



## ICSE - Class X Mathematics - M.L. Agarwal Solution

### Chapter 3 : Shares and Dividends

#### Exercise 3

1. Find the dividends received on 60 shares of ₹ 20 each if 9% dividend is declared.

**Solution:**

Given value of shares = ₹. 20

Therefore the value of 60 shares = ₹.  $20 \times 60$   
= ₹. 1200

Given that rate of dividend = 9%

Therefore total dividend = ₹.  $1200 \times 9\%$   
=  $1200 \times (9/100)$   
= ₹ 108

2. A company declares 8 percent dividend to the share holder. If a man receives a ₹. 2840 as his dividend, find the nominal value of his shares.

**Solution:**

Given that rate of dividend = 8%

Also given that amount of dividend = ₹. 2840

Therefore nominal value of shares =  $(2840 \times 100)/8$   
= ₹. 35500

3. 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.

**Solution:**

Given face value of shares = ₹. 10

Number of shares = 200



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Therefore face value of 200 shares =  $10 \times 200$

= ₹. 2000

Now, amount invested for the purchase of 200 shares at the rate of ₹. 12.50 each

=  $12.50 \times 200$

= ₹. 2500

Given that rate of dividend = 8%

Therefore total amount of dividend =  $(2000 \times 8)/100$

= ₹. 160

**4. Find the market price of 5% ₹ 100 share when a person gets a dividend of ₹ 65 by investing ₹. 1430.**

**Solution:**

Given amount of dividend = ₹. 65

Also given that rate of dividend = 5%

Therefore total face value =  $(65 \times 100)/5$

= ₹. 1300

If face value is ₹. 1300, then market value = ₹. 140

If face value is ₹. 100, then market value =  $(1430 \times 100)/1300$

= ₹. 110

**5. 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?**

**Solution:**

Given face value = ₹ 100

(i) Given that market value = ₹ 132

And number of shares = 50

Therefore investment = number of shares  $\times$  market value

=  $50 \times 132$



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= ₹ 6600

(ii) We have income per share = 7.5% of face value

=  $(75/10 \times 100) \times 100$

= ₹. 7.5

Therefore annual income =  $7.5 \times 50$

= ₹ 375

(iii) Therefore new annual income =  $375 + 150 = ₹ 525$

Therefore number of shares =  $525/7.5 = 70$

Therefore, number of extra share to be increased =  $70 - 50$

= 20

**6. 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.**

**Solution:**

Given total number of shares = 1800

Nominal value of each share = ₹. 100

And rate of dividend = 15%

Total face value of 1800 shares =  $100 \times 1800$

= ₹. 180000

Therefore total dividend =  $180000 \times 15/100$

= ₹. 27000

Therefore market value of each share =  $100 + 40 = ₹. 140$

Now the total investment =  $140 \times 1800$

= ₹. 252000

Therefore percentage on his return

=  $(27000 \times 100)/252000$

= 10.7%

In integer ₹ 11%

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7. What sum should a person invest in ₹ 25 shares, selling at ₹ 36, obtain an income of ₹ 720, if the dividend declared is 12%? Also find the percentage return on his income.

**Solution:**

Given nominal value of each share = ₹. 25

Market value of each share = ₹. 36

Total income = ₹ 720

Rate of dividend = 12%

Therefore total nominal value =  $(100 \times 720) / 12$

= ₹ 6000

Number of shares =  $6000 / 25$

= 240

Total investment =  $240 \times 36$

= ₹ 8640

Now, percentage return =  $(720 \times 100) / 8640$

= 8.3%

8. Ashok invests ₹ 26400 on 12% ₹ 25 shares of a company. If he receives a dividend of ₹ 2475, find:

(i) The number of shares he bought.

(ii) The market value of each share.

**Solution:**

Given investment = ₹ 26400

Face value of the each share = ₹ 25

Rate of dividend = 12%

Total dividend = ₹ 2475

We know that, dividend earned = market price of share  $\times$  number of shares  $\times r / 100$

(i) Therefore number of shares =  $(2475 / 12) \times (100 / 25)$

= 825 shares

(ii) Market value of each share =  $(26400 / 825)$



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= ₹ 32

9. A man invests ₹ 4500 in shares of a company which is paying 7.5% dividend. If ₹ 100 shares are available at a discount of 10%, find

(i) the number of shares he purchases.

(ii) his annual income.

**Solution:**

Given,

Investment = ₹ 4500

Face value of each share = ₹ 100

Discount = 10% and rate of dividend = 7.5%

The market price of each share = ₹ (100 - 25) = ₹ 75

(i) The number of shares he purchases =  $4500/75 = 60$

(ii) Dividend = ₹ 7.5% of (60 × 100)

= ₹ 450

Hence, his annual income will be ₹ 450.

10. 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.

**Solution:**

Given investment = ₹ 36000

Face value = ₹ 100

Premium = ₹ 20 and dividend = 15%

(i) Number of shares =  $36000/120$

= 300

(ii) Dividend = 15% of (100 × 300)

= ₹ 4500

(iii) Percentage of return =  $(4500/36000) \times 100$

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$$= 450/36$$

$$= 12.5\%$$

**11. 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.

**Solution:**

$$(i) \text{ Market value of one share} = [(200/100) \times 100] + 100$$

$$= ₹ 120$$

$$\text{Number of shares} = \text{investment} / \text{market value of one share}$$

$$= 29040/120$$

$$= ₹ 242$$

$$(ii) \text{ Therefore income from investment} = 242 \times 15$$

$$= ₹ 3630$$

$$(iii) \text{ Percentage return on his investment} = (\text{dividend} / \text{market value}) \times 100$$

$$= (15/120) \times 100$$

$$= 12.5\%$$

**12. 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.**

**Solution:**

$$\text{Given face value of each share} = ₹ 10$$

$$\text{Rate of dividend} = 8\% \text{ per annum}$$

$$\text{Total dividend} = ₹ 300$$

$$\text{Therefore total face value of shares} = (300 \times 100) / 8$$

$$= ₹ 3750$$

$$\text{Number of shares} = 3750/10$$

$$= 375$$

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13. 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 this company

(ii) The dividend percentage per share.

**Solution:**

Given investment = ₹ 8800

Face value of each share = ₹ 100

Market value of each share =  $100 + 10 = ₹ 110$

Total income = ₹ 1200

Therefore total face value =  $(8800 \times 100) / 110$   
= ₹ 8000

(i) Number of shares =  $8000 / 100$

= 80

(ii) Rate of dividend =  $(1200 \times 100) / 8000$

= 15%

14. 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.

**Solution:**

Given investment on shares = ₹ 45000

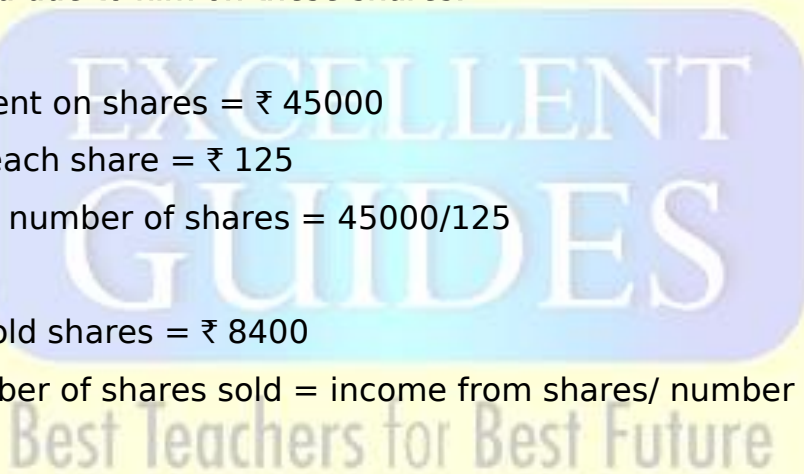
Face value of each share = ₹ 125

Therefore total number of shares =  $45000 / 125$   
= 360 shares

Income from sold shares = ₹ 8400

Therefore number of shares sold =  $\text{income from shares} / \text{number of shares sold}$

=  $8400 / 140$





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= 60

(i) Number of shares he still holds = 300

(ii) Market value of 300 shares =  $300 \times 140$

= ₹ 42000

Face value of 300 shares =  $300 \times 125$

= ₹ 37500

Difference = Market value – face value

=  $42000 - 37500$

= ₹ 4500

**15. 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.

**Solution:**

Given number of shares = 560

Face value of each share = ₹ 25

Rate of dividend = 9% per annum

Total face value of 560 shares =  $25 \times 560$

= ₹ 14000

(i) Amount of dividend =  $14000 \times (9/100)$

= ₹ 1260

(ii) Market value of each share = ₹ 30

Total investment =  $30 \times 560$

= ₹ 16800

Therefore percentage of interest on his investment =  $(1260 \times 100) / 16800$

= 7.5%

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

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





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

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

**Solution:**

Given number of shares = 10000

Nominal value of each share = ₹ 100

Rate of annual dividend = 8%

Total face value of 10000 shares =  $100 \times 10000$   
= ₹ 1000000

Dividend =  $(1000000 \times 8) / 100$   
= ₹ 80000

(ii) Number of shares = 90

Face value of each share = ₹ 150

Total face value of 90 shares =  $150 \times 90$   
= ₹ 9000

Therefore amount of dividend =  $(9000 \times 8) / 100$   
= ₹ 720

Market value of 90 shares =  $90 \times 159$   
= ₹ 13500

Therefore rate of interest =  $(720 \times 100) / (13500 \times 1)$   
=  $16/3$

= 5.3 %

**17. 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)

**Solution:**



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Number of shares = 4000

Nominal (face) value of each share = ₹. 110

Total face value of 4000 shares = ₹. 110  
x 4000

= ₹, 440000

Rate of annual dividend = 15%

(i) Amount of dividend =  $(440000 \times 15) / 100$

= ₹ 66000

(ii) Number of shares, Shah Rukh has = 88

Face value of 88 shares =  $88 \times 110$

= ₹ 9680

Annual dividend =  $(9680 \times 15) / 100$

= ₹ 1452

(iii) Rate of annual income on his investment = 10%

His investment =  $(1452 \times 100) / 10$

= ₹ 14520

Market value of each share =  $14520 / 88$

= ₹ 165

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

**Solution:**

Given investment = ₹. 7500

Rate of dividend = 10%,

Total income = ₹. 500.

Face value of each share = ₹. 100

Total face value =  $(100 \times 500) / 10$

= ₹ 5000



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If face value is ₹. 5000, then investment = ₹. 7500

and if face value is ₹. 100 then market value of each share =  $(7500 \times 100) / 5000$

= ₹ 150

19. 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.

**Solution:**

Given No. of shares = 400

Face value of each share = ₹. 10

Market value of each share

= ₹. 10 + ₹. 2.50

= ₹. 12.50

Rate of dividend = 8%

Therefore, face value of 400 shares =  $10 \times 400$

= ₹ 4000

(i) Total investment =  $12.50 \times 400$

= ₹ 5000

(ii) Total dividend =  $4000 \times (8/100)$

= ₹ 320

(iii) Yield percent =  $(320 \times 100) / 5000$

=  $32/5$

= 6.4%

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20. 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 ?

**Solution:**

Given In first case; Total investment = ₹. 10400

Rate of dividend = 6%

Market value of each share = ₹. 104

$$\begin{aligned} \text{Total dividend} &= (10400 \times 6) / 104 \\ &= ₹ 600 \end{aligned}$$

In second case, investment = ₹ 11440

Rate of dividend = 10.4%

Market value of each share = ₹ 143

$$\begin{aligned} \text{Therefore, total dividend} &= (11440 \times 10.4) / 143 \\ &= ₹ 832 \end{aligned}$$

$$\begin{aligned} \text{Total dividend from both cases} &= ₹. 600 + ₹. 832 \\ &= ₹. 1432 \end{aligned}$$

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

**Solution:**

Let the investment in each case = ₹. 116 x 145

$$\begin{aligned} \text{Dividend in first case,} \\ &= (116 \times 145 \times 7) / 116 \\ &= ₹ 1015 \end{aligned}$$

$$\begin{aligned} \text{Dividend in second case} \\ &= (116 \times 145 \times 9) / 145 \\ &= ₹ 1044 \end{aligned}$$

From the above it is clear that the second type of shares that is 9% at ₹ 145 are more profitable.

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



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## Solution:

Let the investment in each case = ₹. 120 In the first case,

Dividend on ₹. 120 = ₹. 6

In second case, Dividend on ₹. 10

=  $(8 \times 10) / 100$

= 0.8

Now dividend on ₹ 15 = 0.8

Then dividend on ₹ 120 =  $(0.8 \times 120) / 15$

= ₹ 6.4

From the above it is clear that the second type of shares that is 8% at ₹ 10 shares at 15 is more profitable.

**23. 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.**

## Solution:

Given Investment = ₹. 10080

Face value of each share = ₹. 100

Market value of each share = ₹. 112

Rate of dividend = 6%

Total income for the year

=  $(10080 \times 6) / 112$

= ₹ 540

Number of shares =  $10080 / 112$

= 90

Selling price of 90 shares at the rate of ₹ 96 each =  $90 \times 96$

= ₹ 8640

Rate of dividend in new shares = 10%

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Face value of each share = ₹ 10

Market value of each share = ₹ 8

Number of shares =  $8640/8 = 1080$

Face value of 1080 shares =  $1080 \times 10$   
= ₹ 10800

Dividend =  $(10800 \times 10)/100$   
= ₹ 1080

Difference in income =  $1080 - 540$   
= ₹ 540 more

**24. Sachin invests ₹ 8500 in 10% ₹ 100 shares at ₹ 170. He sells the shares when the price of each share rises by ₹ 30. He invests the proceeds in 12% ₹ 100 shares at ₹ 125. Find**

- (i) the sale proceeds.
- (ii) the number of ₹ 125 shares he buys.
- (iii) the change in his annual income.

**Solution:**

Given,

Investment = ₹ 8500

Face value of each share = ₹ 100

Market value of each share = ₹ 170

Rate of dividend = 10%

Total income for the year  
= ₹  $(8500 \times 10)/170$   
= ₹ 500

And, the number of shares =  $8500/170 = 50$

Selling price of 50 shares at the rate of ₹  $(170 + 30)$  each =  $50 \times 200$   
= ₹ 10000

(i) The sale proceeds = ₹ 10000

Rate of dividend in new shares = 12%

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Face value of each share = ₹ 100

Market value of each share = ₹ 125

(ii) Number of shares =  $10000/125 = 80$

Face value of 80 shares =  $80 \times 100$   
= ₹ 8000

Dividend =  $(8000 \times 12)/100$   
= ₹ 960

(iii) Hence, the change in his annual income =  $(960 - 500)$   
= ₹ 460 more

**25. 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.**

**Solution:**

Given Investment = ₹. 4368

Market value of each share = ₹. 91

Face value of each share = ₹ 100

Therefore, number of shares =  $4368/91$   
= 48

Face value of 24 shares =  $24 \times 100$   
= ₹ 2400

Sale price of shares worth ₹ 2400 =  $(2400 \times 95)/100$   
= ₹ 2280

Face value of remaining shares =  $24 \times 100$   
= ₹ 2400

Sale price of shares of remaining amount =  $(2400 \times 85)/100$   
= ₹ 2040

Total amount received =  $2280 + 2040$   
= ₹ 4320

Loss =  $4368 - 4320$

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= ₹ 48

26. 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?

**Solution:**

Given market value of each share = ₹ 80

Face value of each share = ₹. 50

Interest on investment = 4%

Dividend on ₹ 80 =  $(80 \times 4) / 100$

= 32/10

Percent dividend =  $(32/10) \times (100/50)$

= 64/10

= 6.4%

Number of shares = 200

Face value of 200 shares =  $200 \times 50$

= ₹ 10000

Dividend = ₹ 10000  $\times$  (6.4/100)

= ₹ 640

27. ₹. 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.

**Solution:**

Market value of each shares =  $100 - 20 = ₹.80$

Interest on investment of ₹. 80 =  $15\% \times 80$

=  $15/100$

$\times 80$

= ₹ 12

Dividend on face value of ₹. 100 = ₹. 12

Rate of dividend = 12%.

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





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**Solution:**

Rate of dividend = 14%

Dividend on ₹. 50 =  $(14 \times 50) / 100$

= ₹ 7

Now ₹. 10 is interest on the investment of = ₹. 100

₹. 7 will be the interest on =  $(100 \times 7) / 10 = ₹. 70$

Hence, market value of ₹. 50 shares = ₹. 70

**29. 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.**

**Solution:**

Given,

No. of shares = 10000

Face value of each share = ₹. 100

Rate of dividend = 5%

(i) Total face value of 10000 shares

= ₹. 100 × 10000

= ₹. 1000000

Hence,

Total amount of dividend = ₹.  $(1000000 \times 5) / 100$

= ₹. 50000

(ii) Income of 72 shares =  $72 \times 5 = ₹. 360$

(iii) Rate of interest on investment = 4%

Hence, market value of each share = ₹.  $100 / 4 \times 5$

= ₹. 125

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30. 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.

**Solution:**

Given,

Face value of each share = ₹. 100

Market value of each share = ₹. 100 - ₹.25

= ₹. 75

Rate of dividend = 10%

Let the no. of shares be taken as x

Selling price =  $x \times 75 = ₹. 75x$

Face value of x share =  $100x$

Dividend annually =  $100x \times 10/100 = 10x$

No. of shares purchased =  $75x/80 = 15x/16$

Face value of  $15x/16$  shares =  $15x/16 \times 100 = 1500x/16$

Now, dividend =  $1500x/16 \times 16/100 = 15x$

Thus, the increase in the income =  $15x - 10x = 5x$

Now, we have

$$5x = 2000$$

$$x = 2000/5 = 400$$

Hence, the number of shares purchased = 400

31. 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 ?

**Solution:**

Let's consider the investment in first case to be x

Then, the investment in second case =  $(6750 - x)$



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In first case, the dividend = ₹.  $x \times (6/140)$

$$= ₹. 3x/70$$

And dividend in second case = ₹.  $(6750 - x) \times (5/125) = ₹. (6750 - x)/25$

$$\text{Total dividend} = 3x/70 + (6750 - x)/25$$

Given that the total income = ₹. 280

So, we have

$$3x/70 + (6750 - x)/25 = 280$$

$$15x + 14(6750 - x) = 280 \times 350 \text{ [Since, L.C.M} = 350]$$

$$x = ₹. [(280 \times 350) - (14 \times 6750)]$$

$$= ₹. (98000 - 94500)$$

$$= ₹. 3500$$

Hence, investment in first case = ₹. 3500

And investment in second case = ₹. 6750 - ₹. 3500

$$= ₹. 3250$$

**32. 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 investment are equal.**

**Solution:**

Given,

$$\text{Total amount} = ₹ 20304$$

Let the amount invested in 9% ₹ 50 at 8% premium =  $x$

Then, amount invested in 8% ₹ 25 at 8% discount =  $20304 - x$

Income from both investments are equal Now income from first type of shares

$$= (x \times 9)/(100 + 8)$$

$$= 9x/108$$

$$= x/12$$

Income from the second type of shares =  $[(20304 - x) \times 8]/(100 - 8)$

$$= [(20304 - x) \times 8]/92$$



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$$= 2(20304 - x)/23$$

As given, in both the cases the annual income is same, we have

$$x/12 = 2(20304 - x)/23$$

$$23x = 24(20304 - x) \text{ [After cross multiplication]}$$

$$23x = 24 \times 20304 - 24x$$

$$23x + 24x = 24 \times 20304$$

$$47x = 24 \times 20304$$

$$x = (24 \times 20304)/47$$

$$= 10368$$

Hence, the amount invested in first kind of shares = ₹. 10368

And in second kind of shares = ₹. 20304 - ₹. 10368

$$= ₹. 9936$$

## Chapter test

1. If a man received ₹1080 as dividend from 9% ₹20 shares, find the number of shares purchased by him.

**Solution:**

$$\text{Income on one share} = 9/100 \times 20$$

$$= ₹ 9/5$$

$$\text{Therefore, no. of shares} = 1080 \times 5/9$$

$$= 120 \times 5$$

$$= 600$$

2. Find the percentage interest on capital invested in 18% shares when a ₹ 10 share costs ₹ 12.

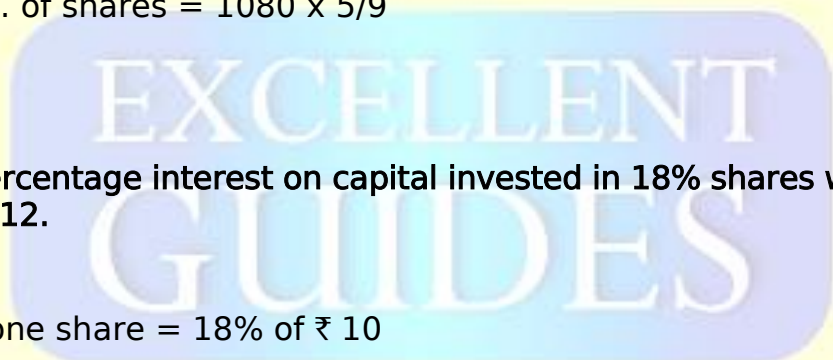
**Solution:**

$$\text{Dividend on one share} = 18\% \text{ of } ₹ 10$$

$$= (18 \times 10)/100$$

$$= ₹ 9/5$$

$$\text{Income on } ₹ 12 = 9/5$$





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Then income of ₹ 100 =  $(9/5) \times (100/12)$   
= 15

Percentage interest on capital = 15%

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.

**Solution:**

Given investment = ₹ 10000

Face value of each share = ₹ 100

Rate of dividend = 10%

Annual dividend = ₹ 800

(i) Market value =  $(10000 \times 10) / 800$

= ₹ 125

(ii) rate percent on investment =  $(800 \times 100) / 10000$

= 8%

4. At what price should a 9% ₹ 100 share be quoted when the money is worth 6% ?

**Solution:**

If interest is 6 then investment = ₹ 100

and if interest is 9, then investment

= ₹  $(100 \times 9) / 6$

= ₹ 150

Market value of each share = ₹ 150

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.



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**Solution:**

Given rate of dividend = 2.5%

And market price = ₹ 92

Let number of shares purchased =  $x$

Selling price of  $x$  shares =  $92x$

Income from investing

$$₹ x = (92x \times 2.5) / 92$$

$$= (92x \times 25) / (92 \times 10) = (5/2) x$$

Again by investing  $92x$  in 5% at ₹ 115 the dividend =  $(92x \times 5) / 115 = 4x$

$$\text{Difference} = 4x - (5/2) x = 3/2 x$$

$$3/2 x = 90$$

$$x = (90 \times 2) / 3$$

$$= 60$$

(i) therefore, number of shares = 60

(ii) Number of shares sold =  $92x/115$

$$= (92 \times 60) / 115$$

$$= 48$$

(iii) New income =  $4x = 4 \times 60$

$$= ₹ 240$$

(iv) Rate percent interest on investment =  $(5 \times 100) / 115$

$$= 100 / 23$$

$$= 4 (8/23)\%$$

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.

**Solution:**

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Let's consider the no. of shares to be  $x$

Value of  $x$  shares =  $x \times 100 = 100x$

And dividend =  $(100x \times 6)/100 = ₹. 6x$

Dividend on half-shares =  $₹. 6x/2 = ₹. 3x$

Now, the no. shares he sold out =  $x/2$

Amount received at 10% discount =  $x/2 \times 90 = ₹. 45x$

In investing ₹.  $45x$ , no. of shares he purchased =  $45x/60$

Thus, the amount of shares =  $45x/60 \times 50 = ₹. 225x/6$

Income at rate of 7% =  $225x/6 \times 7/100 = 21x/8$

Difference in income =  $3x - 21x/8 = 3x/8$

According to the given conditions, we have

$$3x/8 = 120$$

$$x = (120 \times 8)/3$$

$$x = 320$$

Hence,

(i) The number of shares he hold initially = 320

(ii) No. of shares he held later =  $320/2 = 160$

(iii) Amount of income initially =  $320 \times 6 = ₹. 1920$

**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.**

**Solution:**

Given,

Total investment = ₹. 101520

Let investment in first part be  $x$  and in second part will be  $(101520 - x)$

Market value of first kind of shares = ₹. 100 – ₹. 8

$$= ₹. 92$$

And rate of dividend = 8%



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$$\text{So, dividend} = (x \times 8)/92 = ₹. 2x/23$$

$$\text{Now, market value of second kind} = (101520 - x)$$

$$\text{Rate of dividend} = 9\%$$

$$\begin{aligned}\text{And market value} &= ₹. (100 + 8)/100 \times 50 \\ &= ₹. (108/100) \times 50 \\ &= ₹. 54\end{aligned}$$

$$\begin{aligned}\text{So, dividend} &= ₹. (101520 - x) \times 9/(2 \times 54) \\ &= ₹. (101520 - x)/12\end{aligned}$$

According to the given in the problem, we have

$$2x/23 = (101520 - x)/12$$

$$24x = 23(101520 - x)$$

$$24x = 101520 \times 23 - 23x$$

$$47x = 101520 \times 23$$

$$\begin{aligned}x &= ₹. (101520 \times 23)/47 \\ &= ₹. 49680\end{aligned}$$

$$\text{Hence, investment of first part} = ₹. 49680$$

$$\text{And in second part} = ₹. (101520 - 49680) = ₹. 51840$$

**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?**

**Solution:**

Given,

$$\text{Face value of each share} = ₹. 40$$

$$\text{Dividend} = 10\%$$

$$\text{Gain on investment} = 10\%$$

$$\text{So, the dividend on ₹. 40} = (40 \times 10)/100 = ₹. 4$$

$$\text{Now, ₹. 16 is interest on the market value} = ₹. 100$$

Hence,

$$\text{Market value if interest is ₹. 4} = (100 \times 4)/16$$

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= ₹. 25

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.

**Solution:**

Given that,

Investment in 3 companies A, B and C are 20%, 30% and 25%

Let the total investment be ₹. 100

So, the investment in company A = ₹. 20

Rate of dividend = 10%

Thus, dividend = ₹.  $(20 \times 10)/100 = ₹. 2$

Investment in company B = ₹. 30

Rate of dividend = 12%

Thus, dividend = ₹.  $(30 \times 12)/100 = ₹. 36/10 = ₹. 3.6$

And, investment in company C = ₹. 25

Rate of dividend = 25%

Thus, dividend = ₹.  $(25 \times 15)/100 = ₹. 375/100 = ₹. 3.75$

Total dividend = ₹. 2 + ₹. 3.60 + ₹. 3.75 = ₹. 9.35

If dividend is ₹. 9.35, then total savings = ₹. 100

Then, if dividend is ₹. 4675 the total savings

=  $(4675 \times 100)/9.35$

=  $(4675 \times 100 \times 100)/935$

= ₹. 50000

Hence,

The amount of investment in shares of company A = ₹.  $50000 \times (20/100) = ₹. 10000$

The amount of investment in shares of company B = ₹.  $50000 \times (30/100) = ₹. 15000$



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The amount of investment in shares of company A = ₹.  $50000 \times (25/100) = ₹. 12500$

**10. Virat and Dhoni invest ;36000 each in buying shares of two companies. Virat 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.**

**Solution:**

In the first case, we have

Investment made by Virat = ₹ 36000

And market value at a discount of 20% = ₹  $40 \times (80/100) = ₹ 32$

Thus, total face value = ₹  $(36000 \times 40)/32 = ₹ 45000$

Rate of dividend = 15%

Thus, total dividend = ₹  $(45000 \times 15)/100 = ₹ 6750$

Now, in second case, we have

Investment = ₹ 36000

Dividend of Dhoni = ₹ 6750

Face value of each share = ₹ 75

And market value at premium of 20% = ₹  $75 \times (120/100) = ₹ 90$

Face value =  $36000 \times (75/90) = 30000$

Thus, rate of dividend =  $(6750 \times 100)/30000 \%$

=  $45/2 \%$  = 22.5%

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