1. The table shows information about the weekly earnings of 20 people who work in a shop.

Weekly earnings (£x)	Frequency	Midpoint
$150 < x \leqslant 250$	1	200
$250 < x \leqslant 350$	11	300
$350 < x \leqslant 450$	5	400
$450 < x \leqslant 550$	0	500
$550 < x \leqslant 650$	3	600

(a) Work out an estimate for the mean of the weekly earnings.

$1 \times 200 + 11 \times 300 + 5 \times 400 + 3 \times 600$

$= 200 + 3300 + 2000 + 1800$

$= 7300$

$\dfrac{7300}{20}$

$\begin{array}{r} 200 \\ 3\,300 \\ 2\,000 \\ 1\,800 \\ \hline 7\,30\,0 \\ 1 \end{array}$

$= 730 \div 2$

$= 365$

£ .365......

(3)

Nadiya says,

    "The mean may **not** be the best average to use to represent this information."

(b) Do you agree with Nadiya?
    You must justify your answer.

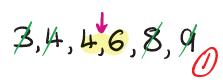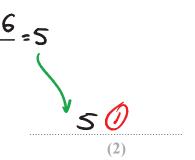........ Yes, because outliers will affect the mean ....

....

(1)

(Total for Question   is 4 marks)

2. Here is a list of numbers.

6̷ 4̷ 8̷ 9 4̷ 3̷

(a) Work out the median.

3,4,4,6,8,9

$\frac{4+6}{2}=5$

5 ①

(2)

Aisha picks at random one of the numbers.   6,4,8,9,4,3

(b) What is the probability that she picks an odd number?

Total 6 numbers
2 of the numbers are odd

$\frac{2}{6}$ ②

(2)

Clara has five cards.
There is a number on each card.
Two of the numbers are hidden.

x

| 3 | ? | 8 | 5 | ? |

3   y 6

The mode of the five numbers is 3
The mean of the five numbers is 5

(c) Work out the two numbers that are hidden.

Since mode is 3 at least one of the hidden cards must be 3
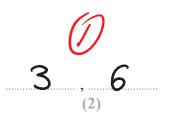So lets say card x is 3

Mean → $\frac{3+3+8+5+y}{5}=5$

$\frac{\cancel{5} \times (19+y)}{\cancel{5}} = 5 \times 5$ ①

$19+y=25$
$-19 \qquad -19$

$y=6$

3 , 6 ①

(2)

3. An estimate of the height, H metres, of a tall building can be found using the formula

$$H = 4f + 12$$

where the building is f floors high.

A tall building is 110 floors high.
The real height of the building is 442 m.

Seb uses the formula to find an estimate of the height of this building.
He then finds the difference between his estimate and the real height.

Show that this difference is less than 5% of the real height.

$$H = 4(110) + 12 \quad ①$$

$$H = 452 \, m \quad ①$$

← Seb's estimate

$$442 \times 1.05 = 464.1$$

↑ Increase ①
by 5%

Since 452 < 464.1 the difference is ①
less than 5% of the real height