

Solution

Pupils should first find out how many litres are in a gallon and then convert mpg into miles per litre.

Pupils may approach the problem using a conversion of gallons to litres rounded to one decimal place.

The solution below has been calculated using 1 gallon \approx 4.5 litres.

49 mpg \approx 10.9 mpl
 56 mpg \approx 12.4 mpl

Cost of petrol old car

$$(17\,500 \div 10.9) \times 114.9 \approx 184472p \approx \pounds 1844.72$$

OR

$$(17\,500 \div 10.9) \times \pounds 1.149 \approx \pounds 1844.72$$

Plus car tax: $\pounds 1844.72 + \pounds 115 = \pounds 1959.72$

Cost of petrol new car

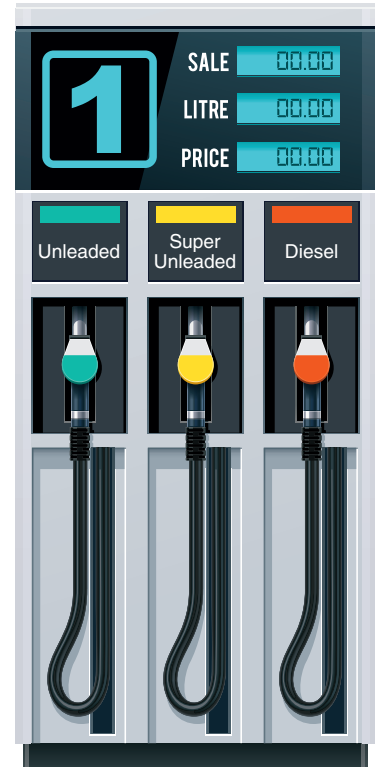
$$(17\,500 \div 12.4) \times 114.9p \approx 162157p \approx \pounds 1621.57$$

OR

$$(17\,500 \div 12.4) \times \pounds 1.149 \approx \pounds 1621.57$$

Plus car tax: $\pounds 1621.57 + \pounds 30 = \pounds 1651.57$

Savings per year
 $\pounds 1959.72 - \pounds 1651.57 = \pounds 308.15$



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Car Running Costs (Continued)

Pupils may approach the problem using a conversion of gallons to litres rounded to two decimal places.

The solution below has been calculated using 1 gallon \approx 4.55 litres.

49 mpg \approx 10.77 mpl

56 mpg \approx 12.31 mpl

Cost of petrol old car

$(17\,500 \div 10.77) \times 114.9 \approx 186699\text{p} \approx \text{£}1866.99$

OR

$(17\,500 \div 10.77) \times \text{£}1.149 \approx \text{£}1866.99$

Plus car tax: $\text{£}1866.99 + \text{£}115 = \text{£}1981.99$

Cost of petrol new car

$(17\,500 \div 12.31) \times 114.9\text{p} \approx 163343\text{p} \approx \text{£}1633.43$

OR

$(17\,500 \div 12.31) \times \text{£}1.149 \approx \text{£}1633.43$

Plus car tax: $\text{£}1633.43 + \text{£}30 = \text{£}1663.43$

Savings per year

$\text{£}1981.99 - \text{£}1663.43 = \text{£}318.56$

