1 A new phone cost £679

The value of the phone decreases at a rate of 4% per year.

Work out the value of the phone at the end of 3 years.

Decreases at a rate of 4% each year

∴ each year is 0.96 times the previous year.

Y1: £679 × 0.96 = £651.84 (1)

Y2: £651.84 × 0.96 = £625.77 (1)

Y3: £625.77 × 0.96 = £600.74 (1)

this could also be done in a single step:

$673 \times 0.96^3 = 600.74$

£ 600.74

(Total for Question 1 is 3 marks)

2 The population of a town increased by 9% between 2018 and 2019
The population in 2019 was 165 680

Calculate the population in 2018

Let:
Population of 2018 = x

Population of 2019 = Population of 2018 + $\frac{9}{100}$ (population of 2018)

$165\,680 = x + 0.09x$

$1.09x = 165680$

$x = 165680 \div 1.09$ (1)

$x = 152\,000$ (1)

152 000

(Total for Question 2 is 2 marks)

3 Tamsin buys a house with a value of £150 000
The value of Tamsin's house increases by 4% each year.

Rachel buys a house with a value of £160 000
The value of Rachel's house increases by 1.5% each year.

At the end of 2 years, whose house has the greater value?
You must show how you get your answer.

$\frac{100\% + 4\%}{100} = 1.04$

$\frac{100\% + 1.5\%}{100} = 1.015$

Tamsin's house by the end of 2 years = $150\,000 \times 1.04^2$ (1) (2) → number of years

$= 162240$ (1)

(1)

Rachel's house by the end of 2 years = $160\,000 \times 1.015^2$

$= 164836$ (1)

Rachel's house has a greater value

(Total for Question 3 is 4 marks)

4 Jenny invests £3000 for 6 years at y% simple interest per year.

At the end of the 6 years, Jenny has received a total of £450 in interest.

Work out the value of y.

Work out how much interest is paid per year:

$\frac{£450}{6} = £75$ (1)

Work out the fraction of interest paid from the original amount:

$\frac{75}{3000} = 0.025$ (1)

Convert to fraction:

$0.025 \times 100 = 2.5\%$

$y = 2.5$

$y =$ 2.5 (1)

(Total for Question 4 is 3 marks)