

Q1: Which of the following numbers is **not** an integer?

- A) $\frac{2016}{6}$ B) $\frac{2015}{5}$ C) $\frac{2014}{4}$ D) $\frac{2013}{3}$

Solution:

- A) $\frac{2016}{6} = 336$ B) $\frac{2015}{5} = 403$
 C) $\frac{2014}{4} = 503.5$ D) $\frac{2013}{3} = 671$

Answer: C

Q2: $3 + 2 \times [(-5 + 2) - (-7 + 3)] - 4 = ?$

- A) 0 B) 1 C) 2 D) 4

Solution:

$$3 + 2 \times [(-5 + 2) - (-7 + 3)] - 4 =$$

$$\Rightarrow 3 + 2 \times [(-3) - (-4)] - 4 =$$

$$\Rightarrow 3 + 2 \times 1 - 4 = 5 - 4 = 1$$

Answer: B

Q3: Evaluate $\frac{\frac{2}{3} + \frac{3}{\frac{3}{2}}}{\frac{2}{2}}$

- A) $\frac{3}{2}$ B) $\frac{7}{3}$ C) $\frac{3}{5}$ D) $\frac{4}{5}$

Solution:

$$\frac{\frac{2}{3} + \frac{3}{\frac{3}{2}}}{\frac{2}{2}} = \frac{2}{3} \times \frac{1}{2} + 3 \times \frac{2}{3} = \frac{1}{3} + 2 = \frac{1+6}{3} = \frac{7}{3}$$

Answer: B

Q4: $\frac{\frac{1}{2} + \frac{1}{3} \div \left(\frac{1}{2} + \frac{1}{3}\right)}{0.4} = ?$

- A) $\frac{1}{5}$ B) $\frac{3}{2}$ C) $\frac{3}{5}$ D) $\frac{9}{4}$

Solution:

$$\frac{\frac{1}{2} + \frac{1}{3} \div \left(\frac{1}{2} + \frac{1}{3}\right)}{0.4} = \frac{\frac{1}{2} + \frac{1}{3} \div \frac{5}{6}}{0.4} = \frac{\frac{1}{2} + \frac{1}{3} \times \frac{6}{5}}{0.4}$$

$$\frac{\frac{1}{2} + \frac{2}{5}}{0.4} = \frac{9}{10} \div \frac{4}{10} = \frac{9}{10} \times \frac{10}{4} = \frac{9}{4}$$

Answer: D

Q5: $14391 \div 13 = ?$

- A) 1107 B) 1161 C) 1071 D) 1171

Solution: $14391 \div 13 = 1107$

Answer: A

Q6: Which of the following is smaller than $\frac{6}{5}$?

- A) 1.15 B) 1.20 C) 1.25 D) 1.30

Solution:

$$\frac{6}{5} = 1.2 \rangle 1.15$$

Answer: A

Q7: $\frac{1}{\frac{0.1}{0.11} + \frac{0.3}{0.33} - \frac{0.6}{0.66}} = ?$

- A) $\frac{11}{3}$ B) $\frac{11}{6}$ **C) $\frac{11}{10}$** D) $\frac{6}{11}$

Solution: $\frac{1}{\frac{0.1}{0.11} + \frac{0.3}{0.33} - \frac{0.6}{0.66}} = \frac{1}{\frac{10}{11} + \frac{10}{11} - \frac{10}{11}} = \frac{11}{10}$

Answer: C

Q8: Find the value of x in the equation

$$4x + \frac{1}{2}(3x - 2) = \frac{9}{2}x.$$

- A) 1** B) 2 C) 3 D) 4

Solution:

$$4x + \frac{1}{2}(3x - 2) = \frac{9}{2}x \Rightarrow \frac{8x + 3x - 2}{2} = \frac{9x}{2}$$

$$\Rightarrow 11x - 2 = 9x \Rightarrow 2x = 2 \Rightarrow x = 1$$

Answer: A

$$a - b = 1$$

Q9: What is the value of $3a + c$ if $a + c = 7$?

$$b - c = 2$$

- A) 8 B) 11 C) 15 **D) 17**

Solution:

$$\left. \begin{array}{l} a - b = 1 \\ a + c = 7 \\ b - c = 2 \end{array} \right\} \Rightarrow 2a = 10 \Rightarrow a = 5, c = 2$$

$$\Rightarrow 3a + c = 3 \times 5 + 2 = 15 + 2 = 17$$

Answer: D

Q10: Which of the following is an odd number?

- A) $101^2 + 9$ **B) $102^2 + 3$**
 C) $102^2 + 8$ D) $105^2 + 5$

Solution: Odd number + even number = odd number

B) $102^2 + 3 \Rightarrow \text{Even} + \text{Odd} = \text{Odd}$

Answer: B

Q11: $\frac{4}{0.2} - (0.25)^2 + 1 = ?$

- A) $\frac{289}{16}$ B) $\frac{331}{16}$ **C) $\frac{335}{16}$** D) $\frac{337}{16}$

Solution:

$$\frac{4}{0.2} - (0.25)^2 + 1 = 4 \times \frac{10}{2} - \left(\frac{1}{4}\right)^2 + 1$$

$$\Rightarrow 20 - \frac{1}{16} + 1 = \frac{320 - 1 + 16}{16} = \frac{335}{16}$$

Answer: C

Q12: $\left(\frac{3}{7}\right)^3 = ?$

- A) $\frac{27}{7}$ B) $\frac{9}{21}$ **C) $\frac{27}{343}$** D) $\frac{33}{343}$

Solution: $\left(\frac{3}{7}\right)^3 = \frac{27}{343}$

Answer: C

Q13: $x - \left[x + \frac{1}{x} \right] + \frac{1}{x} = ?$

- A) 0 B) $2x$ C) $\frac{x+1}{x}$ D) $\frac{1}{x}$

Solution: $x - \left[x + \frac{1}{x} \right] + \frac{1}{x} = x - x - \frac{1}{x} + \frac{1}{x} = 0$

Answer: A

Q14: What will be replaced with the question mark in the following equation?

$$\sqrt{?-12} = 7$$

- A) 61 B) 24 C) 36 D) 42

Solution:
 $(\sqrt{?-12})^2 = 7^2 \Rightarrow ?-12 = 49 \Rightarrow ? = 49 + 12 = 61$

Answer: A

Q15: If the average of “a” and “b” is 12 and the average of “c” and “d” is 13 then which of the following is false?

- A) $a+b=24$ B) $c+d=26$
 C) $(c+d)-(a+b)=0$ D) $a+b+c+d=50$

Solution:
 $\frac{a+b}{2} = 12 \Rightarrow a+b = 24, \frac{c+d}{2} = 13 \Rightarrow c+d = 26$
 $a+b+c+d = 24+26 = 50$

Answer: C

Q16: What is the H.C.F. of a and b if both a and b are prime numbers?

- A) $a+b$ B) $\frac{a}{b}$ C) $a \times b$ D) 1

Solution: the H.C.F. of a and b if both a and b are prime numbers is 1.

Answer: D

Q17:
 $5\Delta 3 = 10$
 $6\Delta 7 = 37$
 $8\Delta 2 = 11$
 $9\Delta 11 = ?$

- A) 94 B) 88 C) 83 D) 81

Solution:
 $5\Delta 3 = 10 \Rightarrow 5 \times 3 - 5 = 15 - 5 = 10$
 $6\Delta 7 = 37 \Rightarrow 6 \times 7 - 5 = 42 - 5 = 37$
 $8\Delta 2 = 11 \Rightarrow 8 \times 2 - 5 = 16 - 5 = 11$
 $9\Delta 11 = ? \Rightarrow 9 \times 11 - 5 = 99 - 5 = 94$

Answer: A

Q18: The average of three numbers is m . What will be the average of the numbers if each of them is increased by 12?

- A) $12m$ B) $m+12$
 C) m D) $m-12$

Solution: $\frac{3m + 3 \times 12}{3} = \frac{3(m+12)}{3} = m+12$

Answer: B

Q19: If $\frac{4}{5} = \frac{p}{15}$ and $\frac{4}{5} = \frac{20}{m}$, what is the value of $p+m$?

- A) 32 B) 34 **C) 37** D) 41

Solution:

$$\frac{4}{5} = \frac{p}{15} \Rightarrow 5p = 60 \Rightarrow p = 12$$

$$\frac{4}{5} = \frac{20}{m} \Rightarrow 4m = 100 \Rightarrow m = 25$$

$$p + m = 12 + 25 = 37$$

Answer: C

Q20: If $\left(\frac{a}{b}\right)^2 = 4$, what is the value of $\left(\frac{b}{a}\right)^4$?

- A) 16 B) $\frac{1}{8}$ C) 8 **D) $\frac{1}{16}$**

Solution: $\left(\frac{a}{b}\right)^2 = 4 \Rightarrow \left(\left(\frac{b}{a}\right)^2\right)^2 = \left(\frac{1}{4}\right)^2 \Rightarrow \left(\frac{b}{a}\right)^4 = \frac{1}{16}$

Answer: D

Q21: What is the value of x if $\frac{3x}{2} + \frac{5}{4} = \frac{9}{2} + \frac{x}{2}$?

- A) $\frac{3}{4}$ B) $\frac{7}{4}$ C) $\frac{11}{4}$ **D) $\frac{13}{4}$**

$$\frac{3x}{2} + \frac{5}{4} = \frac{9}{2} + \frac{x}{2} \Rightarrow \frac{6x+5}{4} = \frac{9+x}{2}$$

Solution: $6x+5 = 2(9+x) \Rightarrow 6x+5 = 18+2x$

$$6x-2x = 18-5 \Rightarrow 4x = 13 \Rightarrow x = \frac{13}{4}$$

Answer: D

Q22: Which of the following proportions is different than others?

- A) $\frac{m}{n} = 4$ **B) $m:n = 1:4$**
 C) $\frac{4}{m} = \frac{1}{n}$ D) $\frac{n}{m} = \frac{2}{8}$

Solution: B) $m:n = 1:4 \Rightarrow \frac{m}{n} = \frac{1}{4} \Rightarrow m = 4n$

Answer: B

Q23: If $a = -3$ then which of the following is the biggest?

- A) $-11a$ B) a^3 C) $\frac{99}{a}$ **D) $5a^2$**

Solution:

A) $-11a = -11 \times (-3) = 33$ B) $a^3 = (-3)^3 = -27$

C) $\frac{99}{a} = \frac{99}{(-3)} = -33$ D) $5a^2 = 5 \times (-3)^2 = 5 \times 9 = 45$

Answer: D

Q24: If $\sqrt{x} = 12$, what is the value of x ?

- A) 12 B) 24 **C) 144** D) 136

Solution: $\sqrt{x} = 12 \Rightarrow (\sqrt{x})^2 = 12^2 \Rightarrow x = 144$

Answer: C

Q25: If 25% of A is equal to 1200, what is 40% of $A + 400$?

- A) 98 B) 245 C) 280 **D) 2080**

Solution:

$$\frac{25}{100}A = 1200 \Rightarrow \frac{1}{4}A = 1200 \Rightarrow A = 4800$$

$$\frac{40}{100}(A + 400) = \frac{40}{100}(4800 + 400) = \frac{40}{100} \times 5200 = 2080$$

Answer: D

Q26: $\sqrt{0.01}(\sqrt{0.36} + \sqrt{0.16}) = ?$

- A) $\frac{1}{10}$ B) 1 C) $\frac{1}{\sqrt{10}}$ D) $\sqrt{10}$

Solution:

$$\sqrt{0.01}(\sqrt{0.36} + \sqrt{0.16}) = 0.1(0.6 + 0.4) = 0.1 \times 1 = \frac{1}{10}$$

Answer: A

Q27: If 11 more than m is 7 less than n , what is m in terms of n ?

- A) $n + 7$ B) $n - 7$ **C) $n - 18$** D) $n - 11$

Solution: $11 + m = n - 7 \Rightarrow m = n - 7 - 11 = n - 18$

Answer: C

Q28: Usman had an appointment which is 60 km away from his home at 11:00 a.m. He travelled with an average speed of 80 km/h for the trip and arrived 25 minutes late for the appointment. At what time did he leave his home?

- A) 09:40 a.m. B) 10:35 a.m.
C) 10:40 a.m. D) 10:45 a.m.

Solution: $time = \frac{60}{80} \times 60 = \frac{3600}{80} = 45 \text{ min}$

$(11:25) - 45 = 10:40 \text{ a.m.}$

Answer: C

Q29: The sum of the squares of which of the following pairs is the greatest?

- A) 3 and 6 B) 4 and 5
 C) 2 and 7 **D) 8 and 1**

Solution:

- A) $3^2 + 6^2 = 9 + 36 = 45$ B) $4^2 + 5^2 = 16 + 25 = 41$
 C) $2^2 + 7^2 = 4 + 49 = 53$ D) $8^2 + 1^2 = 64 + 1 = 65$

Answer: D

$\frac{1}{a} + \frac{1}{b} = 15$

Q30: If $\frac{1}{b} + \frac{1}{c} = 17$ then what is the value of c ?

- $\frac{1}{a} + \frac{1}{c} = 12$
- A) $\frac{1}{13}$ B) $\frac{1}{10}$ **C) $\frac{1}{7}$** D) $\frac{1}{6}$

Solution:

$$2\left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right) = 15 + 17 + 12 \Rightarrow \frac{1}{a} + \frac{1}{b} + \frac{1}{c} = \frac{44}{2} = 22$$

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 15 + \frac{1}{c} = 22 \Rightarrow \frac{1}{c} = 22 - 15 = 7 \Rightarrow c = \frac{1}{7}$$

Answer: C

Q31: $(-45)^2 - 35^2 = ?$

- A) -3250 B) -800
C) 800 D) 3250

Solution: $(-45)^2 - 35^2 = 2025 - 1225 = 800$

Answer: C

Q32: $2\sqrt{21 - \sqrt{23 + \sqrt{4}}} = ?$

- A) 8** B) 6 C) 12 D) 10

Solution:

$$2\sqrt{21 - \sqrt{23 + \sqrt{4}}} = 2\sqrt{21 - \sqrt{25}} = 2\sqrt{21 - 5}$$

$$\Rightarrow 2\sqrt{16} = 2 \times 4 = 8$$

Answer: A

Q33: Which of the following three numbers whose products should be multiplied by 24 to get a perfect square?

- A) 1, 2 and 3** B) 2, 3 and 5
 C) 1, 3 and 5 D) 3, 5 and 6

Solution: $24 \times 1 \times 2 \times 3 = 144 = 12^2$

Answer: A

Q34: 8 workers can paint a building in 27 days. How many days will it take 18 workers to paint the same building?

- A) 10 **B) 12** C) 15 D) 18

Solution: $x = \frac{8 \times 27}{18} = 4 \times 3 = 12$

Answer: B

Q35: If $a^2b = 12^2$ and b is an integer, then a is not divisible by _____.

- A) 3 B) 4 C) 6 **D) 8**

Solution: $a^2b = 12^2 \times 1 \Rightarrow a = 12 \Rightarrow 12$ is not divisible by 8

Answer: D

Q36: Which of the following problems cannot be solved by using the equation $5x - 7 = x + 17$?

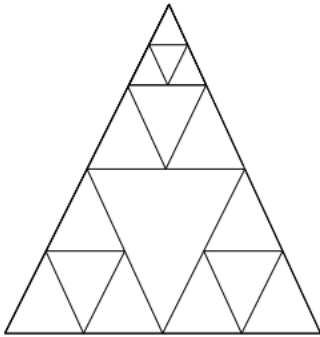
- I. 7 less than 5 times a certain number is equal to 17 more than the number. What is the number?
- II. The age of Hassan after 17 years will be 7 less than 5 times his present age. What is his age?
- III. 5 times 7 less than a certain number is equal to 17 more than the same number. What is the number?

- A) Only I B) I and II
 C) II and III **D) Only III**

Solution: III. 5 times 7 less than a certain number is equal to 17 more than the same number. What is the number? $\Rightarrow 7 - 5x = x + 17$

Answer: D

Q37: What is the number of all possible triangles drawn in the figure given below?

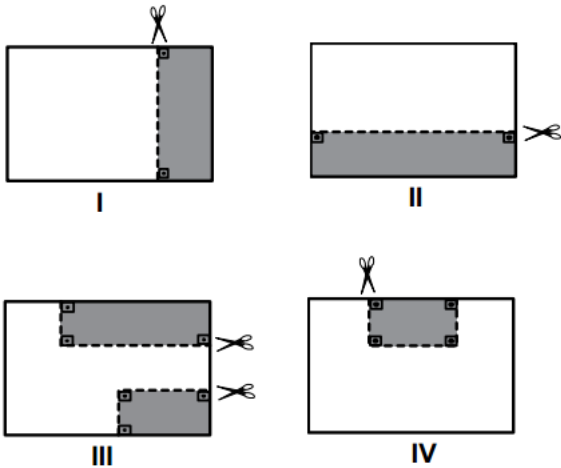


- A) 20 **B) 21** C) 22 D) 23

Solution: Count all possible no. of triangles.

Answer: B

Q38: The shaded areas in the figures given below are removed. Which shape has the longest perimeter after the shaded parts are removed?

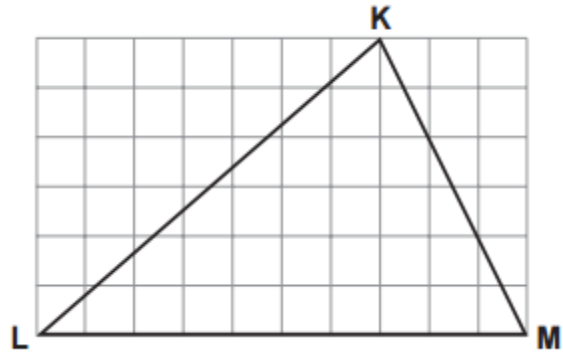


- A) I B) II C) III **D) IV**

Solution: Due to way of cutting, figure IV will have longest perimeter.

Answer: D

Q39: What is the area of the triangle KLM if its height is 42 cm?



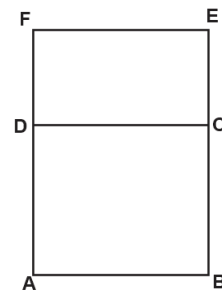
- A) 2940 **B) 1470** C) 30 D) 60

Solution:

$$\text{area of the triangle KLM} = \frac{42 \times 70}{2} = 21 \times 70 = 1470$$

Answer: B

Q40: In the figure below, the perimeter of the rectangle ABCD is 40 cm and the perimeter of the rectangle CDEF is 32 cm. What is the perimeter of the rectangle ABEF if the length of the side CD is 7 cm?



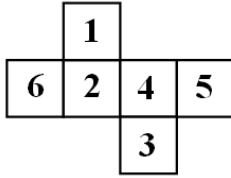
- A) 58 cm** B) 62 cm C) 65 cm D) 72 cm

Solution:

$$\begin{aligned} \text{the perimeter of the rectangle ABEF} &= 40 + 32 - 2 \times 7 \\ &\Rightarrow 72 - 14 = 58 \text{ cm} \end{aligned}$$

Answer: A

Q41: The net of a cube with numbered faces is shown in the diagram.



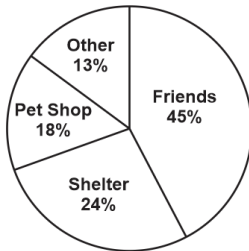
Urva correctly adds the numbers on opposite faces of this cube. Which sums does Urva get?

- A) 4, 7 and 10 B) 8, 9 and 4
 C) 7, 7 and 7 D) 6, 8 and 10

Solution: Opposite faces are:
 $1+3=4$, $2+5=7$, $4+6=10$

Answer: A

Q42: If 360 of the owners got their cat from a shelter, how many of the owners got their cat from friends according to pie chart?



- A) 1500 B) 1350 C) 775 **D) 675**

Solution: $\frac{360}{F} = \frac{24}{45} \Rightarrow F = \frac{360 \times 45}{24} = 675$

Answer: D

Q43: Find the value of x if $4 + \frac{12}{2 - \frac{3}{2-x}} = 8$

- A) 8** B) 6 C) -6 D) -8

Solution:
 $4 + \frac{12}{2 - \frac{3}{2-x}} = 8 \Rightarrow 2 - \frac{3}{2-x} = 3 \Rightarrow \frac{2-x}{2} = -3$
 $2-x = -6 \Rightarrow x = 8$

Answer: A

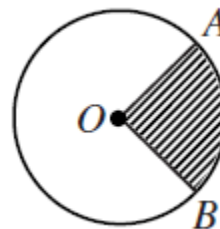
Q44: Each of 9 students conducted an experiment, and the average time for the 9 experiments was 34 minutes. If the average time for 5 of the experiments was 30 minutes, what was the average time, in minutes, for the other 4 experiments?

- A) 38 B) 38.5 **C) 39** D) 39.5

Solution:
 average time for 4 experiments = $\frac{9 \times 34 - 5 \times 30}{4}$
 $\frac{306 - 150}{4} = \frac{156}{4} = 39$

Answer: C

Q45: In the following circle with centre O, the shaded area represents 25% of the area of the circle. What is the size of angle AOB?

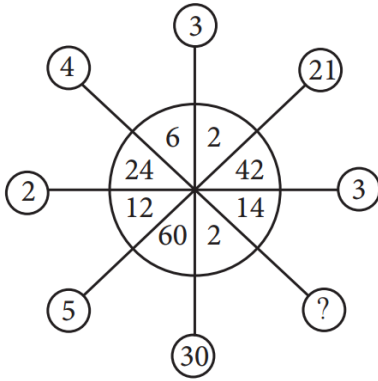


- A) 25° B) 75° **C) 90°** D) 100°

Solution: angle AOB = $\frac{25}{100} \times 360 = \frac{360}{4} = 90$

Answer: C

Q46: What is the unknown number indicated by question mark?

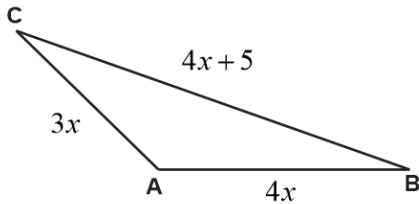


- A) 7 B) 14 C) 21 D) 42

Solution: $2 \times ? = 14 \Rightarrow ? = \frac{14}{2} = 7$

Answer: A

Q47: The perimeter of the $\triangle ABC$ below is 82 cm. What is the value of x ?



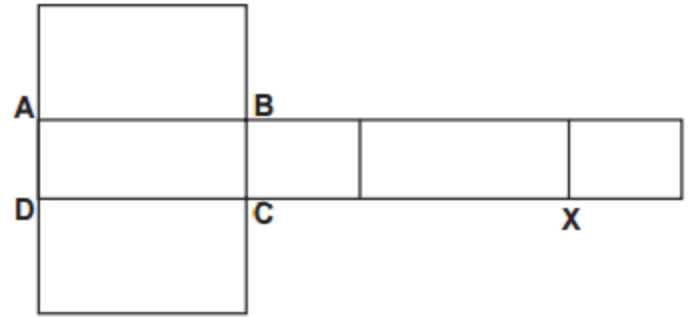
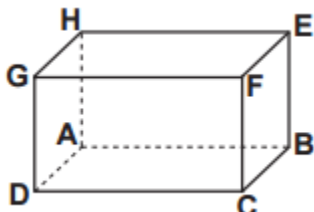
- A) 5 B) 6 C) 7 D) 9

Solution:

$3x + 4x + 4x + 5 = 82 \Rightarrow 11x = 82 - 5 \Rightarrow x = \frac{77}{11} = 7$

Answer: C

Q48: In the figure below, a rectangular prism and its net is given. Which letter will be X?

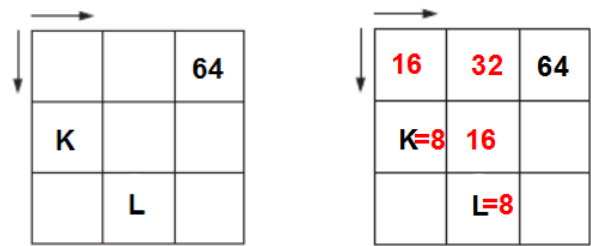


- A) G B) F C) E D) H

Solution:

Answer: A

Q49: According to the given table below, numbers are increasing by double from left to right and decreasing by half top to down. What is the value of K-L?



- A) 16 B) 8 C) 4 D) 0

Solution: $K - L = 8 - 8 = 0$

Answer: D

Q50: x , y and z are three digits.

$$\begin{array}{r} 7 \ x \ 2 \\ - 4 \ 8 \ y \\ \hline z \ 7 \ 3 \end{array}$$

What is the value of $x + y + z$ according to subtraction?

- A) 13 B) 15 C) 17 D) 19

Solution: $x + y + z = 6 + 9 + 2 = 17$

Answer: C