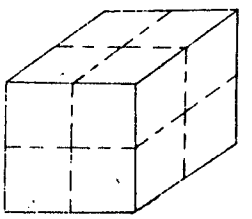
1. In a factory, 80% of the workers have lunch in the factory canteen. If 40% of those having lunch in the canteen and 70% of those not having lunch in the canteen are male workers, the % of female workers in the factory is

(A) 50%
(B) 55%
(C) 45%
(D) 54%
(E) 60%

2. A man's weight increased from 80 kg to 90 kg. The % change in weight is

(A) 12.5%
(B) 10%
(C) 11.1%
(D) 20%
(E) 15%

3. A cube is cut into 8 smaller cubes as shown in the figure. The % of increase in surface area is



(A) 100%
(B) 80%
(C) 125%
(D) 200%
(E) 120%

4. In a school the ratio of number of girls to number of boys was 3 : 2. If the number of girls is increased by 20% and the number of boys is increased by 30%, the % increase in number of students is

(A) 24%
(B) 25%
(C) 22.5%
(D) 27.5%
(E) 50%

5. A 100 $dm^3$ barrel is full of alcohol containing 10% water. If 200 $dm^3$ of pure water is added in, the % of alcohol in the mixture is

(A) 30%
(B) $33\frac{1}{3}$ %
(C) 25%
(D) $12\frac{1}{2}$ %
(E) 10%

6. A salesman is paid a commission of 12% of the selling price of goods he sold. If he wants to earn \$1872, how much worth of goods must he sell?

(A) \$19 500
(B) \$18 500
(C) \$17 600
(D) \$16 000
(E) \$15 600

7. If a taxi driver increases his average speed for a journey by 25%, the time for the journey will decrease by

(A) 25%
(B) 20%
(C) 17.5%
(D) 15%
(E) 12.5%

8. A boy measured the length of a wire to be 2.5 m, find his % error.

(A) 5%
(B) $2\frac{1}{2}$ %
(C) 2%
(D) 0.5%
(E) 0.2%

9. If the cost price of 48 apples is the same as the selling price of 3 dozen apples. The % profit is

(A) 20%
(B) 25%
(C) 30%
(D) $33\frac{1}{3}$ %
(E) $37\frac{1}{2}$ %

10. A saves 20% of his income. If his expenditure is increased by 35%, how much % must his income be increased so that he may save 10% of it?

(A) 20%
(B) 30%
(C) 25%
(D) $22\frac{1}{2}$ %
(E) $17\frac{1}{2}$ %

11. John worked in a company for 3 years. His starting salary was \$1800 per month, in the second year, his salary was increased by 15% and in the third year, was increased by 8%. Find his monthly salary in the third year.

(A) \$2 041.2
(B) \$2 007
(C) \$2 214
(D) \$2 235.6
(E) \$2 500

12. As the price of pork was increased by 25%, a housewife reduced her consumption by 30%. The % change in her expenditure on pork is

(A) decreased by 5%
(B) decreased by 10%
(C) decreased by 12.5%
(D) decreased by 2.5%
(E) remained unchange

13. There are 800 passengers in a ferry. 32% of the passengers travel 1st class, 46% travel 2nd class and the rest travel 3rd class. The number of passengers travel in the 3rd class is

(A) 300
(B) 276
(C) 254
(D) 176
(E) 156

14. In Q 13 above, if ticket for 1st class is \$5, for 2nd class is \$3.5 and for 3rd class is \$2; the total sum of money obtained by selling all the ticket is

(A) \$3 200
(B) \$3 000
(C) \$2 980
(D) \$2 960
(E) \$2 920

15. The volume of a bottle of perfume is stated as $(15 \pm 0.5)\ cm^3$. Find, to 2 sig. fig., the % error.

(A) 30%
(B) 3%
(C) 3.3%
(D) 3.5%
(E) 6.7%

16. A hawker bought 50 dozen of apples at \$8 per dozen. 20 of the apples were rotten and he sold the rest at \$1.2 each. Find his % profit.

(A) 60%
(B) 65%
(C) 70%
(D) 74%
(E) 85%

17. Mary sells cosmetics and receives \$0.75 for every \$4.00 worth of cosmetics she sells. The commission rate she receives is

(A) 5.3%
(B) 25%
(C) 12.5%
(D) 15%
(E) 18.75%

18. An electrical applicances salesman receives a commission of $9\frac{1}{4}$ %. During a week he sold 2 refrigerators at \$4000, \$3600 respectively and a Hi-fi at \$2800. What was his commission for the week?

(A) \$600
(B) \$742
(C) \$862
(D) \$882
(E) \$962

19. In addition to a monthly basic salary of \$500, a salesman was allowed a commission rate of 5% on the goods he sold. If the salesman sold \$24 000 worth of goods in a month, what is his total monthly income?

(A) \$1 700
(B) \$1 200
(C) \$1 800
(D) \$2 200
(E) \$2 700

20. P sold a car to Q at a profit of 40%; Q sold to R at a loss of 30% and R sold it to S at a loss of 20%. If S paid to R \$15 680, find the profit P made.

(A) \$8 000
(B) \$8 600
(C) \$9 000
(D) \$9 600
(E) \$10 000

21. 100 kg of tea A costing \$24 per kg is mixed with 50 kg of tea B costing \$30 per kg. The mixture is sold at \$28 per kg; find the profit %, to the nearest %.

(A) 8%
(B) 10%
(C) 7%
(D) 6%
(E) 5%

22. The cost price of a camera is \$1200 and the marked price is \$1800. A discount of 20% on the marked price is allowed if paid in cash. Find the profit %.

(A) 20%
(B) $17\frac{1}{2}$ %
(C) 25%
(D) $22\frac{1}{2}$ %
(E) 30%

23. A man's working hours a day were increased by 25%, and his wages per hour were increased by 20%. By how much % were his daily earnings increased?

(A) 40%
(B) 45%
(C) 50%
(D) 55%
(E) 75%

24. The production costs of a book were: paper: \$4, printing: \$1.2, binding: \$0.8. If the cost of paper is increased by 20%, cost of printing increased by 50% and cost of binding increased by 25%, the % increase in production cost is

(A) $31\frac{2}{3}$ %
(B) 30%
(C) 27.5%
(D) 25%
(E) $26\frac{2}{3}$ %

25. The cost of a book is calculated as follows: Paper: \$4, Printing: \$2, Binding: \$1
If the cost of paper is increased by 20%, that of printing by 10% and that of binding by 15%, at what price must the book be sold to get a profit of \$2 each?

(A) \$8.15
(B) \$9
(C) \$9.5
(D) \$10.15
(E) \$11.5

26. A blanket loses 10% of its length and 8% of its width after washing. Find the % loss in area.

(A) 18%
(B) 9%
(C) 108%
(D) 72%
(E) 17.2%

27. One year a company paid $700 000 in wages and $210 000 for other expenses; the profit was $140 000. The next year it paid 75% more in wages and 45% more for other expenses. If the receipts increased by 60%, what was the increase % of the profits?

(A) $7\frac{1}{2}$ %
(B) 9%
(C) $10\frac{1}{2}$ %
(D) $12\frac{1}{2}$ %
(E) 15%

28. A man mixed $200 of petrol A (costing $10 per litre), $120 of petrol B (costing $12 per litre) and $80 of petrol C (costing $8 per litre) and sold the mixture at $K per litre; thus making a profit of 35%, find K.

(A) 12.5
(B) 13.5
(C) 14
(D) 15.5
(E) 17.5

29. A deposited $12 000 in a bank which pays 4% interest per annum (year); if the interest tax is charged at 15%, the net amount A gets after 1 year is

(A) $12 480
(B) $12 408
(C) $12 380
(D) $12 240
(E) $12 220

30. If the length of a rectangle is increased by 10%, what should be the decrease percentage of the width so that the area does not change?

(A) 10%
(B) 9%
(C) 11%
(D) $11\frac{1}{9}$ %
(E) $9\frac{1}{11}$ %

to be cont.....

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. (D) | 2. (A) | 3. (A) | 4. (A) | 5. (A) | 6. (E) | 7. (B) | 8. (C) | 9. (D) | 10. (A) |
| 11. (D) | 12. (C) | 13. (D) | 14. (E) | 15. (C) | 16. (D) | 17. (E) | 18. (E) | 19. (A) | 20. (A) |
| 21. (A) | 22. (A) | 23. (C) | 24. (E) | 25. (D) | 26. (E) | 27. (A) | 28. (B) | 29. (B) | 30. (E) |

## ANALYSIS

1. $80\% \times 60\% + 20\% \times 30\% = 54\%$

2. $\frac{90 - 80}{80} \times 100\% = 12.5\%$

3. increase in surface area = original surface area.

4. $(\frac{3}{5} \times 120\% + \frac{2}{5} \times 130\%) \times 100\% - 100\%$

   $= 24\%$

5. $(\frac{100 \times 90\%}{100 + 200}) \times 100\% = 30\%$

6. $\$1872 \times \frac{100}{12} = \$15\ 600$

7. Original time $= \frac{d}{v}$

   new time $= \frac{d}{1.25v}$

   $\therefore$ time decrease by $(1 - \frac{1}{1.25}) \times 100\%$

   $= 20\%$

8. % error is

   $\frac{0.05}{2.5} \times 100\% = 2\%$

9. % profit is

   $(\frac{1}{36} - \frac{1}{48}) \div \frac{1}{48} \times 100\%$

   $= 33\frac{1}{3}\ \%$

10. Let x = original income, y = new income

    $\therefore\ x \times 80\% \times 135\% = 90\%\ y$

    $\Rightarrow y = 1.2\ x$

11. $\$1800 \times 115\% \times 108\% = \$2235.6$

12. New expenditure

    = original expenditure × 125% × 70%

    = 87.5%

13. $800 \times 22\% = 176$

14. $\$800\ (5 \times 32\% + 3.5 \times 46\% + 2 \times 22\%)$

    $= \$2920$

15. $\frac{0.5}{15} \times 100\% = 3.3\%$

16. $\frac{(50 \times 12 - 20) \times 1.2 - 50 \times 8}{50 \times 8}$

    $= 74\%$

17. $\frac{0.75}{4} \times 100\% = 18.75\%$

18. $\$(4000 + 3600 + 2800) \times 9\frac{1}{4}\%$

    $= \$962$

19. $\$24\ 000 \times 5\% + \$500$

    $= \$1700$

20. R paid to Q $\$15\ 680 \times \frac{100}{80}$

    Q paid to P $\$15\ 680 \times \frac{100}{80} \times \frac{100}{70}$

    $= \$28\ 000$

    P paid $\$28\ 000 \times \frac{100}{140} = \$20\ 000$

    $\therefore$ profit of P is $8000

21. $(\frac{28 \times 150 - 24 \times 100 - 30 \times 50}{24 \times 100 + 30 \times 50})$

    $= 7.7\%$

22. $\frac{(1800 \times 0.8 - 1200)}{1200} \times 100\%$

    $= 20\%$

23. $125\% \times 120\% - 100\% = 50\%$

24. $\frac{(4 \times 120\% + 1.2 \times 150\% + 0.8 \times 125\%) - 6}{6}$

    $= 26\frac{2}{3}\ \%$

25. $\$4 \times 120\% + \$2 \times 110\% + \$1 \times 115\% + \$2$

    $= \$10.15$

26. $(100 - 90 \times 0.92)\% = 17.2\%$

27. New receipts = $ 1 050 000 × 160% = $1 680 000

    New profit = $1 680 000 − $1 529 500

    $\therefore$ % increase in profit $= \frac{1505 - 1400}{1400}$

    $= 7.5\%$

28. $\frac{K \times 40 - 400}{400} = 35\%$

    $\Rightarrow K = 13.5$

29. $\$12\ 000\ (1 + 4\% \times 85\%) = \$12\ 408$

30. $(1 - \frac{1}{1.1}) \times 100\% = 9\frac{1}{11}\%$