

Mean from a Frequency Table - Worksheet

Skill

Group A - Mean from a frequency table

Calculate the mean from the frequency tables below. Give your answers to 1 dp:

1)

Number	Frequency	
0	2	
1	7	
2	5	
3	12	
4	17	
5	9	
6	4	

2)

Number	Frequency	
5	2	
6	7	
7	23	
8	16	
9	5	
10	2	

3)

Number	Frequency	
0	12	
1	14	
2	4	
3	2	
4	1	
5	0	
6	1	

4)

Number of strikes (N)	Frequency (f)
0	1
1	5
2	6
3	7
4	4
5	2

5)

Time take (t)	Frequency (f)
10	2
12	4
14	5
16	3
18	7

6)

Height in cm (h)	Frequency (f)
12	8
13	11
14	5
15	13
16	10

7)

Age in years (a)	Frequency (f)
14	8
15	12
16	15
17	14
18	14

8)

Speed (s)	Frequency (f)
8	22
9	20
10	19
11	18
12	15

9)

Length in m (l)	Frequency (f)
5	12
6	15
7	20
8	18
9	14

10)

Rainfall in cm (r)	Frequency (f)
12	10
13	8
14	6
15	4
16	1

11)

Speed in s (s)	Frequency (f)
20	12
21	15
22	14
23	18
24	22

12)

Height in cm (h)	Frequency (f)
2.1	2
2.2	4
2.3	3
2.4	5
2.5	8
2.6	4

Mean from a Frequency Table - Worksheet

Group B - Mean from a grouped frequency table

Find an estimate for the mean from the frequency tables below. Give your answers to 1 dp:

1)

Stamp Price	Frequency
20 - 26	24
27 - 33	39
34 - 40	50
41 - 47	37

2)

Number of plays a week	Frequency
1 - 3	4
4 - 6	27
7 - 9	16
10 - 12	4
13 - 15	1

3)

Length of call (mins)	Frequency
1 - 4	3
5 - 8	32
9 - 12	30
13 - 16	45
17 - 20	17

4)

Delivery Time	Frequency
$0 < t \leq 10$	3
$10 < t \leq 20$	10
$20 < t \leq 30$	14
$30 < t \leq 40$	19
$40 < t \leq 50$	4

5)

Length	Frequency
$0 < t \leq 5$	11
$5 < t \leq 10$	37
$10 < t \leq 15$	43
$15 < t \leq 20$	9

6)

Donation	Frequency
$0 < d \leq 5$	44
$5 < d \leq 10$	35
$10 < d \leq 20$	16
$20 < d \leq 50$	3
$50 < d \leq 100$	2

7)

Number	Frequency
$130 < h \leq 140$	3
$140 < h \leq 150$	10
$150 < h \leq 160$	7
$160 < h \leq 170$	17
$170 < h \leq 180$	15
$180 < h \leq 190$	8

8)

Length	Frequency
$0 < L \leq 10$	6
$10 < L \leq 20$	7
$20 < L \leq 30$	5
$30 < L \leq 40$	1
$40 < L \leq 50$	1

9)

Number	Frequency
$0 < t \leq 10$	42
$10 < t \leq 15$	23
$15 < t \leq 20$	35
$20 < t \leq 30$	12
$30 < t \leq 60$	18
$60 < t \leq 90$	4

10)

Height (cm)	Frequency
$20 \leq h < 40$	2
$40 \leq h < 60$	3
$60 \leq h < 80$	8
$80 \leq h < 100$	6
$100 \leq h < 120$	1

11)

Time (minutes)	Frequency
$0 \leq t < 10$	1
$10 \leq t < 15$	12
$15 \leq t < 20$	24
$20 \leq t < 30$	15
$40 \leq t < 50$	13
$50 \leq t < 60$	9
$60 \leq t < 70$	5

12)

Mass (grams)	Frequency
$100 \leq m < 200$	4
$200 \leq m < 300$	36
$300 \leq m < 400$	47
$400 \leq m < 500$	21
$500 \leq m < 600$	12

Mean from a Frequency Table - Worksheet

Group C - Reverse mean from a frequency table

Given the mean, find the missing frequency:

1)

Mean = 76.61	Frequency
$60 < x \leq 70$	20
$70 < x \leq 80$	a
$80 < x \leq 90$	7
$90 < x \leq 100$	11

2)

Mean = 160.76	Frequency
$140 < x \leq 150$	3
$150 < x \leq 160$	12
$160 < x \leq 170$	a
$170 < x \leq 180$	4

3)

Mean = 77.8	Frequency
$60 < x \leq 70$	14
$70 < x \leq 80$	17
$80 < x \leq 90$	10
$90 < x \leq 100$	a

4)

Mean = 156	Frequency
$140 < x \leq 150$	15
$150 < x \leq 160$	2
$160 < x \leq 170$	8
$170 < x \leq 180$	a

5)

Mean = 80.8	Frequency
$60 < x \leq 70$	16
$70 < x \leq 80$	17
$80 < x \leq 90$	16
$90 < x \leq 100$	a

6)

Mean = 160.81	Frequency
$140 < x \leq 150$	8
$150 < x \leq 160$	a
$160 < x \leq 170$	11
$170 < x \leq 180$	11

7)

Mean = 81	Frequency
$60 < x \leq 70$	15
$70 < x \leq 80$	13
$80 < x \leq 90$	a
$90 < x \leq 100$	19

8)

Mean = 160.38	Frequency
$140 < x \leq 150$	5
$150 < x \leq 160$	16
$160 < x \leq 170$	a
$170 < x \leq 180$	8

9)

Mean = 80.1	Frequency
$60 < x \leq 70$	19
$70 < x \leq 80$	a
$80 < x \leq 90$	11
$90 < x \leq 100$	17

10)

Mean = 161.49	Frequency
$140 < x \leq 150$	15
$150 < x \leq 160$	10
$160 < x \leq 170$	12
$170 < x \leq 180$	a

11)

Mean = 81.1	Frequency
$60 < x \leq 70$	16
$70 < x \leq 80$	a
$80 < x \leq 90$	18
$90 < x \leq 100$	17

12)

Mean = 162.73	Frequency
$140 < x \leq 150$	9
$150 < x \leq 160$	4
$160 < x \leq 170$	19
$170 < x \leq 180$	a

Mean from a Frequency Table - Worksheet

Applied

- 1) A class of 40 students measure their shoe sizes.

The frequency table shows the results.

Shoe Size	Frequency
3	4
4	7
5	15
6	12
7	2

Calculate the mean shoe size for the class.

- 2) Laura did a survey of the number of cups of coffee some of her colleagues had drunk yesterday.

The frequency table shows her result.

Number of cups of coffee	Frequency
2	1
3	3
4	5
5	8
6	5

- (a) Work out the number of colleagues Laura asked.
- (b) Work out the mean number of cups of coffee drunk.

Mean from a Frequency Table - Worksheet

- 3) Bruce asked 40 of his friends how many minutes it takes for them to get to work.

The frequency table shows some information about his results.

Time taken (m minutes)	Frequency
$0 < m \leq 10$	3
$10 < m \leq 20$	8
$20 < m \leq 30$	11
$30 < m \leq 40$	9
$40 < m \leq 50$	9

- (a) Work out an estimate for the mean time taken.
- (b) Why is your answer to part (a) an estimate?

Mean from a Frequency Table - Exam Questions

- 1) Lewis dug up 20 carrots and wrote down their lengths to the nearest cm. Here are his results:

5, 6, 5, 2, 4, 5, 8, 7, 5, 6
7, 6, 4, 3, 5, 7, 6, 4, 8, 5

- (a) Complete the frequency table to show Lewis's results.

Length in cm	Tally	Frequency
2		
3		
4		
5		
6		
7		
8		

(2)

- (b) Work out the mean length.

.....cm

(3)

(5 marks)

Mean from a Frequency Table - Exam Questions

- 2) The table shows information about the number of hours 40 children played computer games in one evening.

Number of hours (h)	Frequency
$0 \leq h < 1$	3
$1 \leq h < 2$	8
$2 \leq h < 3$	7
$3 \leq h < 4$	10
$4 \leq h < 5$	12

- (a) Work out an estimate for the mean number of hours.

.....hours
(3)

- (b) Why is your answer to part (a) an estimate?

.....
(1)
(4 marks)

Mean from a Frequency Table - Exam Questions

- 3) The star rating, from 1 to 5, of restaurants in a city are shown in the table below:

Star Rating	Frequency
1	4
2	17
3	23
4	x
5	18

The mean star rating of a restaurant in the city is 3.575.

Calculate the value of the missing frequency, x .

.....
(4 marks)

Mean from a Frequency Table - Answers

	Question	Answer																																																																																															
	Skill Questions																																																																																																
Group A	Calculate the mean from the frequency tables below. Give your answers to 1 dp: 1) <table><tr><th>Number</th><th>Frequency</th><th></th></tr><tr><td>0</td><td>2</td><td></td></tr><tr><td>1</td><td>7</td><td></td></tr><tr><td>2</td><td>5</td><td></td></tr><tr><td>3</td><td>12</td><td></td></tr><tr><td>4</td><td>17</td><td></td></tr><tr><td>5</td><td>9</td><td></td></tr><tr><td>6</td><td>4</td><td></td></tr></table> 2) <table><tr><th>Number</th><th>Frequency</th><th></th></tr><tr><td>5</td><td>2</td><td></td></tr><tr><td>6</td><td>7</td><td></td></tr><tr><td>7</td><td>23</td><td></td></tr><tr><td>8</td><td>16</td><td></td></tr><tr><td>9</td><td>5</td><td></td></tr><tr><td>10</td><td>2</td><td></td></tr></table> 3) <table><tr><th>Number</th><th>Frequency</th><th></th></tr><tr><td>0</td><td>12</td><td></td></tr><tr><td>1</td><td>14</td><td></td></tr><tr><td>2</td><td>4</td><td></td></tr><tr><td>3</td><td>2</td><td></td></tr><tr><td>4</td><td>1</td><td></td></tr><tr><td>5</td><td>0</td><td></td></tr><tr><td>6</td><td>1</td><td></td></tr></table> 4) <table><tr><th>Number of strikes (N)</th><th>Frequency (f)</th></tr><tr><td>0</td><td>1</td></tr><tr><td>1</td><td>5</td></tr><tr><td>2</td><td>6</td></tr><tr><td>3</td><td>7</td></tr><tr><td>4</td><td>4</td></tr><tr><td>5</td><td>2</td></tr></table> 5) <table><tr><th>Time take (t)</th><th>Frequency (f)</th></tr><tr><td>10</td><td>2</td></tr><tr><td>12</td><td>4</td></tr><tr><td>14</td><td>5</td></tr><tr><td>16</td><td>3</td></tr><tr><td>18</td><td>7</td></tr></table>	Number	Frequency		0	2		1	7		2	5		3	12		4	17		5	9		6	4		Number	Frequency		5	2		6	7		7	23		8	16		9	5		10	2		Number	Frequency		0	12		1	14		2	4		3	2		4	1		5	0		6	1		Number of strikes (N)	Frequency (f)	0	1	1	5	2	6	3	7	4	4	5	2	Time take (t)	Frequency (f)	10	2	12	4	14	5	16	3	18	7	1) 3.4 2) 7.4 3) 1.1 4) 2.6 5) 14.9
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Mean from a Frequency Table - Answers

Group A
contd

6)

Height in cm (h)	Frequency (f)
12	8
13	11
14	5
15	13
16	10

7)

Age in years (a)	Frequency (f)
14	8
15	12
16	15
17	14
18	14

8)

Speed (s)	Frequency (f)
8	22
9	20
10	19
11	18
12	15

9)

Length in m (l)	Frequency (f)
5	12
6	15
7	20
8	18
9	14

10)

Rainfall in cm (r)	Frequency (f)
12	10
13	8
14	6
15	4
16	1

11)

Speed in s (s)	Frequency (f)
20	12
21	15
22	14
23	18
24	22

6) 14.1

7) 16.2

8) 9.8

9) 7.1

10) 13.2

11) 22.3

Mean from a Frequency Table - Answers

Group A contd	12) <table><tr><th>Height in cm (<i>h</i>)</th><th>Frequency (<i>f</i>)</th></tr><tr><td>2.1</td><td>2</td></tr><tr><td>2.2</td><td>4</td></tr><tr><td>2.3</td><td>3</td></tr><tr><td>2.4</td><td>5</td></tr><tr><td>2.5</td><td>8</td></tr><tr><td>2.6</td><td>4</td></tr></table>	Height in cm (<i>h</i>)	Frequency (<i>f</i>)	2.1	2	2.2	4	2.3	3	2.4	5	2.5	8	2.6	4	12) 2.4																																
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Group B	Find an estimate for the mean from the frequency tables below. Give your answers to 1 dp: 1) <table><tr><th>Stamp Price</th><th>Frequency</th></tr><tr><td>20 - 26</td><td>24</td></tr><tr><td>27 - 33</td><td>39</td></tr><tr><td>34 - 40</td><td>50</td></tr><tr><td>41 - 47</td><td>37</td></tr></table> 2) <table><tr><th>Number of plays a week</th><th>Frequency</th></tr><tr><td>1 - 3</td><td>4</td></tr><tr><td>4 - 6</td><td>27</td></tr><tr><td>7 - 9</td><td>16</td></tr><tr><td>10 - 12</td><td>4</td></tr><tr><td>13 - 15</td><td>1</td></tr></table> 3) <table><tr><th>Length of call (mins)</th><th>Frequency</th></tr><tr><td>1 - 4</td><td>3</td></tr><tr><td>5 - 8</td><td>32</td></tr><tr><td>9 - 12</td><td>30</td></tr><tr><td>13 - 16</td><td>45</td></tr><tr><td>17 - 20</td><td>17</td></tr></table> 4) <table><tr><th>Delivery Time</th><th>Frequency</th></tr><tr><td>0 < <i>t</i> ≤ 10</td><td>3</td></tr><tr><td>10 < <i>t</i> ≤ 20</td><td>10</td></tr><tr><td>20 < <i>t</i> ≤ 30</td><td>14</td></tr><tr><td>30 < <i>t</i> ≤ 40</td><td>19</td></tr><tr><td>40 < <i>t</i> ≤ 50</td><td>4</td></tr></table>	Stamp Price	Frequency	20 - 26	24	27 - 33	39	34 - 40	50	41 - 47	37	Number of plays a week	Frequency	1 - 3	4	4 - 6	27	7 - 9	16	10 - 12	4	13 - 15	1	Length of call (mins)	Frequency	1 - 4	3	5 - 8	32	9 - 12	30	13 - 16	45	17 - 20	17	Delivery Time	Frequency	0 < <i>t</i> ≤ 10	3	10 < <i>t</i> ≤ 20	10	20 < <i>t</i> ≤ 30	14	30 < <i>t</i> ≤ 40	19	40 < <i>t</i> ≤ 50	4	1) 34.7 2) 6.3 3) 11.8 4) 27.2
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Mean from a Frequency Table - Answers

Group B
contd

5)

Length	Frequency
$0 < t \leq 5$	11
$5 < t \leq 10$	37
$10 < t \leq 15$	43
$15 < t \leq 20$	9

5) 10 or 10.0

6)

Donation	Frequency
$0 < d \leq 5$	44
$5 < d \leq 10$	35
$10 < d \leq 20$	16
$20 < d \leq 50$	3
$50 < d \leq 100$	2

6) 8.7

7)

Number	Frequency
$130 < h \leq 140$	3
$140 < h \leq 150$	10
$150 < h \leq 160$	7
$160 < h \leq 170$	17
$170 < h \leq 180$	15
$180 < h \leq 190$	8

7) 164.2

8)

Length	Frequency
$0 < L \leq 10$	6
$10 < L \leq 20$	7
$20 < L \leq 30$	5
$30 < L \leq 40$	1
$40 < L \leq 50$	1

8) 17 or 17.0

9)

Number	Frequency
$0 < t \leq 10$	42
$10 < t \leq 15$	23
$15 < t \leq 20$	35
$20 < t \leq 30$	12
$30 < t \leq 60$	18
$60 < t \leq 90$	4

9) 18.8

Mean from a Frequency Table - Answers

Group B contd	10)	<table><tr><th>Height (cm)</th><th>Frequency</th></tr><tr><td>$20 \leq h < 40$</td><td>2</td></tr><tr><td>$40 \leq h < 60$</td><td>3</td></tr><tr><td>$60 \leq h < 80$</td><td>8</td></tr><tr><td>$80 \leq h < 100$</td><td>6</td></tr><tr><td>$100 \leq h < 120$</td><td>1</td></tr></table>	Height (cm)	Frequency	$20 \leq h < 40$	2	$40 \leq h < 60$	3	$60 \leq h < 80$	8	$80 \leq h < 100$	6	$100 \leq h < 120$	1	10) 71 or 71.0			
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Group C	Given the mean, find the missing frequency:												
	1)	<table><tr><th>Mean = 76.61</th><th>Frequency</th></tr><tr><td>$60 < x \leq 70$</td><td>20</td></tr><tr><td>$70 < x \leq 80$</td><td>a</td></tr><tr><td>$80 < x \leq 90$</td><td>7</td></tr><tr><td>$90 < x \leq 100$</td><td>11</td></tr></table>	Mean = 76.61	Frequency	$60 < x \leq 70$	20	$70 < x \leq 80$	a	$80 < x \leq 90$	7	$90 < x \leq 100$	11	1) 18
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Mean = 160.76	Frequency												
$140 < x \leq 150$	3												
$150 < x \leq 160$	12												
$160 < x \leq 170$	a												
$170 < x \leq 180$	4												

Mean from a Frequency Table - Answers

Group C
contd

3)

Mean = 77.8	Frequency
$60 < x \leq 70$	14
$70 < x \leq 80$	17
$80 < x \leq 90$	10
$90 < x \leq 100$	a

3) 9

4)

Mean = 156	Frequency
$140 < x \leq 150$	15
$150 < x \leq 160$	2
$160 < x \leq 170$	8
$170 < x \leq 180$	a

4) 5

5)

Mean = 80.8	Frequency
$60 < x \leq 70$	16
$70 < x \leq 80$	17
$80 < x \leq 90$	16
$90 < x \leq 100$	a

5) 20

6)

Mean = 160.81	Frequency
$140 < x \leq 150$	8
$150 < x \leq 160$	a
$160 < x \leq 170$	11
$170 < x \leq 180$	11

6) 13

7)

Mean = 81	Frequency
$60 < x \leq 70$	15
$70 < x \leq 80$	13
$80 < x \leq 90$	a
$90 < x \leq 100$	19

7) 13

8)

Mean = 160.38	Frequency
$140 < x \leq 150$	5
$150 < x \leq 160$	16
$160 < x \leq 170$	a
$170 < x \leq 180$	8

8) 10

Mean from a Frequency Table - Answers

Group C
contd

9)

Mean = 80.1	Frequency
$60 < x \leq 70$	19
$70 < x \leq 80$	a
$80 < x \leq 90$	11
$90 < x \leq 100$	17

9) 4

10)

Mean = 161.49	Frequency
$140 < x \leq 150$	15
$150 < x \leq 160$	10
$160 < x \leq 170$	12
$170 < x \leq 180$	a

10) 20

11)

Mean = 81.1	Frequency
$60 < x \leq 70$	16
$70 < x \leq 80$	a
$80 < x \leq 90$	18
$90 < x \leq 100$	17

11) 8

12)

Mean = 162.73	Frequency
$140 < x \leq 150$	9
$150 < x \leq 160$	4
$160 < x \leq 170$	19
$170 < x \leq 180$	a

12) 12

Mean from a Frequency Table - Answers

	Question	Answer												
	Applied Questions													
1)	A class of 40 students measure their shoe sizes. The frequency table shows the results. <table><tr><th>Shoe Size</th><th>Frequency</th></tr><tr><td>3</td><td>4</td></tr><tr><td>4</td><td>7</td></tr><tr><td>5</td><td>15</td></tr><tr><td>6</td><td>12</td></tr><tr><td>7</td><td>2</td></tr></table> Calculate the mean shoe size for the class.	Shoe Size	Frequency	3	4	4	7	5	15	6	12	7	2	5.025
Shoe Size	Frequency													
3	4													
4	7													
5	15													
6	12													
7	2													
2)	Laura did a survey of the number of cups of coffee some of her colleagues had drunk yesterday. The frequency table shows her result. <table><tr><th>Number of cups of coffee</th><th>Frequency</th></tr><tr><td>2</td><td>1</td></tr><tr><td>3</td><td>3</td></tr><tr><td>4</td><td>5</td></tr><tr><td>5</td><td>8</td></tr><tr><td>6</td><td>5</td></tr></table> a) Work out the number of colleagues Laura asked. b) Work out the mean number of cups of coffee drunk.	Number of cups of coffee	Frequency	2	1	3	3	4	5	5	8	6	5	a) 22 b) 4.59 cups (2dp)
Number of cups of coffee	Frequency													
2	1													
3	3													
4	5													
5	8													
6	5													
3)	Bruce asked 40 of his friends how many minutes it takes for them to get to work. The frequency table shows some information about his results. <table><tr><th>Time taken (m minutes)</th><th>Frequency</th></tr><tr><td>$0 < m \leq 10$</td><td>3</td></tr><tr><td>$10 < m \leq 20$</td><td>8</td></tr><tr><td>$20 < m \leq 30$</td><td>11</td></tr><tr><td>$30 < m \leq 40$</td><td>9</td></tr><tr><td>$40 < m \leq 50$</td><td>9</td></tr></table> a) Work out an estimate for the mean time taken. b) Why is your answer to part (a) an estimate?	Time taken (m minutes)	Frequency	$0 < m \leq 10$	3	$10 < m \leq 20$	8	$20 < m \leq 30$	11	$30 < m \leq 40$	9	$40 < m \leq 50$	9	a) 28.25 minutes b) It is grouped frequency, not exact values.
Time taken (m minutes)	Frequency													
$0 < m \leq 10$	3													
$10 < m \leq 20$	8													
$20 < m \leq 30$	11													
$30 < m \leq 40$	9													
$40 < m \leq 50$	9													

Mean from a Frequency Table - Mark Scheme

	Question	Answer																																																
	Exam Questions																																																	
1)	Lewis dug up 20 carrots and wrote down their lengths to the nearest cm. Here are his results. 5, 6, 5, 2, 4, 5, 8, 7, 5, 6 7, 6, 4, 3, 5, 7, 6, 4, 8, 5 (a) Complete the frequency table to show Lewis's results. <table border="1"> <thead> <tr> <th>Length in cm</th><th>Tally</th><th>Frequency</th></tr> </thead> <tbody> <tr><td>2</td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td></tr> <tr><td>7</td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td></tr> </tbody> </table>	Length in cm	Tally	Frequency	2			3			4			5			6			7			8			(a) Correct tally column Correct frequency column <table border="1"> <thead> <tr> <th>Length in cm</th><th>Tally</th><th>Frequency</th></tr> </thead> <tbody> <tr><td>2</td><td> </td><td>1</td></tr> <tr><td>3</td><td> </td><td>1</td></tr> <tr><td>4</td><td> </td><td>3</td></tr> <tr><td>5</td><td> </td><td>6</td></tr> <tr><td>6</td><td> </td><td>4</td></tr> <tr><td>7</td><td> </td><td>3</td></tr> <tr><td>8</td><td> </td><td>2</td></tr> </tbody> </table> (1) (1)	Length in cm	Tally	Frequency	2		1	3		1	4		3	5		6	6		4	7		3	8		2
Length in cm	Tally	Frequency																																																
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Length in cm	Tally	Frequency																																																
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4		3																																																
5		6																																																
6		4																																																
7		3																																																
8		2																																																
(b)	Work out the mean length.	(b) $(2 \times 1) + (3 \times 1) + (4 \times 3) + (5 \times 6) + (6 \times 4) + (7 \times 3) + (8 \times 2) = 108$ $108 \div 20$ 5.4cm (1) (1) (1)																																																

Mean from a Frequency Table - Mark Scheme

2)	The table shows information about the number of hours 40 children played computer games in one evening. <table><tr><th>Number of hours (h)</th><th>Frequency</th></tr><tr><td>$0 \leq h < 1$</td><td>3</td></tr><tr><td>$1 \leq h < 2$</td><td>8</td></tr><tr><td>$2 \leq h < 3$</td><td>7</td></tr><tr><td>$3 \leq h < 4$</td><td>10</td></tr><tr><td>$4 \leq h < 5$</td><td>12</td></tr></table> (a) Work out an estimate for the mean number of hours.	Number of hours (h)	Frequency	$0 \leq h < 1$	3	$1 \leq h < 2$	8	$2 \leq h < 3$	7	$3 \leq h < 4$	10	$4 \leq h < 5$	12		
Number of hours (h)	Frequency														
$0 \leq h < 1$	3														
$1 \leq h < 2$	8														
$2 \leq h < 3$	7														
$3 \leq h < 4$	10														
$4 \leq h < 5$	12														
		(a) $(0.5 \times 3) + (1.5 \times 8) + (2.5 \times 7) + (3.5 \times 10) + (4.5 \times 12) = 120$ $120 \div 40$ 3 hours	(1) (1) (1)												
	(b) Why is your answer to part (a) an estimate?	(b) It is grouped data, not exact values.	(1)												
3)	The star rating, from 1 to 5, of restaurants in a city are shown in the table below. <table><tr><th>Star Rating</th><th>Frequency</th></tr><tr><td>1</td><td>4</td></tr><tr><td>2</td><td>17</td></tr><tr><td>3</td><td>23</td></tr><tr><td>4</td><td>x</td></tr><tr><td>5</td><td>18</td></tr></table> The mean star rating of a restaurant in the city is 3.575. Calculate the value of the missing frequency, x	Star Rating	Frequency	1	4	2	17	3	23	4	x	5	18	$\frac{197+4x}{62+x} = 3.575$ $4x + 197 = 3.575(62 + x)$ $0.425x = 24.75$ $x = 58$	(1) (1) (1) (1)
Star Rating	Frequency														
1	4														
2	17														
3	23														
4	x														
5	18														

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