

Length, Weight, Capacity, Time and Temperature

Learning objectives

5.1 Length

5.3 Capacity

5.5 Temperature

5.2 Weight

5.4 Time

5.1 LENGTH

Length is the measure of distance between two points.

Different devices are used to measure different lengths. For longer lengths, we use measuring tapes and for shorter lengths we use scales.

Units of Measuring Length

The most common units of length are kilometre (km), metre (m) and centimetre (cm).

Note :

- Centimetre (cm) is used to measure small lengths such as length of a book, length of the finger, etc.
- Metre (m) and kilometre (km) are used to measure large lengths.

For example: The length of the door is measured in metre (m) while the distance between two places is measured in kilometre (km).



Olympiad Bite

Kilometre is the largest unit of measuring length.

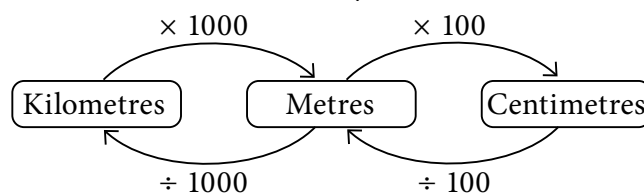
Conversion of Units

Rule-1 : To convert km into m, multiply the number by 1000.

Rule-2 : To convert m into km, divide the number by 1000.

Rule-3 : To convert m into cm, multiply the number by 100.

Rule-4 : To convert cm into m, divide the number by 100.



For example :

1. Convert 7 m into cm.

$$1 \text{ m} = 100 \text{ cm}$$

$$\therefore 7 \text{ m} = 7 \times 100 \text{ cm} = 700 \text{ cm}$$

2. Convert 900 cm into m.

$$100 \text{ cm} = 1 \text{ m}$$

$$\therefore 900 \text{ cm} = 900 \div 100 \text{ m} = 9 \text{ m}$$



Olympiad Bite

- To convert the larger unit into smaller unit, we **multiply**.
- To convert the smaller unit into larger unit, we **divide**.

3. Convert 7 m 15 cm into cm.

$$\begin{aligned}7 \text{ m } 15 \text{ cm} &= 7 \text{ m} + 15 \text{ cm} \\ &= 700 \text{ cm} + 15 \text{ cm} = 715 \text{ cm}\end{aligned}$$

5. Convert 3000 m into km.

$$\begin{aligned}1000 \text{ m} &= 1 \text{ km} \\ \therefore 3000 \text{ m} &= 3000 \div 1000 \text{ km} = 3 \text{ km}\end{aligned}$$

4. Convert 5 km into m.

$$\begin{aligned}1 \text{ km} &= 1000 \text{ m} \\ \therefore 5 \text{ km} &= 5 \times 1000 \text{ m} = 5000 \text{ m}\end{aligned}$$

6. Convert 4625 m into km and m.

$$\begin{aligned}4625 \text{ m} &= (4000 + 625) \text{ m} = 4000 \text{ m} + 625 \text{ m} \\ &= 4 \text{ km} + 625 \text{ m} = 4 \text{ km } 625 \text{ m}\end{aligned}$$

Addition and Subtraction of Lengths

We can add or subtract measures of lengths as we add or subtract ordinary numbers.

For example : 1. Add 215 m 75 cm and 125 m 15 cm.

	m	cm
	①	①
	215	75
+	125	15
	-----	-----
	340	90

2. Subtract 15 km 242 m from 28 km 354 m.

	km	m
	28	354
-	15	242
	-----	-----
	13	112

3. Add 46 km 392 m and 82 km 735 m.

	km	m
	①	①
	46	392
+	82	735
	-----	-----
	129	127

5.2 WEIGHT

Weight means how heavy someone or something is.

Different kinds of devices are used to weigh different things. For example, a beam balance, a weighing machine, a spring balance, etc.

Units of Measuring Weight

The most common units of weight are kilogram (kg) and gram (g).

Note :

- Gram (g) is used to measure the weight of lighter things.
- Kilogram (kg) is used to measure the weight of heavy things.

For example :



A ketchup bottle weighs about 600 g



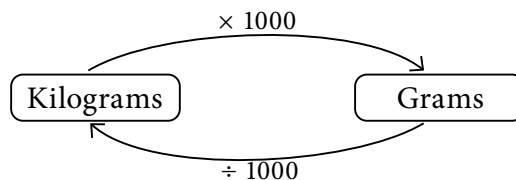
A packet of rice weighs about 5 kg

Conversion of Units

Rule-1 : To convert kg into g, multiply the number by 1000.

Rule-2 : To convert g into kg, divide the number by 1000.

For example :



1. Convert 5 kg into g.

$$1 \text{ kg} = 1000 \text{ g}$$

$$\therefore 5 \text{ kg} = 5 \times 1000 \text{ g} = 5000 \text{ g}$$

2. Convert 8000 g into kg.

$$1000 \text{ g} = 1 \text{ kg}$$

$$\therefore 8000 \text{ g} = 8000 \div 1000 \text{ kg} = 8 \text{ kg}$$

3. Convert 9618 g into kg and g.

$$9618 \text{ g} = (9000 + 618)\text{g} = 9000 \text{ g} + 618 \text{ g}$$

$$= 9 \text{ kg} + 618 \text{ g} = 9 \text{ kg } 618 \text{ g}$$

4. Convert 6 kg 112 g into g.

$$6 \text{ kg } 112 \text{ g} = 6 \text{ kg} + 112 \text{ g}$$

$$= 6000 \text{ g} + 112 \text{ g} = 6112 \text{ g}$$

Addition and Subtraction of Weights

We can add or subtract measures of weights as we add or subtract ordinary numbers.

For example : 1. Add 13 kg 245 g and 18 kg 540 g

	kg	g
①	13	245
+	18	540
	31	785

2. Subtract 10 kg 135 g from 14 kg 240 g

	kg	g
	14	240
-	10	135
	4	105

SELF TEST - 1

1. Find the value of X.

(A) 4

(B) 5

(C) 3

(D) 2

	m	cm
	9	53
	24	82
+	11	07
	4X	42

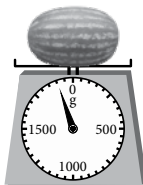
2. What is the weight of 2 such watermelons?

(A) 3 kg 700 g

(B) 3 kg 800 g

(C) 2 kg 700 g

(D) 3 kg 950 g



3. Subtract 15 km 142 m from 80 km 150 m.

(A) 65 km

(B) 55 km 280 m

(C) 65008 m

(D) 65 km 80 m

4. The length of pair of scissors is _____ cm longer than pen.

$$1 \text{ pen} = 1 \text{ cm}$$



(A) 2

(B) 3

(C) 5

(D) 4

5. A contractor uses 52 kg 460 g of cement and sand to build a wall. If he uses 15 kg 420 g of sand, then how much cement does he use?

(A) 36 kg

(B) 37 kg 40 g

(C) 37 kg 400 g

(D) 25 kg 180 g

5.3 CAPACITY

The quantity of liquid a container can hold is called its capacity.

Units of Measuring Capacity

The standard units of measuring capacity are litres (L) and millilitres (mL).

Note :

- Litre (L) is used to measure larger quantity.
- Millilitre (ml) is used to measure smaller quantity.

For example :



Water in bucket is measured in L.

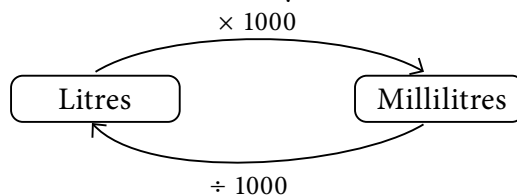


Water in cup is measured in mL.

Conversion of Units

Rule-1 : To convert L into mL, multiply the number by 1000.

Rule-2 : To convert mL into L, divide the number by 1000.



For example :

- Convert 5000 mL into L.
 $1000 \text{ mL} = 1 \text{ L}$
 $\therefore 5000 \text{ mL} = 5000 \div 1000 \text{ L} = 5 \text{ L}$
- Convert 3 L into mL.
 $1 \text{ L} = 1000 \text{ mL}$
 $\therefore 3 \text{ L} = 3 \times 1000 \text{ mL} = 3000 \text{ mL}$
- Convert 6 L 213 mL into mL.
 $6 \text{ L } 213 \text{ mL} = 6 \text{ L} + 213 \text{ mL}$
 $= 6000 \text{ mL} + 213 \text{ mL} = 6213 \text{ mL}$
- Convert 8346 mL into L and mL.
 $8346 \text{ mL} = (8000 + 346) \text{ mL}$
 $= 8000 \text{ mL} + 346 \text{ mL}$
 $= 8 \text{ L} + 346 \text{ mL} = 8 \text{ L } 346 \text{ mL}$

Addition and Subtraction of Capacity

We can add or subtract measures of capacity as we add or subtract ordinary numbers.

For example : 1. Add 15 L 965 mL and 12 L 320 mL.

	L	mL
	①	
	15	965
+	12	320
	-----	-----
	28	285
	-----	-----

2. Subtract 8 L 210 mL from 17 L 329 mL

$$\begin{array}{r}
 \text{L} \quad \text{mL} \\
 17 \quad 329 \\
 - 8 \quad 210 \\
 \hline
 9 \quad 119
 \end{array}$$

5.4 TIME

Clock Face

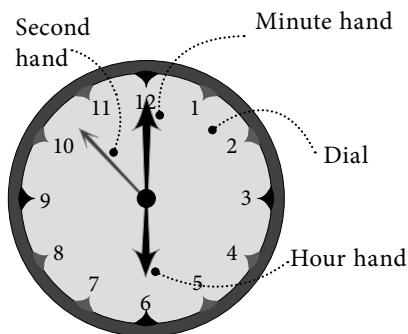
Clock face is the part of a clock that displays the time.

Minute hand

Minute hand is the longer hand of the clock and moves round the dial completely once in an hour. It takes 5 minutes to go from one number to the next. Therefore, we need to multiply the number where the minute hand is by 5 to get the minutes. A minute hand completes 24 rounds in a day.

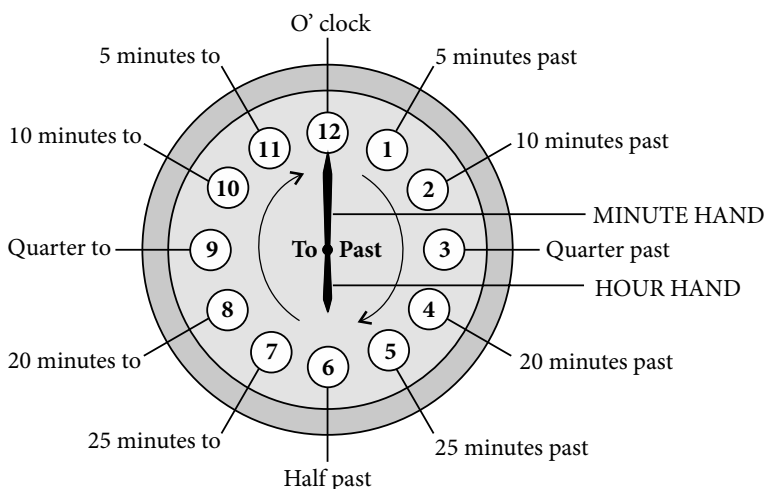
Hour hand

Hour hand is the smaller hand of the clock and moves from one number to the next in 1 hour. Thus, hour hand moves round the clock in 12 hours.



One hour	Half of an hour	Quarter of an hour
60 minutes	30 minutes	15 minutes

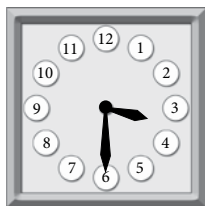
Rules for telling time



In the given clock minute hand is at 12 and the hour hand is at 6, so the time is 6 O' clock or 6 : 00.

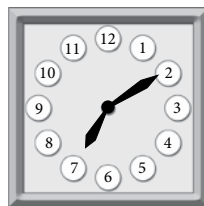
For example :

1.



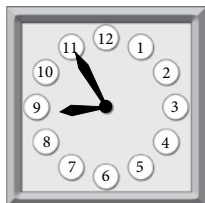
Half past 3 O' clock or 3 : 30

2.



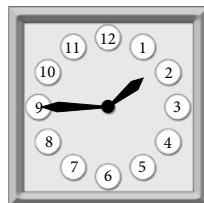
10 minutes past 7 O' clock or 7 : 10

3.



5 minutes to 9 O' clock or 8 : 55

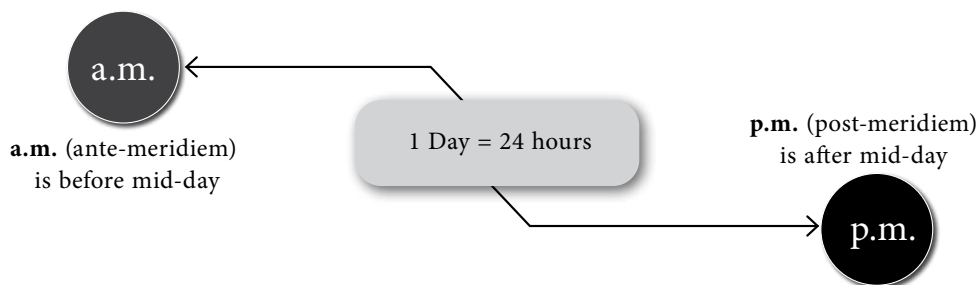
4.



Quarter to 2 O' clock or 1 : 45

A.M. and P.M.

There are 24 hours in a day. We generally use 12-hour clock. The 24 hours of the day are divided equally into two periods.



12 o'clock at night is called **mid-night** and 12 o'clock in the day is called **noon**.

Conversion of Time

1 hour = 60 minutes and 1 day = 24 hours.

For example : Convert 2 days in hours.

As 1 day = 24 hours

So, 2 days = $24 \times 2 = 48$ hours

Calendar

A calendar shows us the days and the months of a year.

Using the calendar, we observe that

- There are 12 months in a year.
- There are 7 days in a week.
- In a year, there are 365 days.
- After every 4 years, there is an extra day, that makes 366 days in a year, which is a leap year.



Olympiad Bite

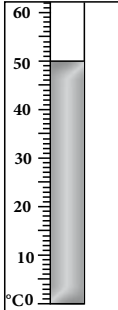
- If today is Monday, then 8th day from today is also Monday.
- If the year is divisible by 4 without leaving a remainder, then it is a leap year.

5.5 TEMPERATURE

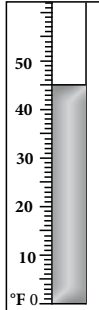
Temperature is measured using a thermometer usually in the Celsius or Fahrenheit scale.

For example :

1. The temperature shown on the thermometer is 50°C .



2. The temperature shown on the thermometer is 45°F .



Less temperature means coldest and more temperature means hottest.

SELF TEST - 2

1. The time shown on the clock is _____ minutes to 7.

- (A) 5
- (B) 40
- (C) 50
- (D) 10





2. Which of the following is a non-leap year?

- (A) 2008
- (B) 1992
- (C) 2013
- (D) 1988

3. Express 3010 mL in litres and millilitres.

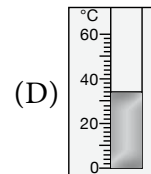
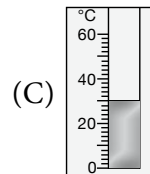
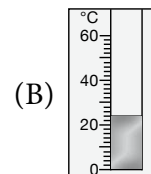
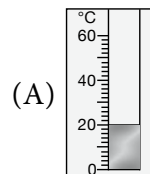
- (A) 3 L 1 mL
- (B) 30 L 10 mL
- (C) 3 L 10 mL
- (D) 30 L 100 mL

4. If  = 2 L and  = 500 mL, then the

difference between the total capacity of water bottle and apple juice pack is _____.

- (A) 1 L 400 mL
- (B) 1500 mL
- (C) 500 L
- (D) 1 L 300 mL

5. Which of the following thermometer shows 30°C ?



EXERCISE

1. To paint a shop, 18 L 500 mL of paint is required. If Amit has 5 L 200 mL of paint, then how much more paint does he need to paint the shop?

- (A) 13300 mL (B) 13 L 450 mL
(C) 15 L 300 mL (D) 14050 mL

2. A monkey weighs 5375 g. A dog is 2105 g lighter than the monkey. What is the total weight of both the animals?

- (A) 7 kg 645 g (B) 8 kg 645 g
(C) 8 kg 540 g (D) 8 kg 40 g

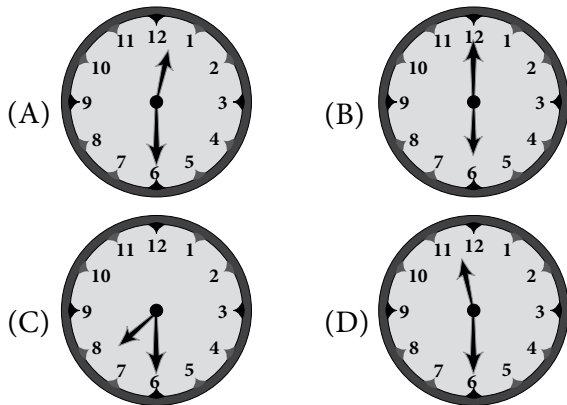
3. Vineet has a dental appointment on September 15. If the day on September 2 is Thursday, then on which day of the week is his appointment?

- (A) Friday (B) Wednesday
(C) Tuesday (D) Thursday

4. Which of the following options is INCORRECT?

- (A) 19 kg = 19000 g (B) 9 kg 61 g = 9061 g
(C) 5305 g = 53 kg 5 g (D) 5000 g = 5 kg

5. Which clock shows 7:30 p.m.?



6. Which of the following temperature shows the coldest weather?

- (A) 15°C (B) 30°C
(C) 29°C (D) 55°C

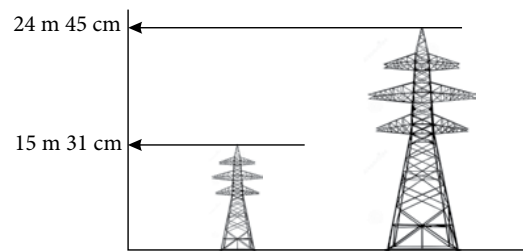
7. Select the CORRECT match.

- (A) 5 days - 36 hours
(B) 3 weeks - 596 hours
(C) 3 hours - 180 mins
(D) 1 week - 2400 mins

8. Kavita has 28 L 540 mL of milk. She used 1 L 300 mL of milk for making one chocolate shake. How much milk is left with her after making 15 such chocolate shakes?

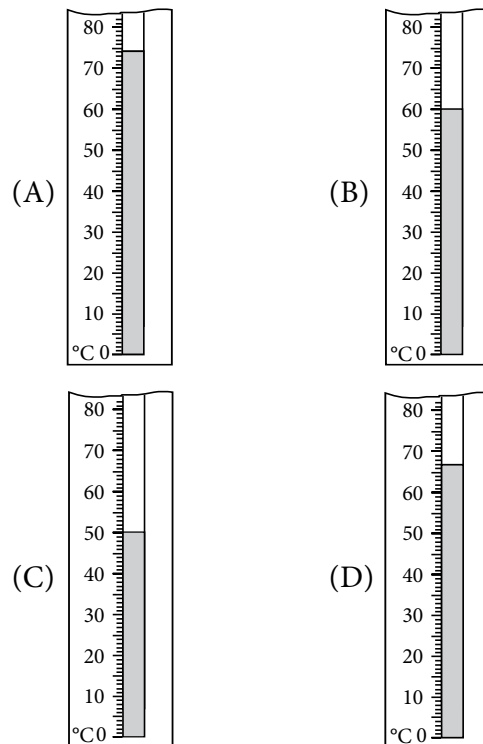
- (A) 9 L 40 mL (B) 8 L 50 mL
(C) 9 L 400 mL (D) 8 L 5 mL

9. What is the difference between the heights of the towers?



- (A) 8 m 84 cm (B) 7 m 21 cm
(C) 9 m 14 cm (D) 8 m 42 cm

10. Which of the following shows 7°C less than 67°C?

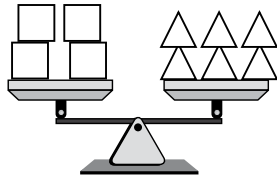


11. The table shows the time taken by 4 participants to complete a race. Who came last in the race?

Runner	Time taken
Aanya	2 h 35 mins
Yashika	2 h 20 mins
Smriti	3 h 18 mins
Priya	3 h 5 mins

- (A) Aanya (B) Yashika
(C) Smriti (D) Priya





12. The weight of one \triangle is 250 g. What is the weight of one \square ?



- (A) 375 g (B) 500 g
(C) 390 g (D) 425 g

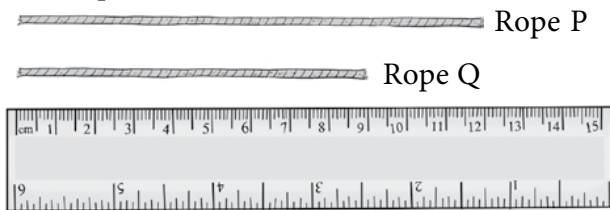
13. 15 pillars were built along a straight road at same distance apart. The distance between the first pillar and the last pillar is 210 m. What is the distance between the third pillar and the seventh pillar?

- (A) 6 cm (B) 600 cm
(C) 60 cm (D) 6000 cm

14. If  =  and  = 100 mL, then what is the capacity of  ?

- (A) 100 mL (B) 500 mL
(C) 450 mL (D) 300 mL

15. Find the difference between the length of rope P and rope Q.



- (A) 2 cm (B) 4 cm
(C) 1 cm (D) 3 cm

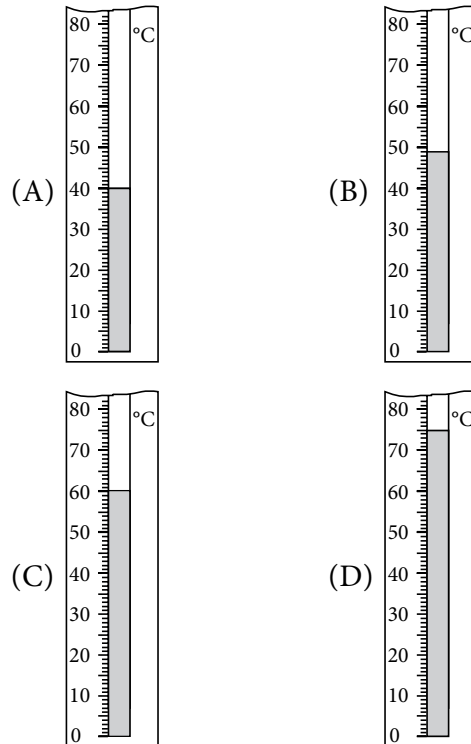
16. Mihul spends 8 hours on sleeping everyday. He spends _____ hours on sleeping in the month of December.

- (A) 248 (B) 240
(C) 180 (D) 230

17. Soham had a 21 m long piece of cloth. If he cut it into 5 equal pieces, then what is the length of each small piece of cloth?

- (A) 450 cm (B) 530 cm
(C) 420 cm (D) 250 cm

18. Which of the following thermometer shows the temperature more than 50°C but less than 70°C ?

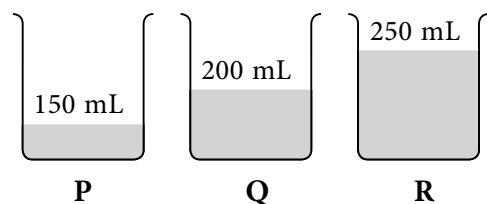


19. Fill in the blanks and select the correct option.

- 4 L 30 mL = P mL
- 5345 mL = Q L R mL

- | | P | Q | R |
|-----|------|----|-----|
| (A) | 4300 | 5 | 345 |
| (B) | 4300 | 53 | 45 |
| (C) | 4030 | 5 | 345 |
| (D) | 4030 | 53 | 45 |

20. Which of the following containers holds the maximum amount of water?



- (A) P (B) Q
(C) R (D) Can't be determined

21. Shruti went for a Piano lesson. How long did the lesson last?



Piano lesson started

Piano lesson ended

- (A) 1 hour 10 minutes
- (B) 1 hour 20 minutes
- (C) 1 hour
- (D) 1 hour 35 minutes

22. If day after tomorrow will be Tuesday, then day before yesterday was _____.

- (A) Thursday
- (B) Saturday
- (C) Friday
- (D) Wednesday

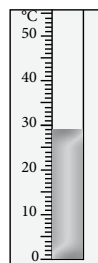
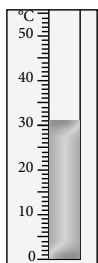
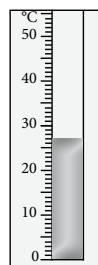
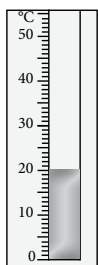
23. A box full of apples weighs 10 kg 150 g. The weight of the empty box is 2 kg 158 g. What is the weight of apples in the box?

- (A) 7 kg 20 g
- (B) 7 kg 992 g
- (C) 8 kg 2 g
- (D) 8 kg 20 g

24. Vineet is 35 cm taller than his sister. If Vineet's sister is 90 cm tall, then find the height of Vineet.

- (A) 55 cm
- (B) 150 cm
- (C) 135 cm
- (D) 125 cm

25. Which of the following thermometer shows the highest temperature?



(A)

(B)

(C)

(D)

26. Find the distance between the dock and island, if the distance between boat and island is 3 times the distance between the boat and dock.



- (A) 62 m
- (B) 70 m
- (C) 80 m
- (D) 50 m

27. Diya weighs 54 kg 435 g and Kavya weighs 52 kg 412 g. Who weighs more and by how much?

- (A) Kavya, 2 kg 230 g
- (B) Kavya, 2 kg 23 g
- (C) Diya, 2 kg 230 g
- (D) Diya, 2 kg 23 g

28. Kunal watched Cricket match from 9:40 p.m. to 11:30 p.m. How long did he watch the match?

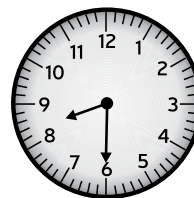
- (A) 110 mins
- (B) 100 mins
- (C) 90 mins
- (D) 115 mins

29. If Niharika takes a leave on 2nd Thursday and 4th Saturday in August 20XX, then how many days are working? (Assume that every Sunday and Independence day is a holiday).

AUGUST 20XX						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

- (A) 24
- (B) 23
- (C) 25
- (D) 26

30. Which of the following clocks shows 2 hours before 9:30?











(A)

(B)

(C)

(D)

Achievers Section (HOTS)

31. If  +  = 623 g,  +  = 537 g and  +  +  = 976 g, then find the weight of .

















- (A) 200 g (B) 184 g
(C) 206 g (D) 208 g

32. State 'T' for true and 'F' for false and select the correct option.

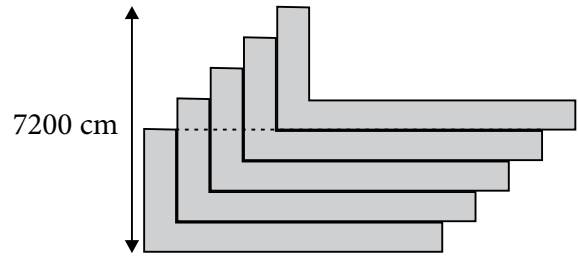
- (a) There are 6 months in a year having 30 days.
(b) There are 4 months in a year having 31 days.
(c) If day before yesterday was Tuesday, then today is Thursday.
(d) 15 hours = 900 minutes.

- | | | | |
|------------|------------|------------|------------|
| (a) | (b) | (c) | (d) |
| (A) T | T | T | F |
| (B) T | F | F | T |
| (C) T | T | F | T |
| (D) F | F | T | T |

33. A bucket can hold 2 litres of oil. It is being filled with oil by the beaker of different capacity. Which of the following combination of beakers can fill the bucket completely?

- (A)  200 mL,  200 mL,  250 mL,  250 mL,  500 mL
- (B)  250 mL,  250 mL,  500 mL,  500 mL,  300 mL
- (C)  500 mL,  250 mL,  250 mL,  250 mL,  250 mL,  500 mL
- (D) None of these

34. Karan stacked 5 identical blocks of wood as shown here. What is the height of a block of wood?



- (A) 36 m (B) 38 m
(C) 40 m (D) 42 m

35. Naina purchased 2 baskets of fruits, 4 boxes of muffins and 3 jars of jam. The total weight she has to carry home is _____.

Basket of fruits



1500 g

Jar of jam



500 g

Box of muffins



250 g

- (A) 6 kg 300 g (B) 6 kg 400 g
(C) 8 kg 900 g (D) 5 kg 500 g



SOF IMO 2019 QUESTIONS

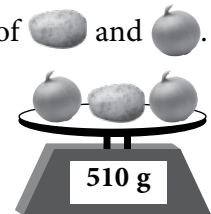
1. The given table shows the weight of four objects.

Object	Clock	Ball	Chair	Book
Weight (in g)	125	143	160	134

Which of these objects is the heaviest?

- (A) Ball (B) Chair
(C) Book (D) Clock (Level-1)

2. Find the total weight of  and .



- (A) 375 g (B) 345 g
(C) 445 g (D) 275 g (Level-1)

3. Payal watched a movie which started at 11:40 a.m. and ended at 3:15 p.m. How long did the movie last?

- (A) 3 hrs 25 mins (B) 3 hrs 55 mins
(C) 3 hrs 45 mins (D) 3 hrs 35 mins

(Level-1)

4. If the distance from Place X to Place Y is 6452 km and from Place X to Place Z is 8526 km, then which place is farther from Place X and by how much?

- (A) Place Y, 1048 km (B) Place Z, 2074 km
 (C) Place Y, 2074 km (D) Place Z, 1048 km

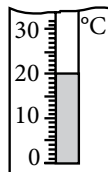
(Level-1)

5. A drum X can hold 18 L 380 mL of water. A drum Y can hold 22 L 395 mL of water. How much more water can drum Y hold than drum X?

- (A) 3 L 15 mL (B) 4 L 15 mL
 (C) 5 L 15 mL (D) 5 L 115 mL

(Level-1)

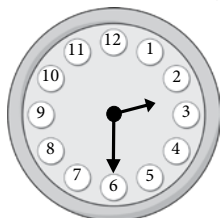
6. If room temperature is 5°C more than the temperature shown on the given thermometer, then what is the room temperature?



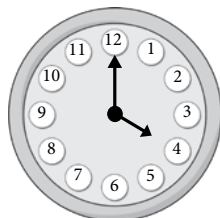
- (A) 15°C (B) 20°C
 (C) 25°C (D) 30°C

(Level-1)

7. Two clocks P and Q are shown here. Clock-P is 20 minutes slow and Clock-Q is 30 minutes fast. Which of the following options is CORRECT?



Clock-P



Clock-Q

- (A) According to Clock-P, the actual time is 2:40.
 (B) According to Clock-Q, the actual time after 10 minutes will be 3:20.
 (C) Both A and B
 (D) Neither A nor B

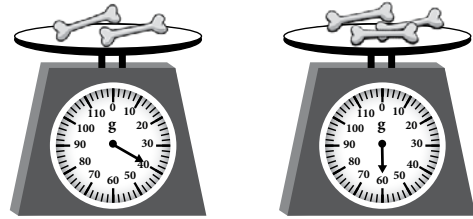
(Level-1)

8. Raj packed each gift with 15 cm of ribbon and Saumya packed each gift with 12 cm of ribbon. If Saumya packed 4 gifts and Raj packed 3 gifts, then who used more ribbon and by how much?

- (A) Raj, 3 cm (B) Saumya, 3 cm
 (C) Raj, 1 cm (D) Saumya, 1 cm

(Level-1)

9. Find the weight of one bone, if the weight of each bone is equal.



- (A) 25 g (B) 15 g
 (C) 10 g (D) 20 g

(Level-1)

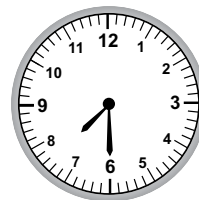
10. The sum of the lengths of the wooden log and ribbon is _____.



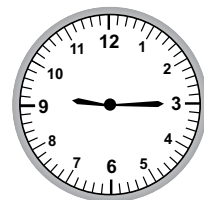
- (A) 12 (B) 8
 (C) 16 (D) 4

(Level-1)

11. The given clocks show the time in the evening at which Rohan starts and finishes his home work. How long does he take to complete his home work?




Starts homework





Finishes homework

- (A) 1 hr 25 minutes
 (B) 1 hr 30 minutes
 (C) 1 hr 45 minutes
 (D) 2 hrs

(Level-1)

12. Weight of  is 21 kg more than the weight

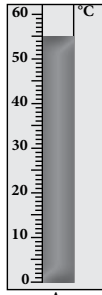
of . If  weighs 79 kg, then what is the

weight of  ?

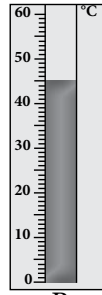
- (A) 100 kg (B) 189 kg
 (C) 58 kg (D) 179 kg

(Level-1)

13. If the room temperature is 7°C less than the difference between the temperatures shown on thermometers A and B, then what is the room temperature?



A



B

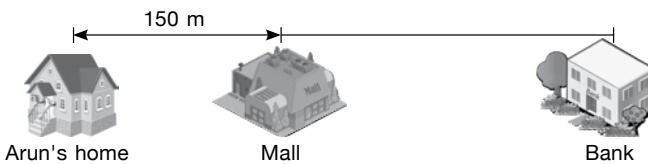
- (A) 3°C (B) 10°C
 (C) 14°C (D) 21°C (Level-1)

14. A shopkeeper made 5 L 345 mL of tomato ketchup on Sunday and 4 L 645 mL on Monday. How much tomato ketchup did he make in two days?

- (A) 9 L 900 mL (B) 8 L 940 mL
 (C) 8 L 950 mL (D) 9 L 990 mL (Level-1)

15. Distance between the bank and the mall is twice the distance between Arun's home and mall. Find the distance travelled by Arun.



- (a) From his home to bank and back home.
 (b) From mall to bank and back to his home.

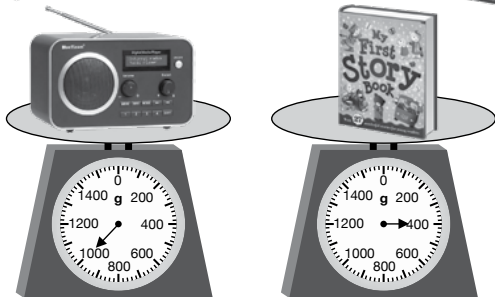


(a)

(b)

- (A) 900 m (B) 600 m
 (C) 750 m (D) 900 m
 (E) 650 m (F) 750 m
 (G) 700 m (H) 750 m (Level-1)

16.  is _____ g heavier than .



- (A) 200 (B) 100
 (C) 500 (D) 600 (Level-2)

17. The given clock shows the time at which a movie ended. If the movie was of 3 hrs 25 mins and there was a break of 15 mins, then what was the starting time of the movie?



- (A) 10 : 20 hours (B) 10 : 10 hours
 (C) 10 : 05 hours (D) 10 : 15 hours (Level-2)

18. A tower P is 8 m 5 cm high. Another tower Q is 6 m 28 cm high. How much shorter is tower Q than tower P?

- (A) 1 m 20 cm (B) 2 m 22 cm
 (C) 1 m 77 cm (D) 2 m 25 cm (Level-2)

19. Which of the following statements is/are CORRECT?

P - At 15 minutes to five, the minute hand points towards 3.

Q - At 30 minutes past 12, the minute hand points towards 6.

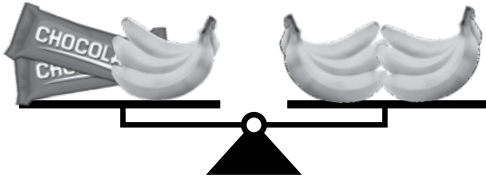
- (A) Only P (B) Only Q
 (C) Both P and Q (D) Neither P nor Q (Level-2)

20. A bucket can hold 5 litres of water. It is being filled by the bottles of different capacities. Which of the following combinations of bottles can completely fill the bucket?



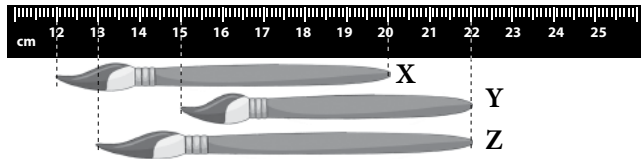
(D) 
 200 mL 250 mL 250 mL 250 mL 2000 mL 2000 mL
 (Level-2)

21. If the weight of a banana is 250 g, then find the total weight of 3 chocolates and 2 bananas.



- (A) 1600 g (B) 1825 g
 (C) 1450 g (D) 1625 g (Level-2)


22. Sum of lengths of brush Y and Z is _____ cm more than the length of brush X.



- (A) 7 (B) 6
 (C) 8 (D) 9 (Level-2)

23. Select the CORRECT option.

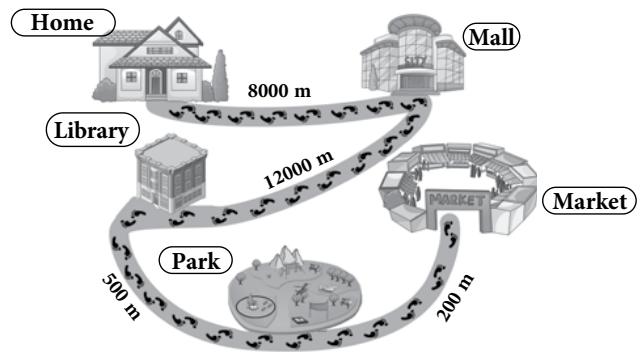
- (A) 2018 is a leap year.
 (B) There are 7 months in a year having 31 days.
 (C) 12 hours is same as 620 minutes.
 (D) If day before yesterday was Sunday, then the day after tomorrow will be Wednesday.
 (Level-2)

24. Kavya had 6  each of capacity 3 L 35 mL.
 If one of the pack fell on the floor, then how much quantity of milk is left with her?

- (A) 18 L 210 mL (B) 16 L 750 mL
 (C) 15 L 175 mL (D) 20 L 100 mL

(Level-2)

25. Vipul went to different places on a particular day. Observe his route and answer the following questions.



Find the distance travelled by Vipul

- (a) from his Home to Library.
 (b) from Mall to Market.

- | | |
|-----------|-----------------------|
| (a) | (b) |
| (A) 20 km | 12 km 700 m |
| (B) 20 km | 12 km 500 m |
| (C) 22 km | 12 km 700 m |
| (D) 22 km | 12 km 500 m (Level-2) |

HINTS & EXPLANATIONS

SELF TEST - 1

1. (B):	m	cm
	①①	①
	9	53
	24	82
	+ 11	07
	45	42

So, $X = 5$

2. (B): Weight of one watermelon = 1900 g
 Weight of 2 watermelons = (1900×2) g = 3800 g
 = $(3000 + 800)$ g
 = 3000 g + 800 g = 3 kg 800 g

3. (C): $80 \text{ km } 150 \text{ m} - 15 \text{ km } 142 \text{ m} = 65 \text{ km } 8 \text{ m}$
 = $65 \text{ km} + 8 \text{ m} = 65000 \text{ m} + 8 \text{ m}$
 = 65008 m

4. (A): Length of pair of scissors = $7 \text{ cm} = 7 \text{ cm}$
 Length of pen = $5 \text{ cm} = 5 \text{ cm}$
 So, pair of scissors is $7 \text{ cm} - 5 \text{ cm} = 2 \text{ cm}$ longer than pen.

5. (B): Total quantity of cement and sand used = 52 kg 460 g

Quantity of sand used = 15 kg 420 g
 So, quantity of cement used = $52 \text{ kg } 460 \text{ g} - 15 \text{ kg } 420 \text{ g} = 37 \text{ kg } 40 \text{ g}$

SELF TEST - 2

- 1. (D)**
2. (C): (A) Leap year, $2008 \div 4$ leaves remainder 0.
 (B) Leap year, $1992 \div 4$ leaves remainder 0.
 (C) Non-leap year, $2013 \div 4$ leaves remainder 1.
 (D) Leap year, $1988 \div 4$ leaves remainder 0.

3. (C): $3010 \text{ mL} = (3000 + 10) \text{ mL}$
 = $3000 \text{ mL} + 10 \text{ mL} = 3 \text{ L } 10 \text{ mL}$

4. (B): Quantity of water = 2 L = 2000 mL
 Quantity of apple juice = 500 mL
 \therefore Required difference = $2000 \text{ mL} - 500 \text{ mL} = 1500 \text{ mL}$
 = $1000 \text{ mL} + 500 \text{ mL} = 1 \text{ L } 500 \text{ mL}$

5. (C)

EXERCISE

1. (A): Quantity of paint required = 18 L 500 mL
 Quantity of paint Amit has = 5 L 200 mL
 More quantity of paint needed

= $18 \text{ L } 500 \text{ mL} - 5 \text{ L } 200 \text{ mL}$

= $13 \text{ L } 300 \text{ mL} = 13300 \text{ mL}$

2. (B): Weight of monkey = 5375 g

Weight of dog = $5375 \text{ g} - 2105 \text{ g} = 3270 \text{ g}$

\therefore Total weight of monkey and dog = $5375 \text{ g} + 3270 \text{ g}$
 = $8645 \text{ g} = 8000 \text{ g} + 645 \text{ g} = 8 \text{ kg } 645 \text{ g}$

3. (B): As September 2 is Thursday and September 9 is also Thursday.

So, September 15 is Wednesday.

4. (C): (A) $19 \text{ kg} = 19 \times 1000 \text{ g} = 19000 \text{ g}$

(B) $9 \text{ kg } 61 \text{ g} = 9 \text{ kg} + 61 \text{ g} = 9 \times 1000 \text{ g} + 61 \text{ g}$
 = $9000 \text{ g} + 61 \text{ g} = 9061 \text{ g}$

(C) $5305 \text{ g} = 5000 \text{ g} + 305 \text{ g} = 5 \text{ kg} + 305 \text{ g}$
 = 5 kg 305 g

(D) $5000 \text{ g} = 5 \text{ kg}$

5. (C) 6. (A)

7. (C): (A) 1 day = 24 hours

\therefore 5 days = 24×5 hours = 120 hours

(B) 1 week = 7 days

\therefore 3 weeks = $7 \times 3 = 21$ days

Also, 1 day = 24 hours

\therefore 21 days = 21×24 hours = 504 hours

(C) 1 hour = 60 mins

\therefore 3 hours = 3×60 mins = 180 mins

(D) 1 week = 7 days

1 day = 24 hours

\therefore 7 days = (24×7) hours = 168 hours

1 hour = 60 mins

\therefore 168 hours = 168×60 mins

= 10080 mins

8. (A): Quantity of milk Kavita has = 28 L 540 mL

Quantity of milk she used in making one chocolate shake = $1 \text{ L } 300 \text{ mL} = 1 \text{ L} + 300 \text{ mL}$
 = $1000 \text{ mL} + 300 \text{ mL} = 1300 \text{ mL}$

Quantity of milk Kavita used in making 15 chocolate shakes = $1300 \text{ mL} \times 15 = 19500 \text{ mL} = 19 \text{ L } 500 \text{ mL}$

So, quantity of milk left

= $28 \text{ L } 540 \text{ mL} - 19 \text{ L } 500 \text{ mL} = 9 \text{ L } 40 \text{ mL}$

9. (C): Required difference in heights

= $24 \text{ m } 45 \text{ cm} - 15 \text{ m } 31 \text{ cm} = 9 \text{ m } 14 \text{ cm}$

10. (B): 7°C less than $67^\circ\text{C} = 67^\circ\text{C} - 7^\circ\text{C} = 60^\circ\text{C}$

Option (B) shows 60°C .

11. (C): Smriti takes maximum time to complete the race. So, she came last in the race.

12. (A): Weight of 1 $\triangle = 250$ g

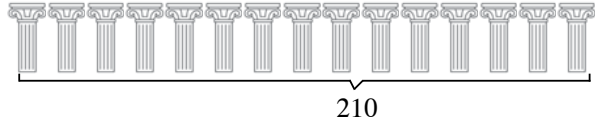
Weight of 6 $\triangle = 250$ g $\times 6 = 1500$ g

As, weight of 4 $\square =$ weight of 6 \triangle

\Rightarrow weight of 4 $\square = 1500$ g

\Rightarrow weight of 1 $\square = 1500$ g $\div 4 = 375$ g

13. (D):





Distance between first and last pillar = 210 m

Distance between first and second pillar = $210 \div 14 = 15$ m

So, distance between third and seventh pillar

= $15 \times 4 = 60$ m = 6000 cm

14. (B): We have,  = 100 mL

\therefore  = 100 mL + 100 mL + 100 mL + 100 mL + 100 mL = 500 mL

So, capacity of  = 500 mL

15. (D): Length of rope P = 12 cm

Length of rope Q = 9 cm

\therefore Required difference = 12 cm - 9 cm = 3 cm

16. (A): Number of hours Mihul sleep in 1 day = 8

Number of days in the month of December = 31

So, number of hours Mihul sleep in the month of December = $31 \times 8 = 248$ hours

17. (C): Length of piece of cloth Soham had = 21 m = 2100 cm

Length of each small piece of cloth

= 2100 cm $\div 5 = 420$ cm

18. (C): Thermometer in option (C) shows 60°C which is more than 50°C but less than 70°C .

19. (C): 4 L 30 mL = 4 L + 30 mL

= 4000 mL + 30 mL = 4030 mL

$\therefore P = 4030$

Now, 5345 mL = (5000 + 345) mL

= 5000 mL + 345 mL

= 5 L + 345 mL = 5 L 345 mL

$\therefore Q = 5$ & $R = 345$

20. (C): As 250 mL $>$ 200 mL $>$ 150 mL

i.e., $R > Q > P$

So, container R holds the maximum amount of water.

21. (A): Piano lesson started at 2 : 40

Piano lesson ended at 3 : 50

Duration of piano lesson = 2 : 40 to 3 : 50

= 1 hour 10 minutes

22. (C):

Day before yesterday	Yesterday	Today	Tomorrow	Day after tomorrow
Friday	Saturday	Sunday	Monday	Tuesday

23. (B): Weight of box with apples = 10 kg 150 g

Weight of empty box = 2 kg 158 g

\therefore Weight of apples in the box = 10 kg 150 g - 2 kg 158 g = 7 kg 992 g

24. (D): Height of Vineet's sister = 90 cm

Height of Vineet = 90 cm + 35 cm = 125 cm

25. (C): Thermometer in option (C) shows the highest temperature *i.e.*, 31°C .

26. (C): Distance between boat and dock = 20 m

Distance between boat and island = 3×20 m = 60 m

So, distance between dock and island = 20 m + 60 m = 80 m

27. (D): Weight of Diya = 54 kg 435 g



Weight of Kavya = 52 kg 412 g




So, required difference = 54 kg 435 g - 52 kg 412 g = 2 kg 23 g


28. (A) 29. (A)


30. (D): Two hours before 9 : 30 = 7 : 30



Clocks in option (D) shows 7 : 30.


31. (B):  +  = 537 g

and  +  +  = 976 g

So, 537 g +  = 976 g

\Rightarrow  = 976 g - 537 g = 439 g

Also,  +  = 623 g

\Rightarrow  = 623 g - 439 g = 184 g

32. (D) : (a) False; There are 4 months in a year having 30 days *i.e.*, April, June, September, November.

(b) False; There are 7 months in a year having 31 days, *i.e.*, January, March, May, July, August, October, December.

(c) True;

Day before yesterday	Yesterday	Today
Tuesday	Wednesday	Thursday

(d) True; 1 hour = 60 minutes

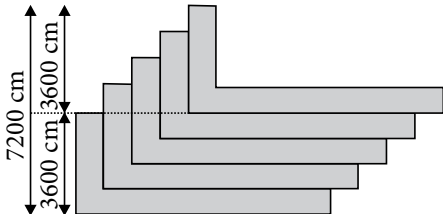
\therefore 15 hours = 15×60 minutes = 900 minutes

33. (C): (A) Total quantity of oil = $(200 + 200 + 250 + 250 + 500)$ mL = 1400 mL = 1 L 400 mL

(B) Total quantity of oil = $(250 + 250 + 500 + 500 + 300)$ mL = 1800 mL = 1 L 800 mL

(C) Total quantity of oil = $(500 + 250 + 250 + 250 + 250 + 500)$ mL = 2000 mL = 2 L

34. (A): Height of stack of 5 blocks = 7200 cm



Height of 1 block = $7200 \div 2 = 3600$ cm = 36 m

35. (D): Weight of 1 basket of fruits = 1500 g

Weight of 2 baskets of fruits = (1500×2) g = 3000 g

Weight of 1 box of muffins = 250 g

Weight of 4 boxes of muffins = (250×4) g = 1000 g

Weight of 1 jar of jam = 500 g

Weight of 3 jars of jam = (500×3) g = 1500 g

So, total weight Naina has to carry

$$= (3000 + 1000 + 1500)$$

$$= 5500 \text{ g or } 5 \text{ kg } 500 \text{ g}$$

SOF IMO 2019 QUESTIONS

1. (B): We have, $125 < 134 < 143 < 160$

So, weight of chair is greatest *i.e.*, chair is the heaviest.

2. (B): Weight of (2 potatoes + 1 onion) = 525 g

Weight of (1 potato + 2 onions) = 510 g

So, weight of (3 potatoes + 3 onions) = $(525 + 510)$ g = 1035 g

\Rightarrow Weight of (1 potato + 1 onion)

$$= (1035 \div 3) \text{ g} = 345 \text{ g}$$

3. (D): Starting time is 11:40 a.m.

Ending time is 3:15 p.m.

So, duration of movie is 3 hours 35 mins.

4. (B): As, $6452 < 8526$

So, place Z is farther from place X by

$$(8526 - 6452) = 2074 \text{ km.}$$

5. (B): Quantity of water drum X can hold

$$= 18 \text{ L } 380 \text{ mL}$$

Quantity of water drum Y can hold = 22 L 395 mL

So, required difference = 22 L 395 mL - 18 L 380 mL

$$= 4 \text{ L } 15 \text{ mL.}$$

6. (C): Temperature shown on the thermometer

$$= 20^\circ\text{C}$$

So, room temperature = 5°C more than 20°C

$$= 20^\circ\text{C} + 5^\circ\text{C} = 25^\circ\text{C}$$

7. (D): According to Clock-P, actual time is 20 mins after 2 : 30 *i.e.*, 2 : 50

According to Clock-Q, actual time is 30 mins before 4 : 00 *i.e.*, 3 : 30

So, after 10 mins it will be 3 : 40

8. (B): Length of ribbon used by Raj to pack 1 gift = 15 cm

So, length of ribbon used by Raj to pack 3 gifts = (15×3) cm = 45 cm

Length of ribbon used by Saumya to pack 1 gift = 12 cm

So, length of ribbon used by Saumya to pack 4 gifts = (12×4) cm = 48 cm


Therefore, Saumya used more ribbon by $(48 - 45) = 3$ cm.


9. (D): Weight of 3 bones = 60 g

Weight of 2 bones = 40 g

So, weight of 1 bone = $60 - 40 = 20$ g

10. (B): Length of wooden log = 4 


Length of ribbon = 4 



So, sum of lengths of wooden log and ribbon = $4 + 4 = 8$ 

11. (C): Time at which Rohan starts doing his homework = 7 : 30 p.m.

Time at which time Rohan finishes his homework = 9 : 15 p.m.

So, duration of time Rohan takes to complete his homework = 1 hr 45 minutes

12. (A): Weight of  WHEAT = 79 kg

Weight of  RICE = 21 kg + Weight of  WHEAT = 21 kg + 79 kg = 100 kg

13. (A): Temperature shown on thermometer A = 55°C

Temperature shown on thermometer B = 45°C

Difference in temperatures on thermometers A and B = $55^\circ\text{C} - 45^\circ\text{C} = 10^\circ\text{C}$

\therefore Room temperature = $10^\circ\text{C} - 7^\circ\text{C} = 3^\circ\text{C}$

14. (D): Quantity of ketchup made on Sunday

$$= 5 \text{ L } 345 \text{ mL}$$

Quantity of ketchup made on Monday = 4 L 645 mL

So, quantity of ketchup made in both the days

$$= 5 \text{ L } 345 \text{ mL} + 4 \text{ L } 645 \text{ mL} = 9 \text{ L } 990 \text{ mL}$$

15. (D): Distance between Arun's home and mall

$$= 150 \text{ m}$$

Distance between mall and bank = $150 \times 2 = 300$ m
 \therefore Distance between Arun's home and bank



$$= 150 + 300 = 450 \text{ m}$$

(a) Distance covered by Arun from his home to bank and back home = $450 \text{ m} + 450 \text{ m} = 900 \text{ m}$

(b) Distance covered by Arun from mall to bank and back to his home = Distance between mall and bank + Distance between bank to Arun's home = $300 \text{ m} + 450 \text{ m} = 750 \text{ m}$

16. (D): Weight of  = 1000 g

Weight of  = 400 g

So,  is $1000 \text{ g} - 400 \text{ g} = 600 \text{ g}$ heavier than .

17. (C): Time at which movie ended = 1 : 45 hours
 Total duration of movie and break = 3 hrs 25 mins + 15 mins = 3 hrs 40 mins

\therefore Time at which movie started is 3 hrs 40 mins before 1 : 45 = 10 : 05 hours

18. (C): Height of tower P = 8 m 5 cm = 805 cm
 Height of tower Q = 6 m 28 cm = 628 cm

\therefore Difference in heights of tower P and tower Q = $805 \text{ cm} - 628 \text{ cm} = 177 \text{ cm} = 1 \text{ m } 77 \text{ cm}$

19. (B): P - 15 minutes to five means 4 : 45. So, minute hand points towards 9.

Q - 30 minutes past 12 means 12 : 30. So, minute hand points towards 6.

So, only Q is correct.

20. (B): (A) Total capacity of all the bottles = $200 \text{ mL} + 200 \text{ mL} + 250 \text{ mL} + 250 \text{ mL} + 2000 \text{ mL} + 2000 \text{ mL} = 4900 \text{ mL} = 4 \text{ L } 900 \text{ mL}$

(B) Total capacity of all the bottles = $250 \text{ mL} + 250 \text{ mL} + 500 \text{ mL} + 2000 \text{ mL} + 2000 \text{ mL} = 5000 \text{ mL} = 5 \text{ L}$

(C) Total capacity of all the bottles = $250 \text{ mL} + 250 \text{ mL} + 250 \text{ mL} + 2000 \text{ mL} + 2000 \text{ mL} = 4750 \text{ mL} = 4 \text{ L } 750 \text{ mL}$

(D) Total capacity of all the bottles = $200 \text{ mL} + 250 \text{ mL} + 250 \text{ mL} + 250 \text{ mL} + 2000 \text{ mL} + 2000 \text{ mL} = 4950 \text{ mL} = 4 \text{ L } 950 \text{ mL}$

21. (D): Weight of 1 banana = 250 g

Weight of 2 chocolates = Weight of 3 bananas = $250 \times 3 = 750 \text{ g}$

\therefore Weight of 1 chocolate = $750 \div 2 = 375 \text{ g}$

So, weight of 3 chocolates = $375 \times 3 = 1125 \text{ g}$

Weight of 2 bananas = $250 \times 2 = 500 \text{ g}$

\therefore Total weight of 3 chocolates and 2 bananas = $1125 \text{ g} + 500 \text{ g} = 1625 \text{ g}$

22. (C): Length of brush X = $20 - 12 = 8 \text{ cm}$

Length of brush Y = $22 - 15 = 7 \text{ cm}$

Length of brush Z = $22 - 13 = 9 \text{ cm}$

Sum of length of brush Y and Z = $7 + 9 = 16 \text{ cm}$

So, sum of length of brush Y and Z is

$16 \text{ cm} - 8 \text{ cm} = 8 \text{ cm}$ more than the length of brush X.

23. (B): (A) Incorrect; $2018 \div 4$ leaves remainder 2. So, it is not a leap year.

(B) Correct; Months having 31 days are January, March, May, July, August, October, December *i.e.*, 7.

(C) Incorrect ; 1 hour = 60 minutes, so 12 hours = 12×60 minutes = 720 minutes


(D) Incorrect;

Day before yesterday	Yesterday	Today	Tomorrow	Day after tomorrow
Sunday	Monday	Tuesday	Wednesday	Thursday

24. (C): Number of  Kavya had = 6

Number of  fell on the floor = 1

\therefore Number of  left with Kavya = $6 - 1 = 5$

Capacity of 1  = $3 \text{ L } 35 \text{ mL} = 3035 \text{ mL}$

\therefore Quantity of milk left with Kavya = $3035 \text{ mL} \times 5 = 15175 \text{ mL} = 15000 \text{ mL} + 175 \text{ mL} = 15 \text{ L } 175 \text{ mL}$

25. (A): (a) Distance travelled by Vipul from his home to Library = $8000 \text{ m} + 12000 \text{ m} = 20000 \text{ m} = 20 \text{ km}$

(b) Distance travelled by Vipul from Mall to Market = $12000 \text{ m} + 500 \text{ m} + 200 \text{ m}$

= $12700 \text{ m} = 12000 \text{ m} + 700 \text{ m}$
 km 700 m