| Question Number | Scheme | Marks |
|---|---|---|
| 1 (a) | [Mode =] 137 | B1 |
| | | (1) |
| (b) | $a$ = 106<br>$b$ = 129<br>$c$ = 126 | B1<br>B1<br>B1 |
| | | (3) |
| (c) (i) | $\left[\text{mean} = \frac{4016}{31} =\right] 129.5$ | B1 |
| (ii) | [Standard deviation =] $\sqrt{\frac{525056}{31} - '\left(\frac{4016}{31}\right)'^2}$ or $\sqrt{\frac{31}{30}\left(\frac{525056}{31} - '\left(\frac{4016}{31}\right)'^2\right)}$ | M1 |
| | $= 12.4$ or 12.6 | A1 |
| | | (3) |
| (d) | $\frac{'129.5' - '137'}{'12.4'} \left[= -0.6\right]$ | M1 |
| | Negative [skew] | A1ft |
| | | (2) |
| (e) | A correct difference of the average or a correct difference of the spread<br>e.g. On average action films **run for longer** than comedy films as the **median** is greater **129 > 117** | B1ft |
| | | (1) |
| | **Notes** | **Total 10** |

| | | |
|---|---|---|
| (a) | **B1** | Cao Must be seen in part (a) |
| (b) | **B1** | $a$ = 106 Must be attached to $a$ (Condone $Q_1$ /lower quartile for $a$) |
| | **B1** | $b$ = 129 Must be attached to $b$ (Condone $Q_2$ /median for $b$) |
| | **B1** | $c$ = 126 Must be attached to $c$ (Condone $Q_3$ /upper quartile for $c$) |
| (c) (i) | **B1** | awrt 130 |
| (ii) | **M1** | For a correct method (including the square root) to find the standard deviation. Ft their mean<br>May be implied by awrt 12.4 or awrt 12.9 or awrt 12.6 if sample standard deviation is calculated |
| | **A1** | awrt 12.4 or awrt 12.6 if sample standard deviation is calculated Correct answer only scores 2/2 |
| (d) | **M1** | For substitution of the mode, the mean and the standard deviation into the expression. Ft their mode, their mean and their standard deviation. Allow awrt −0.6 if no working shown. |
| | **A1ft** | A correct interpretation ft their expression. Ignore any reference to correlation |
| (e) | **B1ft** | for a correct comment, **referring to length**, with reference to a **correctly named statistic.** Must **include the correct figures** compared. Ft their values. Ignore any reference to skew |

The following table may be useful (but not an exhaustive list of possible answers)

| **Statistic** | **A** | **C** | **Comment** |
|---|---|---|---|
| Median | 129 | 117 | On average action films **run for longer** as the **median** is greater **129 > 117** |
| Mean | 129.5 | 114.5 | On average action films have a **greater running time** as the **mean** is greater **129.5 > 114.5** |
| Mode | 137 | 127 | On average comedy films are **shorter in length** as the **mode** is less **127 < 137** |
| IQR | 17 | 20 | Comedy films have a **greater spread of running times** as the **IQR** is greater **20 > 17** |
| Range | 57 | 39 | Action films have a **larger variation of running times** as the **range** is greater **57 > 39** |
| SD | 12.4 | 11.9 | Comedy films show **less variability in the length** of films as the **SD** is less **11.9 < 12.4** |