Q1.

$n - 1$

B1

[1]

Q2.

14 and 22 **chosen**
or
their 22 − their 14 with either correct

M1

8

A1

[2]

Q3.

Median ticked

and

a valid reason for not using mode (eg there is no mode)

and

a valid reason for not using mean (eg 82 will affect the mean disproportionately)

B1

median ticked

or

valid reason to reject mean or valid reason to reject mode with any box or no box ticked

B2

Additional Guidance

Accept any indication in place of a tick

Ignore non-contradictory statements alongside a correct reason

Median ticked with reasons “There is no mode” and “82 would skew the mean”

B2

No box or mode ticked with reason “Not mean, because of the 82”

B1

No box or mean ticked with reason “Not mode, all the numbers are different”

B1

No box or mode ticked with statement that 82 is very large

B0

Condone “one number” oe for “82” in reason for mean if intention is clear, e.g. “One of the numbers is far bigger than the others”

Do not accept reasons for the mean indicating that 12.7 is too high unless 82

is also mentioned

Do not accept reasons given with the wrong measure

eg “It cannot be the mean as they’re all different”

Do not accept a reason which simply defines mean and mode

Giving reasons for mode and mean does not imply a selection of median – the box must be ticked to achieve both marks

Median ticked with two valid reasons which are not attributed to median and mode

eg median ticked and “There is not a repeated number” and “82 is far too high to calculate the average”

B2

Otherwise, reasons must be attributed

[2]

Q4.

(a) 9

Ignore working which may be for 4(b)

B1

(b) 5 7 (9) 9 10

*Numbers arranged in ascending or descending order **and** a clear indication that 9 is the middle number*

or

A clear and complete statement that 9 is the middle number when you arrange them in order

B1

[2]

Q5.

3

B1 for 8 seen as value of X for Set A

or 3 seen as value of X for set A but different value for set B

B2

[2]

Q6.

(a) 20
or 20 out of 120
or 20 in 120

$\sqrt{36}$ *(oe) is B0*

B1

(b) Yes ticked

If boxes blank, yes may be implied by wording

B1

Valid reason eg

1 should be (about) 20 (but it is much lower)
or 6 should be (about) 20 (but it is higher)
or 6 is much higher than 1
or frequencies should be all (about) the same

oe Strand (i)

Only award if Yes ticked or implied

Q1

Additional Guidance

There are 4 ways to score the Q mark
Comparing frequency of 1 to 20
Comparing frequency of 6 to 20
Referring to significant difference between frequency of 1 and 6
Referring to the fact that all frequencies should be the same

Yes ticked and:

B1

6 has above the average which is 20

Q1

6 more, 1 a lot less

Q1

Lands more on 6. It should land on each side about the same number

Q1

The range of results is too large on specific numbers (1,6)
showing there is something making it land on a 6 and not a 1

Q1

The frequency of landing on 6 is over 7 times the frequency
of it landing on 1.

Q1

There is a large range of 33 between the highest and lowest frequency

Q1

Because the frequency is not all the same so it isn`t fair

Q1

Frequency should be the same for all numbers

Q1

Lands more on 6

Q0

6 has appeared as the mode number whereas 1 is the least amount

Q0

Is heavier on number 6

Q0

Landed on 6 38 times

Q0

All number are about average except 1 and 6

Q0

Answers should be more evenly spaced out

Q0

Each time the number goes up, the frequency goes up

Q0

[3]

Q7.

(a) $200 < t \leq 240$

B1

(b) 16×220 (= 3520) or 4×260 (= 1040)

Attempt at fx using one correct midpoint

or 4 × 300 (= 1200) or 2 × 380 (= 760)
or 2 × 460 (= 920) or 2 × 500 (= 1000)
or
8440

M1

(their 3520 + their 1040 + their 1200 + their 0 + their 760 + their 0 + their 920 + their 1000) ÷ 30

1055 implies M1M0A0
7473.(…) implies M1M1A0

M1 dep

281 or 282 or 281.3 (…)

SC2 301.(3..) or 261.(3..)

A1

(c) Ticks modal class and gives valid reason *oe*

the mean is affected by a few (older) slower times

eg Current performance in this class
or
This class has shorter times

or
older / slower times irrelevant to current performance

B1

[5]

Q8.

Valid statement about proportion

eg there were more females than males

B1

Valid statement about average

eg the average age of the females was higher

B1

Valid statement about spread

eg the ages of the females were more spread out

B1

Additional Guidance

Condone incorrect values supporting statements

Condone irrelevant statements with correct statements

Proportion of the audience statements

There were more women

B1

Are mostly female

B1

There were 66% more females than males

B1

The proportion of women is high

B1

Females are a higher proportion than males

B1

Less men than women

B1

The men were 17%, the women were 83%

B1

The males were 17% which is less than half

B1

The males were 17%

B0

The difference is 66%

B0

Average age statements

The women had a higher mean

B1

Women were 5 years older

B1

Females were older than the males

B1

There were more females that were older than the males, this is why the mean age of the females is more

B1

Most males were younger than the females

B1

More older women than men

B1

There are more younger males than females

B1

There are younger males than females

B0

Females have a high mean

B0

Average age 5.4 years difference

B0

The women's mean age range was higher

B0

Spread of ages statements

The women had a higher range

B1

More of an age gap in the females than the males

B1

Females have a higher spread

B1

Males ages are closer together than females

B1

Females have a wider age range

B1

The female age gap was high, the male age gap was low

B1

Ages were quite close together

B0

The female age gap was high

B0

Age range of males is younger than females

B0

[3]

Q9.

(a) Line of height 4 above 0 goals

B1

(b) $(0 \times 4) + 1 \times 6 + 2 \times 3 + 3 \times 4 + 4 \times 2 + 5 \times 1$

(0) + 6 + 6 + 12 + 8 + 5

Allow one error or omission

M1

37

SC1 41

A1

(c) 2×21 (− their 37)

2 × 20 (− their 37) + 2

M1

5

ft their part (b)

A1 ft

[5]

Q10.

(a) $4 \div 2.5$

M1

1.6

Ignore further working

A1

(b) Week 4

B1

Valid reason or working

Accept:
4.8, 2.3, 4.8 are total weights in weeks 1, 2 and 3
Total weight in weeks 1, 2 and 3 always less than 5kg
5.7kg caught in week 4 (so possible)
Largest (total) weight caught in week 4
More than 5(kg) caught in week 4
Most weight in week 4
Do not accept:
Most in week 4
More in week 4
Mean is bigger in week 4
Strand (ii)
SC1 for 4.8, 2.3 4.8 and 5.7 seen

Q1

[4]

Q11.

(a) 30

B1

(b) 4

B1

(c) 5 × 4 (= 20) or

6 × 2 (= 12) or

7 × 8 (= 56) or

8 × 10 (= 80) or

9 × 6 (= 54) *oe*

M1

5 × 4 + 6 × 2 + 7 × 8 + 8 × 10 + 9 × 6 (= 222) *oe*

Allow one error or omission

M1dep

222 ÷ 30 *oe*

222 must be evaluated and correct

A1

(d) Marks for Class B are more spread out

Accept B range > A range (ft their part b)

B1 ft

On average Class A marks higher than Class B

Accept A mean > B mean

B1

[7]

Q12.

1 2 2 2 3

Any order

B1 for two conditions met

eg 1 1 2 2 3

1 1 2 2 2

1 2 2 3 …

1 2 2 3 4

B2

[2]

Q13.

(a) 21 + 20 + 29 + 22 + 24 or 116

Allow one error or omission

M1

their total ÷ 5

Condone 21 + 20 + 29 + 22 + 24 ÷ 5

M1

23.2

May be implied

A1

23

ft any decimal seen that is correctly rounded

B1ft

(b) 9

B1

(c) Agrees **and** Chris' mean is 23

Agrees **and** Chris' total is 116 and Tommy's total is 150

Strand (iii)

or

eg Tommy scored 150 runs which is more than Chris

eg True as all Chris' scores are under 30 ft their mean or total from (a)

or

Correct **comparative** comment on means or total runs

Q1ft

(d) Agrees and Chris' range is 9

Strand (iii)

or

eg Chris had a lower range so he was more consistent

Correct **comparative** comment about the range

ft their range from (b)

Q1ft

[7]

Q14.

Continuous **and** sample **and** primary (and none incorrect)

B1 any two correct and up to one incorrect

B2

[2]

Q15.

(a) (1 + 1 + 10 + 2 + 10 + 1 + 3) ÷ 7 or 1 + 1 + 10 + 2 + 10 + 1 + 3

oe Allow one error or omission

M1

4 or 28 and 35

A1

(range =) 9

Range

B1

Ed's scores are higher on average
or Danni's scores are more varied

oe ft their values for mean or totals or range
Strand (iii)
Supporting answers with explanation and evidence

Q1

Ed's scores are higher on average (or in total)
and Danni's scores have bigger range

oe
ft their values for mean or totals and range

B1 ft

(b) Danni and valid reason or Ed and valid reason

eg (Danni) only one that scored 10 (Ed) more consistent

B1 ft

[6]

Q16.

11 chosen with no other number less than 11 chosen

B1

4 × 10 or 40

M1

23

SC1 for 2 numbers with a total of 34

A1

[3]

Q17.

(a) Needs time frame *oe*

e.g. No time period (zone)

Vague as needs weekly or monthly

B1

(b) No box for never *oe*

If (a) incorrect allow needs time frame

Answers may be seen in (a)

B1

No box for 4 *oe*

If (a) incorrect allow needs a time frame

Answers may be seen in (a)

B1

[3]

Q18.

(a) **Alternative method 1**

4 + 9 + [1, 12] or [14, 25]
or
$\frac{5}{15}$ × 24 or 8

M1

8400 × $\frac{21}{50}$ or 3528

oe

M1dep

211 680

A1

Alternative method 2

$\frac{8400}{50}$ × 4 or 672
and
$\frac{8400}{50}$ × 9 or 1512
and
$\frac{8400}{50}$ × [1, 12] or [168, 2016]

M1

$\frac{8400}{50}$ × 4 + $\frac{8400}{50}$ × 9 +
$\frac{8400}{50}$ × $\frac{5}{15}$ × 24
or 3528

oe

M1dep

211 680

A1

(b) Any appropriate explanation

eg1 this is only a sample
eg2 it may not reflect the whole population
eg3 it may be different on another day
eg4 it may be different at another time

B1

[4]

Q19.

(a) (i) 51

B1

(ii) Orders the values

Either way
Allow one error or omission

M1

51

Must come from all 11 numbers correctly ordered

A1

Alternative method

Orders only first 6 or last 6 numbers correctly

M1

51

A1

(iii) Attempts to add values

At least 51 + 50 + … seen (= 550)

M1

their 550 ÷ 11

M1 dep

50

SC3 working and correct answers to (a)(ii) and (a)(iii) swapped over

A1

(b) (i) Mean/mode/median are 50 or above

oe All but one are 50 or more

B1 ft

(ii) One bag is 43

oe Sample size too small
One (or some) bag(s) have less than 50

B1 ft

(c) Take a larger sample

oe *Need more data*

B1

Spread the sample out over days

oe *Sample at random*

B1

[10]