Element 1

Identify a range of heating and hot water systems and appliances found in homes

Identify heating appliances by type:

	Competent
Electric oil-filled radiator	☐
Storage heater (using Economy 7 tariff)	☐
Electric fan heater	☐
Electric radiant fire	☐
Electric convector heater	☐
Gas radiant/ convector fire	☐
Gas convector heater	☐
Bottled gas heater	☐
Solid fuel room heater	☐
Open fire (coal or other solid fuel)	☐

Identify the functions of hot water appliances by type:

	Competent
Electric immersion heater	☐
Electric instantaneous heater	☐
Gas multipoint water heater	☐
Hot water from a central heating boiler	☐
Solid fuel back boiler	☐
Solar thermal panel	☐
Combination boiler	☐
Identify different types of flue	☐

Element 2

Competent

Convert temperature from °C to °F and from °F to °C ☐

Temperature conversion formula using a calculator	
°C to °F	**°C x 1.8 + 32 = °F**
°F to °C	**°F – 32 ÷ 1.8 = °C**

Identify the type and function of controls on heating and hot water systems

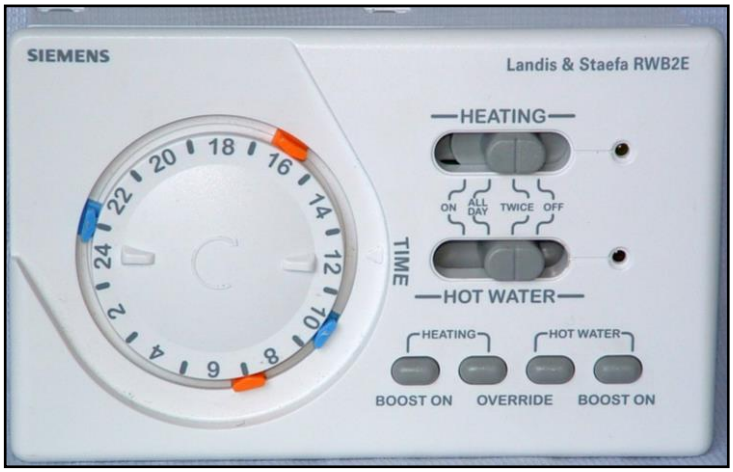
Competent

Boiler thermostat	☐
Thermostatic radiator valve	☐
Room thermostat	☐
Central heating system programmer	☐
Storage heater input/ charge control	☐
Storage heater output/ boost control	☐
Set mechanical and digital heating programmers with reference to the manufacturer's written instructions	☐
List the checks that are needed if a domestic heating system does not appear to be working	☐

Element 3

Advise clients on the efficient and safe use of heating and hot water systems and appliances

	Competent
State the optimum room temperature to aim for if there are elderly people or very young children in the home	☐
State the recommended temperature for storing hot water in a storage cylinder	☐
Explain and demonstrate how to set a mechanical programmer on a central heating system	☐
Explain the factors which affect of the warming up and cooling down period of a domestic dwelling when setting a heating programmer	☐
Identify the main safety issues relating to the use of fuel-burning appliances	☐

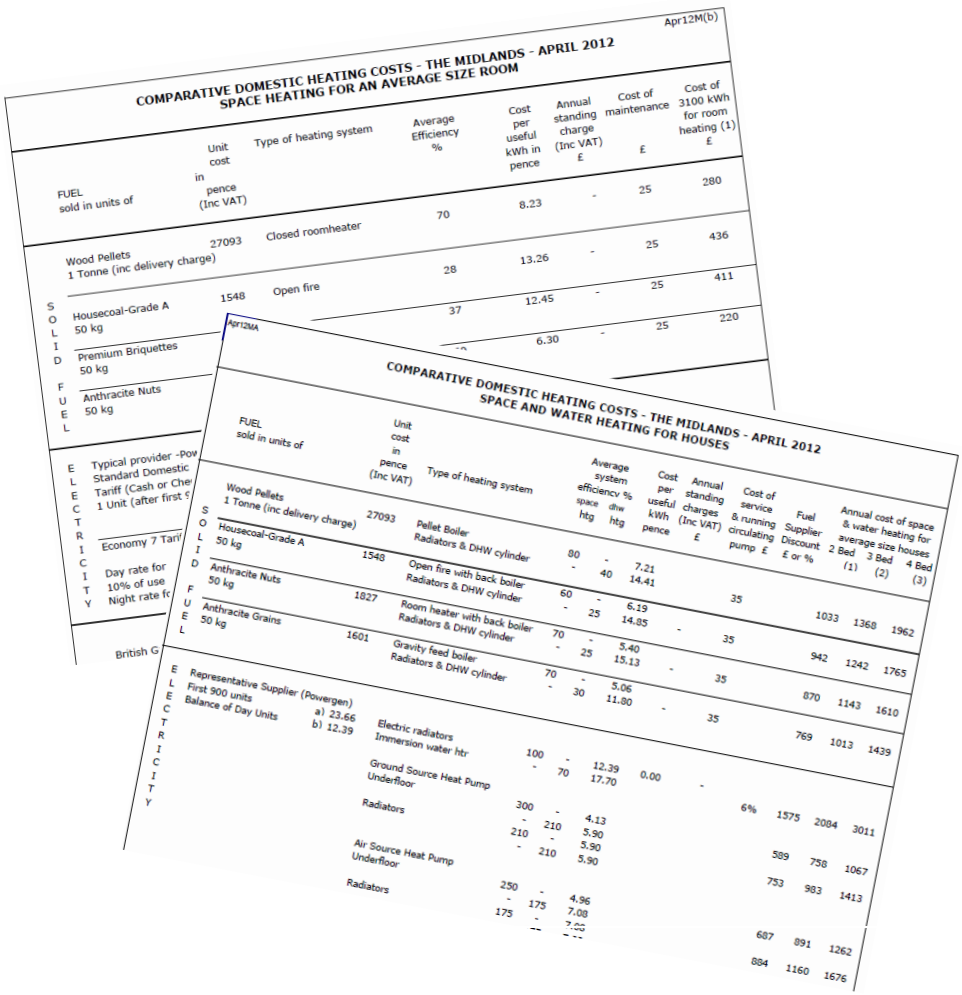


Element 4

Interpret domestic fuel cost data using reference materials

Competent

Interpret fuel cost information from Comparative Domestic Heating Costs tables supplied by Sutherland	☐
Using Comparative Domestic Heating Costs tables, make recommendations on:	
Comparative costs of fuel	☐
Efficiencies of heating types	☐



COMPARATIVE DOMESTIC HEATING COSTS - THE MIDLANDS - APRIL 2012
SPACE HEATING FOR AN AVERAGE SIZE ROOM

Apr12M(b)

	FUEL sold in units of	Unit cost in pence (Inc VAT)	Type of heating system	Average Efficiency %	Cost per useful kWh in pence	Annual standing charge (Inc VAT) £	Cost of maintenance £	Cost of 3100 kWh for room heating (1) £
SOLID FUEL	Wood Pellets 1 Tonne (inc delivery charge)	27093	Closed roomheater	70	8.23	-	25	280
	Housecoal-Grade A 50 kg	1548	Open fire	28	13.26	-	25	436
	Premium Briquettes 50 kg			37	12.45	-	25	411
	Anthracite Nuts 50 kg				6.30	-	25	220
ELECTRICITY	Typical provider -Pow							
	Standard Domestic Tariff (Cash or Che							
	1 Unit (after first							
	Economy 7 Tari							
	Day rate for 10% of use							
	Night rate fo							
	British G							

Apr12MA

COMPARATIVE DOMESTIC HEATING COSTS - THE MIDLANDS - APRIL 2012
SPACE AND WATER HEATING FOR HOUSES

	FUEL sold in units of	Unit cost in pence (Inc VAT)	Type of heating system	Average system efficiency % space htg	Average system efficiency % dhw htg	Cost per useful kWh pence	Annual standing charges (Inc VAT) £	Cost of service & running circulating pump £	Fuel Supplier Discount £ or %	Annual cost of space & water heating for average size houses 2 Bed (1)	3 Bed (2)	4 Bed (3)
SOLID FUEL	Wood Pellets 1 Tonne (inc delivery charge)	27093	Pellet Boiler Radiators & DHW cylinder	80	40	7.21 14.41		35		1033	1368	1962
	Housecoal-Grade A 50 kg	1548	Open fire with back boiler Radiators & DHW cylinder	60	25	6.19 14.85	-	35		942	1242	1765
	Anthracite Nuts 50 kg	1827	Room heater with back boiler Radiators & DHW cylinder	70	25	5.40 15.13	-	35		870	1143	1610
	Anthracite Grains 50 kg	1601	Gravity feed boiler Radiators & DHW cylinder	70	30	5.06 11.80	-	35		769	1013	1439
ELECTRICITY	Representative Supplier (Powergen) First 900 units	a) 23.66	Electric radiators Immersion water htr	100	70	12.39 17.70	0.00	-	6%	1575	2084	3011
	Balance of Day Units	b) 12.39	Ground Source Heat Pump Underfloor							589	758	1067
			Radiators	300 - 210	210 - 210	4.13 5.90 5.90				753	983	1413
			Air Source Heat Pump Underfloor							687	891	1262
			Radiators	250 - 175	175 -	4.96 7.08				884	1160	1676

Element 5

Advise clients on how to record gas and electricity consumption and work out costs

Identify domestic fuel meters by type:

	Competent
Electric digital	☐
Electric dial	☐
Electric Economy 7/ White meter	☐
Electric and gas prepayment meters	☐
Gas digital	☐

Record accurate readings for electricity meters:

	Competent
Digital	☐
Dial	☐
Economy 7/ White meter	☐

Record accurate readings for a gas meter

	Competent
Digital	☐

Element 5 continued

	Competent
Given two different meter readings over time, calculate the amount of gas and electricity used	☐
Given the cost of fuel, calculate the cost of gas or electricity used over a period of time	☐
List the information usually found on a prepayment meter	☐

Element 5 continued

Advise clients on how to record gas and electricity consumption and work out costs

	Competent
Explain how to read meters and how to work out the cost of fuel	☐
Identify the wattage on a range of lighting and electrical household appliances	☐
Identify the energy efficiency rating of a range of electrical household appliances with reference to the EU labelling scheme	☐

How to calculate electricity used			
Power rating	**x**	**Time**	**= Energy used**
(Watts ÷ 1000) kW	x	(minutes ÷ 60) hours	= Units of electricity (kWh)
For a 2500 watt appliance used for 30 minutes			
(2500 watts ÷ 1000)	x	(30 minutes ÷ 60)	
2.5kW	x	0.5 hours	= 1.25 kWh
For a 1 Kilowatt appliance used for 1 hour			
1 kW	x	1 hour	= 1 kWh

How to calculate the cost of electricity used			
Units of electricity (kWh)	**x**	**Unit cost of electricity (pence)**	**= Cost of electricity used (pence)**
1.25 (kWh)	x	15 p	= 18.6p
1 (kWh)	x	15 p	= 15p

Energy Awareness Self-Assessment

Element 6

Inform clients of ways of paying for gas and electricity

	Competent
Interpret and explain the information on gas and electricity bills	☐
Recommend ways of paying for gas and electricity to meet the needs of different households	☐
List the ways of paying off gas and electricity debt	☐
List the organisations which provide specialised advice on fuel debt and disconnection	☐
List the main issues to consider before switching fuel supplier	☐

Element 7

Identify the potential to improve energy efficiency in a range of dwellings

	Competent
List the main areas of fabric heat loss from dwellings	☐
List the main areas of unwanted ventilation heat loss (draughts) from dwellings	☐
List the insulation methods for reducing fabric heat loss from dwellings	☐
State the most effective methods of reducing unwanted ventilation heat loss from dwellings	☐
Identify typical payback periods of draught-proofing and insulation measures	☐
Recommend appropriate energy efficiency measures for various dwellings given the requirements of the household	☐
State a method of measuring the energy efficiency of a dwelling	☐

Element 8

State the assistance available for domestic energy efficiency measures

	Competent
State the current domestic energy efficiency measures available under existing initiatives	☐
State the eligibility criteria for existing initiatives to improve domestic energy efficiency	☐
State the financial assistance available from existing initiatives to improve domestic energy efficiency	☐
State the renewable electricity generating technologies that qualify for the Feed-in Tariff and the renewable heat technologies that qualify for the Renewable Heat Incentive (RHI)	☐
List regional or local organisations that provide financial assistance or advice on energy efficiency measures	☐

Energy Awareness Self-Assessment

Element 9

Advise clients on how to avoid condensation and how to take remedial action where condensation dampness exists

	Competent
Distinguish between different forms of dampness	☐
List the main conditions that contribute to condensation dampness	☐
List the areas in dwellings where condensation dampness is likely to occur	☐
Recommend remedial action for given case studies of condensation dampness problems	☐