4 Shares and Dividends

4.1 SHARE

To start any big business (company or industry), a large sum of money is needed and, in general, it is not possible for an individual to invest such a large amount. Then some persons, interested in the business, join together and form a company. They divide the estimated money required into small parts. Each such part is called a ***share***. A share may have value ₹5, ₹10, ₹25, ₹100 etc. Each person who purchases one or more shares is called a ***shareholder***.

1. The original value of a share is called its **nominal value** (abbreviated **N.V.**) or **face value** or **printed value**. The nominal value of a share always remains same.
2. The price of a share at any time is called its **market value** (abbreviated **M.V.**) or **cash value**. The market value of a share changes from time to time.
3. If the market value of a share is the same as its nominal value, the share is called **at par**.
4. If the market value of a share is more than its nominal value, the share is called **at premium** or **above par**. If a share of ₹100 is selling at ₹135, then it is said to be selling at a premium of ₹35 or at ₹35 above par.
5. If the market value of a share is less than its nominal value, the share is called **at discount** or **below par**. If a share of ₹100 is selling at ₹88, then it is said to be selling at a discount of ₹12 or at ₹12 below par.

4.2 DIVIDEND

The profit, which a shareholder gets for his investment from the company, is called ***dividend.***

1. The dividend is always expressed as the percentage of the face value of the share.
2. The dividend is always given (by the company) on the face value of the share irrespective of the market value of the share.

4.2.1 Quotations

"15% ₹100 shares at ₹145" means that
(1) the face value of 1 share = ₹100.
(2) the market value of 1 share = ₹145.
(3) the dividend (profit) on 1 share = 15% of ₹100 = ₹15 p.a.

(4) the income on ₹145 is ₹15 for one year.

(5) the rate of return (or yield) p.a. $= \left(\frac{15}{145} \times 100\right)\% = \frac{300}{29}\% = 10\frac{10}{29}\%$.

Similarly, "12% ₹25 shares at a discount of ₹5" means that

(1) the face value of 1 share = ₹25.

(2) the market value of 1 share = ₹25 − ₹5 = ₹20.

(3) the dividend on 1 share = 12% of ₹25 = ₹$\left(\frac{12}{100} \times 25\right)$ p.a. = ₹3 p.a.

(4) the income on ₹20 is ₹3.

(5) the rate of return p.a. $= \left(\frac{3}{20} \times 100\right)\% = 15\%$.

4.3 FORMULAE

1. Investment

Money invested = number of shares × market value of one share.

2. Income and Return

(*i*) Annual income = number of shares × rate of dividend × face value of one share

(*ii*) Return percentage $= \left(\frac{\text{annual income}}{\text{investment}} \times 100\right)\%$

3. Number of shares

Number of shares purchased (or held) $= \frac{\text{investment}}{\text{market value of one share}}$ or $\frac{\text{annual income}}{\text{income on one share}}$.

ILLUSTRATIVE EXAMPLES

Example 1. *A man purchases 600 shares of face value ₹40 at par. If a dividend of ₹1680 was received at the end of the year, find the rate of dividend.*

Solution. Total value of all the shares (investment) = ₹(40 × 600) = ₹24000.

The dividend received at the end of year = ₹1680.

∴ The rate of dividend $= \left(\frac{1680}{24000} \times 100\right)\% = 7\%$.

Example 2. *Vijay wants to invest ₹27000 in buying shares. The shares of the following companies are available to him :*

₹100 shares of company A at par value; ₹100 shares of company B at a premium of ₹25; ₹100 shares of company C at a discount of ₹10; ₹50 shares of company D at a premium of 20%.

Find how many shares will he get if he buys shares of company

(i) A (ii) B (iii) C (iv) D?

Solution. (*i*) Market value of a share of company A = ₹100.

∴ Number of shares of company A $= \frac{\text{investment}}{\text{market value of one share}}$

$= \frac{₹\,27000}{₹\,100} = 270.$

(*ii*) Market value of a share of company B = ₹100 + ₹25 = ₹125.

∴ Number of share of company B $= \frac{₹\,27000}{₹\,125} = 216.$

(*iii*) Market value of a share of company C = ₹ 100 – ₹ 10 = ₹ 90.

$\therefore$ Number of shares of company C = $\frac{₹\ 27000}{₹\ 90}$ = 300.

(*iv*) Market value of a share of company D = ₹ 50 + 20% of ₹ 50

= ₹ 50 + ₹ $\left(\frac{120}{100} \times 50\right)$

= ₹ 50 + ₹ 10 = ₹ 60.

$\therefore$ Number of shares of company D = $\frac{₹\ 27000}{₹\ 60}$ = 450.

Example 3. *A man invests ₹ 9600 on ₹ 100 shares at ₹ 80. If the company pays him 18% dividend, find :*

(i) the number of shares he buys.

(ii) his total dividend.

(iii) his percentage return on the shares. *(2012)*

Solution. (*i*) Investment = ₹ 9600, market value of one share = ₹ 80.

$\therefore$ The number of shares bought = $\frac{\text{investment}}{\text{market value of one share}} = \frac{₹\ 9600}{₹\ 80}$ = 120.

(*ii*) Total dividend = number of shares × rate of divident × face value of one share

= 120 × $\frac{18}{100}$ × ₹ 100 = ₹ 2160.

(*iii*) ₹ 2160 is the income on ₹ 9600,

$\therefore$ percentage return on shares = $\left(\frac{2160}{9600} \times 100\right)\% = \frac{45}{2}\%$ = 22·5%.

Example 4. *A man invests ₹ 3960 in shares of a company which pays 15% dividend at a time when a ₹ 25 share costs ₹ 33. Find :*

(i) the number of shares he bought.

(ii) the annual income from his shares.

(iii) the rate of interest which he gets on his investment.

Solution. (*i*) Since the market value of one share is ₹ 33 and the money invested is ₹ 3960,

$\therefore$ the number of shares bought = $\frac{₹\ 3960}{₹\ 33}$ = 120.

(*ii*) Annual income = number of shares × rate of dividend × face value of one share

= 120 × $\frac{15}{100}$ × ₹ 25 = ₹ 450.

(*iii*) ₹ 450 can be considered as the interest on ₹ 3960 for one year,

$\therefore$ the rate of interest = $\left(\frac{450}{3960} \times 100\right)\% = \frac{125}{11}\% = 11\frac{4}{11}\%$.

Example 5. *A man wants to buy 62 shares available at ₹ 132 (par value of ₹ 100).*

(i) How much should he invest ?

(ii) If the dividend is 7·5%, what will be his annual income ?

(iii) If he wants to increase his annual income by ₹ 150, how many extra shares should he buy ? *(2002)*

Solution. (*i*) Since the market value of one share (par value ₹100) is ₹132,
$\therefore$ market value of 62 shares = ₹(132 × 62) = ₹8184.
$\therefore$ The man should invest ₹8184.

(*ii*) Annual income = number of shares × rate of dividend × face value of one share

$$= 62 \times \frac{7{\cdot}5}{100} \times ₹100$$
$$= ₹(62 \times 7{\cdot}5) = ₹465.$$

(*iii*) Since income on one share is ₹7·5,

$\therefore$ for income of ₹150, the number of shares = $\frac{₹150}{₹7{\cdot}5} = 20.$

Thus, to increase the income by ₹150, the number of extra shares to be purchased = 20.

Example 6. *A man invests ₹20020 in buying shares of nominal value ₹26 at 10% premium. The dividend on shares is 15% per annum. Calculate :*

(i) the number of shares he buys.

(ii) the dividend he receives annually.

(iii) the rate of interest he gets on his money. (2003)

Solution. (*i*) Since the man buys shares of nominal value ₹26 at 10% premium, the market value of one share = $\left(1+\frac{10}{100}\right)$ of ₹26 = ₹$\left(26\times\frac{11}{10}\right)$ = ₹$\frac{143}{5}$.

As the investment is ₹20020,

$\therefore$ the number of shares purchased = $\frac{₹\,20020}{₹\,\frac{143}{5}} = \frac{20020\times5}{143} = 700.$

(*ii*) Annual income = number of shares × rate of dividend × face value of one share

$$= 700 \times \frac{15}{100} \times ₹26$$
$$= ₹(7 \times 15 \times 26) = ₹2730.$$

(*iii*) ₹2730 can be considered as the income on ₹20020,

$\therefore$ rate of interest = $\left(\frac{2730}{20020}\times100\right)\% = \frac{150}{11}\% = 13\frac{7}{11}\%.$

Thus, rate of interest on his money = $13\frac{7}{11}\%$ per annum.

Example 7. *Mr. Parekh invested ₹52000 on ₹100 shares at a discount of ₹20 paying 8% dividend. At the end of one year he sells the shares at a premium of ₹20. Find*

(i) the annual dividend

(ii) the profit earned including his dividend. (2011)

Solution. Market value of one share = ₹100 − ₹20 = ₹80, investment = ₹52000.

$\therefore$ The number of shares bought = $\frac{₹\,52000}{₹\,80} = 650.$

(*i*) The annual dividend = number of shares × rate of dividend × face value of one share

$$= 650 \times \frac{8}{100} \times ₹100 = ₹5200.$$

(*ii*) As Mr. Parekh sells his shares at a premium of ₹20,
the market value of one share = ₹100 + ₹20 = ₹120.
$\therefore$ The selling value of his 650 shares = ₹(120 × 650)
= ₹78000.

$\therefore$ Profit earned including his dividend

= selling value + dividend – investment

= ₹ 78000 + ₹ 5200 – ₹ 52000

= ₹ 31200.

Example 8. *How much should a man invest in ₹ 25 shares selling at ₹ 30 to obtain an income of ₹ 450, if the dividend declared is 15% ?*

Solution. Dividend on 1 share of ₹ 25 = 15% of ₹ 25

$$= ₹\left(\frac{15}{100} \times 25\right) = ₹\ \frac{15}{4}.$$

Since the total income is ₹ 450,

$\therefore$ the number of shares bought = $\dfrac{\text{annual income}}{\text{dividend on one share}}$

$$= \frac{₹\ 450}{₹\ \frac{15}{4}} = 450 \times \frac{4}{15} = 120.$$

Since the market value of one share = ₹ 30,

$\therefore$ the sum of money invested by the man = ₹ (30 × 120)

= ₹ 3600.

Example 9. *A man sold 400 (₹ 20) shares paying 5% at ₹ 18 and invested the proceeds in (₹ 10) shares, paying 7% at ₹ 12. How many (₹ 10) shares did he buy and what was the change of income ?*

Solution. Selling price of 400 (₹ 20) shares at ₹ 18 = ₹ (18 × 400)

= ₹ 7200.

Market price of ₹ 10 share = ₹ 12,

$\therefore$ the number of ₹ 10 shares purchased = $\dfrac{₹\ 7200}{₹\ 12}$ = 600.

Dividend on 1 share of ₹ 20 = 5% of ₹ 20 = $₹\left(\frac{5}{100} \times 20\right)$ = ₹ 1.

$\therefore$ Income on 400 (₹ 20) shares = ₹ (400 × 1) = ₹ 400.

Dividend on 1 share of ₹ 10 = 7% of ₹ 10 = $₹\left(\frac{7}{100} \times 10\right) = ₹\ \frac{7}{10}$.

$\therefore$ Income on 600 (₹ 10) shares = $₹\left(\frac{7}{10} \times 600\right)$ = ₹ 420.

$\therefore$ Change in annual income = ₹ 420 – ₹ 400

= ₹ 20 (increase).

Example 10. *Which is better investment :*

7% ₹ 100 shares at ₹ 120 or 8% ₹ 10 shares at ₹ 13·50 ?

Solution. *In the first case :*

Income on ₹ 120 = 7% of ₹ 100 = ₹ 7,

$\therefore$ income on ₹ 1 = $₹\ \frac{7}{120}$.

In the second case :

Income on ₹ 13·50 = 8% of ₹ 10 = $₹\ \frac{8}{10}$,

$\therefore$ income on ₹ 1 = $₹\ \frac{\frac{8}{10}}{13{\cdot}50} = ₹\left(\frac{8}{10} \times \frac{2}{27}\right) = ₹\ \frac{8}{135}$.

Now $\frac{7}{120} = \frac{7 \times 9}{120 \times 9} = \frac{63}{1080}$ and $\frac{8}{135} = \frac{8 \times 8}{135 \times 8} = \frac{64}{1080}$.

Since $63 < 64$, therefore, the investment in the second case is better than the investment in the first case.

Example 11. *By purchasing ₹25 gas shares for ₹10 each, a man gets 4 percent profit on his investment. What rate percent is the company paying ? What is his dividend if he buys 60 shares ?*

Solution. Since the man gets 4% profit on his investment,

$\therefore$ income on 1 share of market value ₹10 = 4% of ₹10

$$= ₹\left(\frac{4}{100} \times 10\right) = ₹\frac{4}{10}.$$

Since the nominal value of 1 share is ₹25,

$\therefore$ on ₹25, company pays = $₹\frac{4}{10}$

$\therefore$ on ₹100, company pays = $₹\left(\frac{4}{10} \times \frac{100}{25}\right)$ = ₹1·6.

$\therefore$ Rate percent which the company pays = 1·6 %.

Income on one share = $₹\frac{4}{10}$.

$\therefore$ Income on 60 shares = $₹\left(\frac{4}{10} \times 60\right)$ = ₹24.

Example 12. *Mr. Lohia invests ₹26680 in buying ₹50 shares at a discount of 8%. He sells shares worth ₹15000 at a premium of 6% and the rest at a discount of 10%. Find his total gain or loss from the transaction.*

Solution. As Mr. Lohia buys shares at a discount of 8%,

market value of one share = $\left(1 - \frac{8}{100}\right)$ of ₹50 = ₹46.

$\therefore$ The number of shares purchasesd = $\frac{₹\,26680}{₹\,46}$ = 580.

Number of shares worth (face value) ₹15000 = $\frac{₹\,15000}{₹\,50}$ = 300.

He sold 300 shares at a premium of 6%,

market value of one share = $\left(1 + \frac{6}{100}\right)$ of ₹50 = ₹53.

$\therefore$ The selling value of 300 shares at ₹53 each

$$= ₹(300 \times 53) = ₹15900.$$

The number of remaining shares = 580 – 300 = 280.

Lohia sold 280 shares at discount of 10%,

market value of one share = $\left(1 - \frac{10}{100}\right)$ of ₹50 = ₹45.

$\therefore$ The selling value of 280 shares at ₹45 each

$$= ₹(280 \times 45) = ₹12600.$$

$\therefore$ Total selling value = ₹15900 + ₹12600

$$= ₹28500.$$

$\therefore$ Lohia's total gain = ₹28500 – ₹26680

$$= ₹1820.$$

Example 13. *Mr. Ram Gopal invested ₹ 8000 in 7% ₹ 100 shares at ₹ 80. After a year he sold these shares at ₹ 75 each and invested the proceeds (including his dividend) in 18% ₹ 25 shares at ₹ 41. Find :*

(i) his dividend for the first year.

(ii) his annual income in the second year.

(iii) the percentage increase in his return on his original investment. (2006)

Solution. (*i*) Since Mr. Ram Gopal invested ₹ 8000 at ₹ 80 per share,

the number of shares bought by him $= \frac{₹\ 8000}{₹\ 80} = 100.$

Dividend received on one share = 7% of ₹ 100 = ₹ 7.

∴ The total dividend received after a year = ₹ (7×100) = ₹ 700.

∴ His dividend for the first year = ₹ 700.

(*ii*) As Mr. Ram Gopal sold his shares at ₹ 75 each,

the sale value of his shares = ₹ (75×100) = ₹ 7500.

His investment in new shares *i.e.* his proceeds

= dividend received + sale value of shares

= ₹ 700 + ₹ 7500 = ₹ 8200.

As Mr. Ram Gopal invested his proceeds *i.e.* ₹ 8200 in ₹ 25 shares at ₹ 41 each,

the number of new shares purchased $= \frac{₹\ 8200}{₹\ 41} = 200.$

Dividend received on one share = 18% of ₹ 25

$= ₹ \left(\frac{18}{100} \times 25\right) = ₹ \frac{9}{2}.$

∴ Total dividend received on his second investment $= ₹ \left(\frac{9}{2} \times 200\right) = ₹ 900.$

∴ His annual income in the second year = ₹ 900.

(*iii*) The increase in return = dividend on second investment

– dividend on first investment

= ₹ 900 – ₹ 700 = ₹ 200.

∴ The percentage of increase in return on his original investment

$= \left(\frac{200}{8000} \times 100\right)\% = \frac{5}{2}\% = 2{\cdot}5\%.$

Example 14. *Amit and Richa invest ₹ 12000 each in buying shares of two companies. Amit buys 15% ₹ 100 shares at a discount of ₹ 20, while Richa buys ₹ 25 shares at a premium of 20%. If both receive equal dividends at the end of the year, find the rate percent of the dividend declared by Richa's company.*

Solution. Market value of one share purchased by Amit

= ₹ 100 – ₹ 20 = ₹ 80.

Investment by Amit = ₹ 12000.

∴ Number of shares purchase by Amit $= \frac{₹\ 12000}{₹\ 80} = 150.$

Annual dividend received by Amit = number of shares held by Amit

× rate of dividend × face vale of one share held by Amit

$= 150 \times \frac{15}{100} \times ₹\ 100 = ₹\ 2250.$

$\therefore$ Annual dividend received by Richa = ₹ 2250.

($\because$ Both Amit and Richa get equal dividends)

Richa purchased ₹ 25 shares at premium of 20%.

$\therefore$ Market value of one share purchased by Richa = $\left(1+\frac{20}{100}\right)$ of ₹ 25

$= ₹\left(25\times\frac{6}{5}\right) = ₹ 30.$

Investment by Richa = ₹ 12000.

$\therefore$ Number of shares purchased by Richa = $\frac{₹\ 12000}{₹\ 30} = 400.$

Let $r\%$ be the rate of dividend declared by Richa's company, then

annual dividend of Richa = number of shares held by Richa
× rate of dividend of Richa's company
× face value of one share held by Richa

$\Rightarrow \quad ₹ 2250 = 400 \times \frac{r}{100} \times ₹ 25$

$\Rightarrow \quad 2250 = 100r \Rightarrow r = 22{\cdot}5.$

Hence, the rate percent of the dividend declared by Richa's company = 22·5%.

Example 15. *A dividend of 9% was declared on ₹ 100 shares selling at a certain price. If the rate of return is* $7\frac{1}{2}\%$*, calculate :*

(i) the market value of the share.

(ii) the amount to be invested to obtain an annual dividend of ₹ 630. (2000)

Solution. Dividend on one share of ₹ 100 = ₹ 9.

(*i*) Let the market value of one share be ₹ x.

The profit on one share = $7\frac{1}{2}\%$ of ₹ x = ₹ $\left(\frac{15}{2}\times\frac{1}{100}\times x\right) = ₹\ \frac{3x}{40}$.

Since the dividend paid on one share = ₹ 9,

$\therefore \quad \frac{3x}{40} = 9 \Rightarrow x = 120.$

$\therefore$ The market value of each share = ₹ 120.

(*ii*) As the total income is ₹ 630,

$\therefore$ the number of shares bought = $\frac{₹\ 630}{₹\ 9} = 70.$

Since the market value of each share = ₹ 120,

$\therefore$ the amount to be invested = ₹ (120 × 70) = ₹ 8400.

Example 16. *A man buys ₹ 50 shares of a company which pays 12% dividend. He buys the shares at such a price that his profit is 15% on his investment. At what price did he buy the shares ?*

Solution. Dividend on 1 share of ₹ 50 = 12% of ₹ 50 = ₹ 6.

Let the man buy one share for ₹ x.

His profit on one share = 15% of ₹ x = ₹ $\frac{15}{100}x$.

Since the dividend paid by the company on 1 share = ₹ 6,

$\therefore \quad \frac{15}{100}x = 6 \Rightarrow x = 40.$

$\therefore$ The man buys each share at ₹ 40.

Example 17. *Mr. Ghosh sold a certain number of ₹ 20 shares paying 8% dividend at ₹ 18 and invested the proceeds in ₹ 10 shares, paying 12% dividend at 50% premium. If the change in his annual income is ₹ 120, find the number of shares sold by Mr. Ghosh.*

Solution. Let the number of shares sold by Mr. Ghosh be x.

Income on one share = 8% of ₹ 20 = ₹ $\left(\frac{8}{100} \times 20\right)$ = ₹ $\frac{8}{5}$.

$\therefore$ Total income on x shares = ₹ $\frac{8}{5}x$.

Since Mr. Ghosh sold x shares at ₹ 18 each, sale value of his shares = ₹ $18x$.

As Mr. Ghosh invested the proceeds *i.e.* ₹ $18x$ in ₹ 10 shares at 50% premium *i.e.* at $\left(1+\frac{50}{100}\right)$ of ₹ 10 *i.e.* at ₹ 15, the number of new shares bought = $\frac{₹\,18x}{₹\,15} = \frac{6x}{5}$.

Dividend received on one share = 12% of ₹ 10

= ₹ $\left(\frac{12}{100} \times 10\right)$ = ₹ $\frac{6}{5}$.

$\therefore$ Total income on new shares = ₹ $\left(\frac{6}{5} \times \frac{6x}{5}\right)$ = ₹ $\frac{36x}{25}$.

$\therefore$ Loss in income = ₹ $\frac{8}{5}x$ – ₹ $\frac{36}{25}x$ = ₹ $\left(\frac{8}{5}-\frac{36}{25}\right)x$ = ₹ $\frac{4}{25}x$.

According to given, ₹ $\frac{4}{25}x$ = ₹ 120 $\Rightarrow$ $\frac{4}{25}x = 120 \Rightarrow x = 750$.

$\therefore$ The number of shares sold by Mr. Ghosh = 750.

Example 18. *Suresh has a choice to invest in shares of two companies A and B. ₹ 100 shares of company A are available at 10% premium and it pays 8% dividend whereas ₹ 50 shares of company B are available at 12% discount and it pays 7% dividend. If he invests equally in both the companies and the sum of his annual incomes from them is ₹ 1340, find how much, in all, does he invest?*

Solution. Let Suresh invest ₹ x in each company.

For company A

Face value of each share = ₹ 100,

market value of each share = $\left(1+\frac{10}{100}\right)$ of ₹ 100 = ₹ 110.

$\therefore$ The number of shares bought = $\frac{₹\,x}{₹\,110} = \frac{x}{110}$.

Annual income = no. of shares × rate of dividend × F.V. of one share

= $\frac{x}{110} \times \frac{8}{100} \times$ ₹ 100 = ₹ $\frac{4x}{55}$.

For company B

Face value of each share = ₹ 50,

market value of each share = $\left(1-\frac{12}{100}\right)$ of ₹ 50 = ₹ 44.

$\therefore$ The number of shares bought = $\frac{₹\,x}{₹\,44} = \frac{x}{44}$.

Annual income = no. of shares × rate of dividend × F.V. of one share

= $\frac{x}{44} \times \frac{7}{100} \times$ ₹ 50 = ₹ $\frac{7x}{88}$.

$\therefore$ Sum of annual income from both companies = ₹ $\frac{4x}{55}$ + ₹ $\frac{7x}{88}$

$$= ₹\left(\frac{4x}{55}+\frac{7x}{88}\right) = ₹\left(\frac{4}{5}+\frac{7}{8}\right)\times\frac{x}{11}$$

$$= ₹\frac{32+35}{40}\times\frac{x}{11} = ₹\frac{67x}{440}.$$

According to given, ₹ $\frac{67x}{440}$ = ₹1340 $\Rightarrow$ $\frac{67x}{440}$ = 1340 $\Rightarrow$ x = 8800

$\Rightarrow$ Suresh invests ₹8800 in each company.

$\therefore$ Suresh invests in all = ₹8800 + ₹8800

= ₹17600.

Example 19. *A man invests ₹13500 partly in 6% ₹100 shars at ₹140 and partly in 5% ₹100 shares at ₹125. If his total income is ₹560, how much has he invested in each?*

Solution. Let the investment of the man in 6% ₹100 shares at ₹140 be ₹x, then his investment in 5% ₹100 shares at ₹125 = ₹(13500 – x).

Income on one share of ₹140 = ₹6% of ₹100 = ₹6.

$\therefore$ Income on ₹x = ₹ $\frac{6}{140}x$ = ₹ $\frac{3}{70}x$.

Income on one share of ₹125 = ₹5% of ₹100 = ₹5.

$\therefore$ Income on ₹(13500 – x) = ₹ $\frac{5}{125}$ (13500 – x)

= ₹ $\frac{1}{25}$ (13500 – x).

But the total income of the man is ₹560,

$\therefore$ $\frac{3}{70}x+\frac{1}{25}$ (13500 – x) = 560

$\Rightarrow$ 15x + 14 (13500 – x) = 350 × 560

$\Rightarrow$ 15x – 14x = 350 × 560 – 14 × 13500

$\Rightarrow$ x = 7000.

$\therefore$ 13500 – x = 13500 – 7000 = 6500.

$\therefore$ Investment in 6% shares at ₹140 = ₹7000

and investment in 5% shares at ₹125 = ₹6500.

Exercise 4

1. Find the dividend received on 60 shares of ₹20 each if 9% dividend is declared.
2. A company declares 8 percent dividend to the share holders. If a man receives ₹2840 as his dividend, find the nominal value of his shares.

Hint

Let the nominal value of his shares be ₹x, then 8% of ₹x = ₹2840.

3. A man bought 500 shares, each of face value ₹10, of a certain business concern and during the first year after purchase received ₹400 as dividend on his shares. Find the rate of dividend on shares.
4. A man buys 200 ten-rupee shares at ₹12·50 each and receives a dividend of 8%. Find the amount invested by him and the dividend received by him in cash.

5. Find the market price of 5% share when a person gets a dividend of ₹65 by investing ₹1430.

6. A man invests a sum of money in ₹100 shares, paying 15% dividend quoted at 20% premium. If his annual dividend is ₹540, calculate
   (*i*) his total investment
   (*ii*) the rate of return on his investment.

7. Salman buys 50 shares of face value ₹100 available at ₹132.
   (*i*) What is his investment?
   (*ii*) If the dividend is 7·5% p.a., what will be his annual income?
   (*iii*) If he wants to increase his annual income by ₹150, how many extra shares should he buy? (*2013*)

8. A lady holds 1800, ₹100 shares of a company that pays 15% dividend annually. Calculate her annual dividend. If she had bought these shares at 40% premium, what percentage return does she get on her investment ? Give your answer to the nearest integer.

9. What sum should a person invest in ₹25 shares, selling at ₹36, to obtain an income of ₹720, if the dividend declared is 12% ? Also find
   (*i*) the number of shares bought by him.
   (*ii*) the percentage return on his income.

10. A company declares semi-annual dividend of 6%. If Raman has 700 shares of nominal value ₹12·50 each, find his annual income.

11. Amit Kumar invests ₹36000 in buying ₹100 shares at ₹20 premium. The dividend is 15% per annum. Find :
   (*i*) the number of shares he buys.
   (*ii*) his yearly dividend.
   (*iii*) the percentage return on his investment. (*2009*)

12. Mr. Tiwari invested ₹29040 in 15% ₹100 shares at a premium of 20%. Calculate :
   (*i*) the number of shares bought by Mr. Tiwari.
   (*ii*) Mr. Tiwari's income from the investment.
   (*iii*) the percentage return on his investment. (2005)

13. A man buys shares at the par value of ₹10 yielding 8% dividend at the end of a year. Find the number of shares bought if he receives a dividend of ₹300.

14. A man invests ₹8800 on buying shares of face value of rupees hundred each at a premium of 10%. If he earns ₹1200 at the end of year as dividend, find :
   (*i*) the number of shares he has in the company.
   (*ii*) the dividend percentage per share. (*2001*)

15. A man invested ₹45000 in 15% ₹100 shares quoted at ₹125. When the market value of these shares rose to ₹140, he sold some shares, just enough to raise ₹8400. Calculate :
   (*i*) the number of shares he still holds.
   (*ii*) the dividend due to him on these shares. (*2004*)

16. A company pays a dividend of 15% on its ten-rupee shares from which it deducts tax at the rate of 22%. Find the annual income of a man who owns one thousand shares of this company.

17. Ajay owns 560 shares of a company. The face value of each share is ₹25. The company declares a dividend of 9%. Calculate
   (*i*) the dividend that Ajay will get.
   (*ii*) the rate of interest, on his investment, if Ajay has paid ₹30 for each share. (2007)

18. A company with 10000 shares of nominal value of ₹100 declares an annual dividend of 8% to the share holders.

(*i*) Calculate the total amount of dividend paid by the company.

(*ii*) Ramesh bought 90 shares of the company at ₹150 per share.

Calculate the dividend he received and the percentage return on his investment

19. A company with 4000 shares of nominal value of ₹110 declares annual dividend of 15%. Calculate :

(*i*) the total amount of dividend paid by the company.

(*ii*) the annual income of Shah Rukh who holds 88 shares in the company.

(*iii*) If he received only 10% on his investment, find the price Shah Rukh paid for each share. (2008)

20. By investing ₹7500 in a company paying 10 percent dividend, an income of ₹500 is received. What price is paid for each ₹100 share ?

21. A man invests ₹8000 in a company paying 8% dividend, when a share of face value of ₹100 is selling at ₹60 premium.

(*i*) What is his annual income ?

(*ii*) What percent does he get on his money ?

22. A man buys 400 ten-rupee shares at a premium of ₹2·50 on each share. If the rate of dividend is 8%, find

(*i*) his investment (*ii*) dividend received (*iii*) yield.

23. A man invests ₹10400 in 6% shares at ₹104 and ₹11440 in 10·4% shares at ₹143. How much income would he get in all ?

24. Mr. Sharma has 60 shares of nominal value ₹100 and he decides to sell them when they are at a premium of 60%. He invests the proceeds in shares of nominal value ₹50, quoted at 4% discount, paying 18% dividend annually. Calculate :

(*i*) the sale proceeds.

(*ii*) the number of shares he buys.

(*iii*) his annual dividend from these shares.

25. Two companies have shares of 7% at ₹116 and 9% at ₹145 respectively. In which of the shares would the investment be more profitable ?

26. Which is better investment : 6% ₹100 shares at ₹120 or 8% ₹10 shares at ₹15 ?

27. Mukul invests ₹9000 in a company paying a dividend of 6% per annum when a share of face value ₹100 stands at ₹150. What is his annual income ? He sells 50% of his shares when the price rises to ₹200. What is his gain on this transaction ?

28. A man invests ₹10080 in 6% hundred-rupee shares at ₹112. Find his annual income. When the shares fall to ₹96 he sells out the shares and invests the proceeds in 10% ten-rupee shares at ₹8. Find the change in his annual income.

29. A man bought 360 ten-rupee shares paying 12% per annum. He sold them when the price rose to ₹21 and invested the proceeds in five-rupee shares paying $4\frac{1}{2}$% per annum at ₹3·5 per share. Find the annual change in his income.

30. Vivek invests ₹4500 in 8%, ₹10 shares at ₹15. He sells the shares when the price rises to ₹30, and invests the proceeds in 12% ₹100 shares at ₹125. Calculate

(*i*) the sale proceeds.

(*ii*) the number of ₹125 shares he buys.

(*iii*) the change in his annual income from dividend. (2010)

31. A person invests ₹4368 and buys certain hundred-rupee shares at ₹91. He sells out shares worth ₹2400 when they have risen to ₹95 and the remainder when they have fallen to ₹85. Find the gain or loss on the total transaction.

32. By purchasing ₹50 gas shares for ₹80 each, a man gets 4% profit on his investment. What rate percent is company paying ? What is his dividend if he buys 200 shares ?

33. ₹100 shares of a company are sold at a discount of ₹20. If the return on the investment is 15%, find the rate of dividend declared.

34. A company declared a dividend of 14%. Find the market value of ₹50 shares if the return on the investment was 10%.

35. At what price should a 6·25% ₹100 share be quoted when the money is worth 5% ?

36. At what price should a 6·25% ₹50 share be quoted when the money is worth 10% ?

37. A company with 10000 shares of ₹100 each, declares an annual dividend of 5%.
    (*i*) What is the total amount of dividend paid by the company ?
    (*ii*) What would be the annual income of a man, who has 72 shares, in the company ?
    (*iii*) If he received only 4% on his investment, find the price he paid for each share.

38. A man sold some ₹100 shares paying 10% dividend at a discount of 25% and invested the proceeds in ₹100 shares paying 16% dividend quoted at ₹80 and thus increased his income by ₹2000. Find the number of shares sold by him.

39. By selling at ₹77, some $2\frac{1}{4}$% shares of face value ₹100, and investing the proceeds in 6% shares of face value ₹100, selling at ₹110, a person increased his income by ₹117 per annum. How many shares did he sell ?

40. A man invests ₹6750, partly in shares of 6% at ₹140 and partly in shares of 5% at ₹125. If his total income is ₹280, how much has he invested in each ?

41. Divide ₹20304 into two parts such that if one part is invested in 9% ₹50 shares at 8% premium and the other part is invested in 8% ₹25 shares at 8% discount, then the annual incomes from both the investments are equal.

CHAPTER TEST

1. If a man received ₹1080 as dividend from 9% ₹20 shares, find the number of shares purchased by him.
2. Find the percentage interest on capital invested in 18% shares when a ₹10 share costs ₹12.

Hint

Dividend on one share = 18% of ₹10 = ₹$\left(\frac{18}{100}\times 10\right)$ = ₹$\frac{9}{5}$.

3. Rohit Kulkarni invests ₹10000 in 10% ₹100 shares of a company. If his annual dividend is ₹800, find :
   (*i*) the market value of each share.
   (*ii*) the rate percent which he earns on his investment.
4. At what price should a 9% ₹100 share be quoted when the money is worth 6% ?
5. By selling at ₹92, some 2·5% ₹100 shares and investing the proceeds in 5% ₹100 shares at ₹115, a person increased his annual income by ₹90. Find :
   (*i*) the number of shares sold.
   (*ii*) the number of shares purchased.
   (*iii*) the new income.
   (*iv*) the rate percent which he earns on his investment.
6. A man has some shares of ₹100 par value paying 6% dividend. He sells half of these at a discount of 10% and invests the proceeds in 7% ₹50 shares at a premium of ₹10. This transaction decreases his income from dividends by ₹120. Calculate :
   (*i*) the number of shares before the transaction.
   (*ii*) the number of shares he sold.
   (*iii*) his initial annual income from shares.
7. Divide ₹101520 into two parts such that if one part is invested in 8% ₹100 shares at 8% discount and the other in 9% ₹50 shares at 8% premium, the annual incomes are equal.
8. A man buys ₹40 shares of a company which pays 10% dividend. He buys the shares at such a price that his profit is 16% on his investment. At what price did he buy each share ?
9. A person invested 20%, 30% and 25% of his savings in buying shares at par values of three different companies A, B and C which declare dividends of 10%, 12% and 15% respectively. If his total income on account of dividends be ₹4675, find his savings and the amount which he invested in buying shares of each company.
10. Sachin and Dhoni invest ₹36000 each in buying shares of two companies. Sachin buys 15% ₹40 shares at a discount of 20%, while Dhoni buys ₹75 shares at a premium of 20%. If both receive equal dividends at the end of the year, find the rate percent of the dividend declared by Dhoni's company.