CHAPTER

08

MEASUREMENT

Measurement

A measurement is a result usually expressed in numbers, that can be obtain by measuring quantity, length, weight, etc. of an object.

Measures of Articles

12 articles = 1 dozen
12 dozen = 1 gross
1 gross = 144 articles

Measures of Length

10 millimetres (mm) = 1 centimetre (cm)
1 inch = 2.54 centimetre (cm)
10 centimetres = 1 decimetre (dm)
10 decimetres = 1 metre (m)
10 metres = 1 decametre (dam)
10 decametres = 1 hectometre (hm)
10 hectometres = 1 kilometre (km)

Example **1.** Convert 10 inches into centimetre.

(1) 24.4 cm
(2) 23.2 cm
(3) 25.4 cm
(4) 27.7 cm

Sol. **(3)** ∵ 1 inch = 2.54 cm
∴ 10 inch = 2.54 × 10 = 25.4 cm

Example **2.** Convert 6825 m into kilometres and millimetres.

(1) 6.825 km, 6825000 mm
(2) 7.601 km, 2765000 mm
(3) 5.625 km, 135700 mm
(4) 4.625 km, 372140 mm

Sol. **(1)** Arrange the given number of metres in the place value chart as given below

Kilometres	1000	6
Hectometres	100	8
Deca metres	10	2
Metres	1	5
Decimetres	1/10 (0.1)	0
Centimetres	1/100 (0.01)	0
Millimetres	1/1000 (0.001)	0

From the chart it is clear that

$$6825 \text{ m} = \frac{6825}{1000} = 6.825 \text{ km}$$

$$6825 \text{ m} = 6825 \times 1000 = 6825000 \text{ mm}$$

Measures of Weight

10 milligrams (mg) = 1 centigram (cg)
10 centigrams = 1 decigram (dg)
10 decigrams = 1 gram (g)
10 grams = 1 decagram (dag)
10 decagrams = 1 hectogram (hg)
10 hectograms = 1 kilogram (kg)
100 kg = 1 quintal
10 quintals = 1 tonne
1000 kilograms = 1 tonne

Example **3.** Convert 7 quintals into kilograms.

(1) 600 kg (2) 700 kg
(3) 800 kg (4) 750 kg

Sol. **(2)** 1 quintal = 100 kg
∴ 7 quintals = 100 × 7 = 700 kg

Measures of Area

100 sq millimetres = 1 sq cm
100 sq centimetres = 1 sq dm
100 sq decimetres = 1 sq m
100 sq metres = 1 sq dam
100 sq decametres = 1 sq hm
100 sq hectometres = 1 sq km

Example **4.** Convert 10 sq cm into square millimetres.

(1) 900 sq mm (2) 920 sq mm
(3) 100 sq mm (4) 1000 s

Sol. **(4)** 1 sq cm = 100 sq mm
$\therefore$ 10 sq cm = $10 \times 100 = 1000$ sq mm

Measures of Volume

1000 cube cm = 1 litre
10 millilitres = 1 centilitre
10 centilitres = 1 decilitre
10 decilitres = 1 litre
10 litres = 1 decalitre
10 decalitres = 1 hectolitre
10 hectolitres = 1 kilolitre

Example **5.** Convert 5 L into decalitres.

(1) 45 dL (2) 51 dL (3) 50 dL (4) 60 dL

Sol. **(3)** $\because$ 1 L = 10 dL
$\therefore$ 5 L = $5 \times 10 = 50$ dL

Measures of Time

60 seconds = 1 minute
60 minutes = 1 hour
24 hours = 1 day
7 days = 1 week
30 days = 1 month
12 months = 1 year
365 days = 1 year
366 days = 1 leap year

Example **6.** How many days are there in 8 months, 3 weeks?

(1) 165 (2) 240 (3) 261 (4) 321

Sol. **(3)** 8 months $= 8 \times 30 = 240$ days
3 weeks $= 3 \times 7 = 21$ days
$\therefore$ Required days = 261 days

Example **7.** A train started from Dehradun at 5 : 40 in the morning and reached Mumbai next day at 10 : 55. How much time was taken by the train in this journey?

(1) 15 h 16 min (2) 6 h 10 min
(3) 7 h 5 min (4) 17 h 15 min

Sol. **(4)** Time of departure from Dehradun = 5:40
Time of arrival at Mumbai = 10:55 (next day)
Time taken from 5:40 to 12:00 (midnight)
= 6 h 20 min
Time taken from 12 : 00 (midnight) to 10 : 55
= 10 h 55 min
Total time = 6 h 20 min + 10 h 55 min
= 17 h 15 min

Anti Meridian (AM)

The time between 12 midnight and 12 noon is known as Anti Meridian (AM).

Post Meridian (PM)

The time between 12 noon and 12 midnight is known as Post Meridian (PM).

Measurement of Days

A year is a unit of time defined as 365 days. These 365 days are distributed in couple of months and a month is also distributed in 30 days. A group of 7 days refers to a week.

Months	Number of days	Month	Number of days
January	31 days	July	31 days
February	28 days (29 days in leap year)	August	31 days
March	31 days	September	30 days
April	30 days	October	31 days
May	31 days	November	30 days
June	30 days	December	31 days

Unitary Method

In this method, we find the value of one article for reference and then determine the value of group. This method is also known as 'Method of one'.

$$\text{Value of 1 article} = \frac{\text{Value of given number of article}}{\text{Number of articles}}$$

and value of required number of article =
(Value of one article) × (Required number of articles)

Example **8.** If 8 books cost ₹ 680. What will be the cost of such 15 books?

(1) ₹ 1275 (2) ₹ 1350 (3) ₹ 1005 (4) ₹ 905

Sol. **(1)** $\because$ Cost of 8 books = ₹ 680
$\therefore$ Cost of 1 book = $₹ \frac{680}{8}$
$\therefore$ Cost of 15 books = $\frac{680}{8} \times \frac{15}{1} = ₹ 1275$

Work and Time

1. **Work and Person** Directly proportional (more work, more men and conversely more men, more work).
2. **Time and Person** Inversely proportional (more men, less time and conversely more time, less men).
3. **Work and Time** Directly proportional (more work, more time and conversely more time, more work).
   While solving these types of problems the work done is always supposed to be equal to 1.

Example **9.** If the wages of 12 men for 30 days be ₹ 4200, the wages of 18 men for 24 days is

(1) ₹ 5040 (2) ₹ 3200
(3) ₹ 4800 (4) ₹ 6400

Sol. **(1)** Let the required wages = ₹ x

$$\left.\begin{matrix}\text{Men} & 12:18\\ \text{Days} & 30:24\end{matrix}\right\} :: 4200 : x \text{ (Direct proportion)}$$

$$12 \times 30 \times x = 18 \times 24 \times 4200$$

$$\therefore \quad x = \frac{18 \times 24 \times 4200}{12 \times 30}$$

$$= ₹\ 5040$$

$\therefore$ Required wages = ₹ 5040

Entrance Corner

1. 5045 grams is equal to [JNV 2019]
(1) 50 kg 45 gm (2) 5 kg 45 gm
(3) 5 kg 450 gm (4) 50 kg 450 gm

2. 5 minutes past 3, in the afternoon, is written as [JNV 2019]
(1) 5 : 30 am (2) 5 : 30 pm
(3) 3 : 50 pm (4) 3 : 05 pm

3. Four pieces of 75 cm were cut from a piece of 14m 25cm of fabric. Find the length of remaining fabric. [JNV 2018]
(1) 13 m 50 cm (2) 11 m 25 cm
(3) 10 m 50 cm (4) 10 m 25 cm

4. 12 Men or 15 women can do a piece of work in 21 days. Find the number of days required to complete the same work by 6 men and 10 women. [JNV 2018]
(1) 15 (2) 18 (3) 21 (4) 24

5. A bus starts at 9 : 10 am from Delhi and reaches Chandigarh at 4 : 20 pm. The total time in this journey is [JNV 2017, 2009, 2007]
(1) 7 h 10 min (2) rightly 7 h
(3) 6 h 30 min (4) 7 h 20 min

6. A train leaves Delhi at 7 : 40 evening and reaches Mumbai next morning at 11:10. The total time taken by train during the journey is [JNV 2016]
(1) 15 h 26 min (2) 14 h 15 min
(3) 15 h 30 min (4) 16 h 20 min

7. 12 men or 15 women can finish a work in 10 days. How many days will 7 men and 10 women take to finish the same work together? [JNV 2016]
(1) 12 (2) 10
(3) 9 (4) 8

8. A man do a work in 12 days working 8 h/day. If he does 6 h/ day, what would be the number of days taken by him? [JNV 2014]
(1) 12 (2) 14 (3) 16 (4) 18

9. A work done by 12 men or 15 women in 20 days. What is the time taken by 4 men and 5 women to complete this work? [JNV 2013]
(1) 15 days (2) 25 days
(3) 30 days (4) 40 days

10. *A* can do a piece of work in 10 days and *B* can do the same work in 12 days. How long will they take to finish the work, if 60th work together? [JNV 2012]
(1) $5\frac{5}{11}$ days (2) $3\frac{1}{2}$ days
(3) 6 days (4) $4\frac{2}{3}$ days

11. Convert 4 m 2604 cm into centimetres.
(1) 3040 cm (2) 3400 cm [JNV 2011]
(3) 3004 cm (4) 6604 cm

12. How many days are there in 2 months, 5 weeks and 18 days? [JNV 2011]
(1) 113 (2) 115 (3) 116 (4) 114

13. Anita started a horse painting at 11:55 am and finished it at 12:05 pm. What time taken by him to complete the painting? [JNV 2010]
(1) 50 min (2) 1 h 50 min
(3) 10 min (4) 1 h 10 min

14. How many bottles filled 300 mL capacity from a pot which contains 2.85 m^3 oil?
(1) 950 (2) 9050 [JNV 2010]
(3) 9500 (4) 9550

15. The 31st May of a year is Thursday, then the day of the 30th June of the same year will be [JNV 2007]
(1) Sunday (2) Friday
(3) Saturday (4) Thursday

16. Sampurna Kranti Express departures from Patna at 5 : 50 pm and arrives New Delhi at 8:15 am of the next day. What is the total time of the journey? [JNV 2007]
(1) 12 h 25 min (2) 14 h 35 min
(3) 14 h 25 min (4) 12 h 35 min

17. If 1 cm = 10 mm, how much is 10 cu cm? [JNV 2005]
(1) 100 cu mm (2) 1000 cu mm
(3) 10000 cu mm (4) 100000 cu mm

18. At the start of a journey, the meter of a car reads 678.3 km. At the end of the journey, the meter reads 913.5 km. What was the distance covered by the car during the journey? [JNV 2005]
(1) 687.3 km (2) 931.5 km
(3) 1591.8 km (4) 235.2 km

19. A bus left Delhi for Amritsar at 5 : 30 pm and reached Amritsar at 7 : 36 am next day. How much time did it take to reach Amritsar? [JNV 2004, 1994]
(1) 2 h 6 min (2) 14 h 6 min
(3) 13 h 6 min (4) 12 h 6 min

20. 10 m is what per cent of 10 km? [JNV 2003]
(1) 0.1 (2) 1.0 (3) 10.0 (4) 40.0

21. On 1st April of a year, it is Monday. What day will it be on 18th April in the same year? [JNV 2003]
(1) Thursday (2) Friday
(3) Saturday (4) Wednesday

22. A boy slept at 9 : 45 pm and woke up the next morning at 5 : 30 am. He slept for [JNV 2003, 1995]
(1) 4 h 15 min (2) 7 h 15 min
(3) 7 h 45 min (4) 8 h 15 min

23. A bus left Delhi for Dehradun at 10 : 15 am. It took 6 h 30 min in journey. At what time did the bus reach at Dehradun? [JNV 2002, 1996]
(1) 4 : 15 pm (2) 4 : 30 pm
(3) 4 : 45 pm (4) 5 : 00 pm

24. A student went to sleep at 9 : 30 pm and got up at 4 : 15 am. For how much time did the student sleep? [JNV 2001, 1996]
(1) 5 h 45 min (2) 6 h 15 min
(3) 6 h 45 min (4) 7 h 45 min

25. A train leaves New Delhi railway station at 10 : 50 am. It travels at a speed of 80 km/h. The train covers a distance of 120 km by [JNV 2001]
(1) 11 : 50 am (2) 12 : 10 pm
(3) 12 : 20 pm (4) 12 : 50 pm

26. A train leaves Mumbai at 17:20 o'clock on Monday and reaches Hyderabad next day at 11:25 o'clock. What is the total time taken by the train during this journey? [JNV 2000]
(1) 5 h 35 min (2) 5 h 55 min
(3) 18 h 5 min (4) 28 h 45 min

27. A train leaves station *A* at 5:15 pm and reached station *B* next morning at 10:40 am, what is the total time taken by the train in the journey? [JNV 2000]
(1) 5 h 25 min (2) 15 h 55 min
(3) 17 h 25 min (4) 22 h 40 min

28. On a Sunday Ram slept at 9 : 30 pm at night and woke up the next morning at 5 : 50 am. For how many times did he sleep? [JNV 1999]
(1) 8 h 20 min (2) 8 h 10 min
(3) 7 h 40 min (4) 7 h 20 min

29. A train reached its destination at 9:00 pm after completing its 6 h 30 min journey. At what time the train had started its journey? [JNV 1999]
(1) 2 : 30 pm (2) 2 : 30 am
(3) 3 : 30 pm (4) 3 : 30 am

30. A train leaves Mumbai at 5:40 in the evening and reaches New Delhi next morning at 10:55. The total time taken by the train during the journey is [JNV 1998]
(1) 5 h 15 min (2) 6 h 45 min
(3) 17 h 15 min (4) 16 h 35 min

31. A fort had provisions for 1200 men for 20 days. If 400 men joined the fort on the first day, how long would the food last at the same rate? [JNV 1997]
(1) 12 days (2) 13 days
(3) 14 days (4) 15 days

32. 20 books are bought for ₹ 200. How much will 45 books cost? [JNV 1997]
(1) ₹ 250 (2) ₹ 450
(3) ₹ 400 (4) ₹ 350

33. Kumar Manglam's earns ₹ 1500 per month. He spends ₹ 800 on food, ₹ 200 on the house rent and ₹ 200 on the education of his son. Calculate his yearly savings.
(1) ₹ 3600 (2) ₹ 300 **[JNV 1997]**
(3) ₹ 3500 (4) ₹ 1000

34. Amit can do $\frac{1}{2}$ of a piece of work in 8 days, while Utpal can do $\frac{1}{3}$ of the same work in 8 days. In how many days can both do it together? **[JNV 1994]**
(1) 9.6 (2) 10.5
(3) 11.2 (4) 16.0

35. A child went to sleep at 8 : 30 pm and woke up at 7 : 45 am. For how much time did he sleep? **[JNV 1993]**
(1) 11 h 45 min (2) 11 h 15 min
(3) 10 h 10 min (4) 10 h 45 min

Answers

1. (1)	**2.** (4)	**3.** (2)	**4.** (2)	**5.** (1)	**6.** (3)	**7.** (4)	**8.** (3)	**9.** (3)	**10.** (1)
11. (3)	**12.** (1)	**13.** (3)	**14.** (3)	**15.** (3)	**16.** (3)	**17.** (3)	**18.** (4)	**19.** (2)	**20.** (1)
21. (1)	**22.** (3)	**23.** (3)	**24.** (3)	**25.** (3)	**26.** (3)	**27.** (3)	**28.** (1)	**29.** (1)	**30.** (3)
31. (4)	**32.** (2)	**33.** (1)	**34.** (1)	**35.** (2)					

Hints and Solutions

1. 1 kg = 1000 gm
Given, 5045 gm = (5000 + 45) gm
This can be written as 5 × 1000 × 45 gm
i.e. 5 kg 45 gm

2. According to the question,
⇒ 5 min past 3 in the afternoon is written as 3 : 05 pm.

3. Total length of fabric = 14m 25cm
= 1400 + 25 = 1425cm
Length of 4 pieces of 75cm = 75 × 4 = 300cm
Remaining length = 1425 cm − 300cm
= 1125cm = 11m 25cm

4. 12 men = 15 women
1 man = $\frac{15}{12}$ women
1 man = $\frac{5}{4}$ women
∴ 6 men + 10 women
$= \left(6 \times \frac{5}{4} + 10\right) = \left(\frac{15}{2} + 10\right) = \frac{35}{2}$ women
∴ $M_1 = 15,\ D_1 = 21,\ M_2 = \frac{35}{2},\ D_2 = ?$
$W_1 = W_2 = 1$
Therefore by using formula
$M_1D_1W_2 = M_2D_2W_1$
$15 \times 21 \times 1 = \frac{35}{2} \times D_2 \times 1$
$D_2 = \frac{15 \times 21 \times 2}{35} = 18$ days

5. Time of start from Delhi = 9 : 10 am
Reaching time at Chandigarh = 4 : 20 pm
Time from 9 : 10 to 12 : 00 = 2 h 50 min
From 12 : 00 to 4 : 20 = 4 h 20 min
Total time taken = 7 h 10 min

6. Time of departure from Dehli = 7 : 40 evening
Time arrival at Mumbai = 11 : 40 (Next morning)
∴ Total time = 7 : 40 evening to 12 : 00 am
+ 12 : 00 am + 11 : 10 am
= 4 h 20 min + 11 h 10 min = 15 h 30 min

7. Since, 12 males = 15 females,
4 males = 5 females
10 females = 8 males
Now, according to the question,
Work done by 12 males = 10 Days
Work done by 1 males = 120 Days
So, work done by (7 + 8) males
$= \frac{120}{7+8} = \frac{120}{15} = 8$ Days

8. Here, $H_1 = 8,\ D_1 = 12,\ M_1 = 1,\ W_1 = 1,$
$H_2 = 6,\ D_2 = ?,\ M_2 = 1,\ W_2 = 1$
Now, $\frac{M_1D_1H_1}{W_1} = \frac{M_2D_2H_2}{W_2}$
∴ $D_2 = \frac{96}{6}$
= 16 days

9. ∵ 12 men = 15 women

$\therefore$ 1 Man $= \frac{15}{12}$ Women

$\therefore$ 4 Men $= \frac{15}{12} \times 4 = 5$ Women

Women		Days
15	↑	20 ↓
10		x

$\Rightarrow \quad \frac{x}{20} = \frac{15}{10}$

$\Rightarrow \quad x = \frac{20 \times 15}{10}$

$\therefore \quad x = 30$ days

10. A's 1 day's work $= \frac{1}{10}$

B's 1 day's work $= \frac{1}{12}$

$(A + B)$'s 1 day's work $= \frac{1}{10} + \frac{1}{12}$

$= \frac{6+5}{60} = \frac{11}{60}$

$\therefore (A + B)$ complete the whole work in $\frac{60}{11}$ days

or $5\frac{5}{11}$ days.

11. ∵ 1 m = 100 cm, 4 m = 400 cm

Now, 400 cm + 2604 cm = 3004 cm

12. 2 months, 5 weeks and 18 days

$= (2 \times 30 + 5 \times 7 + 18)$

$= 60 + 35 + 18 = 113$ days

13. Required time = 12:05 − 11:55 = 10 min

14. Required bottles $= \frac{2.85 \times 100 \times 100 \times 100}{300}$

$= \frac{285 \times 100}{3}$

$= 9500$

15. 31st May to 30th June = 30 days

$\therefore$ In 30 days, divided by 7, remainder is 2.

$\therefore$ Required day = Thursday + 2 = Saturday

16. Time taken in the journey

= 8 : 15 am of the next day − 5 : 50 pm

= 20 : 15 − 5 : 50 = 14 : 25

= 14 h 25 min

17. 1 cm = 10 mm

1 cu cm = 10 × 10 × 10 cu mm

10 cu cm = 10 × 10 × 10 × 10 = 10000 cu mm

18. Distance covered by car = 9135 − 6783

= 2352 km

19. ∵ Bus left from Delhi = 5 : 30 pm

Reached Amritsor = 7 : 36 am

Time from 5 : 30 pm to 12 : 00 pm (midnight)

= 12 : 00 − 5 : 30 = 6 h 30 min

Time from 12 : 00 to 7 : 36 am = 7 h 36 min

$\therefore$ Total time = 6 h 30 min + 7 h 36 min

= 14 h 6 min

20. ∵ 10 km = 10 × 1000 m = 10000 m

Let x% of 10 km = 10 m

$\therefore \quad \frac{x}{100} \times 10000 \text{ m} = 10 \text{ m}$

$x = \frac{10 \times 100}{10000} = \frac{1}{10} = 0.1\%$

21. ∵ Monday is on 1st April.

Monday will be on 8th April and 15th April.

$\therefore$ On 16th April it is Tuesday.

On 17th April it is Wednesday and 18th April it will be Thursday.

22. The boy slept at = 4 : 45 pm

The boy woke up at = 5 : 30 am (next morning)

Time taken in sleeping from 9 : 45 to 12 : 00 (midnight)

= 2 h 15 min

Time taken in sleeping from 12 : 00 to 5 : 30

= 5 h 30 min

Total time he slept = 2 h 15 min + 5 h 30 min

= 7 h 45 min

23. Departure of bus from Delhi = 10 : 15 am

Time taken in the journey = 6 h 30 min

$\therefore$ Arrival of bus at Dehradun = 10 : 15 + 6 : 30

= 16 : 45 = 4 : 45 pm

24. The student went to sleep at = 9 : 30 pm

The student got up at = 4 : 15 am

Time from 9 : 30 to 12 : 00 (midnight)

= 2 h 30 min

Time from 12 : 00 to 4 : 15 = 4 h 15 min

Total time = 6 h 45 min

$\therefore$ The student sleep for 6 h 45 min.

25. ∵ Time $= \frac{\text{Distance}}{\text{Speed}} = \frac{120}{80} = \frac{3}{2}$ h or 1 h 30 min

The train will cover the distance by

= 10 : 50 am + 1 h 30 min = 12 : 20 pm

26. Time of departure—Monday 17 : 20 pm

Time of arrival—Tuesday 11 : 25 am

Time taken in the journey from

17 : 20 to 24 : 00 = 6 h 40 min (on Monday)

From 24 : 00 to 11 : 25
$= +11$ h 25 min (on Tuesday)
$\therefore$ Total time $= 6$ h 40 min + 11 h 25 min
$= 18$ h 05 min

27. Time of departure from station *A*, 5 : 15 pm
Time of arrival at station *B*, 10 : 40 am (Next day)
Time taken in the journey from
5 : 15 to 12 : 00 $= 6$ h 45 min
Next day from 12 : 00 to 10 : 40
$= +10$ h 40 min
$\therefore$ Total time $= 17$ h 25 min

28. Ram slept on Sunday at 9 : 30 pm.
He woke up on Monday at 5 : 50 am.
Time from 9 : 30 to 12:00 $= 2$ h 30 min
Time (Next day) $= 12:00$ to 5 : 50 $= 5$ h 50 min
$\therefore$ Total time $= 8$ h 20 min

29. The train reached destination at 9:00 pm.
Time taken during the journey $= 6$ h 30 min
$\therefore$ The time of departure $= (9:00 - 6:30)$
$= 2:30$ pm

30. Time of departure from Mumbai
$= 5:40$ in the evening
Time of arrival at New Delhi
$= 10:55$ (Next morning)
Total time $= 5:40$ evening to 5 : 40 next morning $= 12$ h
Next morning 5 : 40 to 10 : 55 $= 5$ h 15 min
$\therefore$ Total time $= 17$ h 15 min

31. $1200 + 400 = 1600$
$\because$ 1200 men can eat the food in 20 days.
$\therefore$ 1 man can eat the food in 20×1200 days.
$\therefore 1600$ men can eat the food $= \dfrac{20 \times 1200}{1600}$
$= 15$ days

32. 20 books are bought for ₹ 200.
$\therefore$ 1 book is bought for ₹ $\dfrac{200}{20}$.
$\therefore 45$ books are bought for $\dfrac{200}{20} \times 45 =$ ₹ 450

33. Kumar Manglam's earning $=$ ₹ 1500
Total spends $= 800 + 200 + 200 =$ ₹ 1200
Monthly savings $= 1500 - 1200 =$ ₹ 300
Yearly savings $= 300 \times 12 =$ ₹ 3600

34. Amit alone can do the whole work in
$8 \times 2 = 16$ days
$\therefore$ Work done by Amit in 1 day $= \dfrac{1}{16}$
Utpal alone can do the whole work in
$8 \times 3 = 24$ days
$\therefore$ Work done by Utpal in 1 day $= \dfrac{1}{24}$
Work done by Amit and Utpal in 1 day
$= \dfrac{1}{16} + \dfrac{1}{24} = \dfrac{5}{48}$
$\therefore$ Amit and Utpal will finish the work in
$\dfrac{48}{5} = 9.6$ days.

35. Time from 8 : 30 pm to 12 : 00 $= 3$ h 30 min
Time from 12 : 00 to 7 : 45 am $= 7$ h 45 min
$\therefore$ Total time $= 3$ h 30 min + 7 h 45 min
$= 10$ h 75 min
$= 11$ h 15 min

Practice Exercise

1. What is the weight of 1 cu cm of a metal in gram if weight of 1 cu m of the same metal is 4060 kg?
(1) 406 g (2) 40.6 g (3) 4.06 g (4) 0.406 g

2. Value of 225 h in days.
(1) $8\frac{9}{24}$ (2) 9 (3) $9\frac{3}{8}$ (4) $9\frac{5}{24}$

3. Convert ₹ 25 into paise.
(1) 2450 paise (2) 2300 paise
(3) 2500 paise (4) 2400 paise

4. What is the value of ₹ 50.75 into paise?
(1) 5575 paise (2) 5750 paise
(3) 5075 paise (4) 5800 paise

5. 70 paise is equivalent to
(1) ₹ 0.70 (2) ₹ 0.90
(3) ₹ 0.07 (4) None of these

6. What time is 4 h 59 min before 2:58 pm?
(1) 9 : 59 am (2) 10: 01 am
(3) 9 : 59 pm (4) 9 : 57 am

7. 500 cm + 50 m + 5 km is equal to
(1) 500 m (2) 555 m (3) 5055 m (4) 55 m

8. Convert 6.5 quintals into kilograms.
(1) 65 kg (2) 6500 kg
(3) 650 kg (4) 65000 kg

9. A car travelled for 5 h 20 min. It reached its destination at 7 : 00 pm. When did the car start its journey?
(1) 1:40 pm (2) 1:40 am
(3) 12:20 am (4) 10:20 am

10. Convert 16 kg 9 hg and 90 g into grams
(1) 160990 g (2) 16909 g
(3) 16990 g (4) 16099 g

11. How will be shown 4h 3 min in the afternoon?
(1) 4:03 am (2) 4:03 pm (3) 4:03 am (4) 4:30 pm

12. A train was 1 h 45 min late by its time. It reached at a station at 12:30. What was its exact time of arrival at that station?
(1) 11:15 (2) 10:45
(3) 12:15 (4) 2:15

13. A school started at 7:40 in the morning and closed at 1:30 in the noon. For how long did the school open?
(1) 4 h 50 min (2) 6 h 50 min
(3) 6 h (4) 5 h 50 min

14. How many articles are there in 15 gross, 8 dozen and 10 units?
(1) 2256 (2) 2266
(3) 2276 (4) 2286

15. A girl slept at 8:45 pm and woke up the next morning at 6:30 am. She slept for
(1) 9 h 15 min (2) 2 h 15 min
(3) 9 h 45 min (4) 8 h 45 min

16. How many days are there in 6 months, 7 weeks and 16 days?
(1) 255 (2) 257 (3) 235 (4) 245

17. A bus left Meerut for Lucknow at 7:45 pm and reached there at 7:15 am next day. How much time was taken by the bus in this journey?
(1) 11 h 30 min (2) 10 h 15 min
(3) 11 h 45 min (4) 12 h

18. The cost of 7 rings and 6 bangles is ₹ 148600. What is the cost of 21 rings and 18 bangles?
(1) ₹ 325400
(2) ₹ 297200
(3) ₹ 445800
(4) Cannot be determined

19. 20 persons can make 15 toys in 12h. How many toys can 10 persons make in 8 h?
(1) 20 (2) 15 (3) 5 (4) 2

20. 28 men can complete a piece of work in 21 days. How many more men must be hired to complete the work in 14 days?
(1) 18 (2) 10 (3) 8 (4) 14

21. A canteen requires 28 dozen bananas for a week. How many dozen bananas will it require for 47 days?
(1) 2256 (2) 322
(3) 196 (4) 2352

Answers

1. (3)	**2.** (3)	**3.** (3)	**4.** (3)	**5.** (1)	**6.** (1)	**7.** (3)	**8.** (3)	**9.** (1)	**10.** (3)
11. (2)	**12.** (2)	**13.** (4)	**14.** (2)	**15.** (3)	**16.** (4)	**17.** (1)	**18.** (3)	**19.** (3)	**20.** (4)
21. (1)									

Hints and Solutions

1. We know that,

$$1 \text{ cu m} = 1000000 \text{ cu cm}$$

$\because$ Weight of 1 cu m

= Weight of 1000000 cu cm

$= 4060 \text{ kg} = 4060 \times 1000 \text{ g}$

$\therefore$ Weight of 1 cu cm $= \frac{4060 \times 1000}{1000000} = 4.06 \text{ g}$

2. $\because$ 24 h = 1 day

$\therefore \quad 1 \text{ h} = \frac{1}{24}$ day

$\therefore \quad 225 \text{ h} = \frac{225}{24} = 9\frac{9}{24} = 9\frac{3}{8}$ days

3. ₹ 25 = 258 × 100 paise = 2500 paise

4. ₹ 50 + 75 paise = (50 × 100 + 75) p

= 5000 + 75 = 5075 paise

5. 70 paise = ₹ $\frac{70}{100}$ = ₹ 0.70

6. Required time = 2: 58 pm − 4 h 59 min

= 14 : 58 − 4 : 59 = 9 : 59 am

7. 500 cm + 50 m + 5 km

= 5 m + 50 m + 5000 m = 5055 m

8. 1 quintal = 100 kg

$\therefore$ 6.5 quintals = 6.5 × 100 = 650 kg

9. Car start its journey = 7:00 pm − 5 h 20 min

= 1:40 pm

10. $\because$ 1 kg = 1000 g

$\therefore$ 16 kg = 16 × 1000 = 16000 g

9 hg = 9 × 100 g = 900 g

Now, 16 kg + 9 hg + 90 g

= 16000 g + 900 g + 90 g = 16990 g

11. $\therefore$ Required answer = 4 :03 pm

12. Exact time of arrival = 12 : 30 − 1 h 45 min

= 10:45

13. Closing time = 1:30 pm or 13 h 30 min

Starting time = 7 :40 am or 7 h 40 min

$\therefore$ The school opened for

= 13h 30 min − 7 h 40 min

= 5 h 50 min

14. 15 gross = 15 × 144 articles

= 2160 articles

8 dozen = 8 × 12 = 96 articles

10 units or articles = 10 × 1 = 10 articles

$\therefore$ Total articles = 2160 + 96 + 10 = 2266 articles

15. Time from 8:45 pm to 12:00 = 3 h 15 min

Time from 12:00 to 6:30 am = 6 h 30 min

$\therefore$ Total time = 3 h 15 min + 6 h 30 min

= 9 h 45 min

16. 6 months = 6 × 30 = 180 days

7 weeks = 7 × 7 = 49 days

$\therefore$ Total days = 180 + 49 + 16 = 245

17. Time from 7:45 pm to 12:00

= 4 h 15 min

Time from 12:00 to 7:15 am

= 7 h 15 min

$\therefore$ Total time = 4 h 15 min + 7 h 15 min

= 11 h 30 min

18. Cost of 7 rings and 6 bangles = ₹ 148600

$\therefore$ Cost of 21 rings and 18 bangles = 3 × 148600

= ₹ 445800

19. 20 persons can make in 12 h = 15 toys

$\therefore$ 20 persons can make in 1 h = $\frac{15}{12}$ toys

$\therefore$ 1 person can make in 1 h = $\frac{15}{12 \times 20}$ toys

$\therefore$ 10 persons can make in 8h

$= \frac{15 \times 10 \times 8}{12 \times 20} = 5$ toys

20. In 21 days, the work is completed by 28 men.

$\therefore$ In 1 day, the work is completed by

= 28 × 21 men

$\therefore$ In 14 days, the work is completed by

$= \frac{28 \times 21}{14} = 42$ men

$\therefore$ (42 − 28) = 14 more men must be hired.

21. A canteen required for 7 days = 28 × 12 bananas

$\therefore$ The canteen requires for 1 day

$= \frac{28 \times 12}{7}$ bananas

$\therefore$ The canteen requires for 47 days

$= \frac{28 \times 12}{7} \times 47$

= 2256 bananas

Self Practice

1. 1000 cm is equivalent of
(1) 100 m (2) 10 m (3) 110 m (4) 1 m

2. On a certain day, the Sun rises at 6:15 am and sets at 6:52 pm. What is the length of the day?
(1) 12 h (2) 12 h 17 min (3) 12 h 27 min (4) 12 h 37 min

3. A girl goes to sleep at 9:15 pm and gets up 6:10 next morning. For how much time she slept?
(1) 7 h 45 min (2) 8 h 45 min (3) 8 h 55 min (4) 9 h 15 min

4. How many days are there in 2 months, 5 weeks and 18 days?
(1) 113 days (2) 115 days (3) 116 days (4) 114 days

5. A train started from Howrah at 5:40 in the evening and reached Delhi next day at 9:55. For how much time was taken by the train in this journey?
(1) 17 h 15 min (2) 16 h 15 min (3) 15 h 15 min (4) 18 h 15 min

6. 182 cg can be expressed into milligram as
(1) 1820 mg (2) 182 mg (3) 18200 mg (4) 182000 mg

7. How many seconds are there in 3 min and 25 s?
(1) 28 (2) 325 (3) 205 (4) 175

8. An aeroplane takes off Delhi at 6:50 am and lands Mumbai airport at 9:30 am. For how much time it takes to reach Mumbai?
(1) 2 h 30 min (2) 2 h (3) 3 h (4) 2 h 40 min

9. A boy started for his school by a cycle at 7:30 am from his house and he returned at 3:50 pm from his school. For how much time he has been out from his house?
(1) 7 h 20 min (2) 8 h 20 min (3) 9 h 20 min (4) 7 h 30 min

10. Convert 100 cm^2 into metre square.
(1) 0.1 m^2 (2) 0.01 m^2 (3) 1 m^2 (4) 10 m^2

11. Convert 5000 paise into rupees.
(1) ₹ 500 (2) ₹ 5 (3) ₹ 50 (4) ₹ 0.5

Answers

1. (2)	**2.** (4)	**3.** (3)	**4.** (1)	**5.** (2)	**6.** (1)	**7.** (3)	**8.** (4)	**9.** (2)	**10.** (2)
11. (3)									