

Q1: Evaluate $(8^2 + 6^2) - 7^2$

- A) 49 B) 47 C) 7^2 D) 51

Solution:

$$\begin{aligned} &(8^2 + 6^2) - 7^2 \\ &= (64 + 36) - 49 \\ &= 100 - 49 \\ &= 51 \end{aligned}$$

Answer: D

Q2: $\frac{K-3}{10}$ is equivalent to $\frac{1}{2}$. Find the value of K.

- A) 6 B) 7 C) 8 D) 9

Solution:

$$\begin{aligned} \frac{K-3}{10} &= \frac{1}{2} \\ \Rightarrow \frac{K-3}{10} &\times \frac{1}{2} \\ \Rightarrow 2K - 6 &= 10 \\ \Rightarrow 2K &= 16 \\ \Rightarrow K &= 8 \end{aligned}$$

Answer: C

Q3: $\left(3\frac{1}{2} - \frac{2}{3}\right) \times \frac{4}{5} + \frac{1}{5} \div \frac{1}{2}$

- A) $8/7$ B) $8/3$ C) $8/5$ D) $11/3$

Solution:

$$\begin{aligned} &\left(3\frac{1}{2} - \frac{2}{3}\right) \times \frac{4}{5} + \frac{1}{5} \div \frac{1}{2} \\ &= \left(\frac{7}{2} - \frac{2}{3}\right) \times \frac{4}{5} + \frac{1}{5} \times \frac{2}{1} \\ &= \frac{21-4}{6} \times \frac{4}{5} + \frac{2}{5} \\ &= \frac{17}{6} \times \frac{4}{5} + \frac{2}{5} = \frac{68}{30} + \frac{12}{30} = \frac{80}{30} = \frac{8}{3} \end{aligned}$$

Answer: B

Q4: Which of the following is correct?

- A) $\frac{7}{9} < \frac{35}{43} < \frac{5}{6}$ B) $\frac{5}{6} < \frac{35}{43} < \frac{7}{9}$
 C) $\frac{35}{43} < \frac{7}{9} < \frac{5}{6}$ D) $\frac{35}{43} < \frac{5}{6} < \frac{7}{9}$

Solution:

$$\left. \begin{aligned} \frac{7}{9} &= 0.77 \\ \frac{35}{43} &= 0.81 \\ \frac{5}{6} &= 0.83 \end{aligned} \right\} \frac{7}{9} < \frac{35}{43} < \frac{5}{6} \text{ as } 0.77 < 0.81 < 0.83$$

Answer: A

Q5: Which of the following rational number is between $\frac{1}{15}$ and $\frac{1}{16}$

- A) $\frac{31}{440}$ B) $\frac{31}{480}$ C) $\frac{30}{490}$ D) $\frac{1}{17}$

Solution:

$$\frac{1}{15} = \frac{16}{240} \text{ or } \frac{32}{480}$$

$$\frac{1}{16} = \frac{15}{240} \text{ or } \frac{30}{480}$$

So the fraction $\frac{31}{480}$ is between $\frac{30}{480}$ and $\frac{32}{480}$

Answer: B

Q6: Find the value of $\frac{(a-b)^{(a-b)}}{(a-b)}$ if $a = 2$ and

$b = -2$

- A) 4^4 B) 4^3 C) 4^2 D) 4

Solution:

$$\frac{(a-b)^{(a-b)}}{(a-b)} = \frac{(2-(-2))^{(2-(-2))}}{(2-(-2))} = \frac{4^4}{4} = 4^3$$

Answer: B

Q7: What is the sum of 11th prime number and 13th positive odd number?

- A) 54 B) 55 C) 56 D) 57

Solution:

The 11th prime numbers is 31

The 13th positive odd number is 25

Sum of them is $31+25=56$

Answer: C

Q8: Evaluate

$$1+2+3+\dots+98+99+100-99-98-\dots-3-2-1$$

- A) 48000 B) 12345 C) -100 D) 100

Solution:

$$1+2+3+\dots+98+99+100-99-98-\dots-3-2-1$$

$$= \cancel{1} + \cancel{2} + \cancel{3} + \dots + \cancel{98} + \cancel{99} + 100 - \cancel{99} - \cancel{98} - \dots - \cancel{3} - \cancel{2} - \cancel{1}$$

$$= 100$$

Answer: D

Q9: If $a = \frac{1}{0.05}, b = \frac{1}{0.02}$ and $c = \frac{3}{0.12}$ then

which one of the following is correct?

- A) $a < b < c$ B) $c < a < b$
 C) $a < c < b$ D) $c < b < a$

Solution:

$$\left. \begin{aligned} a &= \frac{1}{0.05} = \frac{100}{5} = 20 \\ b &= \frac{1}{0.02} = \frac{100}{2} = 50 \\ c &= \frac{3}{0.12} = 3 \times \frac{100}{12} = \frac{300}{12} = 25 \end{aligned} \right\} \Rightarrow a < c < b$$

Answer: C

Q10: Evaluate $\frac{\left(\frac{1}{3} + \frac{1}{2}\right)}{\left(1 - \frac{1}{2}\right)} + 1 = ?$

- A) $\frac{1}{3}$ B) $\frac{3}{5}$ C) $\frac{8}{3}$ D) 1

Solution:

$$\begin{aligned} \frac{\left(\frac{1}{3} + \frac{1}{2}\right)}{\left(1 - \frac{1}{2}\right)} + 1 &= \frac{\frac{2+3}{6}}{\frac{2-1}{2}} + 1 = \frac{\frac{5}{6}}{\frac{1}{2}} + 1 \\ &= \frac{5}{6} \times \frac{2}{1} + 1 = \frac{10}{6} + 1 = \frac{16}{6} = \frac{8}{3} \end{aligned}$$

Answer: C

Q11: Evaluate $\frac{0.3 + 0.03 + 0.003 + 0.0003}{9.9 - (1.1 + 2.2 + 3.3)}$

- A) 0.101 B) 1.01 C) 1.001 D) 1.11

Solution:

$$\begin{aligned} \frac{0.3 + 0.03 + 0.003 + 0.0003}{9.9 - (1.1 + 2.2 + 3.3)} &= \frac{0.3333}{9.9 - 6.6} = \frac{0.3333}{3.3} \\ &= \frac{3333}{10000} \times \frac{10}{33} = \frac{101}{1000} = \boxed{0.101} \end{aligned}$$

Answer: A

Q12: Sana reads an average of 35 pages per day. If she reads a book of 286 pages at this speed, how many pages will she read on the last day?

- A) 12 B) 17 C) 6 D) 16

Solution:

Divide 286 by 35, then the remainder will remain for the last day

When we divide 286 by 35, remainder is 6.

Answer: C

Q13: A football team won 9 games and lost 4 games. Find the percentage of lost games of the team if 12 games were drawn (tied)?

- A) %16 B) %20 C) %25 D) %30

Solution:

The number of total games is $9 + 4 + 12 = 25$

The team lost 4 games out of 25.

$$\frac{4}{25} \times 100\% = 16\%$$

Answer: A

Q14: Find the answer when you divide 123123123 by 123

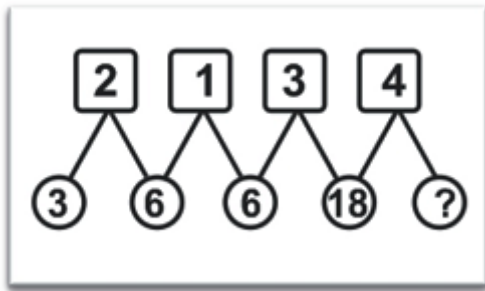
- A) 111000 B) 1001001
C) 1010101 D) 1001100

Solution:

$$\begin{array}{r} \boxed{1001001} \\ 123 \overline{) 123123123} \\ \underline{+123} \\ 0123123 \\ \underline{+123} \\ 0123 \\ \underline{+123} \\ 0 \end{array}$$

Answer: B

Q15: If there is a rule between the following numbers then which one of the following number stands for the question mark?



- A) 72 B) 38 C) 22 D) 9

Solution:

First of all, we should find the rule

The first number in second row multiplied by the first number in first row and gave the second number in second row. As $3 \times 2 = 6$ or $6 \times 1 = 6$ and $6 \times 3 = 18$. We can find the unknown number by $18 \times 4 = 72$

Answer: A

Q16: Simplify $\frac{60}{81} \times \frac{49}{144} \times \frac{243}{168} \times \frac{2}{35}$

- A) $\frac{1}{24}$ B) $\frac{1}{48}$ C) $\frac{1}{12}$ D) $\frac{1}{60}$

Solution:

$$\frac{60}{81} \times \frac{49}{144} \times \frac{243}{168} \times \frac{2}{35}$$

We can simplify as much as we can

$$\begin{aligned} & \frac{\cancel{60}^{12}}{81} \times \frac{49}{\cancel{144}^{12}} \times \frac{243}{168} \times \frac{2}{35} \\ &= \frac{\cancel{5}^5}{81} \times \frac{\cancel{49}^7}{12} \times \frac{243}{168} \times \frac{2}{\cancel{35}^{5 \text{ and } 7}} \\ &= \frac{1}{\cancel{81}^{81}} \times \frac{\cancel{7}^7}{12^2} \times \frac{\cancel{243}^{81}}{168^7} \times \frac{\cancel{2}^2}{1} = \frac{\cancel{7}^1}{6 \times \cancel{24}_8} = \frac{1}{48} \end{aligned}$$

Answer: B

Q17: $(35 \times 10) + 20 = A$ and $(80 \div 16) - 4 = B$

What is $A + B$?

- A) 371 B) 345 C) 287 D) 145

Solution:

$$\begin{array}{l|l} A = (35 \times 10) + 20 & \\ = 350 + 20 = 370 & \\ B = (80 \div 16) - 4 & A + B = 370 + 1 = 371 \\ = 5 - 4 = 1 & \end{array}$$

Answer: A

Q18: $K = \frac{2}{3} + \frac{4}{6} + \frac{8}{12} + \frac{16}{24} + \frac{32}{48}$ and

$L = \frac{1}{2} + \frac{2}{4} + \frac{4}{8} + \frac{8}{16} + \frac{16}{32}$

Which of the following is incorrect?

A) $K = 5 \times \frac{2}{3}$

B) $L = \frac{5}{2}$

C) $3K = 4L$

D) $K = L$

Solution:

$$K = \frac{2}{3} + \frac{4}{6} + \frac{8}{12} + \frac{16}{24} + \frac{32}{48} = \frac{32+32+32+32+32}{48}$$

$$= \frac{5 \times 32}{48} = \frac{5 \times 2}{3} = \frac{10}{3}$$

$$L = \frac{1}{2} + \frac{2}{4} + \frac{4}{8} + \frac{8}{16} + \frac{16}{32} = \frac{16+16+16+16+16}{32}$$

$$= \frac{5 \times 16}{32} = \frac{5}{2}$$

As it is shown above $K \neq L$

Option D is incorrect

Answer: D

Q19: John estimates 2451×129 by rounding the numbers to the nearest hundred. What is the difference between John's estimate and the exact quotient?

A) 66179

B) 50000

C) 66781

D) 55674

Solution:

The exact answer is

$2451 \times 129 = 316179$

After rounding off

$2500 \times 100 = 250000$

$316179 - 250000 = 66179$

Answer: A

Q20: Which numbers can be combined with the operation (+, -, ×, ÷) to get 116?

A) 2, 4, 5, 12

B) 50, 2, 25, 8

C) 5, 1, 6, 50

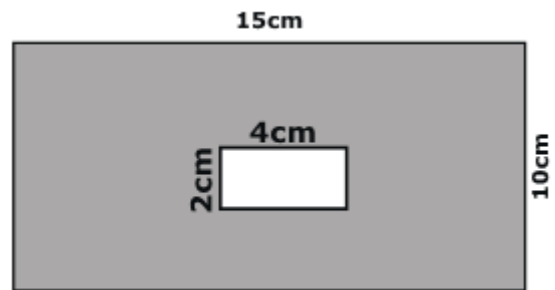
D) 6, 2, 15, 1

Solution:

$2 \times 5 \times 12 - 4 = 116$

Answer: A

Q21: Find the area of the given figure?



A) 142 cm^2

B) 150 cm^2

C) 158 cm^2

D) 138 cm^2

Solution:

Total area with unshaded part is

$15 \text{ cm} \times 10 \text{ cm} = 150 \text{ cm}^2$

The area of unshaded part is $2 \text{ cm} \times 4 \text{ cm} = 8 \text{ cm}^2$

Shaded area is total area - unshaded area

$150 \text{ cm}^2 - 8 \text{ cm}^2 = 142 \text{ cm}^2$

Answer: A

Q22: A property company offers two different payment plans for its apartments.

	Advance payment (RS)	Installment payment	Number of installments
1 st plan	Rs. 1200	Rs. 80	16
2 nd plan	Rs. 4600	Rs. 60	12

Farhan buys an apartment with the first payment plan and Ahmed buys an apartment with the second plan.

How much more does Ahmed pay?

- A) 2800 B) 2840 C) 2480 D) 2880

Solution:

According the first Farhan's payment will be; Rs. 1200 + Rs. 80 x 16 = Rs. 2480

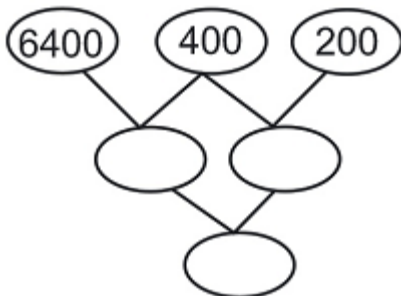
According the second plan Ahmed's payment will be; Rs. 4600 + Rs. 60 x 12 = Rs. 5320

Ahmed's payment-Farhan's payment

Rs. 5320-Rs. 2480= Rs. 2840

Answer: B

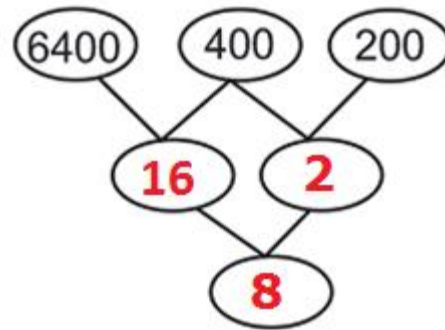
Q23: In the figure above, we divide the bigger number by the smaller number in each case and write the quotient below the number.



What is the number in the lowest circle?

- A) 3 B) 2 C) 6 D) 8

Solution:



Answer: D

Q24: The product of two numbers is the biggest possible three-digit odd number. If one of the numbers is 37, what is the other number?

- A) 17 B) 13 C) 27 D) 23

Solution:

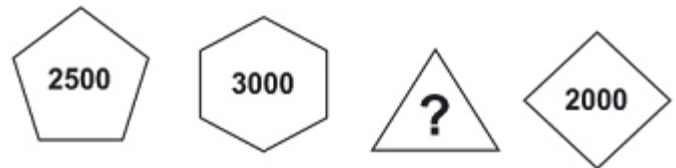
The biggest possible three-digit number is 999

$$999:37=27$$

So other number in product is 27

Answer: C

Q25: The number in each shape below is related to the shape. What number must be in triangle?



- A) 1000 B) 1500 C) 750 D) 250

Solution:

The number of sides in each shape is multiplied by 500.

So the number in third shape (triangle) is equal to 500x3=1500

Answer: B

Q26: Each letter below represents a number.

$$\begin{aligned} n - 5 &= 7 \\ m \times 3 &= n \\ n \div m &= k \\ k + 5 &= t \end{aligned}$$

Which letter has the biggest value?

- A) n B) m C) k D) t

Solution:

$$\left. \begin{aligned} n - 5 &= 7 \\ n &= 7 + 5 = 12 \\ m \times 3 &= n \\ m &= \frac{n}{3} = \frac{12}{3} = 4 \\ n \div m &= k \\ k &= n \div m = 12 \div 4 = 3 \\ k + 5 &= t \\ t &= k + 5 = 3 + 5 = 8 \\ n = 12, m = 4, k = 3, t = 5 \end{aligned} \right\} n = 12$$

Answer: A

Q27: Which number cannot be the area of a square if the length of one side of the square is a natural number?

- A) 16 B) 28 C) 36 D) 121

Solution:

If the length of one side of square is a natural numbers, so square of the natural number must ne a perfect number

So, 28 is not a square of any natural number

Answer: B

Q28: Which of the following statement is false?

- A) $12 \times 12 = 12^2$ B) $15 \times 15 \times 15 = 15^3$
 C) $49 \times 49 = 49^2$ D) $4 + 4 + 4 + 4 = 4^4$

Solution:

- A) $12 \times 12 = 12^2$ It is true

Square of a number equals to product of the same number by itself

- B) $15 \times 15 \times 15 = 15^3$

Cube of a number equals to product of the same number by itself and result by itself

- C) $49 \times 49 = 49^2$

Square of a number equals to product of the same number by itself

$$4 + 4 + 4 + 4 = 4 \times 4 = 16$$

- D) $4^4 = 256$ it is false
 $16 \neq 256$

Answer: D

Q29: $a = 0.3$ and $b = 0.5$ then find $\frac{1}{a} + \frac{1}{b}$

- A) $\frac{16}{3}$ B) $\frac{24}{5}$ C) $\frac{24}{9}$ D) $\frac{1}{9}$

Solution:

$$\begin{aligned} \frac{1}{a} + \frac{1}{b} &= \frac{1}{0.3} + \frac{1}{0.5} = \frac{1}{\frac{3}{10}} + \frac{1}{\frac{5}{10}} = \frac{10}{3} + \frac{10}{5} \\ &= \frac{50 + 30}{15} = \frac{80}{15} = \frac{16}{3} \end{aligned}$$

Answer: A

Q30: $A+12=102$, $B\div 16=3$ and $A+B=C$ so what is C?

- A) 122 B) 124 C) 132 D) 138

Solution:

$$A+12=102 \quad \text{and} \quad B\div 16=3$$

$$A=102-12=90 \quad B=3\times 16=48$$

$$A+B=C$$

$$C=90+48=138$$

Answer: D

Q31: a, b and c are natural numbers and $\frac{33}{7} = a\frac{b}{c}$

where $a\frac{b}{c}$ is a mixed number. Find the smallest possible value of $a+b+c$

- A) 16 B) 17 C) 15 D) 14

Solution:

$$\frac{33}{7} = 4\frac{5}{7} = a\frac{b}{c}$$

$$a=4$$

$$b=5$$

$$c=7$$

$$a+b+c=4+5+7=16$$

Answer: A

Q32: A man drives for 17 hours at an average speed of 115km/h. How far does the man travel, in kilometers?

- A) 1945 km B) 1955 km
C) 1317 km D) 1715 km

Solution:

$$17 \cancel{h} \times 115 \frac{km}{\cancel{h}} = 1955 km$$

Answer: B

Q33: Which number below has the expanded form of $200+50+8+\frac{3}{10}+\frac{5}{100}$

- A) 2.5835 B) 2583.5
C) 258.35 D) 25.835

Solution:

$$200+50+8+\frac{3}{10}+\frac{5}{100}$$

$$= 258+0.3+0.05$$

$$= 258.35$$

Answer: C

Q34: What percentage of the figure above is shaded?



- A) 40% B) 50% C) 60% D) 45%

Solution:

There are total 20 small squares in the figure and 12 of them are shaded. So the fraction of shaded part is $\frac{12}{20}$ which equals to 60%

Answer: C

Q35: The price of an LCD television goes up by 20%. The old price was \$ 1500. What is the new price of the television?

- A) \$1640 B) \$1680
 C) \$1750 D) \$1800

Solution:

The old price of the TV is \$ 1500

If it goes up by 20%, the new price will be;

$$\begin{aligned} & \$1500 + \$1500 \times \frac{20}{100} \\ & = \$1500 + \$300 \\ & = \$1800 \end{aligned}$$

Answer: D

Q36: Ali has a stick, which is 27 cm long. He measures one side of his school and finds it 40 sticks long. What is length of his school in meters?

- A) 10.2m B) 10.4m C) 10.8m D) 12m

Solution:

The length of the school is 40 sticks long

One stick is 27 cm

The length of school will be 40 x 27 cm = 1080 cm

Or 10.8 meters

Answer: C

Q37: The big rectangle below represents a number. The small square is equal to 30. Which sentence below describes this figure in words?



- A) $\frac{1}{2}$ of $\frac{1}{4}$ of $\frac{1}{2}$ of a number is 30
 B) $\frac{1}{2}$ of $\frac{1}{2}$ of $\frac{1}{2}$ of a number is 30
 C) $\frac{1}{4}$ of $\frac{1}{2}$ of $\frac{1}{2}$ of a number is 30
 D) $\frac{1}{2}$ of $\frac{1}{2}$ of $\frac{1}{4}$ of a number is 30

Solution:

The part where 30 is written is the half of half of half of the rectangle. So it will be describe as

$$\frac{1}{2} \text{ of } \frac{1}{2} \text{ of } \frac{1}{2} \text{ of a number is 30}$$

Answer: B

Q38: Irina gave correct answers to 4/5 of the questions in an exam. She gave wrong answer to 1/10 of the questions and did not answer six questions. How many questions were in the exam?

- A) 45 B) 60 C) 75 D) 90

Solution:

Correct answers is 4 out of 5 or we can say 8 out of 10. Wrong answer is 1 out of 10. Total correct and wrongs answer is 9 out of 10. 1 part is remain for the questions which Irina did not answer, so one part is equal to 6.

The number of questions will be 10x6=60 if one part is equal to 6 (6 is out of 10)

Answer: B

Q39: Hakan says: " The sum of $\frac{1}{3}$ and $\frac{4}{9}$ of a number is 35." Find the number

- A) 35 B) 45 C) 30 D) 50

Solution:

$$\frac{1}{3} + \frac{4}{9} = \frac{3+4}{9} = \frac{7}{9} \text{ it means } \frac{7}{9} \text{ of a number is } 35.$$

The number should be $35 \times \frac{9}{7} = 5 \times 9 = 45$

Answer: B

Q40: Find the sum of numbers between 15 and 55 which are divisible by 5

- A) 195 B) 265 C) 225 D) 245

Solution:

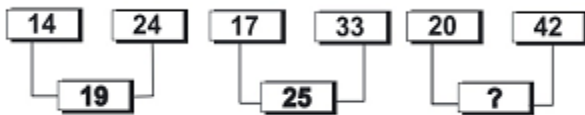
The numbers are listed below

20,25,30,35,40,45,50

The sum is $20+25+30+35+40+45+50=245$

Answer: D

Q41: What is ? in the number pattern above?



- A) 33 B) 29 C) 21 D) 31

Solution:

$$19 = \frac{14+24}{2}, 25 = \frac{17+33}{2}, ? = \frac{20+42}{2}$$

$$? = \frac{62}{2} = 31$$

Answer: D

Q42: Ali uses the digits 3,5,6,8,9 and 0 to make the biggest possible six-digit odd number with the biggest digit in the ten thousand place. What is his number?

- A) 865390 B) 896530
C) 896503 D) 865309

Solution:

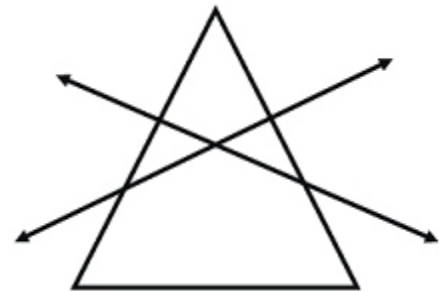
The biggest digit must come in ten thousand place

896503 is the biggest number

It is an odd number so 3 must come at the end and 9 is in ten thousand place. Remaining number should be in descending order...

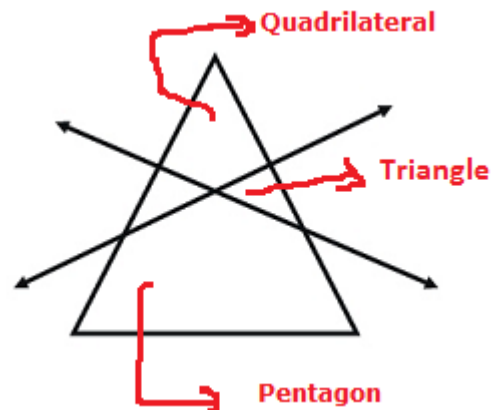
Answer: C

Q43: Two lines intersect inside a triangle as shown below. Which polygonal region is not formed by the lines and triangle?



- A) Triangle B) Quadrilateral
C) Pentagon D) Hexagon

Solution:



Answer: D

Q44: If we subtract 7 from 2013 continuously, which of the following number we cannot find?

- A) 1964 B) 1915
C) 1866 D) 1818

Solution:

When we minus each of the options from 2013, the resulting number must be multiply of 7

$$2013 - 1964 = 49 = 7 \times 7$$

$$2013 - 1915 = 98 = 7 \times 14$$

$$2013 - 1866 = 147 = 7 \times 21$$

$$2013 - 1818 = 195 = 7 \times 27.85$$

So 1818 can not come

Answer: D

Q45: $\frac{1^1}{1} + \frac{2^2}{2} + \frac{3^3}{3} + \frac{4^4}{4} = ?$

- A) 39 B) 76 C) 144 D) 288

Solution:

$$\frac{1^1}{1} + \frac{2^2}{2} + \frac{3^3}{3} + \frac{4^4}{4} = \frac{1}{1} + \frac{4}{2} + \frac{27}{3} + \frac{256}{4}$$

$$= 1 + 2 + 9 + 64 = 76$$

Answer: B

Q46: After every four days in a country is holiday, if the last holiday was on Friday which day will be holiday after 72 days

- A) Monday B) Tuesday
C) Friday D) Sunday

Solution:

There are 7 weeks and 2 days in 72 days. So after 7 week holiday will be the same day (Friday). We have two days. So two days after Friday will be Sunday

Answer: D

Q47: Which of the following number is the next number in sequence

$$1 \times 1^2 + 2 \times 3^2 + 3 \times 5^2 + 4 \times 7^2 + \underline{\quad}$$

- A) 900 B) 405 C) 450 D) 45

Solution:

$$1 \times 1^2 + 2 \times 3^2 + 3 \times 5^2 + 4 \times 7^2 + 5 \times 9^2$$

The first part is the sequence of natural number, so after 4 the next one is 5

The second part is the sequence of square of odd numbers, so the next one will be square of 9

Answer: B

Q48: In a division operation, the divisor is 28 and the quotient is 14. The remainder is the average of the divisor and the quotient.

What is the dividend?

- A) 413 B) 431 C) 396 D) 451

Solution:

$$\text{Remainder is } \frac{14 + 28}{2} = 21$$

Dividend = quotient x Divisor + remainder

$$= 14 \times 28 + 21 = 413$$

Answer: A

Q49: Find the smallest number so that when you divide it by 18, 24 and 30, in each case, the remainder is 2.

- A) 360 B) 258 C) 362 D) 422

Solution:

First of all, we should find the LCM of 18, 24 and 30

Which is 360

The number must be $360+2$ because 18, 24 and 30 are the factors of 360. That means 360 is divisible by 18, 24 and 30. Remainder should not be zero, so we should add 2 to make remainder 2

The number is 362

Answer: C

Q50: 355×143

A maths teacher writes the above operation on the board. Four students estimate the result. Whose estimate is closest to the actual value

- A) 350×140 B) 360×140
C) 300×100 D) 350×150

Solution:

The actual value is $355 \times 143 = 50765$

- A) $350 \times 140 = 49000$ B) $360 \times 140 = 50400$
C) $300 \times 100 = 30000$ D) $350 \times 150 = 52500$

The closest to the actual value is **50400**.

Answer: B