EXERCISE 8A

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1. Express each of the following as percent:
(i) 3/4
(ii) 2/3
(iii) 0.025
(iv) 0.125
Solution:

(i) 3/4
We can write it as
= 3/4 × 100
So we get
= 75%

(ii) 2/3
We can write it as
= 2/3 × 100
So we get
= 200/3
= 66 2/3 %

(iii) 0.025
We can write it as
= 25/1000 × 100
So we get
= 25/10%
= 2.5%

(iv) 0.125
We can write it as
= 125/1000 × 100
So we get
= 125/10
= 12.5%

2. Express the following percentages as fractions and as decimal numbers:
(i) 7 ½ %
(ii) 2.50 %
(iii) 0.02 %
(iv) 175 %
Solution:

(i) 7 ½ %
We can write it as
= 15/ (2 × 100)
So we get
= 15/200
= 0.075

$$
\begin{array}{r|l}
 & 0.075 \\
\hline
200 & 15.000 \\
 & -\ 1400 \\
\hline
 & 1000 \\
 & -\ 1000 \\
\hline
 & 0 \\
\hline
\end{array}
$$

(ii) 2.50 %
We can write it as
= 250/ (100 × 100)
So we get
= 250/10000
= 0.0250
= 0.025

(iii) 0.02 %
We can write it as
= 0.02/100
So we get
= 2/ (100 × 100)
= 2/10000
By further calculation
= 0.0002

(iv) 175 %
We can write it as
= 175/100
So we get
= 7/4
= 1.75

3. What percent is:
(i) 16 hours of 2 days?
(ii) 40 paisa of ₹ 2?
(iii) 25 cm of 4 metres?
(iv) 600 gm of 5 kg?
Solution:

(i) 16 hours of 2 days
We can write it as
= 16/ (2 × 24)
So we get
= 16/48 × 100%
Here
= 100/3%
= 33 1/3 %

(ii) 40 paisa of ₹ 2
We can write it as

= 40/ (2 × 100)
So we get
= 40/200 × 100%
Here
= 20%

(iii) 25 cm of 4 metres
We can write it as
= 25/ (4 × 100)
So we get
= 1/16 × 100%
Here
= 25/4%
= 6 ¼%

(iv) 600 gm of 5 kg
We can write it as
= 600/ (5 × 1000) × 100%
So we get
= 12%

4. Find the value of:
(i) 5% of ₹ 350
(ii) 10% of ₹ 400.40
(iii) 1% of ₹ 500
(iv) 12 ½ % of 80 kg
(v) 5/8 % of ₹ 600
(vi) 33 1/3 % of 27 m
Solution:

(i) 5% of ₹ 350
We can write it as
= 350 × 5/100
So we get
= 35/2
= ₹ 17.50

(ii) 10% of ₹ 400.40
We can write it as
= 400.40 × 10/100
So we get
= ₹ 40.04

(iii) 1% of ₹ 500
We can write it as
= 500 × 1/100
So we get
= ₹ 5

(iv) 12 ½ % of 80 kg

We can write it as
= 80 × 25/ (2 × 100)
So we get
= 10 kg

(v) 5/8 % of ₹ 600
We can write it as
= 600 × 5/ (8 × 100)
So we get
= ₹ 15/4
= ₹ 3.75

(vi) 33 1/3 % of 27 m
We can write it as
= 27 × 100/ (3 × 100)
So we get
= 9 m

5. In a class of 60 children, 30% are girls. How many boys are there?
Solution:

No. of children = 60
Percentage of girls = 30%
So total number of girls = 30% of 60
We can write it as
= 60 × 30/100
= 18
Number of boys = 60 – 18 = 42

6. In an election, two candidates A and B contested. A got 60% of the votes. The total votes polled were 8000. How many votes did each get?
Solution:

Total votes polled = 8000
A got 60% of the votes
Number of votes A got = 60% of 8000
We can write it as
= 8000 × 60/100
= 4800
Number of votes B got = 8000 – 4800 = 3200

7. A person saves 12% of his salary every month. If his salary is ₹ 2,500, find his expenditure.
Solution:

Salary = ₹ 2,500
Saving in every month salary = 12% of salary
So the total savings = 12% of ₹ 2,500
We can write it as
= 2500 × 12/100
= ₹ 300

Total expenditure = 2500 – 300 = ₹ 2200

8. Seeta got 75% marks out of a total of 800. How many marks did she lose?
Solution:

Total marks = 800
Marks scored by Seeta = 75% of total marks
Total marks scored by Seeta = 75% of 800
We can write it as
= 800 × 75/100
= 600
So the marks lost by Seeta = 800 – 600 = 200

9. A shop worth ₹ 25, 000 was insured for 95% of its value. How much would the owner get in case of any mishappening?
Solution:

Worth of shop = ₹ 25, 000
Amount insured = 95% of its values
We can write it as
= 95% of ₹ 25, 000
So we get
= ₹ 25, 000 × 95/100
= ₹ 23, 750

10. A class has 30 boys and 25 girls. What is the percentage of boys in the class?
Solution:

Number of boys = 30
Number of girls = 25
So the total number of children = 30 + 25 = 55
So the percentage of boys in the class = 30/55 × 100
We get
= 600/11
= 54 6/11 %

11. Express:
(i) 3 2/5 as percent
(ii) 0.0075 as percent
(iii) 3: 20 as percent
(iv) 60 cm as percent of 1 m 25 cm
(v) 9 hours as percent of 4 days.
Solution:

(i) 3 2/5 as percent
We can write it as
3 2/5 = (3 × 5 + 2)/ 5 = 17/5
By converting 17/5 as a percent
= 17/5 × 100
= 340%

(ii) 0.0075 as percent
We can write it as
0.0075 × 100 = 0.75%

(iii) 3: 20 as percent
We can write it as
= 3/20 × 100
So we get
= 15%

(iv) 60 cm as percent of 1 m 25 cm
We can write it as
60 cm as percent of (1 × 100 + 25) cm
We know that 1m = 100 cm
So we get
= 60/125 × 100
By further calculation
= 12 × 4
= 48%

(v) 9 hours as percent of 4 days
We know that 1 day = 24 hours
So 4 days = 4 × 24 = 96 hours
We can write it as
= 9/96 × 100
= 75/8%
= 9 3/8%

12. (i) Find 2% of 2 hours 30 min.
(ii) What percent of 12 kg is 725 gm?
Solution:

(i) 2% of 2 hours 30 min
We know that
1 hour = 60 minutes
So we get
2 hours 30 min = 2 × 60 + 30
= 120 + 30
= 150 min
We can write it as
= 150 × 2/100
So we get
= 30/10
= 3 minutes

(ii) 12 kg is 725 gm
We know that
1 kg = 1000 gm
So we get
12 kg = 12 × 1000 = 12000 gm

We can write it as
= 725/12000 × 100
So we get
= 725/120
= 145/24%
= 6 1/24%

EXERCISE 8B PAGE: 97

1. Deepak bought a basket of mangoes containing 250 mangoes. 12% of these were found to be rotten. Of the remaining, 10% got crushed. How many mangoes were in good condition?
Solution:

Number of mangoes = 250
So the rotten mangoes = 12% of 250
We can write it as
= 250 × 12/100
= 30
Remaining mangoes = 250 – 30 = 220
We know that
Mangoes crushed = 10% of 220
We can write it as
= 220 × 10/100
= 22
So the balance number of mangoes = 220 – 22 = 198

Therefore, 198 mangoes were in good condition.

2. In a Maths Quiz of 60 questions, Chandra got 90% correct answers and Ram got 80% correct answers. How many correct answers did each give? What percent is Ram's correct answers to Chandra's correct answers?
Solution:

Total number of questions = 60
Correct answers of the questions Chandra got = 90% of 60
We can write it as
= (60 × 90)/ 100
= 54

Correct answers of the questions Ram got = 80% of 60
We can write it as
= 60 × 80/100
= 48

Percentage of Ram's correct answers to Chandra's correct answers = 48/54 × 100
So we get
= 800/9 %
= 88 8/9%

3. In an examination, the maximum marks are 900. A student gets 33% of the maximum marks and fails by 45 marks. What is the passing mark? Also, find the pass percentage.
Solution:

Maximum marks in the exam = 900
A student got 33% of the maximum marks = 900 × 33/100 = 297
Number of marks by which he failed = 45
So the pass marks = 297 + 45 = 342

So the percentage of pass marks = (342 × 100)/ 900 = 38%

4. In a train, 15% people travel in first class and 35% travel in second class and the remaining travel in the A.C. class. Calculate the percentage of A.C. class travellers.
Solution:

Consider the number of people as 100
So the number of people in first class = 15
Number of people in second class = 35
So the balance number of people = 100 – (15 + 35) = 100 – 50 = 50
So the percentage of A.C class travellers = 50%

5. A boy eats 25% of the cake and gives away 35% of it to his friends. What percent of the cake is still left with him?
Solution:

Consider total cake = 100
Cake eaten by the boy = 25
Cake given to his friends = 35
So the balance cake = 100 – (25 + 35) = 100 – 60 = 40

Therefore, he has 40% of the cake with him.

6. What is the percentage of vowels in the English alphabet?
Solution:

We know that there are 5 vowels in 26 English alphabets
So the percentage of vowels = (5 × 100)/ 26
We get
= 250/13
= 19 3/13 %

7. (i) 6 ¼ % of what number is 375?
(ii) 0.2% of a number is 5. Find the number.
(iii) 30 is 16 2/3% of a number. Find the number.
Solution:

(i) Consider x as the number
6 ¼ % of x = 375
By further calculation
25/ (4 × 100) of x = 375
So we get
1/16 x = 375
Here
x = (375 × 16)/ 1 = 6000

So the number is 6000.

(ii) Consider x as the number
0.2% of x = 5

By further calculation
2/ (10 × 100) of x = 5
So we get
1/500 of x = 5
Here
x = (5 × 500)/ 1 = 2500

So the number is 2500.

(iii) Consider x as the number
16 2/3% of x = 30
By further calculation
50/ (3 × 100) of x = 30
So we get
1/6 of x = 30
Here
x = 30 × 6 = 180

So the number is 180.

8. The money spent on the repairs of a house was 1% of its value. If the repair costs ₹ 5,000, find the cost of the house.
Solution:

Consider x as the cost of house
So the cost of repairs = 1% of x
We can write it as
1% of x = 5000
So we get
1/100 × x = 5000
By further calculation
x = 5000 × 100/1
x = 5, 00, 000

Therefore, the cost of house is ₹ 5, 00, 000.

9. In a school, out of 300 students, 70% are girls and 30% are boys. If 30 girls leave and no new boy is admitted, what is the new percentage of girls in the school?
Solution:

Number of children in a school = 300
Number of boys = 30% of 300
We can write it as
= 30/100 × 300
= 90
Number of girls = 70% of 300
We can write it as
= 70/100 × 300
= 210
Number of girls left = 30

Number of girls after leaving 30 girls = 210 – 30 = 180
Number of children in the school = 180 + 90 = 270
So the percentage of girls now = 180/270 × 100
We get
= 200/3%
= 66 2/3%

10. Kumar bought a transistor for ₹ 960. He paid 12 ½ % cash money. The rest he agreed to pay in 12 equal monthly installments. How much will he pay each month?
Solution:

Price of transistor Kumar bought = ₹ 960
Amount paid in cash = 12 ½ % of ₹ 960
We can write it as
= 25/ (2 × 100) × 960
= ₹ 120

So the balance amount = 960 – 120 = ₹ 840
Number of installments = 12
So the amount of each installment = 840/12 = ₹ 70

11. An ore contains 20% zinc. How many kg of ore will be required to get 45 kg of zinc?
Solution:

In an ore
Zinc = 20%
Consider x as the quantity of ore
We can write it as
20% of x = 45 kg
So we get
20/100 × x = 45
Here
x/5 = 45
x = 45 × 5 = 225

Hence, the quantity of ore is 225kg.

EXERCISE 8C PAGE: 100

1. The salary of a man is increased from ₹ 600 per month to ₹ 850 per month. Express the increase in salary as percent.
Solution:

Salary of a man = ₹ 600
Increased salary of a man = ₹ 850
So the amount of increase = 850 – 600 = ₹ 250
Here the percentage increase = (250 × 100)/ 600
We get
= 125/3
= 41 2/3%

2. Increase:
(i) 60 by 5%
(ii) 20 by 15%
(iii) 48 by 12 ½ %
(iv) 80 by 140%
(v) 1000 by 3.5%
Solution:

(i) 60 by 5%
It is given that
Rate of increase = 5%
So the total increase = 5% of 60
We can write it as
= 5/100 × 60
= 3
Here the increased number = 60 + 3 = 63

(ii) 20 by 15%
Increase on 20 by 15% = 20 × 15/100 = 3
So the increased number = 20 + 3 = 23

(iii) 48 by 12 ½ %
Increase on 48 by 12 ½ % = 48 × 25/2%
We can write it as
= 48 × 25/ (2 × 100)
By further calculation
= 48 × 1/8
= 6
So the increased number = 48 + 6 = 54

(iv) 80 by 140%
Increase on 80 by 140% = 80 × 140/100 = 112
So the increased number = 80 + 112 = 192

(v) 1000 by 3.5%
Increase on 1000 by 3.5% = 1000 × 3.5/100

We can write it as
= 1000 × 35/ (10 × 100)
= 35
So the increased number = 1000 + 35 = 1035

3. Decrease:
(i) 80 by 20%
(ii) 300 by10%
(iii) 50 by 12.5%
Solution:

(i) 80 by 20%
Decrease on 80 by 20% = 80 × 20/100 = 16
So the decreased number = 80 – 16 = 64

(ii) 300 by10%
Decrease on 300 by 10% = 300 × 10/100 = 30
So the decreased number = 300 – 30 = 270

(iii) 50 by 12.5%
Decrease on 50 by 12.5% = 50 × 12.5/100
We can write it as
= (50 × 125)/ (10 × 100)
= 25/4
= 6.25%
So the decreased number = 50 – 6.25 = 43.75

4. What number:
(i) when increased by 10% becomes 88?
(ii) when increased by 15% becomes 230?
(iii) when decreased by 15% becomes 170?
(iv) when decreased by 40% becomes 480?
(v) when increased by 100% becomes 100?
(vi) when decreased by 50% becomes 50?
Solution:

(i) Consider 100 as the number
So the increase = 10% = 10
Increased number = 100 + 10 = 110
If the increased number is 110 then the original number = 100
If the increased number is 88 then the original number = 100/110 × 88 = 80

(ii) Consider 100 as the number
So the increase = 15% = 15
Increased number = 100 + 15 = 115
If the increased number is 115 then the original number = 100
If the increased number is 230 then the original number = (100 × 230)/ 115 = 200

(iii) Consider 100 as the number
So the decrease = 15% = 15

Decreased number = 100 – 15 = 85
If the decreased number is 85 then the original number = 100
If the decreased number is 170 then the original number = 100/85 × 170 = 200

(iv) Consider 100 as the number
So the decrease = 40% = 40
Decreased number = 100 – 40 = 60
If the decreased number is 60 then the original number = 100
If the decreased number is 480 then the original number = (100 × 480)/ 60 = 800

(v) Consider 100 as the number
So the increase = 100% = 100
Increased number = 100 + 100 = 200
If the increased number is 200 then the original number = 100
If the increased number is 100 then the original number = (100 × 100)/ 200 = 50

(vi) Consider 100 as the number
So the decrease = 50% = 50
Decreased number = 100 – 50 = 50
If the decreased number is 50 then the original number = 100
If the decreased number is 50 then the original number = (100 × 50)/ 50 = 100

5. The price of a car is lowered by 20% to ₹ 40,000. What was the original price? Also, find the reduction in price.
Solution:

Consider ₹ 100 as the original price of the car
The price reduction = 20% = ₹ 20
So the reduced price = 100 – 20 = ₹ 80
If the reduced price of the car is ₹ 80 then the original price = ₹ 100
If the reduced price of the car is ₹ 40,000 then the original price = (100 × 40000)/ 80 = ₹ 50, 000
Reduction = 50000 – 40000 = ₹ 10, 000

6. If the price of an article is increased by 25%, the increase is ₹ 10. Find the new price.
Solution:

Consider ₹ 100 as the price of an article
The price of the article is increased = 25% = ₹ 25
So the increased price = 100 + 25 = ₹ 125
If the increase in the price is ₹ 25 then the new price = ₹ 125
If the increase in the price is ₹ 10 then the new price = (125 × 10)/ 25 = ₹ 50

7. If the price of an article is reduced by 10%, the reduction is ₹ 40. What is the old price?
Solution:

Consider ₹ 100 as the original price of an article
The price is reduced = 10% = ₹ 10
If the reduced price is ₹ 10 then the old price = ₹ 100
If the reduced price is ₹ 40 then the old price = (100 × 40)/ 10 = ₹ 400

8. The price of a chair is reduced by 25%. What is the ratio of:
(i) change in price to the old price.
(ii) old price to the new price.
Solution:

Consider ₹ 100 as the original price of the chair
The price of the chair is reduced = 25% = ₹ 25
So the reduced price = 100 – 25 = ₹ 75

(i) Ratio of change in price to the old price = 25: 100
Dividing by 25
= 1: 4

(ii) Ratio of old price to the new price = 100: 75
Dividing by 25
= 4: 3

9. If x is 20% less than y, find:
(i) x/y
(ii) y – x/ y
(iii) x/ y – x
Solution:

Consider y = 100
Reduction = 20% = 20
x = 100 – 20 = 80

(i) x/ y = 80/ 100
Dividing by 20
= 4/5

(ii) (y – x)/ y = (100 – 80)/ 100
So we get
= 20/100
Dividing by 20
= 1/5

(iii) x/ (y – x) = 80/ (100 – 80)
So we get
= 80/20
Dividing by 20
= 4 /1
= 4

10. If x is 30% more than y; find:
(i) x/y
(ii) y + x/ x
(iii) y/ y – x
Solution:

Consider y = a
We know that
x = a × (100 + 30)/ 30
By further calculation
= a × 130/100
= 13/10 a

(i) x/y = 10/ 13/10 a
We can write it as
= (a × 10)/ 13a
= 10/13

(ii) y + x/ x = (a + 13/10 a)/ 13/10 a
We can write it as
= (10 + 13)a/ (10 × 13/10 a)
By further calculation
= 23a/10 × 10/13a
So we get
= 23/13

(iii) y/ y – x = a/ (a – 13/10 a)
We can write it as
= a/ -3/10 a
So we get
= (a × 10)/ - 3a
= - 10/3

11. The weight of a machine is 40 kg. By mistake, it was weighed as 40.8 kg. Find the error percent.
Solution:

Weight of the machine = 40 kg
Error weight of the machine = 40.8 kg
Error in weight = 40.8 – 40 = 0.8 kg
So the error percent = (0.8 × 100)/ 40
We can write it as
= (8 × 100)/ (10 × 40)
= 2%

12. From a cask, containing 450 litres of petrol, 8% of the petrol was lost by leakage and evaporation. How many litres of petrol were left in the cask?
Solution:

Petrol in the cask = 450 litres
Petrol lost by leakage and evaporation = 8%
So the petrol lost = 8% of 450 litres
We can write it as
= (8 × 450)/ 100
= 36 litres
Petrol left in the cask = 450 – 36 = 414 litres

13. An alloy consists of 13 parts of copper, 7 parts of zinc and 5 parts of nickel. What is the percentage of each metal in the alloy?
Solution:

In an alloy
Copper = 13 parts
Zinc = 7 parts
Nickel = 5 parts
So the total alloy = 13 + 7 + 5 = 25 parts
Percentage of copper = 13/25 × 100 = 52%
Percentage of zinc = 7/25 × 100 = 28%
Percentage of nickel = 5/25 × 100 = 20%

14. In an examination, first division marks are 60%. A student secures 538 marks and misses the first division by 2 marks. Find the total marks of the examination.
Solution:

Marks for first division = 60%
A student gets 530 marks and misses the first division by 2 marks
Marks for first division = 538 + 2 = 540
60% of total marks = 540
We can write it as
60/100 × total marks = 540
So we get
Total marks = (540 × 100)/ 60 = 900

15. Out of 1200 pupils in a school, 900 are boys and the rest are girls. If 20% of the boys and 30% of the girls wear spectacles, find:
(i) how many pupils in all wear spectacles.
(ii) what percent of the total number of pupils wear spectacles.
Solution:

Number of pupils = 1200
Number of boys = 900
Number of girls = 1200 – 900 = 300
Number of boys who wear spectacles = 20% of 900
We can write it as
= 20/100 × 900
= 180
Number of girls who wear spectacles = 30% of 300
We can write it as
= 30/100 × 300
= 90

(i) Number of pupils in all wear spectacles = 180 + 90 = 270

(ii) Percent of the total number of pupils wear spectacles = (270 × 100)/ 1200
So we get
= 270/12
= 22.5%

EXERCISE 8D

PAGE: 101

1. 28% of a number is 84. Find the number.
Solution:

Consider x as the number
28% of x = 84
We can write it as
28/100 × x = 84
By further calculation
28x = 84 × 100
So we get
x = 300

2. Every month, a man spends 72% of his income and saves ₹ 12,600. Find:
(i) his monthly income
(ii) his monthly expenses
Solution:

Consider ₹ x as the total salary of the man
Amount spent by man = 72/100 × x
Amount saved by man = ₹ 12,600

(i) His monthly income
x = 72/100 x + 12600
By further calculation
x = (72x + 1260000)/ 100
So we get
100x – 72x = 1260000
28x = 1260000
Here
x = 1260000/28
x = 45000

(ii) His monthly expenses = 72/100 × 45000
So we get
= 72 × 450
= ₹ 32, 400

3. 1800 boys and 900 girls appeared for an examination. If 42% of the boys and 30% of the girls passed, find
(i) number of boys passed
(ii) number of girls passed
(iii) total number of students passed
(iv) number of students failed
(v) percentage of students failed.
Solution:

(i) Number of boys passed = 42/100 × 1800 = 756

(ii) Number of girls passed = 30/100 × 900 = 270

(iii) Total number of students passed = 756 + 270 = 1026

(iv) Number of students failed = (1800 + 900) – 1026
By further calculation
= 2700 – 1026
= 1674

(v) Percentage of students failed = 1674/2700 × 100 = 62%

4. 6 ¼ % of a weight is 0.25 kg. What is 45% of this weight?
Solution:

Consider x kg as the required weight
6 ¼/100 × x = 0.25
We can write it as
25/4 × 1/100 × x = 25/100
By further calculation
25x = 25 × 4 = 100
x = 100/25 = 4 kg

So 45% of this weight = 45/100 × 4 = 4/5 = 1.8 kg

5. An alloy consists of 13 parts of copper, 7 parts of zinc and 5 parts of nickel. Find the percentage of copper in the alloy.
Solution:

Here the sum of all parts = 13 + 7 + 5 = 25
Percentage of copper = 13/25 × 100 = 52%
Percentage of zinc = 7/25 × 100 = 28%
Percentage of nickel = 5/25 × 100 = 20%

6. An ore contains 15% of iron. How much ore will be required to get 36 kg of iron?
Solution:

Consider x kg as the amount of ore
15/100 × x = 36
We can write it as
15x = 3600
So we get
x = 3600/15 = 240 kg

7. Find the number which when increased by 6% becomes 424.
Solution:

Consider x as the required number
x + (6/100 × x) = 424
By further calculation
x + 3x/50 = 424

By taking LCM
(50x + 3x)/ 50 = 424
So we get
53x = 424 × 50
x = (424 × 50)/ 53
x = 400

8. Find the number which when decreased by 15% becomes 1360.
Solution:

Consider x as the required number
x – (15/100 × x) = 1360
By further calculation
x – 3x/20 = 1360
Taking LCM
(20x – 3x)/ 20 = 1360
So we get
17x = 1360 × 20
x = (1360 × 20)/ 17 = 1600

9. The cost of an article decreased from ₹ 17,000 to 15,980. Find the percentage decrease.
Solution:

Decreased cost of article = 17000 – 15980 = ₹ 1020
So the percentage of decrease = 1020/17000 × 100 = 6%

10. Actual length of a rope is 22.5 m but it is wrongly measured as 21.6 m. Find the percentage error.
Solution:

Error measured = 22.5 – 21.6 = 0.9 m
So the percentage of error = 9/10 × 1/22.5 × 100
We get
= 9/10 × 10/225 × 100
= 4%