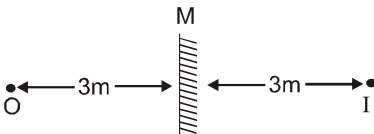


DATE : 03-12-2017

CLASS : VIII

HINTS & SOLUTIONS

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	A	C	D	A	C	C	D	B	C	A	C	B	C	A	A
Ques.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	D	B	D	D	D	B	A	C	B	C	C	A	C	A	C
Ques.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	A	B	D	D	A	C	C	B	D	C	A	D	D	C	B
Ques.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	D	C	D	B	A	B	D	D	C	C	D	C	B	B	A
Ques.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	A	B	D	A	B	D	A	B	B	B	D	C	D	A	D
Ques.	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Ans.	A	D	D	D	A	A	D	C	A	C	B	C	B	B	A
Ques.	91	92	93	94	95	96	97	98	99	100					
Ans.	A	A	A	B	D	C	C	C	C	C					

11. 
- From plane mirror property
 $OM = IM = 3 \text{ m}$
 So, $OI = OM + MI = 3 + 3 = 6 \text{ m}$

36. $(0.00243)^{2/5}$
 $(0.3)^{5 \times \frac{2}{5}} = 0.09$

37. C.P. of 1 toy = Rs. $\left(\frac{375}{12}\right) = \text{Rs.} 31.25$. S.P. of 1 kg = Rs. 33.
 $\therefore \text{Profit\%} = \left(\frac{1.75}{31.25} \times 100\right)\% = \frac{28}{5}\% = 5.6\%$

38. ATQ
 $2p = p \left(1 + \frac{R}{100}\right)^{10}$

$$2^{1/10} = \left(1 + \frac{R}{100}\right)$$

$$8p = p \left(1 + \frac{R}{100}\right)^T$$

$$8 = \left(1 + \frac{R}{100}\right)^T$$

$$2^3 = \left(2^{1/10}\right)^T$$

$$2^3 = 2^{\frac{T}{10}}$$

$$3 = \frac{T}{10}$$

$$T = 3 \times 10 = 30 \text{ years.}$$

39. A's 1 day work = $\frac{1}{16}$ part

B's 1 day work = $\frac{1}{12}$ part

$$(A + B)\text{'s work in 2 days} = \left(\frac{1}{12} + \frac{1}{16}\right) = \frac{7}{48}$$

$$1 \text{ day work} = \frac{7}{96}$$

$$\text{so work can be finished in } \frac{96}{7} = 13\frac{5}{7} \text{ days}$$

40. $a + b + \sqrt{ab}$

Let $n = a + b$

$$\sqrt{ab} = y$$

So $n - y$ is its Rationalisation

$$(x + y)(x - y) = x^2 - y^2$$

$$(a + b + \sqrt{ab})(a + b - \sqrt{ab})$$

$$(a + b)^2 - ab$$

which is rational so

$$a + b - \sqrt{ab} \text{ is the Ans.}$$

41. Let the man purchases y kg of goods at Rs 1600.

Then his total CP = Rs 1600.

He sells $\frac{3y}{4}$ kg of his goods at a profit of 10%.

Now, CP of $\frac{3y}{4}$ kg of his goods

$$= \text{Rs } 1600 \times \frac{3}{4} = \text{Rs } 1200.$$

\therefore SP of $\frac{3y}{4}$ kg of his goods

$$= \text{Rs } \frac{110}{100} \times 1200 = \text{Rs } 1320.$$



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Now, CP of the remaining $\frac{y}{4}$ kg of his goods

$$= \text{Rs } 1600 \times \frac{1}{4} = \text{Rs } 400.$$

Let the man sell the remaining $\frac{y}{4}$ kg of his goods at a profit of $x\%$.

Then SP of $\frac{y}{4}$ kg of his good

$$= \text{Rs } \frac{100+x}{100} \times 400 = \text{Rs } (400 + 4x)$$

\therefore Total SP of y kg of goods

$$= \text{Rs } (1320 + 400 + 4x)$$

$$= \text{Rs } (4x + 1720)$$

If the man makes a gain of 16% on the whole transaction, then SP of y kg of

$$\text{goods} = \text{Rs } \frac{116}{100} \times 1600 = \text{Rs } 1856$$

$$\therefore 4x + 1720 = 1856$$

$$\Rightarrow 4x = 1856 - 1720 = 136$$

$$\Rightarrow x = \frac{136}{4} = 34$$

Hence, the required profit = 34%

42. Let the required sum i.e. the principle, be Rs P.

We have, Principal = P. Amount = Rs 9826, $R = 2\frac{1}{2}\%$ per annum and

$$n = 18 \text{ months} = \frac{18}{12} \text{ years} = \frac{3}{2} \text{ years.}$$

$$\therefore A = P \left(1 + \frac{R}{200} \right)^{2n}$$

$$\Rightarrow 9826 = P \left(1 + \frac{\frac{5}{2}}{200} \right)^{2 \times \frac{3}{2}}$$

$$\Rightarrow 9826 = P \left(1 + \frac{1}{80} \right)^3$$

$$\Rightarrow 9826 = P \left(\frac{81}{80} \right)^3$$

$$\Rightarrow P = 9826 \times \left(\frac{80}{81} \right)^3 = 9466.54$$

Hence, required sum = Rs 9466.54

ALITER

Let the required sum be Rs 100. Then, the amount after 18 months i.e., $\frac{3}{2}$ years at the rate of

$2\frac{1}{2}\%$ compounded half-yearly, is given by

$$\begin{aligned} \text{Amount} &= \text{Rs} \left[100 \times \left(1 + \frac{5}{200} \right)^{2 \times \frac{3}{2}} \right] \\ &= \text{Rs} \left[100 \times \left(\frac{81}{80} \right)^3 \right] \\ &= \text{Rs} \frac{531441}{5120} \end{aligned}$$

Now,

If amount is Rs. $\frac{531441}{5120}$, then principal = Rs 100

If the amount is Re 1, then principal

$$= \text{Rs} \left(\frac{100 \times 5120}{531441} \right)$$

If the amount is Rs. 9826, then principal

$$= \text{Rs} \left(\frac{100 \times 5120}{531441} \times 9826 \right)$$

$$= \text{Rs} 9466.54$$

Hence, required sum = Rs 9466.54

43. A can do a piece of work in 'm' days

In 1 day A can do $\frac{1}{m}$ part of work

B can do piece of work in 'n' days

In 1 day B can do $\frac{1}{n}$ part of work

So, in 1 day both A and B can do

$$= \left(\frac{1}{m} + \frac{1}{n} \right) \text{part of work}$$

$$= \left(\frac{m+n}{mn} \right) \text{part of work}$$

So, $\left(\frac{m+n}{mn} \right)$ part of work in 1 day

So, complete work is done by A and B

$$= \frac{1}{1 \text{ day work}} = \frac{mn}{m+n} \text{ days.}$$

44. $(2^5)^{\frac{1}{3}} \times (5 \times 5 \times 5 \times 2)^{\frac{1}{3}}$

$$= (2^5 \times 5^3 \times 2)^{\frac{1}{3}} = (2^6 \times 5^3)^{\frac{1}{3}}$$

$$= 2^2 \times 5 = 20$$

45. Let his cost price be Rs.x

$$\text{Then his marked price} = \text{Rs} \left(x + \frac{10x}{100} \right) = \text{Rs} \frac{11x}{10}$$

He then sells it at a discount of 10% on this marked price.

$$\therefore \text{Discount} = 10\% \text{ of Rs } \frac{11x}{10} = \text{Rs } \frac{11x}{10} \times \frac{10}{100} = \text{Rs } \frac{11x}{100}$$

$$\therefore \text{His SP} = \text{Rs } \left(\frac{11x}{10} - \frac{11x}{100} \right) = \text{Rs } \frac{110x - 11x}{100} = \text{Rs } \frac{99x}{100}$$

Since his CP > SP, hence there will be a loss and loss = CP - SP

$$= \text{Rs } \left(x - \frac{99x}{100} \right) = \text{Rs } \frac{x}{100}$$

$$\therefore \text{Loss percent} = \frac{x}{100} \times \frac{1}{x} \times 100 = 1$$

Hence, the required loss = 1%

46. Let principal be Rs. P then in 15 years
It becomes 2P

$$\therefore 2P = P \left(1 + \frac{r}{100} \right)^{15}$$

$$\Rightarrow \left(1 + \frac{r}{100} \right)^{15} = 2 \quad \dots (1)$$

Now,

$$8P = P \left(1 + \frac{r}{100} \right)^x$$

$$\Rightarrow 8 = \left(1 + \frac{r}{100} \right)^x \Rightarrow 2^3 = \left(1 + \frac{r}{100} \right)^x$$

$$\Rightarrow \left\{ \left(1 + \frac{r}{100} \right)^{15} \right\}^3 = \left(1 + \frac{r}{100} \right)^x$$

$$\Rightarrow \left(1 + \frac{r}{100} \right)^{45} = \left(1 + \frac{r}{100} \right)^x$$

$$\therefore x = 45 \text{ years}$$

47. 12 men \equiv 18 women \Leftrightarrow 8 men \equiv $\left(\frac{18}{12} \times 8 \right)$ women = 12 women.

$$\therefore 8 \text{ men} + 16 \text{ women} \equiv 28 \text{ women.}$$

Now, more women, less days.

$$\therefore 28 : 18 :: 14 : x.$$

$$\text{So, } x = \frac{18 \times 14}{28} = 9 \text{ days.}$$

48. $\left(\frac{5}{3} \right)^{-5} \times \left(\frac{5}{3} \right)^{11} = \left(\frac{5}{3} \right)^{8x}$

$$\left(\frac{5}{3} \right)^{-5+11} = \left(\frac{5}{3} \right)^{8x}$$

$$-5 + 11 = 8x$$

$$6 = 8x$$

$$x = \frac{6}{8} = \frac{3}{4}$$

49. C.P. = Rs. 1200. S.P. = 125% of Rs. 1200

$$= \text{Rs. } \left(\frac{125}{100} \times 1200 \right) = \text{Rs. } 1500.$$



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Let marked price be Rs. x. Then, 80% of x = 1500

$$\Rightarrow x = \left(\frac{1500 \times 100}{80} \right) = 1875$$

\therefore Marked price = Rs. 1875

50. Case I

Compounded yearly

T = 3/2 years, R = 4%, P = Rs. 5000

$$\begin{aligned} A &= P \left(1 + \frac{r}{100} \right)^n \\ &= 5000 \left(1 + \frac{4}{100} \right)^1 \left(1 + \frac{2}{100} \right) \\ &= 5000 \left(\frac{26}{25} \right) \left(\frac{51}{50} \right) \\ &= \text{Rs. } 5304 \end{aligned}$$

C.I. = A.P. = 5304 – 5000 = Rs. 304

Case II

Interest compounded half yearly

T = 3 half years, R = 27, P = Rs. 5000

$$\begin{aligned} A &= P \left(1 + \frac{r}{100} \right)^n \\ &= 5000 \left(\frac{51}{50} \right)^3 \\ &= \frac{8000 \times 51 \times 51}{50 \times 50 \times 50} \\ &= \text{Rs. } 5306.04 \\ \text{C.I.} &= A - P \\ &= \text{Rs. } 5306.04 - 5000 \\ &= \text{Rs. } 306.04 \end{aligned}$$

Diffirenc = 306.04 – 304 = Rs. 2.04

51. Let A complete the work in x days

So, work done by A in 1 day = $\frac{1}{x}$

According to problem :

$$\frac{1}{x} + \frac{1}{15} = \frac{1}{10}$$

$$\frac{1}{x} = \frac{1}{10} - \frac{1}{15}$$

$$\frac{1}{x} = \frac{3-2}{30}$$

x = 30

So, A complete the work in 30 days.

52. $2^n - 2^{n-1} = 4$

$$2^n = 8$$

$$n = 3$$



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$$n^n = 3^3 = 27.$$

53. S.P. of 1 article = Rs. 45. Let marked price of each article be Rs. x.

$$\text{Then, } x = 45 \Rightarrow x = \text{Rs. } \left(\frac{45 \times 100}{90} \right)$$

= Rs. 50.

$$\text{C.P.} = \text{Rs. } \left(\frac{100}{150} \times 45 \right) = \text{Rs. } 30$$

Now, C.P. = Rs. 30, S.P. = Rs. 50.

$$\therefore \text{Required profit\%} = \left(\frac{20}{30} \times 100 \right) \% = 66 \frac{2}{3} \%$$

54. Difference = $P \left(\frac{R}{100} \right)^n$

$$282 = P \left(\frac{10}{100} \right)^n$$

$$\frac{282 \times 100 \times 100}{10 \times 10} = P$$

$$\text{Rs. } 28200 = P$$

55. A's 1 day work = $\frac{1}{40}$

$$\text{so A's 5 day work} = \frac{1}{8} \text{ part}$$

$$\text{work left} = 1 - \frac{1}{8} = \frac{7}{8} \text{ part}$$

Let B's 1 day work = x

$$\text{so } 21(x) = \frac{7}{8}$$

$$x = \frac{1}{24} \text{ part}$$

$$(A + B)' \text{ 1 day work} = \left(\frac{1}{24} + \frac{1}{40} \right) = \frac{1}{15}$$

so A and B can do the work in 15 days

56. S.I. = $\frac{PRT}{100}$

$$90 = \frac{PR \times 3}{100}$$

$$\frac{90 \times 100}{3} = PR$$

$$3000 = PR$$

For 2 years

$$\text{S.I.} = \frac{PR \times 2}{100}$$

$$= \text{Rs. } 60$$

$$\text{So, C.I.} - \text{S.I.} = P \left(\frac{R}{100} \right)^n$$

$$63 - 60 = P \left(\frac{R}{100} \right)^2$$

$$3 = \frac{PR^2}{10000}$$

$$30000 = PR \times R$$

$$30000 = 3000 \times R$$

$$10\% = R$$

$$\text{So, } PR = 3000$$

$$P \times 10 = 3000$$

$$P = \text{Rs. } 300$$

57. 5 men = 10 women
 1 men : 2 women ... (i)
 Let amount of job = x
 so x = 6 men \times 10 \times 4
 From (i) x = 12 women \times 10 days \times 4 hrs
 x = 480
 Let 10 women works for y days
 so, x = 10 women \times 6 hrs \times y
 x = 60y
 60 y = 480
 y = 8 days

58. (A) 5×10^{-1}
 (B) $0.5 \times 10^{-1} = 5 \times 10^{-2}$
 (C) $0.05 \times 10 = 5 \times 10^{-1}$
 (D) $0.005 \times 10^2 = 5 \times 10^{-1}$
 So, a, c & d are same but b is not same

59. Let the C.P. be Rs. x.
 1st S.P. = $\frac{80x}{100} = \frac{4x}{5}$
 2nd S.P. = $\frac{105x}{100} = \frac{21x}{20}$
 $\therefore \frac{21x}{20} - \frac{4x}{5} = 100$
 $\Rightarrow \frac{5x}{10} = 100$
 x = 400

60. Difference = $P \left(\frac{R}{100} \right)^n$
 $96 = 15000 \left(\frac{R}{100} \right)^2$
 $\frac{96}{15000} = \left(\frac{R}{100} \right)^2$
 $\frac{4}{50} = \frac{R}{100}$
 $\frac{4 \times 100}{50} = R$
 8% = R

61. $(A + B)$'s 1 day work = $\frac{1}{30}$

$(B + C)$'s 1 day work = $\frac{1}{24}$

$(A + C)$'s 1 day work = $\frac{1}{20}$

so, $\left(\frac{1}{30} + \frac{1}{24} + \frac{1}{20}\right) = 2\left(\frac{1}{A} + \frac{1}{B} + \frac{1}{C}\right)$

so 1 day work A, B and C = $\frac{\left(\frac{1}{30} + \frac{1}{24} + \frac{1}{20}\right)}{2}$

so 10 day work of all three = $5\left(\frac{1}{30} + \frac{1}{24} + \frac{1}{20}\right)$

= $\frac{5}{8}$ part

Remaining work = $\frac{3}{8}$ part

1 day work of A = $\frac{1}{16} - \frac{1}{24} = \frac{1}{48}$

so the complet work done by A in 48 days.

so $\frac{3}{8}$ part of work A can do in $\frac{3}{8} \times 48 = 18$ days.

62. $\left(\frac{x}{y}\right)^a \left(\frac{y}{x}\right)^b \left(\frac{y}{x}\right)^{-c}$

$\left(\frac{y}{x}\right)^{-a} \left(\frac{y}{x}\right)^b \left(\frac{y}{x}\right)^{-c}$

$\left(\frac{y}{x}\right)^{-a+b-c}$

$\left(\frac{y}{x}\right)^{-a+a+c-c}$

$\left(\frac{y}{x}\right)^0 = 1$

63. Suppose he buys 6 eggs of each kind.

C.P. of 12 eggs = Rs $\left(\frac{1}{2} \times 6 + \frac{2}{3} \times 6\right)$ = Rs. 7.

S.P. of 12 eggs = Rs. $\left(\frac{3}{5} \times 12\right)$ = Rs. 7.20

\therefore Gain% = $\left(\frac{0.20}{7} \times 100\right)$ % = $2\frac{6}{7}$ %.

64. Here, P = Rs. 4000, $R_1 = 5\%$ per annum and $R_2 = 15\%$ per annum.

Amount after 1 years

= $P\left(1 + \frac{R_1}{100}\right)\left(1 + \frac{R_2}{100}\right)$ = Rs 4000 $\times \left(1 + \frac{5}{100}\right)\left(1 + \frac{15}{100}\right)$ = Rs 4000 $\times \left(1 + \frac{1}{20}\right)\left(1 + \frac{3}{20}\right)$



= Rs 4000 × $\frac{21}{20}$ × $\frac{23}{20}$ = Rs 4830. Thus, the refrigerator will cost Rs 4830 to Ram Singh.

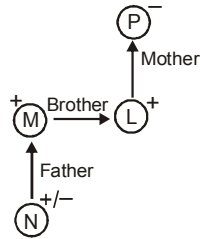
65. Work ratio of sakshi and tanya = 100 : 125 ⇒ 4 : 5

So time ratio = 5 : 4

Let tanya can complete work in x days

so, $\frac{20}{x} = \frac{5}{4}$ ⇒ x = 16 days

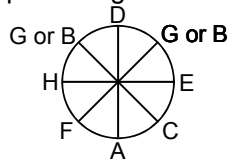
66.



The sex of N is not given hence the exact relationship b/w N & P cannot be established.

67. S is sitting next to P so, the order S, P or P, S is followed. K is sitting next to R. So the order R, K is followed because R is on the extreme left. T is not next to P or K. So, the arrangement will be R, K, P, S, T. Clearly, P and T are sitting adjacent to S.

69. On the basis of the information given in the question we have the sitting arrangements of the persons as per the fig. below.



70. His mother is the woman.
∴ Woman is mother of the person.

Sol. (73 to 76) :

The best method to solve this question is to make a table and fill the place according to the information given logically. On analyzing the information given in the question, we arrive at the following table

Student	Compulsory Subject	Optional Subject
M	Geography (given)	English (given)
N	Geography (given)	Biology (given)
O	Geography (given)	Physics (given)
P	English (given)	Geography (given) Female student (given)
Q	Chemistry (given)	Physics (given)
R	Physics (given)	Chemistry (given)

77. Number 5 represents those poor boys helping family business but are not educated or employed elsewhere because it occupies the space common to circle and rectangle only.

78. No number occupies the space which is common to circle, square and rectangle only.

79. Number 3 is present in the space common to circle, square and rectangle, hence represents educated poor boys who help in family business.

91. $f = 1000$ Hz
 $\lambda = 50$ cm = .5 m
 $v = f \lambda = 1000 \times .5 = 500$ m/s

Time taken to travel distance of 500 m

$$t = d/v = 500 / 500 = 1 \text{ s}$$

96. $2^2 \times \left(\frac{1}{2}\right)^5 \times 2^{-6} \times \left(\frac{1}{2}\right)^{-3}$
 $= 2^2 \times 2^{-5} \times 2^{-6} \times 2^3$
 $= 2^{2-5-6+3}$
 $= 2^{-6}$
 $= \left(\frac{1}{2}\right)^6 = \frac{1}{32}$

97. Discount -I – 50% [A]
Discount -II – 50% [B]
Successive discount = $A + B - \frac{AB}{100}$
 $= 50 + 50 - \frac{50 \times 50}{100}$
 $\Rightarrow 50 + 50 - 25 = 75\%$

98. Let its original size be x
So, after tripling its size is 3x
Here p = x, R = 25%
A = 3x
 $3x = x \left(1 + \frac{R}{100}\right)^n$
 $\frac{3x}{x} = \left(1 + \frac{R}{100}\right)^n$
 $3 = \left(1 + \frac{R}{100}\right)^n$
 $3 = \left(1 + \frac{25}{100}\right)^n$
 $3 = \left(\frac{5}{4}\right)^n$
 $(\sqrt[5]{3})^5 = \left(\frac{5}{4}\right)^n$
 $3^{1/5} \approx \frac{5}{4}$
So, 5 = n
So, it has to undergo reproduction 5 times
So, time taken will be = $15 \times 5 = 75 \text{ min}$

99. A's 1 day work = $\frac{1}{20}$
B's 1 day work = $\frac{1}{15}$
Let C's 1 day work = $\frac{1}{C}$
So, $6 \left(\frac{1}{20} + \frac{1}{15}\right) + 4 \left(\frac{1}{20} + \frac{1}{C}\right) = 1$
 $\frac{27}{30} + \frac{4}{C} = 1 \Rightarrow \frac{4}{C} = \frac{3}{30}$

$$\frac{1}{C} = \frac{1}{40}$$

100. $\frac{3}{8} p = \frac{P \times R \times 6 \frac{1}{4}}{100}$

$$\frac{3 \times 100 \times 4}{25 \times 8} = R$$

$R = 6\%$