Temperature

1. Fill in the blanks.
(a) A thermometer is used for measuring the ... of objects.
(b) The temperature of the body of a patient is measured with a ... thermometer.
(c) Clinical thermometers are marked in ... scale.

2. Give the temperatures of the following in Fahrenheit scale as well as Celsius scale.
(a) Freezing point of water
(b) Boiling point of water
(c) Normal body temperature of human beings

3. Convert the temperatures given below to Celsius scale:
(a) 122°F (b) 77°F (c) 41°F (d) 122.9°F (e) 176°F

4. Convert the temperatures given below to Fahrenheit scale:
(a) 110°C (b) 85°C (c) 25°C (d) 80.5°C (e) 50°C

Averages

Find the average of the following:

1. (a) 10 and 16 (b) 70 g and 76 g
(c) ₹80 and ₹90 (d) 40.5 m and 60.3 m
(e) 34 l and 20 l (f) $3\frac{1}{2}$ and $6\frac{1}{2}$

2. (a) 4, 11 and 12
(b) 100 g, 200 g and 300 g
(c) 45.1 km, 36.5 km, 39.3 km

3. (a) 15, 27, 18 and 40 (b) 5, 0, 6, $\frac{1}{4}$ and $8\frac{3}{4}$
(c) 4, $\frac{7}{10}$, 1.3, 0 and $\frac{1}{2}$
(d) Rs 110, Rs 215, Rs 87 and Rs 28

4. The ages of 5 children are 13, 15, 11, 9 and 8 years respectively. Find their average age.

5. A cricketer scored 20, 10, 120, 0 and 150 respectively in 5 one-day matches. What was his average score?

6. A man's total income in the first six months of a year was ₹ 6000 and in the last six months of the year it was ₹ 7 200. Find his monthly average income forthat year.

Ratio and Proportion

Find each of the following ratios in the simplest form:

1. (a) 24 to 56 (b) 84 paise to ₹ 3
(c) 4 kg to 750 g (d) 1.8 kg to 6 kg
(e) 48 minutes to 1 hour (f) 2.4 km to 900 m

2. (a) 36 : 90 (b) 324 : 144 (c) 85 : 561
(d) 480 : 384 (e) 186 : 403 (f) 777 : 1147

3. (a) ₹ 4 : ₹ 32.16 (b) ₹ 6.30 : ₹ 16.80
(c) 3 weeks : 30 days (d) 3 m 5 cm : 35 cm
(e) 4 kg : 2 kg 500 g (f) 1 L 35 mL : 270 mL
(g) 48 min : 2 hours 40 min

4. Madhavi secured 75 marks while Radha secured 45 marks. What is the ratio of their marks?

5. In a class there are 30 boys and 20 girls. Find the ratio of the number of boys to the number of girls in the class.

6. A building is 20 m high and another is 30 m high. What is the ratio of their heights?

7. Kiran and Shabana have some money. The ratio of their money is 5 : 6. Shabana has Rs 60. How much money does Kiran have?

8. Is the ratio 16 : 24 equal to the ratio 22 : 33?

9. From each of the given pairs, find which ratio is larger:
(a) (3 : 4) or (9 : 16) (b) (5 : 12) or (17 : 30)
(c) (3 : 7) or (4 : 9) (d) (1 : 2) or (13 : 27)

10. Fill in the place holders:
(a) $\frac{24}{40} = \frac{\square}{5} = \frac{12}{\square}$ (b) $\frac{36}{63} = \frac{4}{\square} = \frac{\square}{21}$ (c) $\frac{5}{7} = \frac{\square}{28} = \frac{35}{\square}$

11. Determine if the following numbers are in proportion:
(a) 4, 6, 8, 12 (b) 7, 42, 13, 78
(c) 33, 121, 9, 96 (d) 22, 33, 42, 63
(e) 32, 48, 70, 210 (f) 150, 200, 250, 300

Write (T) for true and (F) for false in case of each of the following:

12. Verify the following:
(a) 60 : 105 :: 84 : 147 (b) 91 : 104 :: 119 : 136
(c) 108 : 72 :: 129 : 86 (d) 39 : 65 :: 141 : 235
(e) 51 : 68 :: 85 : 102 (f) 36 : 45 :: 80 : 100

13. (a) 30 bags : 18 bags :: ₹ 450 : ₹ 270
(b) 81 kg : 45 kg :: 18 men : 10 men
(c) 45 km : 60 km :: 12 h : 15 h
(d) 32 kg : ₹ 36 :: 8 kg : ₹ 9

Find the value of x:

14. (a) 5 : 3 :: x : 6. (b) 2 : 9 :: x : 27
(c) 8 : x :: 16 : 35 (d) x : 35 :: 48 : 60

15. (a) 55 : 11 :: x : 6 (b) 27 : x :: 63 : 84
(c) 51 : 85 :: 57 : x (d) x : 92 :: 87 : 116

16. Determine if the following ratios form a proportion:
(a) 25 cm : 1 m and ₹ 40 : ₹ 160
(b) 39 litres : 65 litres and 6 bottles : 10 bottles
(c) 200 mL : 2.5 L and ₹ 4 : ₹ 50
(d) 2 kg : 80 kg and 25 g : 625 kg

17. Show that the following numbers are in continued proportion:
(a) 48, 60, 75 (b) 36, 90, 225 (c) 16, 84, 441

18. Are the following statements true?
(a) 40 persons : 200 persons = ₹ 15 : ₹ 75
(b) 7.5 litres : 15 litres = 5 kg : 10 kg
(c) 99 kg : 45 kg = ₹ 44 : ₹ 20
(d) 32 m : 64 m = 6 sec : 12 sec
(e) 45 km : 60 km = 12 hours : 15 hours

19. Determine if the following ratios form a proportion. Also, write the middle terms and extreme terms where the ratios form a proportion.
(a) 25 cm : 1 m and ₹ 40 : ₹ 160
(b) 39 litres : 65 litres and 6 bottles : 10 bottles
(c) 2 kg : 80 kg and 25 g : 625 g
(d) 200 mL : 2.5 litre and ₹ 4 : ₹ 50

Unitary Method

1. Fill in the blanks:

For one	For Many
(a) The price of 1 chocolate bar is Rs 8.	The price of 6 chocolate bars is ☐ .
(b) The weight of 1 ball is 300 g.	The weight of 4 balls ☐ is
(c) One can contains 5 l of petrol.	3 cans contain ☐ of petrol.
(d) 1 dress needs 5 m of cloth.	4 such dresses will need ☐ of cloth.
(e) 5 persons can sit in 1 car.	☐ persons can sit in 4 cars.
(f) An aeroplane can go 500 km in 1 hour.	The aeroplane can go ☐ in 3 hours.

2. (a) If the price of a packet of potato chips is Rs 6, what is the price of a dozen packets of potato chips?
(b) If the weight of a tin of oil is 22 kg, what will be the weight of 6 such tins of oil?
(c) A boy runs 250 m in one minute. How far will he run in 5 minutes?
(d) One ubs can carry 75 students. How many students can half a dozen buses carry?
(e) The capacity of an oil tanker is 2460 l. How many litres of oil can be carried by 15 such oil tankers?

3. Fill in the blanks:

For Many	For one
(a) The price of a pair of pineapples is Rs 16.	The price of one pineapples is ☐ .
(b) The weight of 50 equal bricks is 100 kg.	The weight of one brick is ☐ .
(c) Five equal bottles contain 500 ml of perfume.	One bottle contains ☐ of perfume.
(d) 6 equal boxes can hold 600 apples.	One box can hold ☐ apples.

4. (a) The cost of 6 litres of diesel is Rs 48.60. What is the cost of 1 litre of diesel?
(b) The rent of a flat is Rs 24600 per year. What is the monthly rent of the flat?
(c) The cost of 8 g of gold is Rs 3512. What is the cost of 1 g of gold?
(d) A car can go 270 km on 15 litres of petrol. How far can it go on 1 litre of petrol?

5. If 9 pens cost Rs 45.90. What will be the cost of 6 such pens?

6. If a dozen pastnes cost Rs 24.60 then what will be the cost of 20 pastries?

7. One quintal of rice costs Rs 880. What is the cost of 20 kg of rice?

8. The total turton fees collected from 12 girls ofa dass is Rs 2940. How much fees will be collected from a dass of 30 girls?

9. The total weight of 4 equal TVs is 48 kg. What is the weight of 1O such TVs?

10. 6 T-shirts cost Rs 1920. How much money do you need to buy 2 such T-shirts?

11. A 5-day gicket match is played for 30 hours, the duration ofthe play being the same every day. Ifa match stops after 3 days due to rain, find for how many hours the match was played.

12. Aboy runs 930 m in going round a field 3 times. How far wil he run if he goes round the field 1O tmes?

13. A man drinks 21 litres of water in a week. If he drinks the same quantity every day, how much water will he drink in 15 days?

14. 16 metres of cloth costs Rs. 1456. Aman requires 5 metres to make a safari-suit, What will it cost to make two Safari-suits?

Speed, Distance and Time

1. Find the speed in the following cases:
(a) Distance = 90 km, time = 2 hours
(b) Distance = 750 km, time = 15 hours
(c) Distance = 800 m, time = 5 minutes
(d) Distance = 3600 m, time = 24 seconds
(e) Distance = 36 m, time = 27 seconds

2. If the distance covered by atrain is 360 km in 4 hours, find its speed.

3. Find the speed of a bus which covers a distance of 450 km in 10 hours.

4. A student has to reach his school in 15 minutes. If the school is 800 metres away, at what speed should he walk?

5. Sandeep and Tony went to Ganesh's house in their cars. Sandeep covered a distance of 11 km in 10 minutes. Tony covered a distance of 24 km in 20 minutes. Who drove faster?

6. Find the speed of atrain which leaves Secundrabad at 7 p.m. and reaches Bhopal the next dayat 6 a.m. It stops for 1 hour on the way. The distance between Secundrabad and Bhopal is 710 km. Also, find the average speed correct to one place of decimal.

7. A bus left Raipur at 6 a.m. and stopped in between for 30 minutes. It reached Nagpur at 6:30 p.m. on the same day. If the total distance covered by the bus is 300 km, find the speed of the bus.

8. Express the following speeds in metres per second:
(a) 36 km per hour (b) 60 km per hour
(c) 126 km per hour (d) 626 km per hour

9. Express the following speeds in metres per minute:
(a) 54 km/hour (b) 63 km/hour (c) 132 km/hour

10. Express the following speeds in km per hour:
(a) 35 m per second (b) 45 m per second
(c) 420 m per minute (d) 900 m per minute

11. A man can cover $17\frac{1}{2}$ km in 5 hours. Find his

speed in
(a) m/min (b) m/sec.

Percentage

Convert the following to percents:

1. (a) $\frac{8}{25}$ (b) $\frac{27}{50}$ (c) $\frac{16}{25}$ (d) $\frac{2}{5}$ (e) $\frac{47}{100}$ (f) $\frac{9}{20}$
(g) $\frac{3}{8}$ (h) $\frac{8}{125}$ (i) $\frac{19}{500}$ (j) $\frac{4}{15}$ (k) $\frac{2}{3}$ (l) $1\frac{3}{5}$

2. (a) 0.9 (b) 0.08 (c) 0.6 (d) 0.42 (e) 0.07 (f) 0.005

3. (a) 37 : 100 (b) 16 : 25 (c) 3 : 5 (d) 5 : 4

Find:

4. (a) 32% of 425 (b) $1\frac{2}{3}$% of 16 (c) 6.5% of 400
(d) 136% of 70 (e) 2.8% of 35 (f) 0.6% of 45

5. (a) 25% of ₹ 76 (b) 20% of ₹ 132
(c) 7.5% of 600 m (d) $3\frac{1}{3}$% of 90 km
(e) 8.5% of 5 kg (f) 20% of 12 litres

6. Convert each of the following into a fraction:
(a) 32% (b) $6\frac{1}{4}$% (c) $26\frac{2}{3}$% (d) 120%
(e) 6.25% (f) 0.8% (g) 0.06% (h) 22.75%

7. Convert each of the following into decimal form:
(a) 10% (b) 45% (c) 127% (d) 3.6% (e) 0.23%

8. Express each of the following as a ratio:
(a) 43% (b) 36% (c) 7.5% (d) 125%

9. find the value of x if
(a) 8% of ₹ x is ₹ 100 (b) 32% of x kg is 400 kg
(c) 35% of ₹ x is ₹ 280 (d) 12.5% of x is 6
(e) 3% of x is 9 (f) 45% of marks x is 405

10. What percentage is
(a) 65 of 325 (b) ₹ 15 of ₹ 120?
(c) 25 paise of ₹ 4? (d) 8 hours of 2 days?
(e) 160 metres of 4 km? (f) 175 mL of 1 litre?
(g) 36 minutes of 2 hours?

11. In a city, 30% are females, 40% are males and remaining are children. What per cent are children?

12. Out of 15,000 voters in a constituency, 60% voted. Find the percentage of voters who did not vote. Can you now find how many actually did not vote?

13. Meeta saves ₹ 4000 from her salary. If this is 10% of her salary. What is her salary?

14. A local cricket team played 20 matches in one season. It won 25% of them. How many matches did they win?

Profit and Loss

1. Find the profit or loss in each of the following cases:
(a) Cost price = Rs 270, selling price = Rs 300
(b) Cost pnce = ₹ 325, selling pnce = ₹ 275
(c) Selling pnce = Rs 895, cost price = Rs 88
(d) Selling pnce = ₹ 1000, cost pnce = ₹ 1080

2. Find the SP when:
(a) CP = ₹ 950, grain = 6%
(b) CP = ₹ 9600, gain = $16\frac{2}{3}$%
(c) CP = ₹ 1540, loss = 4%
(d) CP = ₹ 8640, loss = $12\frac{1}{2}$%

3. Find the gain or loss per cent when:
(a) CP = ₹ 2400 and SP = ₹ 2592
(b) CP = ₹ 1650 and SP = ₹ 12800
(c) CP = ₹ 12000 and SP = ₹ 12800
(d) CP = ₹ 1800 and SP = ₹ 1611

4. Find the CP when:
(a) SP = ₹ 924, grain = 10%
(b) SP = ₹ 1755, grain = $12\frac{1}{2}$%
(c) SP = ₹ 8510, loss = 8%
(d) SP = ₹ 5600, loss = $6\frac{2}{3}$%

5. Fill in the blanks:
(a) CP = ₹ 780, profit = ₹ 78, SP = ...
(b) CP = Rs 1220, loss = Rs 244, SP = ...
(c) SP = Rs 4325, gain = Rs 432, CP = ...
(d) SP = Rs 13456, loss = Rs 544, CP = ...

6. Fill in the blanks:

	CP	SP	Profit	Loss
(a)	₹ 999	...	₹ 99	×
(b)	Rs 1678	...	×	Rs 167
(c)	...	Rs 4890.50	Rs 480.00	×
(d)	...	₹ 7896.00	×	₹785.75

7. A pen is bought for Rs 7.75 and sold at Rs 6.25. Find the profit or loss.

8. Praveen sold a water filter for Rs 960. He had bought it for Rs 875. Find his profit or loss.

9. A man bought a dozen eggs at ₹ 1.10 per egg. He sold the eggs at ₹ 1.50 per egg. What was his profit?

10. A shopkeeper bought 40 chocolate bars for Rs 5 each. He sold them all and got Rs 235. What profit did he make?

11. A man bought 80 mangoes at Rs 1 each. 10 of them could not be sold as they got rotten. He sold the remaining at Rs 1.50 each. What was his profit or loss?

12. A dishonest milkman bought 20 litres of milk at ₹ 10 per litre. He added 5 litres of water to it and sold the water-mixed milk at ₹ 10 per litre. What was his profit?

13. A businessman bought an almirah for Rs 1800. He spent Rs 50 on transporting it to his shop. He sold it for Rs 2100. What was his profit?

14. A chair was bought for Rs 575. At what pnce should it be sold to gain Rs 57?

15. An article was bought for Rs 800. It was sold at a profit of Rs 160. find the selling pnce.

16. A man bought a bag of cement for Rs 98.75. Due to some reason he sold it at a toss of Rs 5. Find the selling price.

17. Ajay bought a scooter for Rs 22300. He sold it at a loss of Rs 3500. At what price did he sell the scooter?

18. A refrigerator is sold at Rs 10525 at a profit of Rs 925. What was the cost price of the refrigerator?

19. A man earned a profit of Rs 10500 by selling a plot of land for Rs 72000. What was the price at which he bought the plot?

20. By selling an article for Rs 638, there is a loss of Rs 42. What was the cost price of the article?
21. A man bought a car and sold it for Rs 145000 at a loss of Rs 12000. What was the cost price of the car?
22. Radhika bought a dozen pens at the rate of Rs 5.00 per pen. She sold 6 of them for Rs 7.50 each and the rest for Rs 6.75 each. What was the profit or loss?
23. A shopkeeper buys 10 pairs of shoes for Rs 190 each. He makes a profit of Rs 300 by selling all of them. At what pnce did he sell each pair?
24. Sandeep bought 100 bars of soap. He sold them all at the rate of Rs 6.20 each and made a profit of Rs 50. At what rate did he buy them?
25. Raman bought a sewing machine for Rs 2 400. He sold itfor Rs 3000. Calculate his (i) profit and (ii) profit per cent
26. A businessman buys a watch for Rs 1125 and sells itfor Rs 1250. What is his profit per cent?
27. Mohan bought a bed for Rs 9900 and paid Rs 100 for transportation. He sold it for Rs 12000. What was his (i) profit and (ii) profit per cent?
28. A dealer bought a sofa set for Rs 5000 and sold it at Rs 4000. Find his loss per cent.
29. Shalini buys a dress for Rs 1500 and sells it at Rs 1200. Find the (i) loss and (ii) loss per cent.

Simple Interest

Find the simple interest and the amount when:

1. Principal = ₹ 6400, rate = 6% p.a. and time = 2 years.
2. Principal = ₹ 2650, rate = 8% p.a. and time = $2\frac{1}{2}$ years.
3. Principal = ₹ 1500, rate = 12% p.a. and time = 3 years 3 months.
4. Principal = ₹ 9600, rate = $7\frac{1}{2}$% p.a. and time = 5 months.
5. Principal = ₹ 5000, rate = 9% p.a. and time =146 days.

Find the time when:

6. Principal = ₹ 6400, SI = ₹ 1152 and rate = 6% p.a.
7. Principal = ₹ 9540, SI = ₹ 1908 and rate = 8% p.a.
8. Principal = ₹ 5000, amount = ₹ 6450 and rate = 12% p.a.

Find the rate when:

9. Principal = ₹ 8250, SI = ₹ 1100 and time = 2 years.
10. Principal = ₹ 5200, SI = ₹ 975 and time = $2\frac{1}{2}$ years.
11. Principal = ₹ 3 years. amount = ₹ 4521.20 and time = 3 years.
12. Find the amount to be paid at the end of 3 years in each case:
(a) Principal = ₹ 1,200 at 12% p.a.
(b) Principal = ₹ 7,500 at 5% p.a.

Compound Interest

1. Find the amount and the compound interest on ₹ 2500 for 2 years at 10% per annum, compounded annually.
2. Find the amount and the compound interest on ₹ 15625 for 3 years at 12% per annum, compounded annually.

By using the formula, find the amount and compound interest on:

1. ₹ 6000 for 2 years at 9% per annum compounded annually.
2. ₹ 10000 for 2 years at 11% per annum compounded annually.
3. ₹ 31250 for 3 years at 8% per annum compounded annually.
4. ₹ 10240 for 3 years at $12\frac{1}{2}$% per annum compounded annually.
5. ₹ 62500 for 2 years 6 months at 12% per annum compounded annually.
6. ₹ 9000 for 2 years 4 months at 10% per annum compounded annually.

Direct and Inverse Proportions

1. Observe the tables given below and in each one find whether x and y are proportional:

x	**3**	**5**	**8**	**11**	**26**
y	9	15	24	33	78

x	**2.5**	**4**	**7.5**	**10**	**14**
y	10	16	30	40	42

x	**5**	**7**	**9**	**15**	**18**	**25**
15	21	27	60	72	75	

2. If x and y are directly proportional, find the values of x_1,x_2 and y_1, in the table given below:

x	**3**	**x_1**	**x_2**	**10**
y	72	120	192	y_1

3. Observe the tables given below and in each case find whether x and y are inversely proportional:

x	**6**	**10**	**14**	**16**
y	9	15	21	24

x	**5**	**9**	**15**	**3**	**45**
y	18	10	6	30	2

x	**9**	**3**	**6**	**36**
y	4	12	9	1

4. If x and y are inversely proportional, find th e values of x_1, x_2, y_1, and y_2 in the table given below:

x	**8**	**x_1**	**16**	**x_2**	**80**
y	y_1	4	5	2	y_2