# Section-wise Grand Test – Quantitative Aptitude – SWGTQ-180106
## HINTS & SOLUTIONS

### ANSWER KEY

| | | | | |
|---|---|---|---|---|
| 1. (2) | 11. (1) | 21. (2) | 31.(4) | 41. (2) |
| 2. (3) | 12. (4) | 22. (1) | 32.(2) | 42. (5) |
| 3. (4) | 13. (3) | 23. (4) | 33.(2) | 43. (4) |
| 4. (2) | 14. (3) | 24. (2) | 34.(1) | 44. (1) |
| 5. (4) | 15. (4) | 25. (3) | 35.(2) | 45. (2) |
| 6.(4) | 16. (2) | 26.(2) | 36. (1) | 46. (2) |
| 7.(3) | 17. (4) | 27.(1) | 37. (4) | 47. (2) |
| 8.(2) | 18. (1) | 28.(2) | 38. (4) | 48. (5) |
| 9.(5) | 19. (2) | 29.(3) | 39. (4) | 49. (4) |
| 10.(3) | 20. (5) | 30.(1) | 40. (3) | 50. (1) |

### HINTS & SOLUTIONS

**1. (2)** Estimated Profit = 25% of 400000 = Rs.100000
Remaining Amount = 400000 – 100000 = Rs.300000
Per day wages of a man $= \frac{300000}{50 \times 20} = $ Rs.300

At the end of 18th day, some women were employed.
Let the number of women employed were x.
Per day wages of a woman = 80% of per day wages of a man = Rs.240
The work was completed 3 days later than the schedule i.e. in 23 days (20 + 3 = 23)
So, 50 men worked for 3 extra days and x women worked for 5 days.
Actual Profit = Rs.31000
Reduction in profit = 3 days' wages of 50 men + 5 days' wages of x women
$\Rightarrow$ 100000 – 31000 = 3 × 50 × 300 + 5 × x × 240
$\Rightarrow$ 69000 = 45000 + 1200x $\Rightarrow$ 1200x = 24000 $\Rightarrow$ x = 20
Hence, 20 women were employed.

**2. (3)** Let the number of women in the group be x.
Then, the number of men in the group = 10 – x
Probability of both the representatives being women = p > 0.4
$\frac{^{x}C_2}{^{10}C_2} > 0.4$
$\Rightarrow$ x(x-1) > 36
Since, x is a whole number.
$\therefore$ x ≥ 7

So, there are 4 combinations:
7 women and 3 men
8 women and 2 men
9 women and 1 man
10 women and no man
If the group consists of 8 women and 2 men, then the ratio of the number of women and men is 4 : 1.
Probability of both the representatives being men

$= \frac{^{10-x}C_2}{^{10}C_2}$
$= \frac{(10-x)(9-x)}{90}$
For x = 7,
Probability $= \frac{1}{15} = 0.066$

So, the probability of both the representatives being men will always be less than 0.1.
The least difference between the number of men and women is 4. Therefore, the difference between the number of women and men in the group can never be 2.
Number of women is more than half of the employees in all the cases.
$\therefore$ 3rd statement is definitely false.

**3. (4)** Let, the amounts invested by A, B and C:

| | A | B | C | |
|---|---|---|---|---|
| At the start of a year | 4x | 6x | 9x | |
| At the end of four months | 2y | 3y | y | |
| At the end of eight months | 3z | 2z | 5z | |

Now, the amounts invested by A:
4x : 2y : 3z = 8 : 6 : 9
$\Rightarrow$ x : y : z = 2 : 3 : 3
So, the investments in terms of x:

| | A | B | C |
|---|---|---|---|
| At the start of a year | 4x | 6x | 9x |
| At the end of four months | 3x | $\frac{9}{2}x$ | $\frac{3}{2}x$ |
| At the end of eight months | $\frac{9}{2}x$ | 3x | $\frac{15}{2}x$ |

Ratio of profit sharing among A, B and C
$= (4x \times 12 + 3x \times 8 + \frac{9}{2}x \times 4) :$
$(6x \times 12 + \frac{9}{2}x \times 8 + 3x \times 4) : (9x \times 12 + \frac{3}{2}x \times 8 + \frac{15}{2}x \times 4)$
= 90x : 120x : 150x
= 3 : 4 : 5
Profit of C $= \frac{5}{12} \times 150000 = $ Rs.62500

**4. (2)** Let, the amounts invested by A, B and C:

| | A | B | C |
|---|---|---|---|
| At the start of a year | 4x | 6x | 9x |
| At the end of four months | 2y | 3y | y |
| At the end of eight months | 3z | 2z | 5z |

Now, total amount invested by A and B, B and C, and; C and A in the year
10x + 5y + 5z = 50000
15x + 4y + 7z = 63000
13x + 3y + 8z = 59000
By solving these equations,
x = 2000, y = 3000, z = 3000
Total amount invested by A, B and C at the start of the year
= 4x + 6x + 9x
= 19x
= 19 × 2000
= Rs.38000

**5. (4)** Let the original strength of the hostel be x.
Original monthly expenditure of the mess = Fixed cost + variable cost per month × Strength of hostel
= 45000 + 750x
Original mess bill of a student $= \frac{\text{Total monthly expenditure of mess}}{\text{Total strength of hostel}}$
$= \frac{45000 + 750x}{x}$
$= \frac{45000}{x} + 750$
Current strength of hostel = x + 30

Current monthly expenditure of the mess = $45000 + 750 \times (x + 30)$

Current mess bill of a student = $\frac{45000 + 750 \times (x + 30)}{x + 30}$

$= \frac{45000}{x + 30} + 750$

According to the question,

Original Bill – Current Bill = 75

$\Rightarrow \left(\frac{45000}{x} + 750\right) - \left(\frac{45000}{x + 30} + 750\right) = 75$

$\Rightarrow \frac{45000}{x} - \frac{45000}{x + 30} = 75$

$\Rightarrow x^2 + 30x - 18000 = 0$

Since x is a positive integer,

$\Rightarrow x = 120$

Current strength of the hostel = $x + 30 = 150$

**6.(4)** The pattern of the number series is :

$7 \times 2 - 2 = 12$

$12 \times 4 - (2 + 6) = 48 - 8 = 40$

$40 \times 6 - (8 + 10) = 240 - 18 = 222$

$222 \times 8 - (18 + 14) = 1776 - 32 = 1744$ not 1742

$1744 \times 10 - (32 + 18) = 17440 - 50 = 17390............$

**7.(3)** The pattern of the number series is :

$6 \times 7 + 7^2 = 42 + 49 = 91$

$91 \times 6 + 6^2 = 546 + 36 = 582$, not 584

$582 \times 5 + 5^2 = 2910 + 25 = 2935$

$2935 \times 4 + 4^2 = 11740 + 16 = 11756$

$11756 \times 3 + 3^2 = 35268 + 9 = 35277$

**8.(2)** The pattern of the number series is :

$8424 / 2 = 4212$

$4212 / 2 = 2106$

$2106 / 2 = 1053$ not 1051

$1053 / 2 = 526.5$

$526.5 / 2 = 263.25$

**9.(5)** $8.1 + 9.2 = 17.3$

$17.3 + 9.2 = 26.5$

$26.5 + 17.3 = 43.8$

$43.8 + 26.5 = 70.3$ $\boxed{\text{Not } 71.5}$

$70.3 + 43.8 = 114.1$

**10.(3)** $4 \times 2 + 2 = 10$

$10 \times 2 + 2 = 22$

$22 \times 2 + 2 = 46$

$46 \times 2 + 2 = 94$ $\boxed{\text{Not } 96}$

$94 \times 2 + 2 = 190$

$190 \times 2 + 2 = 382$

**11. (1)** As per given condition

$\frac{10}{60} + \frac{10}{30} + \frac{x}{15} + \frac{x}{45} + \frac{3}{45} = \left(1 - \frac{1}{45}\right)$

$\frac{4x}{45} = \frac{44}{45} - \frac{17}{30}$

$x = \frac{45}{4}\left(\frac{88 - 51}{90}\right)$

$= \frac{37}{8}$ days.

**12. (4)** Part of work completed by T = $\frac{15}{45} = \frac{1}{3}$

3 day work by $(P + R + S) = \frac{1}{20} + \frac{1}{60} + \frac{1}{30}$

$= \frac{3 + 1 + 2}{60} = \frac{1}{10}$

15 day work = $(5P + 5R + 5S) = \frac{1}{2}$

Remaining work = $1 - \frac{5}{6}$

$= \frac{1}{6}$

Now, this work can be done

by Q in $\frac{1}{6} \times 15 = \frac{5}{2}$ days

But it has to be completed in

3/2 days.

Ratio of new efficiency to old efficiency = 5:3.

Hence increase in efficiency

$= \frac{5 - 3}{3} \times 100 = 66\frac{2}{3}\%$

**13. (3)** Suppose total units of job C be 180 units.

Then, units done by P,Q,R,S and

T per day is 9,12,3,6 and 4 respectively.

Units completed by P,Q and R in

9 days = 3(21+15+12)=144

Remaining 180-144=36 units are

completed by S and T.

ATQ,

$6 \times 4x + 4 \times 3x = 36$

$=> x = 1$

Hence, the answer is 3 days.

**14. (3)** According to question

$\frac{4}{20} + \frac{5x}{15} + \frac{10}{60} + \frac{6x}{30} + \frac{4.5}{45} = 1$

$\Rightarrow \frac{1}{5} + \frac{x}{3} + \frac{1}{6} + \frac{x}{5} + \frac{1}{10} = 1$

$\frac{6 + 10x + 5 + 6x + 3}{30} = 1$

$16x + 14 = 30$

$x = 1$

Required sum = $5x + 6x$

$= 5 + 6 = 11$

**15. (4)** With new efficiency P will complete

the job in $\frac{3}{4} \times 20 = 15$ days

And R will complete the job in

$\frac{3}{4} \times 60 = 45$ days

3 days work of P and R and 1 day

work of Q = $3\left(\frac{1}{15} + \frac{1}{45}\right) + \frac{1}{15} = \frac{1}{3}$

Hence,

Days required = 3 days

**16. (2)** Y alone will complete work C in = $\frac{8 \times 1}{2} = 4$ days

Y alone will complete work D in = $\frac{6 \times 7}{6} = 7$ days

Part of work C and work D completed by Y in given time = $\frac{2}{4}, \frac{4}{7}$

Remaining of work C and work D is completed by X

So,

X will complete remaining of work C = $\left(1 - \frac{2}{4}\right) \times 8 = 4$ days

X will complete remaining of work D = $\left(1 - \frac{4}{7}\right) \times 6 = \frac{18}{7}$ days

Required percentage = $\frac{4 - \frac{18}{7}}{\frac{18}{7}} \times 100 = \frac{500}{9}\%$

**17. (4)** Y can complete work D in = $\frac{6 \times 7}{6} = 7$ days

Part of work D completed by X and Y in 2 days = $\frac{2}{6} + \frac{2}{7}$

$= \frac{1}{3} + \frac{2}{7}$

$= \frac{7 + 6}{21}$

$= \frac{13}{21}$

Time taken by M in completing work D = $\frac{6}{3} \times 7 = 14$ days

So,

In 4 days M will complete = $\frac{4}{14}$

$= \frac{2}{7}$ part

M and N together complete = $\left(1 - \frac{13}{21}\right) = \frac{8}{21}$

But M completes $\frac{2}{7}$ of work D.

Remaining $\left(\frac{8}{21} - \frac{2}{7} = \frac{2}{21}\right)$ is completed by N in 4 days

So, N alone will complete work D in = $4 \div \frac{2}{21} = 42$ days

**18. (1)** Percentage of work C completed by X in 4 days

$= \frac{4}{8} \times 100 = 50\%$

This is equal to work C completed by 4 women in 5 days

So, one woman will complete it in = 40 days

One child will complete it in $\frac{40}{3} \times 5$

6 children will complete it in = $\frac{40 \times 5}{3 \times 6} = \frac{100}{9}$ days

**19. (2)** Y will complete work B in $= \frac{4 \times 5}{5} = 4$ day

Y will complete work C in $= \frac{8 \times 1}{2} = 4$ day

$P = \frac{5 \times 4}{9} = \frac{20}{9}$ days

$Q = \frac{8 \times 4}{12} = \frac{8}{3}$ days

Z will complete work B in $= \frac{8}{3} - \frac{20}{9}$

$= \frac{24-20}{9}$

$= \frac{4}{9}$ days

Ratio of time taken by Y and Z in completing work B

$= 4 : \frac{4}{9}$

$= 9 : 1$

Ratio of efficiency will be = 1 : 9

**20. (5)** Y alone will complete work C, D and E in 4 , 7 and $\frac{9}{2}$ days respectively

Part of work of C, D and E done by Y is $\frac{2}{4}, \frac{4}{7}$ and $\frac{2}{3}$ days respectively

Remaining of work C, D and E is completed by X in

$\frac{1}{2} \times 8, \frac{3}{7} \times 6$ and $\frac{1}{3} \times 6$ days respectively

Required sum $= 4 + \frac{18}{7} + 2$

$= 6 + \frac{18}{7}$

$= \frac{60}{7}$ days.

**21. (2)** Let the per day efficiencies of a man, a woman and a child are 'M', 'W' and 'C' respectively.

$A \to 3M = 4W \Rightarrow \frac{M}{W} = \frac{4}{3}$

$B \to 2W + 5C = \frac{2}{3} \times \frac{1}{12} \Rightarrow 2W + 5C = \frac{1}{18}$

$C \to \frac{M}{C} = \frac{2}{1}$

Hence, the question can be answered by using all the three statements together.

**22. (1)** A → Train A crosses another train B moving in the opposite direction in 10 sec.

∴ Time taken = 10 sec

B → Ratio of the speeds of trains A and B = 1 : 2

∴ Let the speeds of trains A and B be x and 2x m/sec respectively.

C → Length of train B is 25% more than that of train A.

∴ Let the lengths of trains A and B be 4y and 5y meters respectively.

From all the three statements,

Relative speed = x + 2x = 3x

Sum of lengths of trains = 4y + 5y = 9y

Time taken $= \frac{\text{Sum of lengths of trains}}{\text{Relative speed}}$

$\Rightarrow 10 = \frac{9y}{3x}$

Hence, the question cannot be answered even by using all the three statements together.

**23. (4)** A → Let the length and breadth of the rectangle be 4x and 3x respectively.

B → Sum of the lengths of diagonals of the rectangle = 50 m

Rectangle's diagonals are always equal.

$\Rightarrow d = 25 \text{ m} = \sqrt{\text{Length}^2 + \text{Breadth}^2}$

C → Area of a square = 1225 m²

Edge of the square = 35 m

Perimeter of the square = 4 × 35 = 140 m

Perimeter of the rectangle $= \frac{1}{2} \times$ Perimeter of the square

$= 70 \text{ m} = 2(\text{Length} + \text{Breadth})$

Hence, the question can be answered by using any two of the three statements together.

**24. (2)** Let the ten's place and unit's place digits of the number be x and y respectively.

And, the number be 10x + y = z

$A \to \frac{10x + y}{x + y} = \frac{4}{1}$

$\Rightarrow y = 2x$

$B \to (10y + x) - (10x + y) = 18$

$\Rightarrow y - x = 2$

$C \to z + z^2 = 25z$

Hence, either C alone or A and B together are sufficient to answer the question.

**25. (3)** $A \to 85\%$ of MP $= 148\frac{3}{4}\%$ of CP

$\Rightarrow CP = \frac{4}{7}$ of MP

$B \to 80\%$ of 90% of MP = CP + 208

$\Rightarrow \frac{18}{25}MP = CP + 208$

$C \to 57\frac{1}{7}\%$ of MP = CP

$\Rightarrow CP = \frac{4}{7}$ of MP

Hence, either A and B together or B and C together are sufficient to answer the question.

**26. (2)** Let the first group's man can do x unit in one hour and second group's man can do y unit in one hour

$2 \times x \times 2 = 4 \times y \times 1$

$x = y$

$2 \times 30 \times 4 \times 10 = 45 \times 8 \times t$

$t = 6\frac{2}{3}$ days.

**27. (1)** Let the manufacturing price is MP

$MP \times \frac{105}{100} \times \frac{110}{100} \times \frac{115}{100} = 5313$

$MP = 4000$

**28. (2)** Let the selling price is SP

Let the cost price of Ajay is A and vijay is V

$0.15SP - 0.1 A = 130$

$0.15SP - 0.1 \times \frac{SP}{1.1} = 130$

$\frac{1.65-1}{11} \times SP = 130$

$\frac{0.65}{11} \times SP = 130$

$SP = 2200$

**29. (3)** $P = \frac{900 \times 100}{6 \times 3}$

$P = 5000$

CI  1ˢᵗ year 300

   2ⁿᵈ year  300 + 18

   3ʳᵈ year  300 + 18 + 18 + 1.08

CI = 955.08

Required value = 955.08 – 900 = 55.08

**30. (1)** $\frac{\text{amount left}}{\text{Intial amount}} = \left(1 - \frac{\frac{1}{100}V}{V}\right)^3 = \left(1 - \frac{1}{100}\right)^3 = \left(\frac{99}{100}\right)^3$

$\frac{\text{amount left}}{\text{Initial Amount}} = \frac{970299}{1000000}$

**31. (4)** Average Budget of Gujarat during 2008-12 $= \frac{795}{5} = 159$

Average budget of UP during 2008-12 $= \frac{777}{5} = 155.4$

Required % $= \frac{159}{155.4} \times 100 = 102\%$

**32. (2)** Budget allocated for boys in 2012 =35% of 182 = 63.70 crore

Budget left =182-63.7=118.3 crore

Now in 2013, 35% more was increased

Then, budget for boys in 2013 =135% of 63.7 = 85.9 ≈ 86

Then budget in 2013 =86+118.3=204.30 crore

Required % $= \frac{204.3-182}{182} \times 100 = 12.25\%$

**33. (2)** Budget allocated for girls education in 2011 from UP

$= \frac{3}{4} \times 205 = 153.75$ crore

Amount spent on higher education $= \frac{21}{41} \times 153.75 = 78.75$ crore

34.(1) Average budget of Tamilnadu from 2009 to 2012

$= \frac{771}{4} = 192.75$ crore

Now budget in 2013 =113% of 192.75 = 217.8075 crore
Decrease in budget =220-217.8075 = 2.1925 crore

35.(2) Share allocated from budget = 23% of 135 = 31.05 crore
Shares of NGOs =67.3-31.05 = 36.25 crore
Now, let the share of NGOs in previous year be x
∴ 110% of x=36.25
x=32.9crore ≈33crore

36. (1) Let, the income, expenditures and saving of P, Q and R:

|  | P | Q | R |
|---|---|---|---|
| Income | $\frac{3}{4}x + 8000$ | $x$ | $\frac{3}{4}x$ |
| Expenditure on Rent | y | y | y |
| Expenditure on Food | z | z + 1000 | z + 2000 |
| Savings | 6t | 7t | 4t |

Now,
Savings of Q = $62\frac{1}{2}$% of income of Q = $\frac{5}{8}x$
Savings of Q and R are in the ratio 7 : 4.
∴ Savings of R = $\frac{4}{7} \times \frac{5}{8}x = \frac{5}{14}x$
Percent of Type equation here.R's savings out of his monthly income
$= \frac{\frac{5}{14}x}{\frac{3}{4}x} \times 100$
$= 47\frac{13}{...}\%$

37. (4) Let, the income, expenditures and saving of P, Q and R:

|  | P | Q | R |
|---|---|---|---|
| Income | $\frac{3}{4}x + 8000$ | $x$ | $\frac{3}{4}x$ |
| Expenditure on Rent | y | y | y |
| Expenditure on Food | z | z + 1000 | z + 2000 |
| Savings | 6t | 7t | 4t |

Now,
Total amount spent by all the three on food = 27000
⇒ z + z + 1000 + z + 2000 = 27000
⇒ z = 8000
Monthly income of Q = Monthly income of P + 6000
⇒ $x = \frac{3}{4}x + 8000 + 6000$
⇒ x = 56000
$\frac{\text{Savings of P}}{\text{Savings of Q}} = \frac{6}{7}$
⇒ $\frac{\frac{3}{4}x + 8000 - y - z}{x - y - z - 1000} = \frac{6}{7}$
Putting the values of x and z
⇒ $\frac{42000 - y}{47000 - y} = \frac{6}{7}$
⇒ y = 12000
Monthly rent of the apartment = 3y = Rs.36000

38. (4) Total charges at regular price = 5 × 9.60 + 205 × 4.80 = Rs.1032
Total charges after using plan = 225 + 60% of charges at regular price
= 225 + 60% of 1032
= 225 + 619.20
= Rs.844.20
Total savings = Total charges after using plan - Total charges after using plan
= 1032 - 844.20
= Rs.187.80

39. (4) Number of copies sold on Friday = 13
Sum of total number of copies sold on all the days except Friday = 90 – 13 = 77
At least 2 copies were sold on each day.
∴ Minimum total number of copies sold on the remaining days except Friday and Saturday = 2 + 3 + 4 + 5 + 6 = 20
Maximum number of copies sold on Saturday = 77 – 20 = 57
Not more than 12 copies can be sold on any of the remaining days except Friday and Saturday.

∴ Maximum total number of copies sold on rest of the days = 12 + 11 + 10 + 9 + 8 = 50
Minimum number of copies sold on Saturday = 77 – 50 = 27
∴ 27 ≤ Number of copies sold on Saturday ≤ 57
And, 2 ≤ Number of copies sold on any day except Friday and Saturday ≤ 12
So, total number of copies sold on Wednesday and Thursday can be 23.
Number of copies sold on Saturday is greater than 27, so can be 28.
If number of copies sold on Saturday is 39, then the ratio of number of copies sold on Saturday and Friday is 3 : 1.
Number of copies sold on Saturday cannot be greater than 57, then the total number of copies sold on Friday and Saturday together cannot be 72.
∴ 4th Statement is definitely false.

40. (3) Probability of getting two red marbles > Probability of getting one marble of each color
$\frac{^8C_2}{^{(8+x)}C_2} > \frac{^8C_1 \times ^xC_1}{^{(8+x)}C_2}$
⇒ 28 > 8x
⇒ x < 3.5
But, x is a whole number.
∴ x ≤ 3

41. (2) Let cost price of product D and E in January be 500 and 600 respectively
Acc. to question,
$\frac{25}{100} \times 500$ + Profit of E = 150% of Profit of E
⇒ 50% of Profit of E = 125
⇒ Profit of E = 250
Required percentage profit $= \frac{250}{850} \times 100 = \frac{500}{17}\%$

42. (5) Let the cost price of A in January and D in February be Rs.x.
Let profit of all products in January be $P_A, P_B, P_C, P_D$ and $P_E$
And, profit of all products in February be $Q_A, Q_B, Q_C, Q_D$ and $Q_E$
According to question,
Average of $P_B, P_C, P_D$ and $P_E$ = Average of $Q_A, Q_B, Q_C$ and $Q_E$
∴ $P_B + P_C + P_D + P_E = Q_A + Q_B + Q_C + Q_E$
And,
Total profits in January − Total profits in February = 4900
$(P_A + P_B + P_C + P_D + P_E) - (Q_A + Q_B + Q_C + Q_D + Q_E) = 4900$
∵ $P_B + P_C + P_D + P_E = Q_A + Q_B + Q_C + Q_E$
⇒ $P_A - Q_D = 4900$
$\frac{15}{100}x - \frac{8}{100}x = 4900$
$\frac{7x}{100} = 4900$
x = 70,000
Profit of A in January = 15 × 700 = Rs.10500

43. (4) Let cost price of A in January and B in May be 100x
So, selling price of A in January = 115x
And, selling price of B in May = 130x
Marked price – Discount = selling price
$MP_1 - 2n\%$ of $MP_1 = 115x$
$MP_1 = \frac{115x}{(100 - 2n)\%}$
Similarly
$MP_2 = \frac{130x}{(100 - 25 - n)\%}$
$\frac{MP_1}{MP_2} = \frac{\frac{115x}{(100 - 2n)\%}}{\frac{130x}{(100 - 25 - n)\%}}$　　or
$\frac{\frac{115x}{(100 - 2n)\%}}{\frac{130x}{(75 - n)\%}} = \frac{23}{26}$
$\frac{(75 - n)\%}{(100 - 2n)\%} = \frac{1}{1}$
n = 25

**44. (1)** Let cost price per kg for customer is Rs.100
Total cost price = 10 × 100 = Rs.1000
Profit per kg on selling at 24% profit = Rs.24
Selling price per kg = Rs.124
Total selling price = 124 × 8 + 62 × 2 = Rs.1116
Overall profit % = $\dfrac{1116 - 1000}{1000} \times 100$
= 11.6%

**45. (2)** Let cost price of D in April and May be 100x
And, cost price of E in April and May be 100y
According to question
110x + 125y = 650 × 2 ...(i)
120x + 110y = 630 × 2 ...(ii)
132x + 150y = 1560
132x + 121y = 1386
On solving equations
x = 5
y = 6
So, cost price of E in May = 100y
= 100 × 6 = Rs.600

**46. (2)** Quantity I:
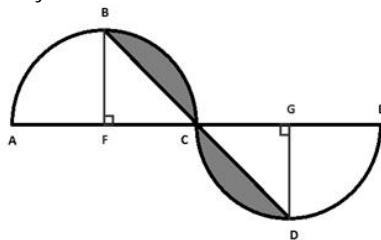


Let F and G be the centers and r be the radius of the semicircles ABC and CDE respectively.
∵ F and G are the centers of the semicircles ABC and CDE and B and D are the midpoints of the arc ABC and CDE respectively,
∴ ∠BFC = ∠DGC = 90°
∴ FB = FC = GC = GD = r = $\dfrac{AE}{4}$ = 10 cm
And, ΔBFC and ΔDGC are right angled isosceles triangles.
Area of shaded region = $2 \times \left(\dfrac{1}{4} \text{Area of circle} - \text{Area of } \Delta BFC\right)$
= $2 \times \left(\dfrac{1}{4} \times \pi \times 10^2 - \dfrac{1}{2} \times 10 \times 10\right)$
= 2 × (25π – 50)
= 50 × (π – 2)
≈ 57.08 cm2
Quantity II > Quantity I

**47. (2)** Quantity I:
Time taken by the trains to meet for the first time
= $\dfrac{\text{Total Distance}}{\text{Relative Speed}}$
= $\dfrac{360}{80 + 100}$
= 2 hours
Distance between point R and Q
= Distance travelled by train B in 2 hours
= 100 × 2
= 200 km
Quantity II:
Time taken by the train B to travel from Q to P and then return to Q
= $\dfrac{2 \times 360}{100}$ = 7.2 hours

Train A took the same time as train B in traveling from P to Q and then Q to S.
∴ Distance between P and Q + Distance between Q and S = Distance travelled by train A in 7.2 hours

⇒ 360 + Distance between Q and S = 80 × 7.2 = 576
⇒ Distance between Q and S = 576 – 360 = 216 km
Quantity II > Quantity I

**48. (5)** Quantity I:
Let the capacity of each vessel be 10x liters.
Then, vessel A contains 8x liters of milk and 2x liters of water.
Vessel B contains 7x liters of milk and 3x liters of water.
Vessel C contains 10x liters of milk.
Hence, Vessel D contains 25x liters of milk and 5x liters of water i.e. in the ratio 5 : 1.
According to the question,
30 liters of the mixture is drawn from vessel D.
Final quantity of water in Vessel D = 40 liters
⇒ $5x - \dfrac{1}{6} \times 30 = 40$
⇒ 5x = 45
⇒ x = 9
Capacity of each vessel = 10x = 90 liters
Quantity I = Quantity II

**49. (4)** Efficiency of 5 women = Efficiency of 4 men
5W = 4M
Ratio of efficiencies:
$\dfrac{M}{W} = \dfrac{5}{4}$
Let, a man does 5 units and a woman does 4 units of work per day
2 men and 5 women complete the work in 12 days.
∴ Total work = 12 × (2 × 5 + 5 × 4) = 360 units
Quantity I:
Time taken by 9 men to complete the work = $\dfrac{360}{9 \times 5}$ = 8 days
Quantity II:
If we employ 5 women and 5 men in the work,
Time taken to complete the work = $\dfrac{360}{(5 \times 4 + 5 \times 5)}$ = 8 days

If we employ more than 5 women in the work, time taken to complete the work will be more than 8 days because according to the question, a woman is less efficient than a man.
∴ Time taken to complete the work ≥ 8 days
Quantity II ≥ Quantity I

**50. (1)** The probability of getting a 6 = 0.25
And probability of getting any other number = $\dfrac{1 - 0.25}{5}$ = 0.15
Quantity I:
Probability of getting a sum of either 9 or 12
= Probability of getting (3, 6) or (4, 5) or (5, 4) or (6, 3) or (6, 6)
= 0.15 × 0.25 + 0.15 × 0.15 + 0.15 × 0.15 + 0.25 × 0.15 + 0.25 × 0.25
= 2 × 0.15 × 0.25 + 2 × 0.15 × 0.15 + 0.25 × 0.25
= 0.1825

Quantity II:
Probability of getting a sum of 7
= Probability of getting (1, 6) or (2, 5) or (3, 4) or (4, 3) or (5, 2) or (6, 1)
= 0.15 × 0.25 + 0.15 × 0.15 + 0.15 × 0.15 + 0.15 × 0.15 + 0.15 × 0.15 + 0.25 × 0.15
= 2 × 0.15 × 0.25 + 4 × 0.15 × 0.15
= 0.165
Quantity I > Quantity II