



PHYSICS

BOOKS - ICSE

PHYSICAL QUANTITIES AND MEASUREMENT

Solved Examples

1. The marks obtained (out of 30) by five students in a test are 20, 15, 25, 18, and 22.

Find the average marks obtained.



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2. Round the following

I finished reading a book in three hours and five minutes.



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3. Round the following

You need 102 metres of rope to lift this heavy

carton using a pulley.



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4. Round the following

We need 29.5 kg of flour and 4.2 kg of ghee to make halwa for tomorrow's festivities.



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5. The highest temperature recorded daily from January 26 to January 30 were:

$7^{\circ}C$, $8^{\circ}C$, $6^{\circ}C$, $3.4^{\circ}C$ and $9.8^{\circ}C$.

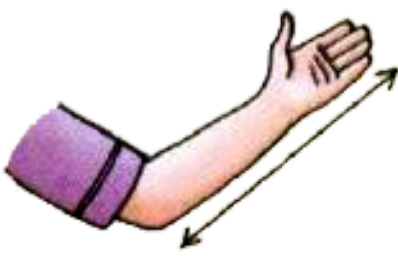
What was the average temperature for these days?



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Questions Observe The Figures And Answer The Questions

1. Label the figures (a) and (b) as handspan and cubit.



(a)

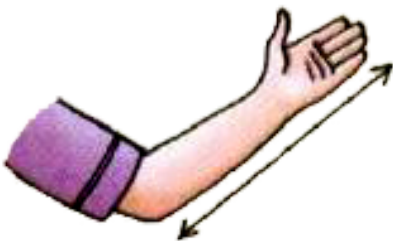


(b)



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2. Why do we not use handspan or cubit for measurement today?



(a)



(b)



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3. Which of the following statements is true?

a. A clinical thermometer is shown in Figure

(a).

b. There is a kink present in the thermometer

shown in Figure (b).



(a)



(b)





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4. What is the purpose of the kink present in a clinical thermometer?



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Questions Match The Following

1. Match the following

- | | |
|-----------------------|-------------------------|
| a. SI unit of mass | i. Used in laboratories |
| b. 1 kg | ii. 10 quintal |
| c. 1 quintal | iii. 100 kg |
| d. 1 metric ton | iv. 1000 g |
| e. Physical balance | v. kg |
| f. Electronic balance | vi. 1000 mg |
| g. 1 g | vii. Digital display |



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2. Match the columns

- | | |
|-------------------------------|----------------|
| a. 5:30 a.m. in 24-hour clock | i. 1300 h |
| b. 1 p.m. in 24-hour clock | ii. 8:20 p.m. |
| c. 1140 h in 12-hour clock | iii. 6:15 a.m. |
| d. 0615 h in 12-hour clock | iv. 0530 h |
| e. 7:20 p.m. in 24-hour clock | v. 11:40 a.m. |
| f. 2020 h in 12-hour clock | vi. 1920 h |



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Questions

1. How many m^2 are there in one hectare? How many hectares are there in $1km^2$?



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2. How many mm^2 are there in one square metre?



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Questions Write T For True And F For False Correct The False Statements

1. Approximation is never used in our everyday life.



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2. Accuracy in measurement is necessary while preparing medicines.



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3. Average is calculated by adding up all the values and dividing the result by the total number of values.



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Exercises Section I Name The Following

1. Something that can be measured



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2. A fixed quantity used as a standard of measurement



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3. Any four physical quantities that can be measured



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4. The distance between the ends of an object





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5. Three devices used for measuring length



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6. The amount of matter contained in a body



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7. The degree of hotness or coldness of an object



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8. The instrument to measure temperature



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Exercises Section I Choose The Correct Option

1. Sam wants to convert 86 cm to metres.
Which of the following will give him the correct value?

A. 86×100

B. $86 \div 100$

C. 86×1000

D. $86 + 1000$

Answer:



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2. While measuring the length of a pen, the measurement was taken from 2 cm mark of a ruler and the reading obtained was 13 cm.

What is the length of the pen?

A. 13 cm

B. 12 cm

C. 11 cm

D. 15 cm

Answer:



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3. A book of length 15 cm and breadth 10 cm is kept on a table. Its area would be

A. 15 cm^2

B. 10 cm^2

C. 150 cm^2

D. 100 cm^2

Answer:



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4. Which set of units is arranged in the increasing order?

A. mm,cm,m,km

B. cm,mm,km,m

C. km,m,cm,mm

D. km,mm,cm,m

Answer:



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Exercises Section I Write T For True And F For False Correct The False Statements

1. A metre rod would not be suitable for measuring the dimensions of a science textbook.



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2. Parallax error can be avoided by using positioning the eyes to one side while taking a reading.



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3. 10 kg is smaller than 10000 g.



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4. A physical balance is a modified and highly sensitive version of the beam balance.



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5. We have standard formulae for calculating the areas of regular shapes.



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Exercises Section I Choose The Correct Option To Fill In The Blank

1. Length, volume, and time are
(physical/chemical) quantities.



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2. (Length/Mass) can be measured in inches.



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3. Temperature can be measured using a
(beam balance/thermometer)



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4. Celsius is a unit of
(time/temperature).



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5. On the (Celsius/Fahrenheit) scale,
the freezing point of water is taken as 0.



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**Exercises Section I Circle The Odd One One Has
Been Done For You**

1. Length, Mass, Temperature are ?



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2. Ruler, Measuring tape, Metre rod are ?



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3. mg , g , kg are ?



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4. Celsius, Fahrenheit, Thermometer are?



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5. minute , hour , second are ?



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Exercises Section li Give Reasons For The Following

1. A meter rod is not suitable for measuring the distance between two cities. TRUE or FALSE ?



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2. A physical balance is used in laboratories.



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3. The 24-hour clock is used for railways and airlines.



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4. There is a kink or bend in the stem of a clinical thermometer



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Exercises Section II Explain The Following Terms

1. Measurement



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2. Physical quantity



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3. Unit



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Exercises Section II Distinguish Between

1. Difference between Mass and Length



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2. Difference between Physical balance and beam balance



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3. Difference between Celsius scale and Fahrenheit scale



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4. Difference between 12-hour clock and 24-hour clock



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Exercises Section II Short Answer Questions

1. What is mass? Give any three units of mass.



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2. State whether the units are written correctly. If not, correct them.

a.45 seconds , b.67 ms , c.78 n , d.99 kg , e.66

Meters



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3. What is the parallax error?



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4. Name any two units used to measure temperature.



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Exercises Section II Long Answer Questions

1. Explain the precautions that should be taken while measuring length using a ruler



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2. Differentiate between a laboratory thermometer and a clinical thermometer



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Exercises Section II Numerical Questions

1. Convert the following values as indicated.

45 kg 50 g into g



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2. Convert the following values as indicated.

4 g 5 mg into mg



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3. Convert the following values as indicated.

3000 mL into L



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4. Convert the following values as indicated.

6 m 8 cm into cm



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5. Convert the following values as indicated.

8456 mm into m , cm and km



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6. Convert the following values as indicated.

8754 g into kg



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7. Answer the following questions with the help of the railway timetable given below.

a. Find the arrival time for the train nos. 3020 and 6385 using the 12-hour clock.

b. Find the departure time for the train nos. 3020 and 2946 using the 12-hour clock.

Calculate how long the train nos. 2946 and 6385 will stop at the stations.

Train no	Name of the train	Arrival	Departure
3020	Trivandrum Indore Ahilya Nagari Exp. (Sun)	1830	1840
6385	Trivandrum Bilaspur Exp. (Tue, Fri)	1920	1930
2946	Bilaspur Bhopal Mahanadi Exp. (Mon, Wed, Fri)	0300	0320



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8. Convert the time from 12-hour clock to 24-hour clock and vice versa.

a. 3:00 p.m. , b. 10 p.m. , c. 1530 , d. 0400 , e. 2350 , f. 1:30 a.m. , g. 6:45 p.m.



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9. A string is wound around a pencil 20 times and the total thickness of the turns is found to be 2 cm and 5 mm. What is the thickness of the string?





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10. Find the area of a book of length 20 cm and breadth 10 cm



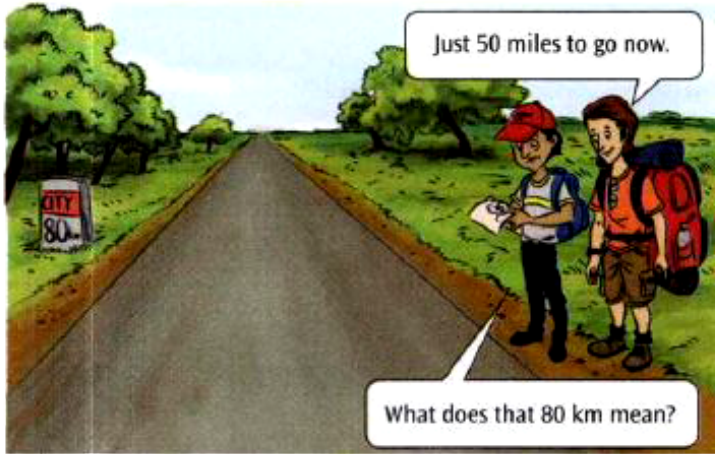
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11. Find the area of a table of length 1.5 m and breadth 20 cm.



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Picture Based Questions



1.
 - a. What does 80 km (refer to the figure above) indicate with respect to the city?
 - b. Why the confusion?
 - c. Does the confusion mean that the travellers have to travel different distances?



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