

## Q1-2

1

$$\% \text{ change} = \frac{\text{change}}{\text{original}} \times 100$$

$$\frac{64.8 - 59.3}{64.8} \times 100 = 8.487654321\dots$$

[2]

8.49% [1]

2

Find the total cost, £7000 plus 20% VAT  
For an increase of 20% we can multiply by 1.2

$$£7000 \times 1.2 = £8400$$

[2]

Subtract the deposit of £3000 which has been paid

$$£8400 - £3000 = £5400$$

[1]

Split into 6 equal monthly payments, use the fact that  $54 \div 6 = 9$

$$£5400 \div 6 = £900$$

£900 [1]

## Q3-4

3

145% of an amount is equivalent to  $1.45 \times$  the amount

$$1.45 \times 1.80$$

[2]

2.61m [1]

4

Find the total cost of 23 tickets bought separately

$$23 \times £24 = £552$$

Find the saving

$$£552 - £425 = £127$$

[1]

Express the saving as a percentage of the total cost of buying separately

$$\frac{£127}{£552} \times 100 = 23.00724638\dots$$

[1]

23% [1]

## Q5-6

5

Each hour there is a 2% decrease in the amount of water in the tank  
i.e. In an hour, 98% of the water will remain

Finding 98% of an amount, or a 2% decrease, is equivalent to multiplying by 0.98

e.g. after 1 hour, the water remaining will be  $0.98 \times 2000$ , and after 2 hours it will be  $0.98 \times (0.98 \times 2000)$  and so on

k=0.98 [1]

6

Find the total money that Emily receives from selling the bottles of water  
50p=£0.50

$$12 \times \text{£}0.50 = \text{£}6.00$$

Find the profit by subtracting the price Emily bought the water for, from the money she made by selling the water

$$\text{£}6.00 - \text{£}5.64 = \text{£}0.36$$

[1]

Express the profit as a percentage of the money Emily spent on the water, this is the "percentage profit"

$$\frac{\text{£}0.36}{\text{£}5.64} \times 100 = 6.382978723... \%$$

[1]

Round to 1 decimal place as asked

6.4 % [1]

## Q7-8



First calculate the profit.

$$\text{Profit} = 520 - 465 = 55$$

[1]

Use this to calculate the percentage profit, given  $\text{percentage profit} = \frac{\text{profit}}{\text{original amount}} \times 100\%$

$$\% \text{ profit} = \frac{55}{465} \times 100\% = 11.82795699... \%$$

[1]

Round the answer to 3 significant figures as instructed.

Percentage profit = 11.8% [1]

8

If 5.48 million was 22%, divide 5.48 million by 22 to find 1% of the total population.

$$5\,480\,000 \div 22 = 249\,090.9091$$

[1]

Multiply this amount by 100 to find 100% of the total population.

$$249\,090.9091 \times 100 = 24\,909\,090.91$$

[1]

Round this number to 3 significant figures as instructed.

24 900 000 or 24.9 million [1]

## Q9

9

Method 1

Calculate the price Victor bought each bottle for by dividing the total cost by 12.

$$21 \div 12 = 1.75$$

[1]

Calculate the profit on each bottle by subtracting \$1.75 from \$2.45.

$$\text{profit per bottle} = 2.45 - 1.75 = 0.70$$

Calculate the percentage profit using percentage profit =  $\frac{\text{profit}}{\text{original amount}} \times 100\%$ .

$$\% \text{ profit} = \frac{0.70}{1.75} \times 100\%$$

[1]

**Answer = 40%** [1]Method 2

Calculate the total amount Victor sold the bottles for by multiplying total sale price per bottle by 12.

$$2.45 \times 12 = 29.40$$

[1]

Calculate the total profit subtracting \$21 from \$29.40.

$$\text{profit per bottle} = 29.40 - 21 = 8.40$$

Calculate the percentage profit using percentage profit =  $\frac{\text{profit}}{\text{original amount}} \times 100\%$ .

$$\% \text{ profit} = \frac{8.40}{21} \times 100\%$$

[1]

**Answer = 40%** [1]**Q10**

10

Method 1

Calculate 3% of 180 000 by multiplying by 0.03.

$$180\,000 \times 0.03 = 5400$$

[1]

Add 5400 to 180 000 to find Lijuan's salary after the increase.

$$180\,000 + 5400$$

[1]

**Answer = 185 400 HK\$** [1]Method 2

Calculate a 3% increase on 180 000 by multiplying by 1.03.

$$180\,000 \times 1.03$$

[2]

**Answer = 185 400 HK\$** [1]**Q11-12**

11

To find 320 as a percentage of 80

$$\frac{320}{80} \times 100 = 400\%$$

The 4th option, 400% [1]

A common incorrect answer could be 25%, which would be 80 as a percentage of 320

12

To find 40 as a percentage of 10

$$\frac{40}{10} \times 100 = 400\%$$

The fourth option, 400% [1]

A common incorrect answer could be 25%, which is 10 as a percentage of 40

## Q13

13

Liam claims that it will be the same **percentage** increase, rather than the same increase in the number of peopleFirst, find the percentage increase from 2001 to 2011 using  $\frac{\text{Change}}{\text{Original}} \times 100$ 

$$\frac{480\,000 - 420\,000}{420\,000} \times 100 = \frac{100}{7} = 14.29\%$$

[1]

Now find a 14.29% increase of the population in 2011, to check Liam's claim for 2021

For an increase of 14.29% we can use a multiplier of 1.1429

$$480\,000 \times 1.1429 = 548\,592$$

[1]

**Therefore the population of 540 000 does not support Liam's claim as for the same percentage increase, the increase in the number of people would have to be larger than 60 000.** [1]

An alternative method is to find the percentage increase suggested by Liam and compare it

$$\frac{540\,000 - 480\,000}{480\,000} \times 100 = 12.5\% \text{ and we can see that this is not as large as } 14.29\%$$

## Q14

14

To find the percentage increase we can use  $\frac{\text{Increase}}{\text{Original}} \times 100$ 

$$\frac{6.31 - 3.60}{3.60} \times 100 = 75.27777... \%$$

Finding the difference [1]

Appropriate division [1]

75.3% [1]

## Q15

15

If an amount is decreased by 20%, it is now at 80% of its original amount.

$$80\% = \text{£}360$$

[1]

We want to find 100% which is the original profit before 20% was removed.  
We can do this by finding 1%, and then multiplying by 100

Divide both sides by 10.

$$8\% = \text{£}36$$

Divide both sides by 8.

$$1\% = \text{£}4.5$$

[1]

Multiply both sides by 100

$$100\% = \text{£}450$$

**£450** [1]