

Mathematics

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(Chapter - 10) (How Quantities Combine: Understanding Data) (Assignment 4)

(Class - 9)

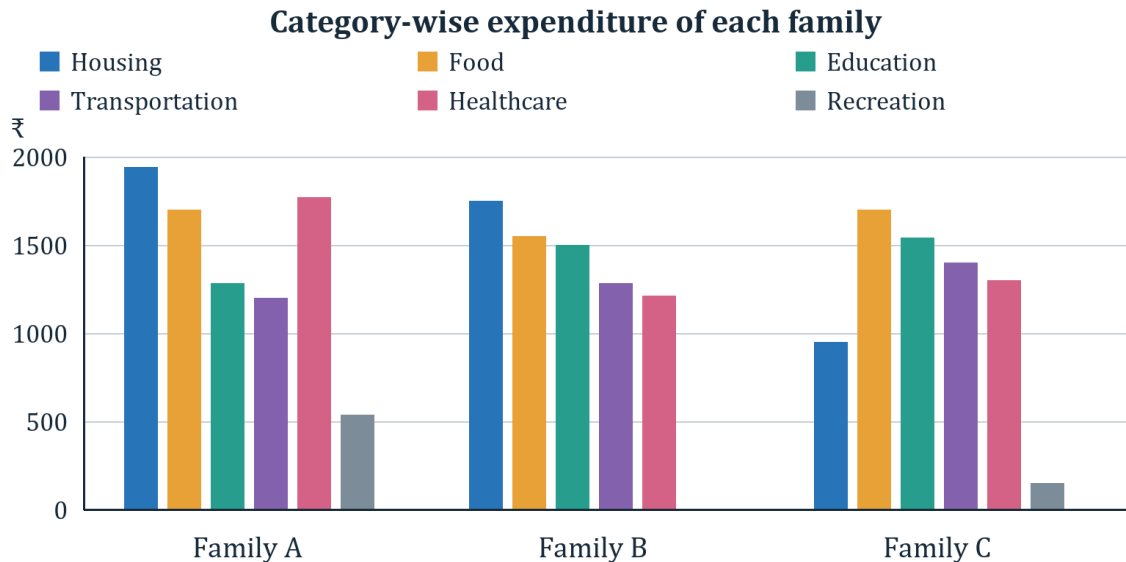
Name _____

Date _____

Answer all 15 questions. Choose one option for each MCQ. Show your working and give reasons where required.

Section A: Multiple Choice Questions

1. Did Family A spend more on food or on healthcare?



- (a) Food
(b) Healthcare
(c) Equal amounts
(d) Cannot be determined

2. A triathlon is an endurance race consisting of swimming 3.8 km, cycling 180 km, and running 42.2 km. Athletes compete for the fastest overall time, completing each segment in that order. The following table shows the finish time of 3 athletes in each segment.

(ii) Suppose a 100% stacked bar chart is drawn. Which of the following question(s) can be answered by looking at just that chart?

- (a) Who finished the race first?
(b) Approximately what fraction of their race time did Athlete 1 spend cycling?
(c) Which athlete took the longest for running?

Time (hh:mm)	Swimming	Cycling	Running
Athlete 1	01:08	05:00	03:15
Athlete 2	01:05	05:10	03:35
Athlete 3	01:22	05:55	03:50

- (a) Race winner only
(b) Cycling fraction only
(c) Longest running time only
(d) All three questions

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3. In cricket, the run rate is the average number of runs scored per over. In a T20 match, a team scored 6 runs in the first over making the run rate 6.

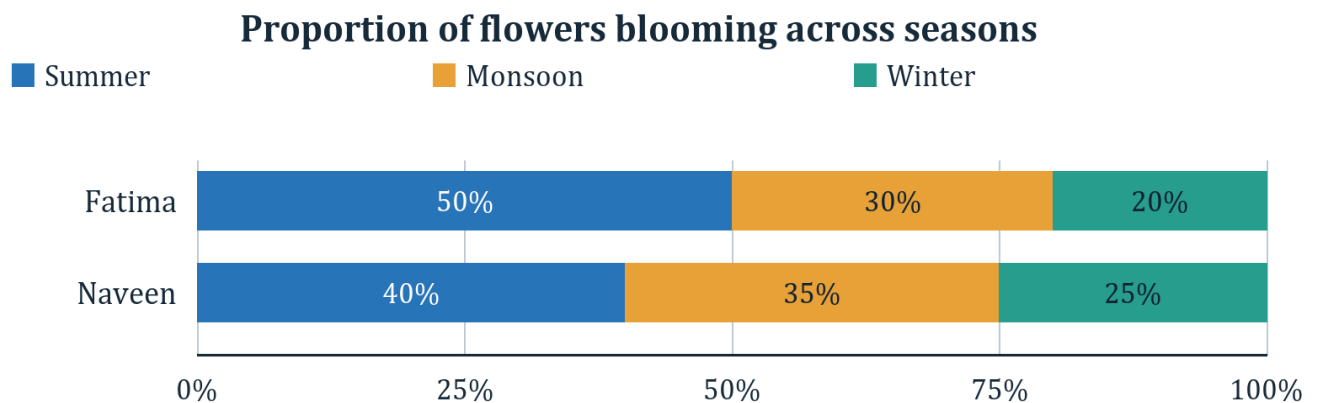
(i) In the second over they scored 12 runs. What is the run rate now?

- (a) 6 runs per over
(b) 8 runs per over
(c) 9 runs per over
(d) 12 runs per over

4. The 100% stacked bar below compares the proportion of flowers blooming in Fatima's garden and Naveen's garden across seasons.

Which of the following statements can be inferred from this chart?

- (i) In Fatima's garden, there were more blooms in the summer than in the monsoon.
(ii) In summer, Fatima's garden had more blooms than Naveen's garden.
(iii) In winter, Fatima's garden had fewer blooms than Naveen's garden.
(iv) The total number of flowers, across seasons, is the same in both gardens but it varies in each season.



- (a) (i) only
(b) (i) and (ii)
(c) (ii) and (iii)
(d) All four statements
5. The values 20 and 80 have weights 3 and 1. Where must their weighted mean lie?
- (a) Below 20
(b) At 50
(c) Between 20 and 50
(d) Above 80

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Section B: Very Short Answer Questions

6. Dorjee has collected 1 litre of water from the Dead Sea! Using the information in the table, answer the following questions. A calculator can be used if necessary.

(iii) Is it possible to mix water from the Dead Sea and groundwater to get a mixture with the salinity of purified drinking water? Why/Why not? What quantity of groundwater should he mix with 1 litre of water from the Dead Sea to get a mixture having the salinity of purified drinking water?

Water source	Salinity
Dead Sea	$\approx 34\%$
Other seas and oceans	$\approx 3.5\%$
Ground water	$\approx 0.01\%$
Purified drinking water	$\approx 0.001\%$

Answer:

7. The smart watch data of 5 people was tracked from Monday to Friday. The recorded data tells us how many hours each person spent lying down, sitting, and standing or moving around, etc., as shown in the following table.

(i) How much time does Sahana spend per day in each of these body-states? Make a reasonable guess and fill her row in the table.

Person	Lying down	Sitting	Standing/moving around, etc.
Pavani (Patient)	20	3	1
Raghu (Nurse)	7	4	13
Zakir (Teacher)	8	6	10
Sahana (Student)			
Julie (_____)	8	10	6

Answer:

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8. Given a 100% stacked bar chart can we make a corresponding stacked bar chart?

Answer:

9. Whole class project: Each student shares the average age of their family and the number of family members. Discuss among the class and come up with a way to find out the average age of all the families of the class.

Answer:

10. Why does Method 1 give the correct answer in this case?

Method 1 takes $(12.8 + 15.8 + 18)/3$ for Jaspreet's three weeks, each with five cycling weekdays.

Answer:

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Section C: Short and Long Answer Questions

- 11.** (Prthūdakasvāmī, commentary on Brahmagupta's Brāhmasphuṭasiddhānta, c. 864 CE) A “hasta” (meaning “forearm”) refers to a unit of length measuring around 18 inches.

A pool 30 hastas long is dug to different depths along its length. It is divided into 5 sections having lengths 4, 5, 6, 7, and 8 hastas, and is dug to depths of 9, 7, 7, 3, and 2 hastas, respectively. Find the mean depth of the pool.

Answer:

- 12.** Given some data with corresponding weights, what would happen to the weighted average if all the weights are increased by a constant value, say 1? If required, experiment with some data. What do you observe? Justify your answer using algebra.

Answer:

- 13.** Two litres of a 25% juice mixture are combined with three litres of a 10% juice mixture. Find the juice concentration. Then find the concentration after adding one litre of plain water.

Answer:

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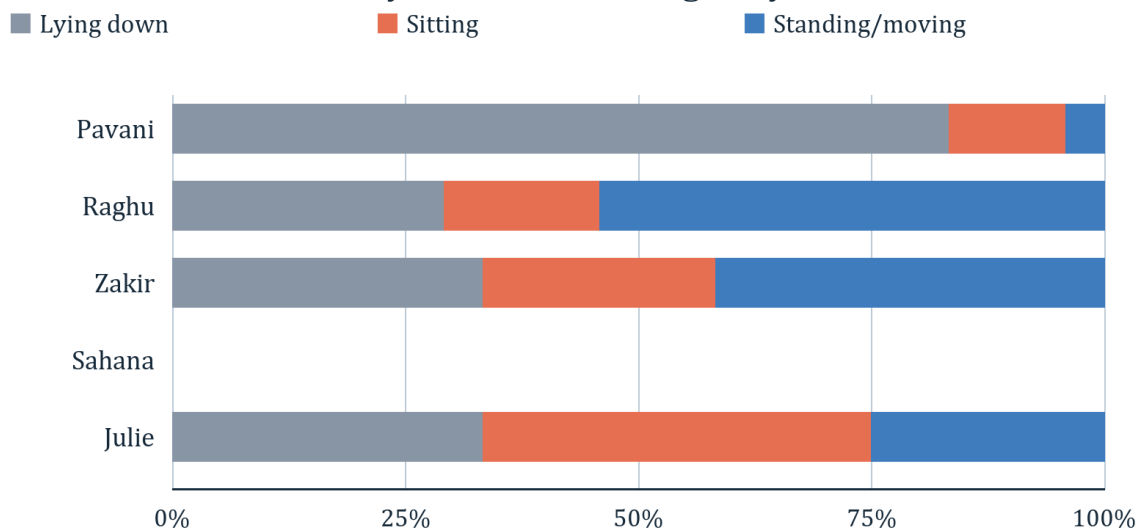
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14. The smart watch data of 5 people was tracked from Monday to Friday. The recorded data tells us how many hours each person spent lying down, sitting, and standing or moving around, etc., as shown in the following table.

(iii) Complete the chart below based on the tabular data.

Person	Lying down	Sitting	Standing/moving around, etc.
Pavani (Patient)	20	3	1
Raghu (Nurse)	7	4	13
Zakir (Teacher)	8	6	10
Sahana (Student)			
Julie (_____)	8	10	6

Body-state shares during a day



Answer:

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Answer: