Find the mean from an ungrouped frequency table

H

1 The data shows the ages of 40 people at an exercise class.

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19 19 19 19 19 19 19
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20

Annie, Amir and Dexter are working out the mean of the data using different methods.

Annie's method

Add all the numbers up and divide by how many there are.

Amir's method

Work out $7 \times 17 + 5 \times 18 + 9 \times 19 + 19 \times 20$ and then divide by how many numbers there are.

Dexter's method

Use a table.

Age	Frequency	
17	7	119
18	5	90
19	9	171
20	19	380
	40	760

Choose one method to work out the mean. 19

Why did you choose this method?

Talk about it with a partner.

2 The table shows the number of letters in the first 100 words in a new children's book.

Number of letters	Number of words	
1	11	11
2	15	30
3	22	66
4	17	68
5	12	60
6	11	66
7	9	63
8	3	24
	100	388

a) Circle the modal number of letters in a word.

8 **22** **3** **4**

For each of the answers you have not circled, discuss with a partner why somebody might think they are the mode.

b) Circle the range of the number of letters in a word.

7 **8** **19** **21**

For each of the answers you have not circled, discuss with a partner why somebody might think they are the range.

c) Eva is working out the mean of the data in the table.

$11 + 15 + 22 + 17 + 12 + 11 + 9 + 3 = 100$

$\frac{100}{8} = 12.5$

How can you tell straight away that Eva is incorrect?

d) Work out the mean of the data in the table.

3·88

3 The table shows the number of bedrooms in 1,000 houses in a town.

The table is incomplete.

Number of bedrooms	1	2	3	4	5	6
Number of houses	33	124	237	380	186	

a) How many houses have six bedrooms?

40

b) State the modal number of bedrooms.

4

c) Find the mean number of bedrooms per house.

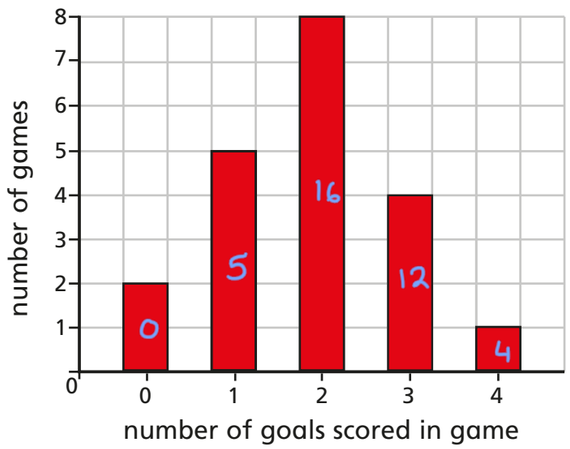
$33 + 248 + 711 + 1{,}520 + 930 + 240 = 3{,}682$

$\frac{3682}{1000} = 3.682$

3.7

4 Rosie plays for a local football team.

The frequency diagram shows how many goals the team scored in its first twenty games.



a) Find the number of goals scored in total in the twenty games.

37

b) Find the mean number of goals scored per game.

1.85

5 A teacher asks a number of students six spelling questions.

The table shows the results.

Number of correct spellings	0	1	2	3	4	5	6
Number of students	1	6	x	8	11	6	4
	0	6	$2x$	24	44	30	24

The teacher calculates that the mean number of correct spellings was 3.4

Find the missing data in the table.

$\frac{128+2x}{36+x} = 3.4$

$128 + 2x = 122.4 + 3.4x$

$5.6 = 1.4x$

$4 = x$

4

6 Three Year 9 classes sit a mental arithmetic test.

The table shows the number of students in each class and the mean number of questions each class gets correct.

Class	Number of students	Mean number of correct answers	
9A	32	23	736
9B	25	18	450
9C	20	15	300
	77		1486

Work out the overall mean for all the students.

$\frac{1486}{77} = 19.2987...$

19.3