

Name

Class



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Averages from tables

(9 – 1) Topic booklet

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

Information

- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL questions
Write your answers in the space provided.
You must write down all the stages in your working.

8 Rachel carried out a survey of 10 people to find out the type of fruit they like best.

The table gives information about her results.

| Type of fruit | Number of people |
|---------------|------------------|
| apple | 2 |
| banana | 5 |
| orange | 3 |

(a) Which type of fruit is the mode?

.....
(1)

In Rachel's survey, 2 out of 10 people like apples best.

(b) Write 2 out of 10 as a percentage.

.....%
(1)

- 15 The table shows information about the number of social media accounts used by each of 300 students.

| Number of social media accounts | Frequency |
|---------------------------------|-----------|
| 0 | 3 |
| 1 | 57 |
| 2 | 84 |
| 3 | 75 |
| 4 | 81 |

- (a) Work out the total number of social media accounts used by these students.

.....
(2)

- (b) Find the median number of social media accounts used by these students.

.....
(2)

15 The table shows information about the ages of all the people at a party.

| Age (years) | Frequency |
|--------------------|------------------|
| 11 – 20 | 6 |
| 21 – 30 | 16 |
| 31 – 40 | 10 |
| 41 – 50 | 8 |

(a) Work out the total number of these people who were aged 40 or less.

.....
(1)

Andy says that the range of ages is 39 years because $50 - 11 = 39$

(b) The range may not be 39 years.
Explain why.

.....
.....
.....
(1)

16 The table gives information about the number of points scored by each of 16 students in a game.

| Number of points | Frequency |
|------------------|-----------|
| 0 | 1 |
| 1 | 3 |
| 2 | 5 |
| 3 | 4 |
| 4 | 3 |

Tina worked out the median of the number of points scored to be 5

(a) Explain why it is **not** possible for the median to be 5

.....

.....

.....

(1)

Tina also worked out the total number of points scored by the 16 students in the game. Here is her working.

$$(0 \times 1) + (1 \times 3) + (2 \times 5) + (3 \times 4) + (4 \times 3) = 1 + 3 + 10 + 12 + 12 = 38$$

Tina made a mistake in her working to find the total number of points scored.

(b) Describe the mistake that Tina made.

.....

.....

.....

(1)

16 Marla buys some bags of buttons.

There are 19 buttons or 20 buttons or 21 buttons or 22 buttons in each bag.

The table gives some information about the number of buttons in each bag.

| Number of buttons | Frequency |
|--------------------------|------------------|
| 19 | |
| 20 | 7 |
| 21 | 3 |
| 22 | 1 |

The total number of buttons is 320

Complete the table.

16 Ross rolled an ordinary dice 30 times.

The frequency table gives information about his results.

| Score | Frequency |
|-------|-----------|
| 1 | 7 |
| 2 | 5 |
| 3 | 4 |
| 4 | 4 |
| 5 | 6 |
| 6 | 4 |

Ross worked out the mean score as 8

(a) Explain why it is impossible for the mean score to be 8

(1)

Graham also worked out the mean score.

Here is his working.

$$1 \times 7 + 2 \times 5 + 3 \times 4 + 4 \times 4 + 5 \times 6 + 6 \times 4 = 99$$

$$99 \div 6 = 16.5$$

The mean score is 16.5

(b) Describe the mistake Graham made in his method to work out the mean score.

(1)

17 The table shows information about the heights of 80 teenagers.

| Height (h cm) | Frequency |
|--------------------|-----------|
| $150 < h \leq 160$ | 8 |
| $160 < h \leq 170$ | 14 |
| $170 < h \leq 180$ | 24 |
| $180 < h \leq 190$ | 30 |
| $190 < h \leq 200$ | 4 |

Work out an estimate for the mean height of the teenagers.

..... cm

November 2022 – 2F

(Total for Question 17 is 3 marks)

17 The table shows some information about the dress sizes of 25 women.

| Dress size | Number of women |
|------------|-----------------|
| 8 | 2 |
| 10 | 9 |
| 12 | 8 |
| 14 | 6 |

Find the median dress size.

.....
(1)

June 2017 – Paper 3F

(Total for Question 17 is 1 mark)

- 18 The incomplete table gives some information about the lengths of the planks of wood in Ben's workshop.

| Length of plank (metres) | Number of planks |
|--------------------------|------------------|
| 3 | 5 |
| 2.5 | 8 |
| 2 | |
| 1.5 | 14 |
| 1 | 10 |

The total length of these planks is 92 metres.

Work out the number of planks of length 2 metres in Ben's workshop.

18 The table shows information about the numbers of points scored by 30 students in a quiz.

| Number of points | Frequency |
|-------------------------|------------------|
| 0 | 4 |
| 1 | 3 |
| 2 | 7 |
| 3 | 5 |
| 4 | 6 |
| 5 | 5 |

(a) Find the modal number of points.

.....
(1)

(b) Work out the total number of points scored.

.....
(2)

19 The table shows information about the heights of 80 children.

| Height (h cm) | Frequency |
|--------------------|-----------|
| $130 < h \leq 140$ | 4 |
| $140 < h \leq 150$ | 11 |
| $150 < h \leq 160$ | 24 |
| $160 < h \leq 170$ | 22 |
| $170 < h \leq 180$ | 19 |

Find the class interval that contains the median.

.....
(1)

November 2017 – Paper 3F

(Total for Question 19 is 1 mark)

23 The grouped frequency table gives information about the heights of 30 students.

| Height (h cm) | Frequency |
|--------------------|-----------|
| $130 < h \leq 140$ | 1 |
| $140 < h \leq 150$ | 7 |
| $150 < h \leq 160$ | 8 |
| $160 < h \leq 170$ | 10 |
| $170 < h \leq 180$ | 4 |

Write down the modal class interval.

.....
(1)

Specimen 1 – Paper 2F

(Total for Question 23 is 1 mark)

24 Jenny works in a shop that sells belts.

The table shows information about the waist sizes of 50 customers who bought belts from the shop in May.

| Belt size | Waist (w inches) | Frequency |
|------------------|--------------------------------------|------------------|
| Small | $28 < w \leq 32$ | 24 |
| Medium | $32 < w \leq 36$ | 12 |
| Large | $36 < w \leq 40$ | 8 |
| Extra Large | $40 < w \leq 44$ | 6 |

Calculate an estimate for the mean waist size.

.....inches
(3)

25 The table gives information about the times taken, in seconds, by 18 students to run a race.

| Time (t seconds) | Frequency |
|---------------------|-----------|
| $5 < t \leq 10$ | 1 |
| $10 < t \leq 15$ | 2 |
| $15 < t \leq 20$ | 7 |
| $20 < t \leq 25$ | 8 |

Work out an estimate for the mean time.

Give your answer correct to 3 significant figures.

..... seconds

26 The table shows information about the heights of 80 plants.

| Height (h cm) | Frequency |
|------------------|-----------|
| $10 < h \leq 20$ | 7 |
| $20 < h \leq 30$ | 13 |
| $30 < h \leq 40$ | 14 |
| $40 < h \leq 50$ | 12 |
| $50 < h \leq 60$ | 16 |
| $60 < h \leq 70$ | 18 |

(a) Find the class interval that contains the median.

.....
(1)

June 2019 – Paper 3F

(Total for Question 26 is 1 mark)

27 The table shows information about the weekly earnings of 20 people who work in a shop.

| Weekly earnings (£ x) | Frequency |
|--------------------------|-----------|
| $150 < x \leq 250$ | 1 |
| $250 < x \leq 350$ | 11 |
| $350 < x \leq 450$ | 5 |
| $450 < x \leq 550$ | 0 |
| $550 < x \leq 650$ | 3 |

(a) Work out an estimate for the mean of the weekly earnings.

£.....
(3)

Nadiya says,

“The mean may **not** be the best average to use to represent this information.”

(b) Do you agree with Nadiya?
You must justify your answer.

.....
.....
(1)

27 The table shows some information about the foot lengths of 40 adults.

| Foot length (f cm) | Number of adults |
|-----------------------|------------------|
| $16 \leq f < 18$ | 3 |
| $18 \leq f < 20$ | 6 |
| $20 \leq f < 22$ | 10 |
| $22 \leq f < 24$ | 12 |
| $24 \leq f < 26$ | 9 |

(a) Write down the modal class interval.

.....
(1)

(b) Calculate an estimate for the mean foot length.

..... cm
(3)