1. A batsman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total score did he make by running between the wickets?

   A. 45%

   B. $45\frac{5}{11}$%

   C. $54\frac{6}{11}$%

   D. 55%

   Answer: Option **B**
   Explanation:

   Number of runs made by running = 110 - (3 x 4 + 8 x 6)

   = 110 - (60)

   = 50.

   $\therefore$ Required percentage = $\left(\frac{50}{110} \times 100\right)$% = $45\frac{5}{11}$%

   Video Explanation: https://youtu.be/X2zTnABqEHU
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2. Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are:

   A. 39, 30

   B. 41, 32

   C. 42, 33

   D. 43, 34

   Answer: Option **C**
   Explanation:
   Let their marks be $(x + 9)$ and x.

   Then, $x + 9 = \frac{56}{100}(x + 9 + x)$

   $\Rightarrow 25(x + 9) = 14(2x + 9)$
   $\Rightarrow 3x = 99$
   $\Rightarrow x = 33$

   So, their marks are 42 and 33.

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3. A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:

   A. 588 apples

   B. 600 apples

   C. 672 apples

   D. 700 apples

Answer: Option **D**
Explanation:
Suppose originally he had x apples.
Then, (100 - 40)% of $x = 420$.

$$\Rightarrow \frac{60}{100} \times x = 420$$

$$\Rightarrow x = \left(\frac{420 \times 100}{60} \right) = 700.$$

Video Explanation: https://youtu.be/-Pv25Do3WwY
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4. What percentage of numbers from 1 to 70 have 1 or 9 in the unit's digit?

   A. 1

   B. 14

   C. 20

   D. 21

Answer: Option **C**
Explanation:

Clearly, the numbers which have 1 or 9 in the unit's digit, have squares that end in the digit 1.
Such numbers from 1 to 70 are 1, 9, 11, 19, 21, 29, 31, 39, 41, 49, 51, 59, 61, 69.

Number of such number =14

$\therefore$ Required percentage = $\left(\frac{14}{70} \times 100 \right)\% = 20\%$.

Video Explanation: https://youtu.be/cBamI6iRNIA
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5. If A = x% of y and B = y% of x, then which of the following is true?

   A. A is smaller than B.

   B. A is greater than B

   C. Relationship between A and B cannot be determined.

   D. If x is smaller than y, then A is greater than B.

Answer: Option **E**
Explanation:

$x\%$ of $y = \left(\dfrac{x}{100} \times y \right) = \left(\dfrac{y}{100} \times x \right) = y\%$ of x

$\therefore$ A = B.

6. If 20% of $a = b$, then $b\%$ of 20 is the same as:

   A. 4% of a

   B. 5% of a

   C. 20% of a

   D. None of these

Answer: Option **A**
Explanation:

20% of $a = b \implies \dfrac{20}{100}a = b.$

$\therefore b\%$ of $20 = \left(\dfrac{b}{100} \times 20 \right) = \left(\dfrac{20}{100}a \times \dfrac{1}{100} \times 20 \right) = \dfrac{4}{100}a = 4\%$ of a.

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7. In a certain school, 20% of students are below 8 years of age. The number of students above 8 years of age is $\dfrac{2}{3}$ of the number of students of 8 years of age which is 48. What is the total number of students in the school?

   A. 72

   B. 80

   C. 120

   D. 150

   E. 100

Answer: Option **E**
Explanation:

Let the number of students be x. Then,
Number of students above 8 years of age = (100 - 20)% of x = 80% of x.

$\therefore$ 80% of $x = 48 + \dfrac{2}{3}$ of 48

$\implies \dfrac{80}{100}x = 80$

$\implies x = 100.$

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8. Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A : B.

    A. 2 : 3

    B. 1 : 1

    C. 3 : 4

    D. 4 : 3

Answer: Option **D**
Explanation:

5% of A + 4% of B = $\dfrac{2}{3}$ (6% of A + 8% of B)

$\Rightarrow \dfrac{5}{100}A + \dfrac{4}{100}B = \dfrac{2}{3}\left(\dfrac{6}{100}A + \dfrac{8}{100}B\right)$

$\Rightarrow \dfrac{1}{20}A + \dfrac{1}{25}B = \dfrac{1}{25}A + \dfrac{4}{75}B$

$\Rightarrow \left(\dfrac{1}{20} - \dfrac{1}{25}\right)A = \left(\dfrac{4}{75} - \dfrac{1}{25}\right)B$

$\Rightarrow \dfrac{1}{100}A = \dfrac{1}{75}B$

$\dfrac{A}{B} = \dfrac{100}{75} = \dfrac{4}{3}.$

∴ Required ratio = 4 : 3

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9. A student multiplied a number by $\dfrac{3}{5}$ instead of $\dfrac{5}{3}$.

    What is the percentage error in the calculation?

    A. 34%

    B. 44%

    C. 54%

    D. 64%

Answer: Option **D**
Explanation:
Let the number be *x*.

Then, error = $\dfrac{5}{3}x - \dfrac{3}{5}x = \dfrac{16}{15}x.$

Error% = $\left(\dfrac{16x}{15} \times \dfrac{3}{5x} \times 100\right)$% = 64%.

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10. In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was:

   A. 2700

   B. 2900

   C. 3000

   D. 3100

   Answer: Option **A**
   Explanation:

   Number of valid votes = 80% of 7500 = 6000.

   ∴ Valid votes polled by other candidate = 45% of 6000

   = $\left(\dfrac{45}{100} \times 6000\right)$ = 2700.

11. Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?

   A. 57%

   B. 60%

   C. 65%

   D. 90%

   Answer: Option **A**
   Explanation:

   Total number of votes polled = (1136 + 7636 + 11628) = 20400.

   ∴ Required percentage = $\left(\dfrac{11628}{20400} \times 100\right)$% = 57%.

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12. Two tailors X and Y are paid a total of Rs. 550 per week by their employer. If X is paid 120 percent of the sum paid to Y, how much is Y paid per week?

   A. Rs. 200

B. Rs. 250

C. Rs. 300

D. None of these

Answer: Option **B**
Explanation:
Let the sum paid to Y per week be Rs. z.
Then, $z + 120\%$ of $z = 550$.

$\Rightarrow z + \dfrac{120}{100}z = 550$

$\Rightarrow \dfrac{11}{5}z = 550$

$\Rightarrow z = \left(\dfrac{550 \times 5}{11}\right) = 250.$

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13. Gauri went to the stationers and bought things worth Rs. 25, out of which 30 paise went on sales tax on taxable purchases. If the tax rate was 6%, then what was the cost of the tax free items?

    A. Rs. 15

    B. Rs. 15.70

    C. Rs. 19.70

    D. Rs. 20

Answer: Option **C**
Explanation:
Let the amount taxable purchases be Rs. x.

Then, 6% of $x = \dfrac{30}{100}$

$\Rightarrow x = \left(\dfrac{30}{100} \times \dfrac{100}{6}\right) = 5.$

$\therefore$ Cost of tax free items = Rs. $[25 - (5 + 0.30)]$ = Rs. 19.70

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14. Rajeev buys good worth Rs. 6650. He gets a rebate of 6% on it. After getting the rebate, he pays sales tax @ 10%. Find the amount he will have to pay for the goods.

    A. Rs. 6876.10

    B. Rs. 6999.20

    C. Rs. 6654

    D. Rs. 7000

Answer: Option **A**

Explanation:

Rebate = 6% of Rs. 6650 = Rs. $\left(\dfrac{6}{100} \times 6650\right)$ = Rs. 399.

Sales tax = 10% of Rs. (6650 - 399) = Rs. $\left(\dfrac{10}{100} \times 6251\right)$ = Rs. 625.10

∴ Final amount = Rs. (6251 + 625.10) = Rs. 6876.10

Video Explanation: https://youtu.be/XuiggCTh3SU
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15. The population of a town increased from 1,75,000 to 2,62,500 in a decade. The average percent increase of population per year is:

   A.   4.37%

   B.   5%

   C.   6%

   D.   8.75%

Answer: Option **B**
Explanation:

Increase in 10 years = (262500 - 175000) = 87500.

Increase% = $\left(\dfrac{87500}{175000} \times 100\right)$% = 50%.

∴ Required average = $\left(\dfrac{50}{10}\right)$% = 5%.