Chapter : 9. PERCENTAGE

Exercise : 9A

Question: 1

Express each of t

Solution:

(i) 48% means, 48 divided by 100.

So, 48% = 48 /100

= 12 /25

(ii) 220% means, 220 divided by 100.

So, 220% = 220 /100

= 11 /5

(ii) 2.5% means, 2.5 divided by 100.

So, 2.5% = 2.5 /100

= 1 /40

Question: 2

Express each of t

Solution:

(i) 6% means, 6 divided by 100.

So, 6% = 6 /100

= 3 /50 = 0.06

(ii) 72% means, 72 divided by 100.

So, 72% = 72 /100

= 18 /25 = 0.72

(iii) 125% means, 125 divided by 100.

So, 125% = 125 /100

= 5 /4 = 1.25

Question: 3

Express each of t

Solution:

(i) $\frac{9}{25}$ = ($\frac{9}{25}$ x 100) %

= (9 x 4) %

= 36%

(ii) $\frac{3}{125}$ = ($\frac{3}{125}$ x 100) %

= 2.4%

(iii) $\frac{12}{5}$ = ($\frac{12}{5}$ x 100) %

= (12 x 20) %

= 240%

Question: 4

Convert the ratio

Solution:

4 : 5 = $\frac{4}{5}$

= ($\frac{4}{5}$ x 100) % [Because 100% = 1]

= 80%

Question: 5

Express 125% as a

Solution:

125% = 125/100

= 5 /4 [Divided by 25]

= 5 : 4

Question: 6

Which is largest

Solution: $6\frac{2}{3}\%$

= (20 /3) %

= (20 /3 x 1 /100)

= 1 /15

= 0.06 ____ (i)

$\frac{3}{20}$ = 0.15 ____ (ii)

0.14 ____ (iii)

From equation (i), (ii) and (iii),

0.15 > 0.14 > 0.06

Question: 7 A

What per cent of

Solution:

Percentage = (96 /150 x 100) %

= (96 /3 x 2) % [Divided by 50]

= (32 x 2) %

= 64%

Question: 7 B

What per cent of

Solution:

5 kg = 5 x 1000

= 5000 g

Now,

Percentage = (200 /5000 x 100) %

= (200 /50) % [Divided by 100]

= 4 %

Question: 7 C

What per cent of

Solution:

2 liters = 2 x 1000

= 2000 mL

Now,

Percentage = (250 /2000 x 100) %

= (250 /20) % [Divided by 100]

= 12.5 %

Question: 8

Find

Solution:

$4\frac{1}{2}\%$ = (9 /2) x 100

= 9 /200

Now,

9 /200 of 3600 = 9 /200 x 3600

= 9 x 18 [Divided by 200]

= 162

Question: 9

If 16% of number

Solution:

Let the number = Z

∴ 16% of Z is 72.

⇒ 16 /100 × Z = 72

⇒ 16 Z = 7200

⇒ Z = 7200 /16

⇒ Z = 450

Question: 10

A man saves 18% o

Solution:

Let Rs. Z his monthly income.

∴ Saving = 18% of Rs. Z

⇒ 3780 = 18 /100 × Z

⇒ 3780 = 9 /50 × Z

⇒ Z = 3780 × 50/9

⇒ Z = 420 × 50

[Because 420 × 9 = 3780]

⇒ Z = 21000

Therefore, his monthly income is Rs 21000/-

Question: 11

A football team w

Solution:

Let, total games played = Z

∴ percentage of games won = 35% of Z

⇒ 7 = 35/100 × Z

⇒ 7 = 7/20 × Z [Divided by 5]

⇒ Z = 7 × 20/7

⇒ Z = 20

Question: 12

Amit was given an

Solution:

Let Amit’s old salary = Z

∴ Salary after increment = (Z + 20Z/100)

Now,

⇒ (Z + 20 Z/100) = 30600

⇒ (100 Z + 20 Z)/100 = 30600

⇒ 120 Z = 30600 × 100

⇒ Z = 25500

Question: 13

Sonal attended he

Solution:

Let the number of days the school was opened = Z

∴ Percentage of attendance = 85% of Z

Now,

85% of Z = 204

⇒ 85/100 × Z = 204

⇒ Z = 204 × 100/85

⇒ Z = 204 × 20/17 [Divided by 5]

⇒ Z = 12 × 20

⇒ Z = 240

Question: 14

A’s income

Solution:

Let B’s income = 100

Then, A’s income = (100 – 20) = 80

∴ B’s income more than A’s income = (100 – 80)/80 × 100

= 20/80 × 100

= 1/4 × 100

= 25

Question: 15

The price of petr

Solution:

Let the consumption of petrol = 1 unit and its cost = Rs.100

∴ New cost of 1 unit of petrol = Rs.110

Now,

Rs.110 will yield 1 unit of petrol.

∴Rs.100 will yield (1/110 × 100)

= 10/11 unit of petrol

Now,

Reduction of consumption = 1 – (10/11)

= 1/11

Percentage of reduction = (1/11 × 100) %

= $9\frac{1}{11}\%$

Question: 16

The population of

Solution:

Let population of the town a year ago = Z

∴ Present population = 108% of Z

⇒ 54000 = Z × 108/100

⇒ 54000 = Z × 27/25

⇒ Z = 54000 × 25/27

⇒ Z = 2000 × 25

⇒ Z = 50000

Question: 17

The value of a ma

Solution:

Let the value of machine last year = Z

∴ Present value = (100 – 20) % of Z

⇒ 160000 = 80% of Z

⇒ 160000 = Z × 80/100

⇒ Z = 160000 × 100/80

⇒ Z = 2000 × 100

⇒ Z = 200000

Question: 18

An alloy contains

Solution:

Given,

Percentage of copper = 40%

Percentage of nickel = 32%

∴ Percentage of zinc = {100 – (40 + 32)} %

= 28 %

Now,

Mass of zinc in 1 kg of the alloy = (28 × 1/100) kg

= 0.28 kg

= 0.28 × 1000 g

= 280 g

Question: 19

Balanced diet sho

Solution:

Amount of proteins = 12% of 2600

$$= 2600 \times \frac{12}{100}$$

= 26 × 12

= 312 calories

Amount of fats = 25% of 2600

$$= 2600 \times \frac{25}{100}$$

= 26 × 25

= 650 calories

Amount of carbohydrates = 63% of 2600

$$= 2600 \times \frac{63}{100}$$

= 26 × 63

= 1638 calories

Question: 20

Gunpowder contain

Solution:

Let the amount of gunpowder which carries 9 kg nitre = Z

∴ 75% of Z = 9 kg

⇒ Z × 75/100 = 9

⇒ Z = 9 × 100/75

⇒ Z = 9 × 4/3

⇒ Z = 12 kg

Now,

Let the amount of gunpowder which carries 2.5 kg sulphur = K

∴ 10% of K = 2.5 kg

⇒ K × 10/100 = 2.5

⇒ K = 2.5 × 100/10

⇒ K = 2.5 × 10

⇒ K = 25 kg

Question: 21

Divide Rs. 7000 a

Solution:

Let the amount of money gets by C = Rs. Z

∴ Amount of money B gets = (50% of Rs.Z)

∴ Amount of money A gets = (50% of B)

= (25% of Rs.Z)

Now,

Z + (50% of Rs.Z) + (25% of Rs.Z) = RS.7000

⇒ Z + (Z × 50/100) + (Z × 25/100) = 7000

⇒ Z + 50 Z/100 + 25 Z/100 = 7000

⇒ 175 Z/100 = 7000

⇒ Z = 7000 × 100/175

⇒ Z = 7000 × 4/7

⇒ Z = 4000

∴ C gets = Rs.4000

∴ Amount of money B gets = (50% of Rs.Z)

= (50% of Rs.4000)

= (Rs.4000 × 50/100)

= Rs.2000

∴ Amount of money A gets = (25% of Rs.Z)

= (25% of Rs.4000)

= (Rs.4000 × 25/100)

= Rs.1000

Question: 22

Find the percenta

Solution:

22-carat gold contains 22 parts out of 24 parts.

∴ Percentage of pure gold in 22-carat gold $= \left(\frac{22}{24} \times 100\right)\% = 91\frac{2}{3}\%.$

Hence, 22-carat gold contains $91\frac{2}{3}\%$ of pure gold.

Question: 23

The salary of an

Solution:

Let the original salary = Rs.100

Then,

After increment of 25% = 100 (1 + 25/100)

= 100 (125/100)

= Rs.125

Now,

To restore the original salary,

Let the new salary decreased by Z%

∴ 125(1 – Z/100) = 100

⇒ (1 – Z/100) = 100/125

⇒ (1 – Z/100) = 4/5

⇒ Z/100 = 1/5 [1 – 4/5 = 1/5]

⇒ Z = 100/5

⇒ Z = 20%

Exercise : 9B

Question: 1

Choose the

Solution:

3/5 = (3/5 × 100) %

= (3 × 20) %

= 60%

Question: 2

Solution:

0.8% = 0.8/100

= 0.008

Question: 3

Solution:

6 : 5 = 6/5

= (6/5 × 100) % [100% = 1]

= (6 × 20) %

= 120 %

Question: 4

Solution:

Let number = Z

Then,

5% of Z = 9

⇒ 5/100 × Z = 9

⇒ 5 Z = 900

⇒ Z = 180

Question: 5

What per cent of

Solution:

Let Z% of 90 is 120

∴ Z/100 × 90 = 120

⇒ 90 Z = 120 × 100

⇒ Z = 12000/90

⇒ Z = 400/3

⇒ Z = $133\frac{1}{3}\%$

Question: 6

What per cent of

Solution:

10 kg = 10 × 1000

= 10000 g

Let Z% of 1000 is 250

∴ Z/100 × 10000 = 250

⇒ 100 Z = 250

⇒ Z = 250/100

⇒ Z = 2.5%

Question: 7

Solution:

Let, 40% of Z = 240

⇒ 40/100 × Z = 240

⇒ Z = 240 × 100/40

⇒ Z = 6 × 100 [40 × 6 = 240]

⇒ Z = 600

Question: 8

?% of 400 = 60

Solution:

Let, Z% of 400 = 600

⇒ Z/100 × 400 = 60

⇒ 4 Z = 60

⇒ Z = 60/4

⇒ Z = 15

Question: 9

(180% of ?)

Solution:

Let (180% of Z) $\div 2 = 504$

∴ (180/100 × Z) $\div 2 = 504$

⇒ (18/10 × Z) = 504 × 2

⇒ Z = 504 × 2 × 10/18

⇒ Z = 504 × 10/9

⇒ Z = 560

Question: 10

20% or Rs. 800 =

Solution:

20% of Rs.800 = 20/100 × 800

= 20 × 8

= 160

Question: 11

In an examination

Solution:

Let the maximum marks = Z

∴ 56% of Z = 98

⇒ Z × 56/100 = 98

⇒ Z = 98 × 100/56

⇒ Z = 7 × 100/4

⇒ Z = 175

Question: 12

A number is first

Solution:

Let the number = Z

10% increased by number = Z (1 + 10/100)

= 11Z/10

Now,

10% decreased by number = 11Z/10 (1 - 10/100)

= (11Z/10) (90/100)

= 99Z/100

∴ difference = Z – 99Z/100

= Z/100

Percentage of decreases = Z/100 × 1/Z × 100

= 1%

Question: 13

A period of 4 hou

Solution:

4 hours 30 min = (4 × 60) + 30

= 240 + 30

= 270 min

24 hours = 24 × 60

= 1440 min

Now,

Percentage = (270/1440 × 100) %

= (3/16 × 100) %

= (3/4 × 25) %

= (75/4) %

= $18\frac{3}{4}\%$

Question: 14

In an examination

Solution:

Let the total number of examines = Z

Percentage of examines failed = (100 – 65) % = 35%

∴ 35% of Z = 420

⇒ Z × 35/100 = 420

⇒ Z = 420 × 100/35

⇒ Z = 12 × 100

⇒ Z = 1200

Question: 15

A number exceeds

Solution:

Let the number = Z

∴ 20% of Z + 40 = Z

⇒ (Z × 20/100) + 40 = Z

⇒ Z/5 + 40 = Z

⇒ Z – Z/5 = 40

⇒ 4Z/5 = 40

⇒ Z = 40 × 5/4

⇒ Z = 50

Question: 16

A number decrease

Solution:

Let the number = Z

∴ Z - ($27\frac{1}{2}\%$ of Z) = 87

⇒ Z - (Z × 55/2 × 1/100) = 87

⇒ Z - (Z × 11/2 × 1/20) = 87

⇒ Z- (11Z/40) = 87

⇒ 29Z/40 = 87

⇒ 29Z/40 = 87

⇒ Z = 87 × 40/29

⇒ Z = 120

Question: 17

Solution:

Percentage = (0.05/20 × 100) %

= (0.05 × 5) %

= 0.25%

Question: 18

One-third of 1206

Solution:

Percentage = {(1/3 × 1206) × (1/134) × 100} %

= {402 × 1/134 × 100} %

= {3 × 100} %

= 300%

Question: 19

x% of y is y% of<

Solution:

Let x% of y is y% of Z

∴ x/100 × y = y/100 × Z

⇒ x y/100 = y/100 × Z

⇒ Z = x y/100 × 100/y

⇒ Z = x

Question: 20

What per cent of<

Solution:

Percentage = {(1/35)/(2/7) × 100} %

= {1/35 × 7/2 × 100} %

= {1/5 × 1/2 × 100} %

= {1/5 × 50} %

= 10%

Exercise : CCE TEST PAPER-9

Question: 1 A

Express:

<

Solution:

24% means, 24 divided by 100.

So, 24% = 24/100

= 6/25

Question: 1 B

Express:

<

Solution:

105% means, 105 divided by 100.

So, 105% = 105/100

= 1.05

Question: 1 C

Express:

<

Solution:

4 : 5 = 4 /5

= (4 /5 x 100) % [Because 100% = 1]

= 80%

Question: 1 D

Express:

<

Solution:

56% means, 56 divided by 100.

So, 56% = 56/100

= 14/25

= 14:25

Question: 2

If 34% of a numbe

Solution:

Let the number = Z

∴ 34% of Z = 85

⇒ 34/100 x Z = 85

⇒ Z = 85 x 100/34

⇒ Z = 5 x 100/2

⇒ Z = 250

Question: 3

The value of a ma

Solution:

Let the value of the machine last year = Z

∴ Present value of the machine = (100 – 10) % of Rs.Z

⇒ 54000 = 90% of Z

⇒ 54000 = Z x 90/100

⇒ Z = 54000 x 100/90

⇒ Z = 600 x 100

⇒ Z = 60000

Question: 4

An alloy contains

Solution:

Given,

Percentage of copper = 30%

Percentage of nickel = 42%

∴ Percentage of zinc = {100 – (30 + 42)} %

= 28 %

Now,

Mass of zinc in 1 kg of the alloy = (28 × 1/100) kg

= 0.28 kg

= 0.28 × 1000 g

= 280 g

Question: 5

In a class, 60% o

Solution:

Let the total number of students = Z

Percentage of girls = (100 – 60) % = 40%

Now,

Number of girls = 40% of Z

⇒ 14 = Z × 40/100

⇒ Z = 14 × 100/40

⇒ Z = 14 × 5/2

⇒ Z = 35

Question: 6

Which is largest

Solution:

= (25 /3) %

= (25 /3 x 1 /100)

= 8.33 /100

= 0.08 _____ (i)

$\frac{4}{25}$ = 0.16 _____ (ii)

0.15 _____ (iii)

From equation (i), (ii) and (iii),

0.16 > 0.15 > 0.08

Question: 7

What per cent of<

Solution:

Percentage = {(1/45)/(2/9) × 100} %

= {1/45 × 9/2 × 100} %

= {1/5 × 1/2 × 100} %

= {1/5 × 50} %

= 10%

Question: 8

A number decrease

Solution:

Let the number = Z

∴ Z – (30% of Z) = 84

⇒ Z – (Z × 30/100) = 84

⇒ Z – 30 Z/100 = 84

⇒ 70 Z/100 = 84

⇒ Z = 84 × 100/70

⇒ Z = 12 × 10

⇒ Z = 120

Question: 9

(?)% of 320 is 48

Solution:

Percentage = (48/320 × 100) %

= (48/32 × 10) %

= (3/2 × 10) %

= 15%

Question: 10

What per cent of

Solution:

Percentage = (54/45 × 100) %

= (54/9 × 20) %

= (6 × 20) %

= 120%

Question: 11

A number exceeds

Solution:

Let the number = Z

∴ 25% of Z + 60 = Z

⇒ (Z × 25/100) + 60 = Z

⇒ Z/4 + 60 = Z

⇒ Z – Z/4 = 60

⇒ 3Z/4 = 60

⇒ Z = 60 × 4/3

⇒ Z = 80

Question: 12

5% of which numbe

Solution:

Let the number = Z

∴ 5% of Z = 12

⇒ Z × 5/100 = 12

⇒ Z = 12 × 100/5

⇒ Z = 12 × 20

⇒ Z = 240

Question: 13

Fill in the blank

Solution:

(i) 90

$7\frac{1}{2}$% of Rs.1200 = (15/2) % of Rs.1200

= 15/2 × 1/100 × 1200

= 15/2 × 12

= 90

∴ Rs.90

(ii) 8

240 mL = (240/1000) L

Now,

Percentage = (240/1000 × 1/3 × 100) %

= (240/10 × 1/3) %

= (80/10) %

= 8%

(iii) 120

X% of 35 = 42

⇒ 35 × X/100 = 42

⇒ 35X/100 = 42

⇒ X = 42 × 100/35

⇒ X = 6 × 100/5

⇒ X = 120

(iv) 240

12/5 = (12/5 × 100) %

= (12 × 20) %

= 240%

(v) 150

Let the number = Z

∴ 120 = Z% of 80

⇒ 120 = 80 × Z/100

⇒ Z = 120 × 100/80

⇒ Z = 120 × 5/4

⇒ Z = 150

Question: 14

Write ‘T&#

Solution:

(i) False

6% of 8 = 8 × 6/100

= 48/100

= 0.48

(ii) False

6:5 = 6/5

= (6/5 × 100) %

= (6 × 20) %

= 120%

(iii) True

3/5 = 3/5

= (3/5 × 100) %

= (3 × 20) %

= 60%

(iv) True

1 day = 24 hours

6 hours = (6/24 × 100) %

= (1/4 × 100) %

= 25%