SBI PO Prelims Previous Year Question Paper 2017

Quantitative Aptitude (Questions & Solutions)

Direction Q. (1 - 5): Read the following information carefully and answer the questions given below:

Name of the colleges	Total number of students (2016)	Percentage of male students
A	1850	54%
B	1550	66%
C	1340	45%
D	1675	56%
E	1250	72%
F	1450	38%

Q. (1) Find the average of the number of females in all the colleges except college C and E?

1. 672.8
2. 683.5
3. 750
4. 753.5
5. 602.8

Answer: 4

Solution: Total number of females in college A = 1850 - (54% of 1850)

= 1850 - 999

= 851

Total number of females in college B = 1550 - (66% of 1550)

= 1550 - 1023

= 527

Total number of females in college D = 1675 - (56% of 1675)

= 1675 - 938

= 737

Total number of females in college F = 1450 - (38% of 1450)

= 1450 - 551

= 899

Thus, required average = (851 + 527 + 737 + 899) / 4

= 3014 / 4

= 753.5

Hence, the average number of female students in all the colleges except C and E is 753.5

Q. (2) Find the average difference between the number of male and female students in all the colleges?

1. 312.833
2. 314.60
3. 313
4. 314.50
5. None of these

Answer: 1

Solution:

Total number of females in college A = 1850 - (54% of 1850)

= 1850 - 999

= 851

Therefore, number of males in college A = 999

Difference = 999 - 851 = 148

Total number of females in college B = 1550 - (66% of 1550)

= 1550 - 1023

= 527

Therefore, number of males in college B = 1023

Difference = 1023 - 527 = 496

Total number of females in college C = 1340 - (45% of 1340)

= 1340 - 603

= 737

Therefore, number of males in college C = 603

Difference = 737 - 603 = 134

Total number of females in college D = 1675 - (56% of 1675)

= 1675 - 938

= 737

Therefore, number of males in college D = 938

Difference = 938 - 737 = 201

Total number of females in college E = 1250 - (72% of 1250)

= 1250 - 900

= 350

Therefore, number of males in college E = 900

Difference = 900 - 350 = 550

Total number of females in college F = 1450 - (38% of 1450)

= 1450 - 551

= 899

Therefore, number of males in college F = 551

Difference = 899 - 551 = 348

Hence, the required average = (148 + 496 + 134 + 201 + 550 + 348) / 6 = 312.8

Q. (3) The number of female students in college C is what approx. percent of the number of male students of college A?

1. 70%
2. 72%
3. 74%
4. 76%
5. 77%

Answer: 3

Solution: Total number of females in college A = 1850 - (54% of 1850)

= 1850 - 999

= 851

Therefore, number of males in college A = 999

Total number of females in college C = 1340 - (45% of 1340)

= 1340 - 603

= 737

Required percentage = (737/999) x 100%

= 73.77%

= 74% (approx.)

Q. (4) Out of total female in college E, 30% are in Arts department which is 35% of the total students in Arts department. Find out approximately how much percent of male students from E are in Arts department?

1. 20%
2. 22%
3. 19%
4. 23%
5. 25%

Answer: 2

Solution: Total number of students in college E = 1250

72% of the total students are male

28% of the total students are female

∴ Number of female students in college E = 28% of 1250 = 350

Number of female students in Arts department = 30% of 350 = 105

Let the total number of students in Arts department be x

Number of female students in Arts department = 35% of x

⇒ 7x/20 = 105

⇒ x = 300

∴ Number of male students in arts department = 300 – 105 = 195

Number of male students in college E = 72% of 1250 = 900

Now, required percentage = (195/900) x 100 = 22%

Hence, approx. 22% of the total male students in the college are in Arts department.

Q. (5) Find the ratio of 2/3rd of college B male students and female students of college F.

1. 29: 11
2. 29: 33
3. 33: 29
4. 29: 22
5. 22: 29

Answer: 5

Solution: Total number of students in college B = 1550

66% of the total students are male

∴ Number of male students in college B = 66% of 1550 = 1023

∴ 2/3rd of male students of college B = 682

Total number of students in college F = 1450

38% of the total students are male

Hence, 62% of the total students are female

∴ Number of female students in college F = 62% of 1450

Number of male students in college F = 899

Now, required ratio = 682/899 = 22/29

Hence, the ratio of 2/3rd of college B male students and female students of college F is 22: 29

Q. (6) A sum of Rs. 91,000 is borrowed at 20% per annum compounded annually. If the amount is to be paid in two years, the amount will be?

1. Rs. 1,20,000
2. Rs. 1,25,760
3. Rs. 1,27,526
4. Rs. 1,31,040
5. Rs. 1,34,034

Answer: 4

Solution: Sum borrowed = 91,000

The amount to be paid back = $91000[1 + (20/100)]^2$

= $91000 \times (120/100)^2$

= $91000 \times (36/25)$

= 3640×36

= Rs. 131040

Q. (7) If an article is marked 40% above the cost price. If discount of x% is given on the marked price of the article then final profit of 12% is obtained. Now if CP of a new article is Rs.120 and x% profit is desired then what should be the selling price of that new article?

1. 140
2. 142
3. 144
4. 146
5. 148

Answer: 3

Solution: Market price (MP) = 1.4 Cost price (CP)

$\Rightarrow$ MP $(1 - x/100) = 1.12CP$

$\Rightarrow 1.4CP (1 - x/100) = 1.12CP$

$\Rightarrow 1.4(1 - x/100) = 1.12$

$\Rightarrow (1 - x/100) = 1.12/1.4$

$\Rightarrow x/100 = 0.28/1.40$

$\Rightarrow x = 20\%$

Therefore, cost price of a new article is Rs. 120

Thus, selling price of that new article will be = 120 x 1.2 = Rs. 144

Q. (8) A, B and C started a business and invested in the ratio of 3:4:5. After 4 months, A withdrew 1/12th amount of what B and C invested. If the annual income was 9200, then what was the share of B?

1. 3280
2. 3480
3. 3200
4. 3880

5. 4080

Answer: 3

Solution:

Let us assume that initial investments by A, B & C are 3y, 4y & 5y respectively.

This investment was same for B & C throughout the year.

However, A withdrawn 1/12th of (4y + 5y) = 3y/4

So, investment of A for the next 8 months will be = 3y - (3y/4) = 9y/4

Total investment of A = 8 x (9y/4) + (3y x 4) = 30y

Hence share of B in the total profit of Rs. 9200

= [(12 x 4y)/ {(30y) + (12 x 4y) + (12 x 5y)}] x 9200

= 3200

Q. (9) In a 40 litres mixture acetic acid and sodium acetate are in the ratio 3:1,find the amount of sodium acetate solution to be added to make the ratio 2:3.

1. 40 litres
2. 20 litres
3. 15 litres
4. 30 litres
5. 35 litres

Answer: 5

Solution: Since, the ratio is 3:1 and the total volume is 40 litres

Therefore, 3x + x = 40

⇒ 4x = 40

⇒ x = 10.

Hence, the initial volumes are 3x = 30 litres and x = 10 litres.

To make the ratio 2:3, let y litres of sodium acetate solution be added.

Thus,the proportion is 30 : (y + 10) = 2 : 3

⇒ 30 × 3= (y + 10) × 2

⇒ 90 = 2y + 20

⇒ 70 = 2y

⇒ y = 35 litres

Q. (10) Radhika has two daughters by name Rinku and Sindhu. The ratio of the age of Radhika and Rinku is 3:1 and that of Rinku and Sindhu is 8:5. Given that Rinku is six years elder to Sindhu. Find the ratio of their ages after 12 years.

1. 29:15:12
2. 30:14:10
3. 29:14:11
4. 30:14:11
5. 30:13:11

Answer: 4

Solution: The ratio of the ages of Radhika and Rinku is 3:1.

Let their ages be 3x and x respectively.

The ratio of ages of Rinku and Sindhu is 8:5.

Let their ages be 8x and 5x.

Given that Rinku is 6 years elder to Sindhu.

$\therefore 8x - 5x = 6$

$\Rightarrow x = 2$

Thus, the present ages of Rinku and Sindhu are $8 \times 2 = 16$ and $5 \times 2 = 10$ respectively.

Therefore, the age of Radhika is $3 \times 16 = 48$.

After 12 years, their ages would be $48 + 12 = 60$, $16 + 12 = 28$ and $10 + 12 = 22$ respectively.

So, the ratio is 60 : 28 : 22

= 30 : 14 : 11

Q. (11) Three years ago the average age of Mohan's family having 5 members was 17 years. Mohan becomes father but the average age of his family is the same today. What is the present age of baby?

1. 1 year
2. 2 years
3. 3years
4. 4 years
5. 5 years

Answer: 2

Solution: Money spent by the twelfth person = 2010 + 110 = 2120 years

Three years ago,

(Sum of 5 family members) / 5 = 17

Sum of 5 family members = 85 years

Presently,

The present age of each family member increases by 15 years (5×3 years)

{(Sum of 6 family members) + 15} / 6 = 17

Sum of 6 family members = 102 - 15

Sum of 6 family members = 87 years

Age of the child = 87 - 85 = 2 years

Q. (12) Out of 12 persons, 11 spend Rs.2000 monthly each. The twelfth person spends Rs.110 more than the average spending of the 12 people. How much money does the twelfth person spend?

1. Rs.2200
2. Rs.2120
3. Rs.3300
4. Rs.1800
5. Rs.2010

Answer: 2

Solution: Monthly spending of 11 persons = 2000 × 11 = 22000

Let the average be x

So the monthly spending twelfth person = 110 + x

So according to the question,

{22000 + (110 + x) / 12} = x

⇒ 22000 + 110 + x = 12x

⇒ 11x = 22110

⇒ x = 2010

Money spent by the twelfth person = 2010 + 110 = 2120

Directions Q. (13 - 17): In the following question, two equations I and II are given. Solve both equations carefully & answer the questions given below:

Q. (13)

I. $2x^2 - 7x + 6 = 0$

II. $y^2 - 3y + 2 = 0$

1. $x < y$
2. $x > y$
3. $x \leq y$
4. $x \geq y$
5. $x = y$ or no relation can be established

Answer: 4 ($x \geq y$)

Solution:

Equation I $\Rightarrow 2x^2 - 7x + 6 = 0$

$\Rightarrow 2x^2 - 4x - 3x + 6 = 0$

$\Rightarrow 2x(x - 2) - 3(x - 2) = 0$

$\Rightarrow (x - 2)(2x - 3) = 0$

$\Rightarrow x = 2, 3/2$

Equation II $\Rightarrow y^2 - 3y + 2 = 0$

$\Rightarrow y^2 - 2y - y + 2 = 0$

$\Rightarrow y(y - 2) - (y - 2) = 0$

$\Rightarrow (y - 1)(y - 2) = 0$

$\Rightarrow y = 1, 2$

Hence, $x \geq y$

Q. (14)

I. $3x^2 + 4x + 1 = 0$

II. $y^2 + 5y + 6 = 0$

1. $x < y$
2. $x > y$

3. $x \leq y$
4. $x \geq y$
5. x = y or no relation can be established

Answer: 2 ($x > y$)

Solution:

Equation I $\Rightarrow 3x^2 + 4x + 1 = 0$

$\Rightarrow 3x^2 + 3x + x + 1 = 0$

$\Rightarrow 3x(x + 1) + (x + 1) = 0$

$\Rightarrow (x + 1)(3x + 1) = 0$

$\Rightarrow x = -1, -1/3$

Equation II $\Rightarrow y^2 + 5y + 6 = 0$

$\Rightarrow y^2 + 3y + 2y + 6 = 0$

$\Rightarrow y(y + 3) + 2(y + 3) = 0$

$\Rightarrow (y + 3)(y + 2) = 0$

$\Rightarrow y = -3, -2$

Hence, $x > y$

Q. (15)

I. $x^2 - 7x + 10 = 0$

II. $y^2 - 12y + 35 = 0$

1. $x < y$
2. $x > y$
3. $x \leq y$
4. $x \geq y$
5. x = y or no relation can be established

Answer: 3 ($x \leq y$)

Solution:

Equation I $\Rightarrow x^2 - 7x + 10 = 0$

$\Rightarrow x^2 - 5x - 2x + 10 = 0$

$\Rightarrow x(x - 5) - 2(x - 5) = 0$

$\Rightarrow (x - 5)(x - 2) = 0$

$\Rightarrow x = 5, 2$

Equation II $\Rightarrow y^2 - 12y + 35 = 0$

$\Rightarrow y^2 - 7y - 5y + 35 = 0$

$\Rightarrow y(y - 7) - 5(y - 7) = 0$

$\Rightarrow (y - 7)(y - 5) = 0$

$\Rightarrow y = 7, 5$

Hence, $x \leq y$

Q. (16)

I. $(x - 12)^2 = 0$

II. $y^2 = 144$

1. $x < y$
2. $x > y$
3. $x \leq y$
4. $x \geq y$
5. $x = y$ or no relation can be established

Answer: 5 ($x = y$)

Solution:

Equation I $\Rightarrow (x - 12)^2 = 0$

$\Rightarrow (x - 12) = 0$

$\Rightarrow x = 12$

Equation II $\Rightarrow y^2 = 144$

$\Rightarrow y^2 = 12^2$

$\Rightarrow y = 12$

Hence, $x = y$

Q. (17)

I. $2x^2 + 5x + 2 = 0$

II. $y^2 + 9y + 20 = 0$

1. $x < y$
2. $x > y$
3. $x \leq y$
4. $x \geq y$
5. $x = y$ or no relation can be established.

Answer: 2 ($x > y$)

Solution:

Equation I $\Rightarrow 2x^2 + 5x + 2 = 0$

$\Rightarrow 2x^2 + 4x + x + 2 = 0$

$\Rightarrow 2x(x + 2) + (x + 2) = 0$

$\Rightarrow (x + 2)(2x + 1) = 0$

$\Rightarrow x = -2, -1$

Equation II $\Rightarrow y^2 + 9y + 20 = 0$

$\Rightarrow y^2 + 5y + 4y + 20 = 0$

$\Rightarrow y(y + 5) + 4(y + 5) = 0$

$\Rightarrow (y + 4)(y + 5) = 0$

$\Rightarrow y = -4, -5$

Hence, $x > y$

Q. (18) Direction: What will come in place of the question mark **(?)** in the following number series?

14, 8, 9, 14.5, 30, (?)

1. 72
2. 73
3. 74
4. 75
5. 76

Answer: 5

Solution: The pattern of the given series is as follows:

- 14 x 0.5 + 1 = 8
- 8 x 1 + 1 = 9
- 9 x 1.5 + 1 = 14.5
- 14.5 x 2 + 1 = 30
- 30 x 2.5 + 1 = 76

Q. (19) Direction: What will come in place of the question mark **(?)** in the following number series?

77, 85, 69, 101, 37, (?)

1. 105
2. 125
3. 145
4. 165
5. 185

Answer: 4

Solution: The pattern of the given series is as follows:

- 77 + (8 x 1) = 85
- 85 - (8 x 2) = 69
- 69 + (8 x 4) = 101
- 101 - (8 x 8) = 37
- 37 + (8 x 16) = 165

Q. (20) In the following number series, one number is missing. What should come at the place of missing number **(?)**

20, 29, 54, 103, 184, (?)

1. 301
2. 302
3. 303
4. 304
5. 305

Answer: 5

Solution: The pattern of the given series is as follows:

- $20 + 3^2 = 29$
- $29 + 5^2 = 54$
- $54 + 7^2 = 103$
- $103 + 9^2 = 184$
- $184 + 11^2 = 305$

Q. (21) Direction: What will come in place of the question mark **(?)** in the following number series?

7, 8, 18, 57, (?), 1165

1. 212
2. 217
3. 232
4. 247
5. 275

Answer: 3

Solution: The pattern of the given series is as follows:

- 7 x 1 + 1 = 8
- 8 x 2 + 2 = 18
- 18 x 3 + 3 = 57
- 57 x 4 + 4 = 232
- 232 x 5 + 5 = 1165

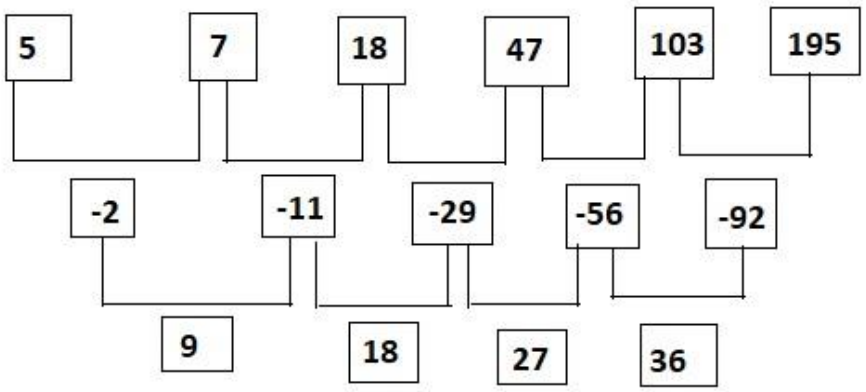
Q. (22) Direction: What will come in place of the question mark **(?)** in the following number series?

5, 7, 18, 47, 103, (?)

1. 155
2. 175
3. 195
4. 215
5. 235

Answer: 3

Solution: The pattern of the given series is as follows:



Directions Q. (23 - 27): What should come in place of question mark (?) in the following questions? (You do not have to calculate the exact value.)

Q. (23) 13.03^2 + (?) + 21.998 x 4.012 = 298.998

1. 12
2. 42
3. 92
4. 132
5. 172

Answer: 2

Solution: 13^2 + (?) + 22 x 4 = 299

⇒ 169 + (?) + 88 = 299

⇒ (?) = 299 - 257

⇒ (?) = 42

Q. (24) 33125 x 2600 - $(83.01)^2$ = $(?)^2$ + $(36.99)^2$

1. 24
2. 39
3. 36
4. 28
5. 32

Answer: 5

Solution: $33125 \times 2600 - (83)^2 = (?)^2 + (37)^2$

$\Rightarrow 182 \times 51 - 6889 = (?)^2 + 1369$

$\Rightarrow 9282 - 6889 - 1369 = (?)^2$

$\Rightarrow (?)^2 = 1024$

$\Rightarrow (?) = 1024$

$\Rightarrow (?) = 32$

Q. (25) $454 + 985 - (?)^2 / 18.752 = 18.9001$

1. 19
2. 18
3. 21
4. 25
5. 15

Answer: 1

Solution: $454 + 985 - (?)^2 / 18.752 = 18.9001$

$\Rightarrow 1439 - (?)^2 / 19 = 19$ (taking roundup values)

$\Rightarrow 37.9 - (?)^2 / 19 = 19$

$\Rightarrow (?)^2 / 19 = 38 - 19$

$\Rightarrow (?)^2 = 361$

$\Rightarrow (?) = 19$

Q. (26) $7441 \div 34 \times 12 = (?) \times 9 + 110$

1. 420
2. 280
3. 590
4. 350
5. 220

Answer: 2

Solution: 7441 ÷ 34 × 12 = (?) × 9 + 110

⇒ 2626 = (?) x 9 + 110

⇒ (?) = 2516/9

⇒ (?) = 279.55 = 280

Q. (27) 5466.97 - 3245.01 + 1122.99 = (?) + 2309.99

1. 1130
2. 1000
3. 1100
4. 1030
5. 1060

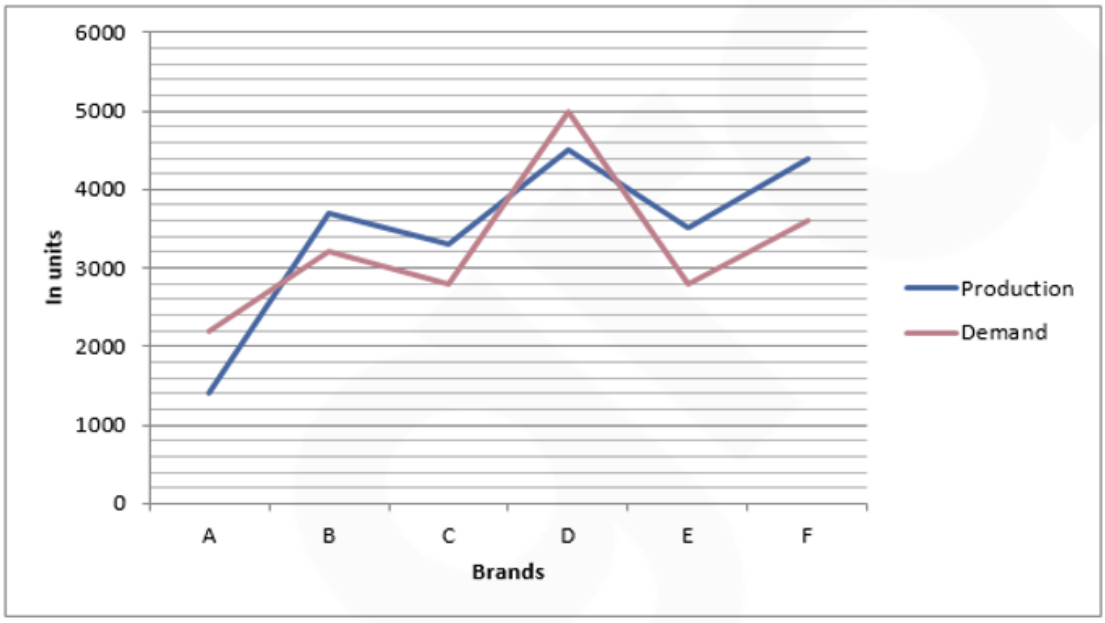
Answer: 4

Solution: 5466.97 - 3245.01 + 1122.99 = (?) + 2309.99

⇒ (?) = (5467 – 3245) + (1123 – 2310)

⇒ (?) = 1030

Directions Q. (28 - 32): Study the following graph carefully to answer the question given below:
Given below is the demand and production of 6 brands (in units) of a product in the year 2016.



Q. (28) If the demand for brand C product increase by 75% then to meet the demand production should be increased by what percent?

1. 32.65%
2. 48.48%
3. 57.14%
4. 31.25%
5. None of these

Answer: 2

Solution: Demand for brand C product = 2800 units

New demand of brand C product = 175% of 2800 units = 4900 units

Production of brand C product = 3300 units

Required percentage = (1600/3300) x 100 = 48.48%

Hence, to meet the demand the brand C should raise the production by 48.48%.

Q. (29) Brand A increase its production to meet its demand. With every 160 unit produced the brand increases its price by 10%. If the earlier price of one product was INR 5000 then find the new price of the product.

1. INR 5500
2. INR 6655
3. INR 7320.5
4. INR 8052.55
5. Cannot be determined

Answer: 4

Solution: Demand for brand A product = 2200 units

Production of brand A product = 1400 units

Hence, the difference between demand and production of brand A product = 800 units

Number of times the brand increase its price by 10% = 800/160 = 5

Therefore, new price of the product = $5000 \times (110/100)^5$

= 8052. 55

Q. (30) The demand for brand D product fell. The new demand is 20% less than its production. Find by what percentage demand fell?

1. 28%
2. 30%
3. 38.88%
4. 72%
5. 32%

Answer: 1

Solution: Demand of brand D product = 5000 units

Production of brand D product = 4500 units

The new demand is 20% less than its production

New demand for brand D product = 80% of 4500 units = 3600 units

∴ Difference in earlier demand and new demand = 5000 – 3600 = 1400

Now, required percentage = (1400/5000) x 100 = 28%

Hence, the demand for brand D product fell by 28%.

Q. (31) Brand B decreased its price of the product to meet its demand to its production. When the price decreased by 12% the demand increased by 25%. If the ratio between the new price and new demand is 11:20 then find the price of the product before the decrease.

1. INR 2500
2. INR 2300
3. INR 2200
4. INR 2000
5. INR 2800

Answer: 1

Solution: Let the price of the product be INR x

New price of the product = 88% of x

Demand for the brand B product = 3200 units

New demand of the brand B product = 125% of 3200 = 4000 units

The ratio between the new price and new demand is 11: 20

Hence, (88x/100)/4000 = 11/20

(88x/100) x (1/4000) = 11/20

88x/100 = (11/20) x 4000

x = 2500

Hence, the original price of the brand B product is INR 2500

Q. (32) The production of brand E and F took together is approx. what percent of total demand of E and F?

1. 81%
2. 21%
3. 123%
4. 121%
5. 23%

Answer: 3

Solution: Production of brand E product = 3500 units

Production of brand F product = 4400 units

Therefore, total production of brand E and F = 7900 units

Demand of brand E product = INR 2800 units

Demand of brand F product = INR 3600 units

Therefore, total demand of brand E and F = 6400 units

Now, required percentage = 7900/6400 x 100

= 123.43% = 123% (approx.)

Q. (33) Ratio between the heights of 2 cylinders is in the ratio 3:5. Their volumes are in the ratio 27:80. Find the ratio between their radii.

1. ½
2. ⅔
3. ¾
4. ⅘
5. None of these

Answer: 3

Solution: Let the height of two cylinders be h_1 and h_2 and radius of two cylinders be r_1 and r_2 respectively.

Let the volume of two cylinders be V_1 and V_2 respectively.

Therefore, according to the question,

$V_1/V_2 = 27/80$

$\Rightarrow [\pi (r_1)^2 h_1] / [\pi (r_2)^2 h_2] = 27/80$

Also, $h_1 / h_2 = 3/5$

Hence, $(r_1)^2 / (r_2)^2 = 9/16$

$\Rightarrow r_1 / r_2 = 3/4$

Q. (34) B is 20% more efficient than A. B started the work & do it for x days. And then B is replaced by A. And A completed the remaining work in x+8 days. Ratio of work done by A & B is 3:2. In how many days A & B working together to complete the whole work?

1. 120/12
2. 150/11 days
3. 140/13 days
4. 100/33 days
5. 75/12 days

Answer: 2

Solution: Let the efficiency of A = 5 units per day

Efficiency of B= 120%

A = 6 unit per day

Therefore, work done by B = 6x unit

Work done by A = 5(x+8) = (5x + 40) unit

Therefore, according to the question,

$(5x + 40)/6x = 3/2$

$\Rightarrow 10x + 80 = 18x$

$\Rightarrow 8x = 80$

$\Rightarrow x = 10$

Then the total work to be done = 6x + (5x + 40) = 150 units

Time taken by A and B in completing the whole work together = total work/ efficiency of A and B

= 150/ (6 + 5)

= 150/11 days

Q. (35) The time taken for covering ‘X’ Km by downstream is equal to 'X-18' by covering upstream. Upstream speed is 6 km/ hr less than that of downstream. If the speed of the boat in still water is 15 km/hr. What is the value of 'X'?

1. 51
2. 52
3. 53
4. 54
5. 55

Answer: 4

Solution:

Let us assume that the speed of the boat in still water is y km/hr and speed of current is z km/hr.

Therefore,

X / (y + z) = (X - 18) / (y - z)

⇒ y - z = y + z - 6

⇒ 2z = 6

⇒ z = 3

Hence, y = 15

Now, X / 18 = (X - 18) / 12

⇒ 12X = 18X - 324

⇒ 6X = 324

⇒ X = 54