Stem and Leaf and Two-Way Tables

GCSE Mathematics • **Foundation Tier** • Grades 2–4 • Non-calculator

WORKED SOLUTIONS

Name: worked example Class: _____ Total: 47 / 47

Show all your working. Marks are given for correct method as well as the final answer.

1. The stem and leaf shows test marks. Write down the lowest mark. **[1 mark]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

stem 1, first leaf 2
key: 1 | 2 = 12

Answer: 12

2. Using the same diagram, write down the highest mark. **[1 mark]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

last stem 5, leaf 1

Answer: 51

3. Using the same diagram, work out the range. **[2 marks]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

51 − 12
= 39

Answer: 39

4. Using the same diagram, write down the mode. **[2 marks]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

stem 3 has leaves 1 4 4 4 9
34 appears three times

Answer: 34

5. Using the same diagram, work out how many took the test. **[1 mark]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

count the leaves: 3 + 4 + 5 + 2 + 1

Answer: 15

6. Using the same diagram, work out the median. **[3 marks]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

15 values, so the median is the 8th
(15 + 1) ÷ 2 = 8
count along: 12 15 17 21 23 23 28 31

Answer: 31

7. Using the same diagram, work out how many scored more than 35. **[2 marks]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

39, 42, 45, 51

Answer: 4

8. Using the same diagram, work out the fraction who scored less than 20. **[2 marks]**

Stem	Leaf
1	2 5 7
2	1 3 3 8
3	1 4 4 4 9
4	2 5
5	1

Key: 1 | 2 means 12 marks

12, 15, 17 → 3 of them
$\frac{3}{15} = \frac{1}{5}$

Answer: $\frac{3}{15} = \frac{1}{5}$

9. The stem and leaf shows race times in seconds. Write down the mode. **[2 marks]**

Stem	Leaf
2	4 8
3	0 2 2 7 9
4	1 5 6
5	3

Key: 2 | 4 means 24 seconds

stem 3, leaves 0 2 2 7 9
32 appears twice

Answer: 32

10. Using the race times, work out the median. **[3 marks]**

Stem	Leaf
2	4 8
3	0 2 2 7 9
4	1 5 6
5	3

Key: 2 | 4 means 24 seconds

11 values, so the median is the 6th
(11 + 1) ÷ 2 = 6
24 28 30 32 32 37 39 41 45 46 53
= 37 seconds

Answer: 37

11. Using the race times, work out the range. **[2 marks]**

Stem	Leaf
2	4 8
3	0 2 2 7 9
4	1 5 6
5	3

Key: 2 | 4 means 24 seconds

53 − 24
= 29

Answer: 29

12. Using the race times, work out how many ran in under 40 seconds. **[2 marks]**

Stem	Leaf
2	4 8
3	0 2 2 7 9
4	1 5 6
5	3

Key: 2 | 4 means 24 seconds

stem 2: 2 values
stem 3: 5 values
2 + 5 = 7

Answer: 7

13. Complete the two-way table, then write down how many Year 10 pupils take the bus. **[3 marks]**

	Walk	Bus	Total
Year 10	14		32
Year 11		11	
Total	31		60

Year 10 total 32, walk 14
32 − 14 = 18

Answer: 18

14. Using the same table, work out how many Year 11 pupils walk. **[2 marks]**

	Walk	Bus	Total
Year 10	14		32
Year 11		11	
Total	31		60

walk total 31, Year 10 walk 14
31 − 14 = 17

Answer: 17

15. Using the same table, work out how many Year 11 pupils there are. **[2 marks]**

	Walk	Bus	Total
Year 10	14		32
Year 11		11	
Total	31		60

60 − 32 = 28
check: 17 walk + 11 bus = 28 ✓

Answer: 28

16. Using the same table, work out how many pupils take the bus altogether. **[2 marks]**

	Walk	Bus	Total
Year 10	14		32
Year 11		11	
Total	31		60

$60 - 31 = 29$
check: $18 + 11 = 29$ ✓

Answer: 29

17. Using the same table, work out the probability that a pupil chosen at random walks. **[2 marks]**

	Walk	Bus	Total
Year 10	14		32
Year 11		11	
Total	31		60

31 walk out of 60 pupils

Answer: $\frac{31}{60}$

18. Using the same table, work out the percentage of Year 10 who walk, to 1 d.p. **[3 marks]**

	Walk	Bus	Total
Year 10	14		32
Year 11		11	
Total	31		60

$\frac{14}{32} \times 100$
$= 43.75$
$= 43.8\%$

Answer: 43.8%

19. The stem and leaf below shows the ages of a club's members.

Stem	Leaf
1	4 7 9
2	0 2 2 5 8
3	1 6
4	0

Key: 1 | 4 means 14 years

(a) Work out how many members there are. **[1 mark]**

$3 + 5 + 2 + 1 = 11$

(b) Work out the median age. **[3 marks]**

11 values, median is the 6th
14 17 19 20 22 22 25 28 31 36 40
$= 22$

Answer: 11 members ; median 22

20. 80 people were asked whether they drive. 45 were men, and 28 of the men drive. 12 women do not drive.

(a) Work out how many women drive. **[3 marks]**

women = 80 − 45 = 35

35 − 12 = 23

(b) Work out the probability a person chosen at random drives. **[3 marks]**

drivers = 28 + 23 = 51

$\frac{51}{80}$

Answer: _____ 23 women ; $\frac{51}{80}$ _____

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