Name: _____ **(   )**   **Class:**_____

Exercise 10.1 Average and range

1. A group of students were timed as they completed a task.

12	**12**	**14**	**14**	**15**	**18**	**20**	**20**	**20**	**29**	**36**

   Their times, in seconds, are listed above. Work out

   a. the mode   **b.** the median   **c.** the range

2. Maria had 20 pairs of shoes, in the following colours.

black	**black**	**black**	**black**	**black**	**black**	**blue**	**blue**	**blue**	**brown**
brown	**brown**	**green**	**green**	**red**	**white**	**white**	**white**	**white**	**yellow**

Find, if you can:
If any is impossible to find, explain why.

   a. the mode   **b.** the median   **c.** the range

3. A science class took a test. Here are their marks.

32	35	35	38	39	41	44	44	44	46

   a. Work out
   i. the mode   **ii.** the median   **iii.** the range

The teacher doubles all the marks to change them to percentages.

   b. Work out
   i. the new mode   **ii.** the new median   **iii.** the new range

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4. These are the masses of 10 babies born over a weekend.

The range is 3.5 – 3.1 = 0.4 kg.

3.1 kg   3.3 kg   3.0 kg   3.3 kg   2.9 kg   3.0 kg   3.5 kg   3.4 kg   2.6 kg   3.5 kg

   a. A nurse writes

      i.   What mistake has the nurse made?   **ii.**   What is the correct answer?

     _____   _____

   b. Work out the median class.   _____

5. There are 20 students in a class.
   The height of the tallest is 1.81 m and of the shortest is 1.52 m.
   A new student joins the class.
   The range of heights is now 0.32 m.
   How tall is the new students?

   _____

6. This table shows how far people who work in an office travel to work.

Distance (km)	Less than 5	5 or more but less than 10	10 or more but less than 20	20 or more but less than 30	30 or more
Number of people	9	23	6	9	3

   a. How many people travel less than 20 km?   _____

   b. What is the modal class?   _____

   c. Hassan said: 'More than half the people are in the modal class.'
      Is this true or false?   _____

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7. This table shows how many days some people worked, over a period of two weeks.

Number of days	4	5	6	7	8	9	10
Number of people	4	1	1	1	6	10	2

    a. How many people worked less than 7 days?   _____

    b. How many people worked more than 7 days?   _____

    c. Work out the modal number of days worked.   _____

    d. Work out the median number of days worked.   _____

8. Four lengths have a mode of 12 km and a range of 5 km.
   One of the lengths is 14 km.
   What are the other three lengths?

   _____

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Exercise 10.2 The mean

1. Miguel had five oranges.
   Their masses are given in the box.

150 g	170 g	185 g	190 g	190 g

   a. Work out the mean mass.

   b. Which is greater, the mean or the median?

   c. A sixth orange has a mass of 255 g. Calculate the mean mass of the six oranges.

2. Andrew recorded the rainfall, in millimetres, each day for two weeks.

First week (mm)	2	0	0	4	3	5	0
Second week (mm)	0	0	0	3	1	1	2

   a. Work out the modal rainfall for each week.

   b. Work out the mean rainfall for each week.

   c. Work out the mean rainfall over the whole two-week period.

3. There are 20 chairs in each of six rooms.
   There are 30 chairs in each of another fur rooms.
   Work out the mean number of chairs per room.

4. Sen has been doing jobs to earn money.
   The amounts he has earned for his last six
   jobs are shown in the box.

$ 25	$ 15	$ 20	$ 85	$ 10	$ 25

   a. What was the mean amount?

   b. Sean earned less than the mean in _____ of his jobs.

5. Matches are sold in boxes.

Number of matches	47	48	49	50	51	52	53	54
Number of boxes	3	8	12	7	6	2	1	1

   a. Work out the range of the number of matches.

   b. Calculate the mean number of matches per box.

   c. It says on the box: 'Average: 50 matches.' Is this correct?
      Give a reason for your answer.

6. Mia did a survey.
   She stood at the school gate and counted the number of people in each car the passed her.

Number of people	1	2	3	4	5	6
Number of cars	15	9	4	2	1	1

   a. How many cars passed Mia?

   b. Work out the mean number of people per car.

7. The mean age of nine members of a club is 20 years.
   When another person joins the club, the mean age increases to 21 years.
   How old is the new person?

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Exercise 10.3 Comparing distributions

1. Here are the ages, in years, of the cars in two car parks.

Car park A	4	8	9	7	2	10	7	
Car park B	1	4	3	5	6	4	1	4	3

   a. Work out the median age for each car park.

   b. Work out the range of ages for each car park.

   c. Which car park has the older cars, on average?

   d. Which car has greater variation in ages?

2. Sami made 27 phone calls in 12 days.
   Marta made 45 phone calls in 18 days

   a. Work out the mean number of calls per day for each person.

   b. Who made more calls per day?

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