

% Recap

5% of (multiply)
calculator $\boxed{\text{SHIFT}} \boxed{C} \boxed{=}$ input %
into your calculator

$$0.05 = 5\%$$

$$104\% \Rightarrow 1.04$$

VAT \Rightarrow Value Added Tax

Eg1) A TV costs €647, VAT is charged at 17%.
Find the cost of the TV after the VAT is added?

$$647 \times 17\% = 109.99 \text{ VAT}$$

$$\text{Cost after the VAT} = 647 + 109.99 = \text{€}756.99$$

OR $647 \times 1.17 = \text{€}756.99$

$$647 \times 117\% = \text{€}756.99$$

Eg2) A laptop is sold for €1028.50 which includes VAT at 21%. Find the cost of the laptop before the VAT was added on.

$$\begin{array}{l} \text{Laptop} + \text{VAT} = \text{Total cost} \\ 100\% + 21\% = \text{€}1028.50 \\ ? \end{array}$$

$$121\% = 1028.50$$

$$1\% = \frac{1028.50}{121} = 8.5$$

$$100\% = 8.5 \times 100 = \text{€}850$$

Unitary method
Work back to find
1%
Divide the value by
the %

Eg3) A phone cost €571.95 after VAT of 23% is added on. Find the cost of the phone before VAT.

$$\begin{array}{l} \text{Phone} + \text{VAT} = \text{Total cost} \\ 100\% + 23\% = \text{€}571.95 \\ ? \end{array}$$

$$123\% = 571.95$$

$$\rightarrow \frac{571.95}{123\%} = 465$$

$$1\% = \frac{571.95}{123} = 4.65$$

$$100\% = 4.65 \times 100 = \text{€}465 \text{ cost before the vat.}$$

Eg4) A plumber charges €2500 before VAT is added. The charge after the VAT is added amounts to €2837.50. Calculate the rate of VAT charged?

$$2837.50 - 2500 = \overset{\text{VAT}}{337.50}$$

$$\frac{337.50}{2500} \times 100 = 13.5\%$$

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T&T2.4.1
VAT - profit...



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Section 4.1 VAT – Profit and loss

Example 1

The rate of VAT on electrical goods is 23%.

- (i) Find the selling price of a washing machine priced at €650 + VAT.
- (ii) If the selling price of an *ipad* is €738, find its price before VAT is added on.

Example 2

A rail fare goes up by 6% to €42.40.
What was the old fare?

Example 3

By selling a car for €14 400, a dealer would lose 4% on the purchase price.

- (i) What did the dealer pay for the car?
- (ii) Find his percentage profit if he had sold the car for €17 250.

Exercise 4.1

1. Express each of these percentages as decimals:

- (i) 7% (ii) $3\frac{1}{2}\%$ (iii) 12% (iv) 15% (v) $16\frac{1}{2}\%$

- (vi) 104% (vii) 110% (viii) 114% (ix) 125% (x) $87\frac{1}{2}\%$

2. (i) Increase 120 by 10% (ii) Increase 150 by 6%

- (iii) Decrease 600 by 5% (iv) Decrease 820 by $12\frac{1}{2}\%$

3. Train fares are increased by 4%.

- (i) Find the new fare if the old fare was €28.
- (ii) If the new fare is €36.40, find the old fare.

4. The price of a theatre ticket goes up 7% to €26.75.
What was the price before the increase?

5. The price of a bicycle is €520 plus VAT at 23%.
Find the price of the bicycle after VAT is added.

- 6.** The price of a television set is €984.
If this includes VAT at 23%, find the price before VAT is added.

- 7.** An electricity bill amounts to €204.30 after VAT at $13\frac{1}{2}\%$ is added.
Find the amount of the bill before VAT is added.

- 8.** In a sale, the price of a piece of furniture was reduced by 15%.
If the sale price was €1360, what was the price before the sale?

- 9.** In a sale, the marked prices are reduced by 30%.
- (i) Calculate the sale price of a jacket if the marked price is €350.
 - (ii) Find the marked price of a dress if the sale price is €168.

- 10.** By selling a jacket for €416, a store makes a profit of 30%.
- (i) Find the cost price of the jacket.
 - (ii) If the jacket is reduced by 10% in a sale, calculate the percentage profit the store now has on the cost price.

- 11.** By selling a laptop for €1150, a store makes a profit of 25%.
At what price should the laptop be sold to make a profit of 20%?

12. When an item is sold for €176, the profit is 10% on the cost price. When the selling price is increased to €192, calculate the percentage profit on the cost price.

13. A greengrocer buys 30 boxes of strawberries at €5.25 each and sells 28 of them at a profit of 30%. If the remaining two boxes are unsaleable, find his percentage profit on the deal.

14. The price of a games console is €615 which includes VAT at 23%.
Store A offers a discount of 24% on the selling price.
Store B says it will not charge VAT.
Store C says it will reduce the price before VAT is added by 25% and then charge VAT at 23% on the reduced price.
In which store is the selling price the cheapest and by how much?

15. Kelly Og's Corn Flakes are sold in standard packs of 500 g for €2.40. During a promotion, the quantity in a pack is increased by 20%, but the price stays the same. Calculate the percentage reduction in the price per kilogram during the promotion.



16. A shop advertised "Everything half price in our sale", but also now advertises that there is "An additional 15% off sale prices". To what percentage reduction on the original price is the new offer equivalent?

Answers

Exercise 4.1

1. (i) 0.07 (ii) 0.035 (iii) 0.12 (iv) 0.15
 (v) 0.165 (vi) 1.04 (vii) 1.1 (viii) 1.14
 (ix) 1.25 (x) 0.875
2. (i) 132 (ii) 159 (iii) 570 (iv) 717.5
3. (i) €29.12 (ii) €35
4. €25 5. €639.60 6. €800
7. €180 8. €1600
9. (i) €245 (ii) €240
10. (i) €320 (ii) 17%
11. €1104 12. 20% 13. $21\frac{1}{3}\%$
14. Store C; €6.15 cheaper than Store A
15. $16\frac{2}{3}\%$ 16. Equates to a $57\frac{1}{2}\%$ reduction