac{1225 \times 40}{100} = 490$$

- 2 (b) Let the original fraction is  $\frac{x}{y}$ .

$$\text{Then, } \frac{x+5x}{y+3y} = 2 \frac{4}{7}$$

$$\Rightarrow \frac{6x}{4y} = \frac{18}{7}$$

$$\Rightarrow \frac{x}{y} = \frac{72}{42} = \frac{12}{7}$$

3. (c) Let the income of Shilpa be = ₹x

∴ Expenditure on school fees, rent and furniture

$$= (8 + 25 + 17)\% = 50\%$$

$$\text{Remaining} = ₹ \frac{x}{2}$$

$$\text{Expenditure on medical bills} = ₹ \frac{x}{2} \times \frac{1}{4} = \frac{x}{8}$$

$$\text{Remaining amount} = \frac{x}{2} - \frac{x}{8} = \frac{3x}{8}$$

$$= ₹ \frac{4x - x}{8} = \frac{3x}{8}$$

$$\therefore \frac{3x}{8} = 6000$$

$$\Rightarrow x = \frac{6000 \times 8}{3} = ₹16000$$

$$\therefore \text{Expenditure on rent} = 16000 \times \frac{25}{100} = ₹4000$$

4. (b) Let the number be = x

$$\therefore (89 - 73)\% \text{ of } x = 448$$

$$\Rightarrow \frac{x \times 16}{100} = 448$$

$$\Rightarrow x = \frac{448 \times 100}{16} = 2800$$

$$\therefore 49\% \text{ of } 2800 = \frac{2800 \times 49}{100} = 1372$$

- 5 (e) Required production =  $70 \left(1 + \frac{8}{100}\right)^2$  lakh tonnes

$$= 70 \left(1 + \frac{2}{25}\right)^2 \text{ lakh tonnes}$$

$$= 70 \times \frac{27}{25} \times \frac{27}{25} = 81.648 \text{ lakh tonnes}$$

6. (b) Let the number be = x

According to the question,

$$(58 - 39)\% \text{ of } x = 247$$

$$\text{or, } x \times \frac{19}{100} = 247$$

$$\text{or, } x = \frac{247 \times 100}{19} = 1300$$

$$\therefore 62\% \text{ of } 1300 = 1300 \times \frac{62}{100} = 806$$

7. (c) Population at the end of 2nd year

$$= 126800 \times \left(1 + \frac{15}{100}\right) \times \left(1 - \frac{20}{100}\right)$$



$$= 126800 \times \frac{115}{100} \times \frac{80}{100} = 116656$$

8. (a) Let the number be  $x$ .

$$\therefore \frac{75x}{100} - \frac{20x}{100} = 378.4$$

$$\text{or, } x = \frac{378.4 \times 100}{55}$$

$$\therefore \frac{40x}{100} = \frac{378.4 \times 100}{55} \times \frac{40}{100} = 275.2$$

9. (e) Fraction is  $\frac{x}{y}$

$$\therefore \frac{x + \frac{200}{100}x}{y + \frac{150}{100}y} = \frac{9}{35}$$

$$\Rightarrow \frac{x + 2x}{y + 1.5y} = \frac{9}{35}$$

$$\Rightarrow \frac{3x}{2.5y} = \frac{9}{35}$$

$$\therefore \frac{x}{y} = \frac{9 \times 2.3}{3 \times 35} = \frac{3}{14}$$

10. (b) Let the number be  $= x$

According to the question,

$$(42 - 35)\% \text{ of } x = 110.6$$

$$\text{or, } x \times \frac{7}{100} = 110.6$$

$$\text{or, } x = \frac{110.6 \times 100}{7} = 1580$$

$$\therefore 60\% \text{ of } 1580 = \frac{1580 \times 60}{100} = 948$$

11. (c) Let the original fraction be  $= \frac{x}{y}$

According to the question,

$$\frac{x \times \frac{350}{100}}{y \times \frac{400}{100}} = \frac{7}{9}$$

$$\Rightarrow \frac{7x}{8y} = \frac{7}{9} \Rightarrow \frac{x}{y} = \frac{7}{9} \times \frac{8}{7} = \frac{8}{9}$$

12. (a) Weight of low quality of wheat in 150 kgs of wheat

$$= \frac{150 \times 10}{100} = 15 \text{ kg.}$$

Suppose that  $x$  kgs of good quality wheat is mixed.

According to the question,

$$\frac{(x+150) \times 5}{100} = 15$$

$$\text{or, } x = 150 \text{ kg.}$$

13. (b) Let the number be  $= x$

$$\text{Difference in } \% = 42 - 28 = 14\%$$

$$\text{or } x = \frac{210 \times 100}{14} = 1500$$

$$\therefore \text{Required answer} = \frac{59}{100} \times 1500 = 885$$

14. (e) Let the maximum aggregate marks  $= x$

According to the question,

$$40\% \text{ of } x - 4\% \text{ of } x = 261$$

$$\text{or } x \times \frac{(40-4)}{100} = 261$$

$$\therefore x = \frac{261}{36} \times 100 = 725$$

15. (b) Let the number be  $x$ .



$$\therefore \frac{x \times 58}{100} - \frac{x \times 39}{100} = 247$$

$$\Rightarrow x = \frac{247 \times 100}{19} = 1300$$

$$\therefore x \times \frac{82}{100} = 1300 \times \frac{82}{100} = 1066$$

16. (a) The monthly salary of Manish will be

$$= \frac{3818 \times 100}{20} = ₹19090$$

17. (e) Required number of transferred employees

$$= \frac{1556 \times 25}{100} = 389$$

18. (d) Required % =  $\frac{555 \times 100}{850} = 65.294\%$

$$= 65\% \text{ (approx.)}$$

19. (d) Total marks obtained by the student

$$= 6 \times \frac{64}{100} \times 150 = 576$$

Marks obtained in Hindi and English

$$= 25\% \text{ of } 576$$

$$= 576 \times \frac{25}{100} = 144$$

20. (b) Required percentage =  $\frac{1012}{1150} \times 100 = 88$

21. (b) Population of the town after 2 years

$$= 198000 \left(1 + \frac{7}{100}\right) \left(1 - \frac{5}{100}\right)$$

$$= \frac{198000 \times 107 \times 95}{100 \times 100} = 201267$$

22. (d) Let the number be x.

According to the question,

$$(38 - 24\%) \text{ of } x = 135.10$$

$$\text{or, } x \times \frac{14}{100} = 135.10$$

$$\text{or, } x = \frac{135.10 \times 100}{14} = 965$$

$$\therefore 965 \text{ of } 40\%$$

$$= 965 \times \frac{40}{100} = 386$$

23. (b) Let the number of girls in the school be = x

$$\therefore \text{Number of boys} = \frac{124x}{100}$$

$$\therefore \text{Required ratio} = \frac{124x}{100} : x$$

$$= 124 : 100 = 31 : 25$$

24. (d) Let the number be = x

According to the question,

$$(58 - 37)\% \text{ of } x = 399$$

$$\text{or, } x \times \frac{21}{100} = 399$$

$$\therefore x = \frac{399 \times 100}{21} = 1900$$

$$\therefore 72\% \text{ of } 1900 = 1900 \times \frac{72}{100} = 1368$$

25. (c) Let the maximum marks be = x

According to the question,

$$x \text{ or } 5\% = 296 - 259$$

$$\text{or, } \frac{x \times 5}{100} = 37$$

$$\therefore x = \frac{3700}{5} = 740$$

26. (b) Let the number be = x

According to the question,

$$\frac{58x}{100} - \frac{28x}{100} = 225$$



$$\text{or, } \frac{30x}{100} = 225$$

$$\text{or, } x = \frac{225 \times 100}{30} = 750$$

$$\therefore \text{ Required answer} = 750 \times \frac{38}{100} = 285$$

27. (c) Let the number be  $x$

$$\therefore \frac{67x}{100} - \frac{42x}{100} = 214$$

$$\Rightarrow x = \frac{214 \times 100}{25}$$

$$\therefore \frac{75x}{100} = \frac{214 \times 100}{25} \times \frac{75}{100} = 642$$

28. (c) Required number of employees

$$= \frac{1850 \times 38}{100} = 703$$

29. (c) Required maximum aggregate marks

$$= (256 - 192) \times \frac{100}{10} = 640$$

30. (a) Required monthly income

$$= \frac{3960 \times 100}{30} = ₹13200$$

31. (e) Required approximate percentage

$$= \frac{654 \times 100}{950} \%$$

$$= 68.84\%$$

$$\approx 69\%$$

32. (b) Total amount spent

$$= 44620 + 32764 = ₹ 77384$$

Percentage of amount spent

$$= 100 - 32 = ₹ 68\%$$

$$\therefore 68\% = 77384$$

$$\therefore 100\% = \frac{77384 \times 100}{68}$$

$$= ₹ 113800$$

33. (c) Required amount

$$= \frac{2100}{6} \times (6 + 8 + 9)$$

$$= \frac{2100}{6} \times 23 = ₹ 8050$$

34. (a) Let the maximum marks be  $x$

$$\therefore (265 + 55) = \frac{40x}{100}$$

$$\text{or } 320 \times 100 = 40x$$

$$\therefore x = \frac{320 \times 100}{40} = 800$$

35. (a) Let the original fraction =  $\frac{x}{y}$

According to the question,

$$\frac{\frac{300x}{100}}{\frac{260y}{100}} = \frac{7}{13}$$

$$\text{or } \frac{30x}{26y} = \frac{7}{13}$$

$$\therefore \frac{x}{y} = \frac{7}{13} \times \frac{26}{30} = \frac{7}{15}$$

36. (b) 60% of 250 = 150

$$40\% \text{ of } 125 = 50$$

No. of correct answers in remaining 125 questions

$$= 150 - 50 = 100$$

$$\therefore \text{ Percentage} = \frac{100 \times 100}{125} = 80\%$$

37. (a) Let the original fraction be  $\frac{x}{y}$ , then,  $\frac{x \times 320}{y \times 250} = \frac{4}{5}$



$$\Rightarrow \frac{x}{y} = \frac{25 \times 4}{32 \times 5} = \frac{5}{8}$$

$$\text{Then, } \frac{x+2x}{y+2.5y} = \frac{3}{14}$$

38. (e) Population after two years

$$= 48600 \times \frac{125}{100} \times \frac{92}{100} = 55890$$

$$\Rightarrow \frac{3x}{3.5y} = \frac{3}{14}$$

39. (d) Dhreeu's monthly salary

$$= \frac{600000}{12} = ₹ 50000$$

$$\Rightarrow \frac{x}{y} = \frac{3 \times 3.5}{14 \times 3} = \frac{1}{4}$$

Surya's monthly salary

$$= 50000 \times \frac{40}{100} = ₹ 20000$$

43. (e) Let the maximum marks be  $x$

According to the question,

$$\therefore \frac{35x}{100} + 42 = 336$$

$$\therefore x = 840$$

Pranab's monthly salary

$$= 20000 \times \frac{80}{25} = ₹ 64000$$

40. (a) Total marks in the test

$$= (280 + 80) \times \frac{100}{45}$$

$$= 800$$

Passing marks for girls

$$= 800 \times \frac{30}{100} = 240$$

$\therefore$  Required marks

$$= 240 - 108 = 132$$

41. (e) Votes obtained by winner candidate = 64%

Votes obtained by runner candidate

$$= (400 - 64) = 36\%$$

$$\text{Difference of votes} = (64 - 36) = 28\%$$

According to question,

$$\text{Total votes} = \frac{992 \times 100}{28} = 3542$$

42. (e) Let the original fraction be  $\frac{x}{y}$ .

## EXERCISE 2

1. (d) Let the third number be 100. Then, the first and second numbers will be 20 and 50, respectively.

$$\text{Required \%} = \frac{20}{50} \times 100 = 40\%$$

2. (b) Weight of the 1st box = 200 kg

Therefore, weight of 3rd box = 250 kg,

Weight of 2nd box = 300 kg and

Weight of 4th box = 350 kg

Thus, weight of 5th box = 500 kg

$\therefore$  Average weight of four heaviest boxes

$$= \frac{1400}{4} = 350 \text{ kg}$$

and average weight of four lightest boxes

$$= \frac{1100}{4} = 275 \text{ kg}$$

Required difference = 75 kg

3. (c) Let number be  $x$

$$\text{then, } \frac{2}{3} \times \frac{1}{7} \times x = \frac{240 \times 87.5}{100}$$



$$\text{or } \frac{2x}{21} = 87.5 \times 2.4$$

$$\text{or } x = 2205$$

4. (d) Working with options, we have

	Original number	New number	Difference
(a)	22	34	12
(b)	63	96	33
(c)	24	38	14

Obviously, (d) is the correct option.

5. (b) 15% of 40 = 6

6. (a) % change in rate =  $\frac{27-24}{24} \times 100 = \frac{100}{8}\%$

For fixed expenditure, % change in consumption

$$= \frac{\% \text{ change in rate}}{100 + \% \text{ change in rate}} \times 100$$

$$= \frac{100/8}{100 \left[ 1 + \frac{1}{8} \right]} \times 100 = \frac{100}{9}\% = 11\frac{1}{9}\%$$

7. (b) Let the total number of original inhabitants be x. Then,

$$(100 - 25)\% \text{ of } (100 - 10)\% \text{ of } x = 4050$$

$$\Rightarrow \left( \frac{75}{100} \times \frac{90}{100} \times x \right) = 4050 \Rightarrow \frac{27}{40}x = 4050$$

$$\Rightarrow x = \left( \frac{4050 \times 40}{27} \right) = 6000.$$

\(\therefore\) Number of original inhabitants = 6000.

8. (d) Let he had originally Rs x. Then

$$65\% \text{ of } x + 20\% \text{ of } x + 1305 = x$$

$$0.65x + 0.2x + 1305 = x$$

$$\Rightarrow 0.15x = 1305 \Rightarrow x = \text{Rs } 8700$$

\(\therefore\) His total investment = 65% of 8700 + 20% of 8700

$$= 85\% \text{ of } 8700 = \text{Rs } 7395$$

9. (d) Net effect on sale =  $-\frac{(\text{common \% change})^2}{100}$

$$= \frac{-(15)^2}{100} = 2.25\% \text{ decrease}$$

10. (a) Let the original price be x and sale be of y units.

Then, the revenue collected initially =  $x \times y$

Now, new price = 0.8x, new sale = 1.8 y

Then, new revenue collected = 1.44xy

$$\% \text{ increase in revenue} = \frac{0.44xy}{xy} \times 100$$

$$= 44\% \text{ increase}$$

11. (b) Since, expenditure = price \(\times\) consumption

$$\therefore 110\% \text{ of } 30 = \frac{132}{100} \times \text{new consumption}$$

$$\Rightarrow \frac{110}{100} \times 30 = \frac{132}{100} \times \text{new consumption}$$

$$\Rightarrow \text{New consumption} = 25 \text{ kg}$$

12. (a) Let the bill be Rs x. Then

$$90\% \text{ of } x = 45$$

$$\Rightarrow x = \frac{45 \times 100}{90} = \text{Rs } 50$$

13. (d) Let one month ago, production be x chocolates.

Then, 130 % of x = 9100

$$\Rightarrow x = \frac{9100 \times 100}{130} = 7000 \text{ chocolates}$$

14. (b) Let total number of votes polled be x.

Then, votes polled by other candidate

$$= (100 - 40)\% \text{ of } x = 60\% \text{ of } x$$

Now 60% of x - 40% of x = 160

$$\Rightarrow \frac{20x}{100} = 160 \Rightarrow x = 800 \text{ votes}$$

15. (c) After first year, the value of the scooter

$$= \text{Rs } 20,000$$

After second year, the value of scooter = Rs



16,000

After third year, the value of scooter = Rs 12,800

$$\Rightarrow \frac{y}{x} = \left( \frac{3}{25} \times 100 \right) \% = 12\%$$

16. (b) Let the original number be 100.

Then, the new number =  $100 \times 1.1 \times 0.9 = 99$

i.e. the number decreases by 1%.

17. (a) % reduction in consumption

$$= \frac{\% \text{ change in price}}{100 + \% \text{ change in price}} \times 100$$

$$= \frac{7}{100+7} \% = \frac{7}{107} \%$$

18. (d) Total cost = Rs.  $[1 \times 1000 + (100 - 2)\% \text{ of } 1 \times 4000]$

$$= \text{Rs. } (1000 + 0.98 \times 4000) = \text{Rs. } (1000 + 3920)$$

$$= \text{Rs. } 4920.$$

19. (b)  $\therefore \frac{\text{Marks of } y}{\text{Marks of } x} = \frac{100 + \% \text{ above minimum of } y}{100 + \% \text{ above minimum of } x}$

$$\Rightarrow \frac{710}{515} = \frac{100 + y}{103}$$

$$\Rightarrow 100 + y = \frac{710 \times 103}{515} = 142$$

$$\Rightarrow y = 42\%$$

20. (c) Let the salary of Ram be Rs 100. Then, salary of Amit = Rs 80 and salary of Ravi = Rs 120

Ratio of Ram's salary to Ravi's salary

$$= 100 : 120 = 5 : 6$$

21. (b) Total no. of machine parts in both the shipments =  $(120 + 80) = 200$

Total defective machine parts in both the shipments =  $120 \times 5\% + 80 \times 10\% = 6 + 8 = 14$

$$\text{Therefore, required \%} = \frac{14}{200} \times 100 = 7\%$$

22. (a) Let the numbers be x and y. Then,

$$x + y = \frac{28}{25}x \Rightarrow y = \frac{28}{25}x - x \Rightarrow y = \frac{3}{25}x$$

23. (d) Let original price be Rs x per orange. Then,

$$\text{Reduced rate} = (1 - 0.2)x = \text{Rs } 0.8x$$

$$\therefore \frac{2.50}{0.8x} - \frac{2.50}{x} = 5$$

$$\Rightarrow \frac{25}{8x} - \frac{2.5}{x} = 5 \Rightarrow x = \frac{1}{8}$$

$\therefore$  Original price of oranges per dozen

$$\frac{1}{8} \times 12 = \text{Rs } 1.5$$

and Reduced price = Rs  $(0.8)(1.5) = \text{Rs } 1.2$

24. (c) Let the inspector examined x metres,

then  $0.08\%$  of  $x = 2$

$$\Rightarrow \frac{x \times 0.08}{100} = 2$$

$$\text{or } x = \frac{200}{0.08} = 2500 \text{ metres}$$

25. (c) If the radius is diminished by  $r\%$ , then

$$\text{Area is diminished by } \left( 2r - \frac{r^2}{100} \right) \%$$

$$= 2 \times 10 - \frac{10^2}{100} = 19\%$$

26. (b) Let the total number of votes enrolled be x. Then,

Number of votes cast =  $75\%$  of x. Valid votes =  $98\%$  of  $(75\%$  of x).

$$\therefore 75\% \text{ of } [98\% \text{ of } (75\% \text{ of } x)] = 9261$$

$$\Rightarrow \left( \frac{75}{100} \times \frac{98}{100} \times \frac{75}{100} \times x \right) = 9261$$

$$\Rightarrow x = \left( \frac{9261 \times 100 \times 100 \times 100}{75 \times 98 \times 75} \right) = 16800.$$



27. (b) Let original income = Rs. 100. Then, saving = Rs. 10 and expenditure = Rs. 90.  
New income = Rs. 120, New saving = Rs. 10.  
New expenditure = Rs. (120 - 10) = Rs. 110.  
Increase in expenditure = Rs. (110 - 90) = Rs. 20.

$$\therefore \text{Increase \%} = \left( \frac{20}{90} \times 100 \right) \% = 22 \frac{2}{9} \%$$

28. (b) Let the original price of a screw driver and a hammer be Rs 100 each.

Then, price of 3 screw drivers and 3 hammers = Rs 600

Now, after increase of 5%, the price of 3 screw drivers = Rs 315

And after 3% increase the price of 3 hammers = Rs 309

Increased price of 3 hammers and 3 screw drivers = Rs 624

$$\text{Therefore, \% increase in price} = \frac{24}{600} \times 100 = 4\%$$

29. (a) Suppose price of the printer = P

$$\therefore \text{Price of a computer} = 3P$$

Total cost of 60 computers = 180 P

Total cost of 20 printers = 20 P

$$\therefore \text{Total cost of the purchase} = 200 P$$

Thus total cost of the printers is 10% of the total cost.

30. (c) Let the total number of candidates = x

Then, number of passed candidates

$$= (100 - 31)\% \text{ of } x = 69\% \text{ of } x$$

Now, 69 % of x - 31% of x = 247

$$\Rightarrow 38\% \text{ of } x = 247$$

$$\Rightarrow \frac{38}{100}x = 247 \Rightarrow x = \frac{247 \times 100}{38} = 650$$

31. (c) Let the total number of votes be x

$\therefore$  votes polled by winning candidate

$$= (100 - 30)\% \text{ of } x = 70\% \text{ of } x$$

Now, 70% of x - 30% of x = 15,000

$$\Rightarrow 40\% \text{ of } x = 15,000$$

$$\Rightarrow x = \frac{15000 \times 100}{40} = 37,500$$

$\therefore$  number of votes polled by winning candidate

$$= 70\% \text{ of } 37500$$

$$= \frac{70 \times 37500}{100} = 26,250$$

32. (b) Let B's salary be Rs 100,

then A's salary = Rs 125

$$\% \text{ lesser} = \frac{125 - 100}{125} \times 100 = \frac{25}{125} \times 100$$

$$= \frac{1}{5} \times 100 = 20\%$$

33. (c) Let the number of males be x. Then,

number of females = (5000 - x).

$$\therefore 10\% \text{ of } x + 15\% \text{ of } (5000 - x) = (5600 - 5000)$$

$$\Rightarrow \frac{10}{100}x + \frac{15}{100}(5000 - x) = 600$$

$$\Rightarrow 10x + 75000 - 15x = 60000.$$

$$\Rightarrow 5x = 15000 \Rightarrow x = 3000.$$

34. (d) 5 + 10% = 5.50

$$10 + 10\% = 11$$

$$11 + 10\% = 12.10$$

## EXERCISE 3

1. (c) Total Tractor = 29400

i.e., Mahindra + non Mahindra = 29400

Given : Mahindra tractor = 15000

$$\therefore \text{Non - Mahindra tractor} = 29400 - 15000 = 14400$$

Now, 53% of 29400 = Red Mahindra + Red Non-





Mahindra

$$\Rightarrow 29400 \times \frac{53}{100} = 15582.$$

Thus, Red Mahindra + Red Non-Mahindra = 15582

$$\text{Now, Non-Red Mahindra} = 15582 - \frac{98 \times 15000}{100}$$

$$= 15582 - 14700 = 882.$$

$$\therefore \% \text{ non-Red Mahindra} = \frac{882}{14400} \times 100 = 6.125\%$$

2. (b) Let  $x$  be the total grown quantity of wheat.

$\therefore$  According to the question

$$(7\% \text{ of } x) + 6 = \left( \frac{31}{4} \% \text{ of } x \right) + 3$$

$$\Rightarrow \frac{7x}{100} + 6 = \frac{31x}{400} + 3$$

$$\Rightarrow 3 = \left( \frac{31-28}{400} \right) x$$

$$\Rightarrow \frac{1200}{3} = x \Rightarrow 400 \text{ million tonnes wheat}$$

grown.

3. (d) Population after 1st year =  $\frac{110}{100} \times 10,000$

$$= 11000$$

Population after 2nd year

$$= 11000 \times \frac{120}{100} = 13200$$

Population after 3rd year

$$= 13200 \times \frac{95}{100} = 12,540$$

Hence, population after 3rd year = 12, 540.

4. (c) Suppose there are 100 candidates for entrance.

$\therefore$  No. of capable candidates = 40 and

No. of incapable candidates =  $100 - 40 = 60$

Now, no. of capable candidates who pass the test

$$= 80\% \text{ of } 40 = 32$$

No. of incapable candidates who pass the test

$$= 25\% \text{ of } 60 = 15$$

Note that these successful candidates become college students.

Thus, there are  $32+15 = 47$  college students in all, of which 32 are capable.

Hence, Proportion of capable college students

$$= \frac{32}{47} \times 100 = 68\%$$

5. (a) Let the salary of July be Rs  $\frac{5}{2}x$

and the salary of June be Rs  $\frac{9}{4}x$ .

Required percentages

$$= \frac{\frac{5}{2}x - \frac{9}{4}x}{\frac{9}{4}x} \times 100 \quad \text{and} \quad \frac{\frac{5}{2}x - \frac{9}{4}x}{\frac{5}{2}x} \times 100$$

$$= \frac{100}{9} \% \quad \text{and} \quad \frac{100}{10} \% = 11\frac{1}{9} \% \quad \text{and} \quad 10\%$$

6. (b) 30% of the residents are children.

$\therefore$  30% of the total residents = 24

$\therefore$  Total number of residents in the society

$$= \frac{24}{30} \times 100 = 80$$

7. (b) Number of questions attempted correctly

= (70% of 10 + 40% of 30 + 60% of 35)

$$= (7 + 12 + 21) = 40$$

Questions to be answered correctly for 60% grade = 60% of 75 = 45.

$\therefore$  Required number of questions =  $(45 - 40) = 5$ .

8. (b) Seats in executive class = 50

Seats for chair car = 450

Booked seats in total = 425



Booked in executive class = 48

Therefore, seats booked in chair class = (425 - 48)

$$= 377$$

Empty seats for chair class = 450 - 377 = 73

9. (c) Let his sales be worth Rs x. Then,

$$1000 + 2.5 \% \text{ of } (x - 4000) = 5\% \text{ of } x + 600$$

$$\Rightarrow \frac{5x}{100} - \frac{2.5(x-4000)}{100} = 1000 - 600$$

$$\Rightarrow 2.5x + 10000 = 40,000$$

$$\Rightarrow x = \frac{30,000}{2.5} = 12,000/-$$

10. (b) 40 % of boys =  $\frac{20}{2}$  girls

$$\Rightarrow 40\% \text{ of boys} = 10 \text{ girls}$$

Total no. of boys = 25

$$\therefore \text{Total number of students} = 25 + 20 = 45$$

11. (b) Let the number of candidates appeared from each state be x.

$$\text{Then, } 7\% \text{ of } x - 6\% \text{ of } x = 80 \Rightarrow 1\% \text{ of } x = 80 \\ \Rightarrow x = 80 \times 100 = 8000.$$

12. (d) Let the number of students be x. Then,

Total number of students of 8 years and above 8 years

$$= (100 - 20)\% \text{ of } x = 80\% \text{ of } x.$$

$$\therefore 80\% \text{ of } x = 48 + \frac{2}{3} \text{ of } 48 \Rightarrow \frac{80}{100}x = 80 \Rightarrow x$$

$$= 100.$$

13. (b) Let the number be x. Then,

$$\% \text{ error} = \frac{6x - x/6}{6x} \times 100 = \frac{35}{36} \times 100 = 97.2\%$$

14. (b) Let the total salary be Rs. x.

Then, (100 - 10)% of (100 - 20)% of (100 - 20)% of

$$(100 - 10)\% \text{ of } x = 15552$$

$$\Rightarrow \left( \frac{90}{100} \times \frac{80}{100} \times \frac{80}{100} \times \frac{90}{100} \times x \right) = 15552$$

$$\Rightarrow x = \left( \frac{15552 \times 10000}{64 \times 81} \right) = 30,000.$$

15. (b) Let his investment in the year 2000 be Rs. x.

Then, income in 2000 = Rs. [x + 20% of x] =

$$\text{Rs. } \frac{120}{100}x$$

$$\text{Income in 2001} = \text{Rs. } \left[ \frac{126}{100}(x - 5000) \right].$$

N o w ,

$$\frac{120}{100}x = \frac{126}{100}(x - 5000) \Rightarrow 120x = 126(x - 5000)$$

$$\Rightarrow 6x = 630000 \Rightarrow x = 105000.$$

16. (d) Let the maximum marks be x.

Then,  $x \times 30\% + 10 = x \times 40\% - 15$

$$\Rightarrow x \times 10\% = 25 \text{ or } x = 250$$

$$\text{Therefore, passing marks} = 250 \times \frac{30}{100} + 10 = 85$$

17. (a) If side is increased by a%, area increased by

$$\left( 2a + \frac{a^2}{100} \right) \%$$

$$= 2 \times 5 + \frac{5^2}{100} = 10 \frac{1}{4} \%$$

18. (d) Number of ticketless travellers in April

$$= 4000 \times \left( 1 + \frac{5}{100} \right) \left( 1 - \frac{5}{100} \right) \left( 1 - \frac{10}{100} \right)$$

$$= \left( 4000 \times \frac{21}{20} \times \frac{19}{20} \times \frac{9}{10} \right) = 3591.$$

19. (b) Let the capacity of the tank be 100 litres. Then,

**Initially :** A type petrol = 100 litres.

**After first operation :**



$$\text{A type petrol} = \left(\frac{100}{2}\right) = 50 \text{ litres;}$$

$$\text{B type petrol} = 50 \text{ litres.}$$

**After second operation :**

$$\text{A type petrol} = \left(\frac{50}{2} + 50\right) = 75 \text{ litres;}$$

$$\text{B type petrol} = (50/2) = 25 \text{ litres}$$

**After third operation :**

$$\text{A type petrol} = \left(\frac{75}{2}\right) = 37.5 \text{ liters;}$$

$$\text{B type petrol} = \left(\frac{25}{2} + 50\right) = 62.5 \text{ litres.}$$

$$\therefore \text{ Required percentage} = 37.5\%.$$

20. (a) Let the total number of students be  $x$ .

Number passed in one or both is given by :

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 65\% \text{ of } x + 60\% \text{ of } x - 40\% \text{ of } x \end{aligned}$$

$$= \left(\frac{65}{100}x + \frac{60}{100}x - \frac{40}{100}x\right) = \frac{85}{100}x = \frac{17}{20}x.$$

$$\text{Failed in both} = \left(x - \frac{17}{20}x\right) = \frac{3x}{20}.$$

$$\therefore \frac{3x}{20} = 90 \Rightarrow x = \left(\frac{90 \times 20}{3}\right) = 600.$$

21. (c)  $n(A) = 40$ ,  $n(B) = 50$ ,  $n(A \cap B) = 10$ .

$$\begin{aligned} n(A \cup B) &= n(A) + n(B) - n(A \cap B) = 40 + 50 \\ &- 10 = 80. \end{aligned}$$

$$\begin{aligned} \therefore \text{ Percentage reading either or both newspapers} \\ &= 80\%. \end{aligned}$$

$$\begin{aligned} \text{Hence, percentage reading neither newspaper} \\ &= (100 - 80)\% = 20\% \end{aligned}$$

22. (c) Let the number of students be 100.

Then number of students who play both the games

$$= (34 + 40) - (48) = 26$$

If 26 students play both the games, then the total number of students = 100

Therefore, if 234 students play both the games, then the total number of students

$$= \frac{100}{26} \times 234 = 900$$

23. (d) Let the total no. of parts produced at initial stage be 100. Then after three successive percentage rejections of 10%, 5% and 2%, we have

$$100 \times 0.9 \times 0.95 \times 0.98 = 83.79$$

Therefore, a single effective rejection

$$= 100 - 83.79 = 16.21$$

24. (d) Let the original length and breadth be both 10 cm each.

$$\text{Then original area} = 100 \text{ cm}^2$$

$$\text{New length} = 10 \times 1.25 = 12.5 \text{ cm}$$

$$\text{Let new breadth be } x. \text{ Then, } 12.5x = 100$$

$$\Rightarrow x = \frac{100}{12.5} = 8 \text{ cm}$$

Hence, % reduction in breadth

$$= \frac{2}{10} \times 100 = 20\%$$

