

**City & Guilds Certificate in Plumbing Studies
Tutor Training Guidance
6129 Level 3 Units May 2009**

This document is for City & Guilds tutors only and is not for dissemination to candidates.

City & Guilds is committed to providing support, advice and guidance to our centres that deliver our qualifications. One way we support centres is to issue, when necessary, tutor training guidance to assist in the delivery of our qualifications. The purpose of this tutor training guidance paper is to provide support and guidance to centres on their delivery of the City & Guilds Certificate in Plumbing Studies.

The move to GOLA testing enables City & Guilds to monitor the performance of each question and therefore identify areas of the syllabus which a number of candidates are struggling with. City & Guilds can provide additional guidance and support to centres highlighting subject areas where candidates may need more learning input.

The document is designed to be used in conjunction with the 6129 level 3 GOLA test specification which is available by visiting the www.cityandguilds.com/plumbing 6129 level 3 page.

The units covered in this learning input feedback paper are:

Level 3

- Unit 331 – Complex cold water systems
- Unit 332 – Complex hot water systems (part 1)
- Unit 342 – Complex hot water systems (part 2)
- Unit 333 – Complex sanitation systems
- Unit 334 – Central heating systems including boilers and control wiring
- Unit 335 – Gas supply systems (part 1)
- Unit 345 – Gas Supply systems (part 2)
- Unit 336 – Improvement of business products and services

A further tutor guidance report on units 339 & 349 oil supply systems for centres delivering in Northern Ireland and the Channel Islands will be issued at a later date.

Unit 331 – Complex cold water systems

Test Specification Objective No.	Scheme Standards Knowledge Outcome Reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
331001 1.1	Element 8.1 Knowledge outcome 1	Input services	The function of pneumatic pressure cylinders within boosted cold water systems	Selected plumbing text books
331010 1.2.2	Element 8.1 Knowledge outcome 2	Legislation	Situations under the water regulations that do not require consent before work can begin	Selected plumbing text books / Water Regulations Guide
331015 1.2.3	Element 8.1 Knowledge outcome 2	Legislation	Within the water regulations what constitutes material change of use	Selected plumbing text books / Water Regulations Guide
331018 1.2.3	Element 8.1 Knowledge outcome 2	Legislation	Within the water regulations the time a temporary water supply can be made available	Selected plumbing text books / Water Regulations Guide
331024 1.2.3	Element 8.1 Knowledge outcome 2	Legislation	Fluid categories within the water regulations	Selected plumbing text books / Water Regulations Guide
331026 1.3	Element 8.1 Knowledge outcome 3	Legislation	Locations that are not suitable for pipework installation	Selected plumbing text books / Water Regulations Guide
331032 1.4	Element 8.1 Knowledge outcome 4	Industry bodies	Organisations that provide lists of water regulations approved contractors	Selected plumbing text books / DEFRA website
331049 2.3	Element 10.1 Knowledge outcome 3	Component requirements	What components need to be in place on a sprinkler system fed by a storage cisterns	Selected plumbing text books / Water Regulations Guide

331050 2.3	Element 10.1 Knowledge outcome 3	Component requirements	What components need to be in place on a sprinkler system with fluid category 4 risk	Selected plumbing text books / Water Regulations Guide
331051 2.3	Element 10.1 Knowledge outcome 3	Component requirements	What components need to be in place on a sprinkler systems with storage cisterns	Selected plumbing text books / Water Regulations Guide
331053 2.3	Element 10.1 Knowledge outcome 3	Component requirements	Requirements for zone protection within systems	Selected plumbing text books / Water Regulations Guide
331054 2.3	Element 10.1 Knowledge outcome 3	Component requirements	Requirements for backflow protection within gardening watering systems	Selected plumbing text books / Water Regulations Guide
331055 2.3	Element 10.1 Knowledge outcome 3	Component requirements	Requirements surrounding DC pipe interrupters	Selected plumbing text books / Water Regulations Guide
331057 2.4.1	Element 10.1 Knowledge outcome 4	Component requirements	Minimum requirements of type DC pipe interrupters	Selected plumbing text books / Water Regulations Guide
331059 2.4.1	Element 10.1 Knowledge outcome 4	Component requirements	The minimum requirements of tap air gaps	Selected plumbing text books / Water Regulations Guide
331069 3.2	Element 10.2 Knowledge outcome 2	Component recognition	The requirements of installation of RPZ valves	Selected plumbing text books / Water Regulations Guide
331072 3.2	Element 10.2 Knowledge outcome 2	Component recognition	The requirements of installation of RPZ valves	Selected plumbing text books / manufacturers instruction manuals
331075 3.3	Element 10.2 Knowledge outcome 3	Commissioning	The commissioning requirements for domestic storage cisterns	Selected plumbing text books / British Standard 6700

331079 3.3	Element 10.2 Knowledge outcome 3	Commissioning	Disinfection procedures and chlorine levels expected during testing	Selected plumbing text books / British Standard 6700
331080 3.3	Element 10.2 Knowledge outcome 3	Commissioning	Main cause of blue water corrosion in systems as stagnation	WRAS commissioning plumbing systems leaflet
331087 3.5	Element 10.2 Knowledge outcome 5	Commissioning	Documentation to be supplied to the customer for compliance with water regulation approved contractor works	Selected plumbing text books / Water Regulations Guide
331100 3.8	Element 10.2 Knowledge outcome 8	Commissioning	The requirements of the installation of RPZ valves	Selected plumbing text books / manufacturers instruction manuals

Unit 332 – Complex hot water

Test Specification Objective No.	Scheme Standards Knowledge Outcome Reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
332003 1.1.1	Element 8.1 Knowledge outcome 1	Design methodology	The hydrostatic gradient and how it affects system performance	Selected plumbing text books
332021 1.2	Element 8.1 Knowledge outcome 2	Building regulations	How the Domestic Heating Compliance Guide supports the Approved Document L (F in NI)	Selected plumbing text books/ Domestic Heating Compliance Guide
332022 1.2	Element 8.1 Knowledge outcome 2	Water regulations	Water supply regulations in respect of cold water storage cisterns connected to hot water systems	Selected plumbing text books / Water Regulations Guide
332023 1.2	Element 8.1 Knowledge outcome 2	Building regulations	Which approved document covers the conservation of energy within properties	Selected plumbing text books / Approved Document L (F in NI)
332026 1.2	Element 8.1 Knowledge outcome 2	Building regulations	The Domestic Heating Compliance Guide - labelling requirements for hot water storage cylinders	Selected plumbing text books/ Domestic Heating Compliance Guide
332027 1.2	Element 8.1 Knowledge outcome 2	Building regulations	The Domestic Heating Compliance Guide – the requirements for hot water temperature control	Selected plumbing text books/ Domestic Heating Compliance Guide
332035 1.4	Element 8.1 Knowledge outcome 4	Information sources	The Carbon Trust and how they assist organisations reduce their carbon emissions and energy consumption	Selected plumbing text books/ Carbon Trust website

332036 1.4	Element 8.1 Knowledge outcome 4	Building regulations	The Domestic Heating Compliance Guide – the minimum pipework insulation standards	Selected plumbing text books/ Domestic Heating Compliance Guide
332038 1.5	Element 8.1 Knowledge outcome 5	Installation requirements	The maximum delivery time for hot water at 55°C at an open outlet	Selected plumbing text books / Water Regulations Guide
332043 1.5	Element 8.1 Knowledge outcome 5	Installation requirements	The maximum uninsulated hot water pipe length allowed	Selected plumbing text books / Water Regulations Guide
332044 1.5	Element 8.1 Knowledge outcome 5	Installation requirements	The formula for calculating minimum open vent height	Selected plumbing text books
332046 2.1	Element 10.1 Knowledge outcome 1	Commissioning	The correct commissioning procedure for a hot water system	Selected plumbing text books
332055 3.1	Element 10.2 Knowledge outcome 1	Information sources	Detailed information on Legionella control can be sourced from HSE ACOP L8	Health & Safety Executive ACOP L8
332060 3.2	Element 10.2 Knowledge outcome 3	Component performance	The formula to calculate a hot water storage vessel heat requirement / vessel volume	Selected plumbing text books
332061 3.3.1	Element 10.2 Knowledge outcome 3	Commissioning	The length of time required between visual inspections in larger CWSC for legionella prevention	Health & Safety Executive ACOP L8
332062 3.3.1	Element 10.2 Knowledge outcome 3	Commissioning	The length of time required between flushing out little used outlets in larger systems for legionella prevention	Health & Safety Executive ACOP L8
332063 3.3.1	Element 10.2 Knowledge outcome 3	Commissioning	The length of time required between regular temperature tests of the sentinel outlets for legionella prevention	Health & Safety Executive ACOP L8

332064 3.3.1	Element 10.2 Knowledge outcome 3	Commissioning	The length of time required between regular temperature tests of the sentinel outlets for legionella prevention	Health & Safety Executive ACOP L8
332065 3.3.2	Element 10.2 Knowledge outcome 3	Commissioning	The approvals body for disinfection chemicals	Drinking Water Inspectorate website
332067 3.3.2	Element 10.2 Knowledge outcome 3	Commissioning	The timing and method for disinfection of systems	British Standard 6700

Unit 342 – Complex hot water part 2

Test Specification Objective No.	Scheme standards knowledge outcome reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
342011 1.2	Element 8.1 Knowledge outcome 2	Building regulations	How the Domestic Heating Compliance Guide supports Building Regulation Approved Document L (F in NI)	Selected plumbing text books/ Domestic Heating Compliance Guide
342012 1.2	Element 8.1 Knowledge outcome 2	Information sources	The main British Standard for electrical work	Selected plumbing text books / British Standard 7671
342036 3.1.1	Element 9.2 Knowledge outcome 1	Component recognition	The key difference between functional control devices and safety control devices	Selected plumbing text books
342039 3.1.1	Element 9.2 Knowledge outcome 1	Component recognition	The use and positioning of anti legionella valves within systems	Selected plumbing text books
342047 3.1.1	Element 9.2 Knowledge outcome 1	Component recognition	Typical pressure settings for expansion relief valves	Selected plumbing text books
342062 4.1	Element 10.1 Knowledge outcome 1	Visual inspection	The maximum number of discharge pipes that can be communally connected	Selected plumbing text books / Approved Document G (P in NI)
342063 4.1	Element 10.1 Knowledge outcome 1	Visual inspection	The possibilities of backflow into the cylinder from unbalanced supplies to a mixing outlet	Selected plumbing text books
342065 5.1	Element 10.2 Knowledge outcome 1	Information sources	Where to obtain a copy of the Domestic Heating Compliance Guide	Communities and Local Government website (DFPNI in NI)
342077 5.3	Element 10.2 Knowledge outcome 3	Commissioning	The correct order of procedures during commissioning activities	Selected plumbing text books / British Standard 6700

342090 8.1	Element 11.2 Knowledge outcome 1	Maintenance	The effects of limescale on high temperature components with unvented systems	Selected plumbing text books
342096 9.1	Element 11.3 Knowledge outcome 1	Fault recognition	Causes of leakage from tundish in unvented systems	Selected plumbing text books
342098 9.1	Element 11.3 Knowledge outcome 1	Fault recognition	Causes of poor hot water recovery rates within directly heated unvented hot water cylinders	Selected plumbing text books

Unit 333 – Complex sanitation systems

Test Specification Objective No.	Scheme standards knowledge outcome reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
333001 1.1.1	Element 8.1 Knowledge outcome 1	Design methodology	Provision of sanitary appliance under the Building Regulations	Selected plumbing text books / Approved document G
333002 1.1.1	Element 8.1 Knowledge outcome 1	Design methodology	Provision of sanitary appliance under the Building Regulations	Selected plumbing text books / Approved document G
333003 1.1.1	Element 8.1 Knowledge outcome 1	Design methodology	Provision of sanitary appliance under the Building Regulations	Selected plumbing text books / Approved document G
333004 1.1.1	Element 8.1 Knowledge outcome 1	Design methodology	Provision of sanitary appliance under the Building Regulations	Selected plumbing text books / Approved document G
333006 1.1.2	Element 8.1 Knowledge outcome 1	Sanitary accommodation	The minimum mechanical extract rate for bathroom fans	Selected plumbing text books / Approved document F
333007 1.1.2	Element 8.1 Knowledge outcome 1	Sanitary accommodation	The design of space around appliances in relation to that of the human body	Selected plumbing text books / BS6465
333008 1.1.2	Element 8.1 Knowledge outcome 1	Sanitary accommodation	The need to separate WC's and food preparation areas	Selected plumbing text books / Approved document G
333010 1.1.3	Element 8.1 Knowledge outcome 1	Design methodology	The fall requirement for unventilated pipework	Selected plumbing text books / Approved document H
333019	Element 8.1 Knowledge outcome 2	British standards	The British Standard for the requirements of sanitary accommodation	British Standard 6465

333020	Element 8.1 Knowledge outcome 2	British standards	The British Standard for the requirements of mechanical disposal units	BS EN 60335
333028	Element 8.1 Knowledge outcome 2	Building regulations	Building regulations that relate to ventilation requirements	Approved document F
333045 1.5.1	Element 8.1 Knowledge outcome 5	Building regulations	Building regulations that relate to fire stopping arrangements	Approved document B
333047 1.5.1	Element 8.1 Knowledge outcome 5	Building regulations	The need to insulate pipework to minimise sound transmission in flats	Selected plumbing text books / Approved document E
333049 1.5.2	Element 8.1 Knowledge outcome 5	Gutter calculations	Use of Pythagoras theorem in the calculation of roof area	Selected plumbing text books
333050 1.5.2	Element 8.1 Knowledge outcome 5	Gutter calculations	Use of Pythagoras theorem in the calculation of roof area	Selected plumbing text books
333052 1.5.2	Element 8.1 Knowledge outcome 5	Component installation	The minimum spacing requirement for gutter brackets	Selected plumbing text books
333053 2.1	Element 10.1 Knowledge outcome 2	Component installation	Self sealing valve installation	Selected plumbing text books / manufacturer catalogues
333054 2.1	Element 10.1 Knowledge outcome 2	Component installation	Use of air admittance valves to stack vent in housing estates	Selected plumbing text books / manufacturer catalogues
333063 3.1	Element 10.2 Knowledge outcome 3	Commissioning	The method of testing appliances for self siphonage	Selected plumbing text books
333067 3.2	Element 10.2 Knowledge outcome 4	Commissioning	Communicating with co-workers that commissioning is going to commence	Selected plumbing text books
333075 3.4	Element 10.2 Knowledge outcome 7	Commissioning	Understanding the method of operation of competent person schemes in relation to notifiable work	Selected plumbing text books / Department for Communities and Local Government website

333076 3.4	Element 10.2 Knowledge outcome 7	Commissioning	Understanding the method of operation of competent person schemes in relation to notifiable work	Selected plumbing text books / Department for Communities and Local Government website
333078 3.4	Element 10.2 Knowledge outcome 7	Commissioning	Common faults with macerators that inhibit correct operation	Selected plumbing text books / manufacturer catalogues
333080 3.4	Element 10.2 Knowledge outcome 7	Commissioning	Understanding which works are notifiable to the local authority and those that are not	Selected plumbing text books / Department for Communities and local Government website

Unit 334 – Central heating systems including boilers and control wiring

Test Specification Objective No.	Scheme Standards Knowledge Outcome Reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
334002 1.1	Element 8.1 Knowledge outcome 1	Input services	Minimum feed and expansion cistern height in relation to system components	Selected plumbing text books
334006 1.2	Element 8.1 Knowledge outcome 2	Building regulations	Approved Document J (L in NI) Combustion Appliances & fuel storage Systems	Selected plumbing textbooks / Planning Portal (DFPNI) website
334008 1.2	Element 8.1 Knowledge outcome 2	Information sources	BS EN 14336 as a standard providing the requirements of water based central heating in buildings	Selected plumbing text books
334014 1.2	Element 8.1 Knowledge outcome 2	Information sources	Definition of a heat pump within government legislation	Selected plumbing text books/ Domestic Heating Compliance Guide
334019 1.3	Element 8.1 Knowledge outcome 3	Building Regulations	SAP energy rating as in Approved Document L (F in NI) dealing with Conservation of Fuel & Power	Selected plumbing text books / Planning Portal (DFPNI) website
334023 1.4	Element 8.1 Knowledge outcome 8	Component sizing	Use of U values	Selected plumbing text books // Domestic heating design guide
334024 1.4	Element 8.1 Knowledge outcome 8	Component sizing	The temperature differences for heating design within dwellings	Selected plumbing text books / Domestic heating design guide
334025 1.4	Element 8.1 Knowledge outcome 8	Component sizing	Key factors when setting a pump using manufacturers performance curve data	Selected plumbing text books/ manufacturer information

334026 1.4	Element 8.1 Knowledge outcome 8	Component sizing	General allowances for DHW when designing centralised systems within domestic properties	Selected plumbing text books / Domestic heating design guide
334028 1.4	Element 8.1 Knowledge outcome 8	Component sizing	General allowances for movement of air when designing centralised systems within domestic properties	Selected plumbing text books / Domestic heating design guide
334029 1.4	Element 8.1 Knowledge outcome 8	Information sources	HETAS and their role in approving solid fuel appliances	Domestic Heating Compliance Guide
334030 2.1	Element 9.1 Knowledge outcome 1	Information sources	Guidance on energy efficiency requirements when changing fuel or energy sources	Selected plumbing text books/ Domestic Heating Compliance Guide
334039 2.1	Element 9.1 Knowledge outcome 5	Component positioning	System types and designs for uses with specific fuel types	Selected plumbing text books
334044 3.1	Element 9.2 Knowledge outcome 3	Component positioning	Minimum requirements needed when replacing existing indirect hot water cylinders fed by gravity circulation	Selected plumbing text books/ Domestic Heating Compliance Guide
334084 5.2	Element 10.2 Knowledge outcome 1	Commissioning	How to achieve adjustment of a gas boilers heat output	Selected plumbing text books
334093 6.2	Element 10.3 Knowledge outcome 5	Site related hazards	Understanding when to employ safety signs to protect others	Selected plumbing text books
334100 7.1	Element 11.1 Knowledge outcome 1	Information sources	HETAS and their role in producing energy efficiency rating for solid fuel appliances	Selected plumbing text books / HETAS website
334101 8.1	Element 11.2 Knowledge outcome 1	Commissioning	Periodic maintenance requirements of boilers	Selected plumbing text books
334104 8.1	Element 11.2 Knowledge outcome 1	Commissioning	The requirement to include the Gas Safe Registration card ID on benchmark certificates	Selected plumbing text books / HHIC website

334105 8.1	Element 11.2 Knowledge outcome 1	Component recognition	Identification of an automatic bypass valve positioning and function with systems	Selected plumbing text books
334116 9.1	Element 11.3 Knowledge outcome 1	Component recognition	Identification of a thermistor positioning and function with combination systems	Selected plumbing text books
334117 9.1	Element 11.3 Knowledge outcome 1	Component recognition	Identification of a pressure switch in relation to fan operation within fanned flue combustion appliances	Selected plumbing text books
334119 9.1	Element 11.3 Knowledge outcome 1	Commissioning	Diagnosing common problems or faults with systems.	Selected plumbing text books

Unit 335 – Gas supply systems part 1

Test Specification Objective No.	Scheme Standards Knowledge Outcome Reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
335002 1.1	Element 34.1 Knowledge outcome 1	Fault recognition	The problems dead legs can cause to instantaneous water heater operation	Selected plumbing text books / CORGI manuals
355015 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	What information should be provided to installations which include a secondary gas meter	Health & Safety Executive L56 ACOP
335018 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	The safety checks that are unnecessary when using and appliance as a purging point	Health & Safety Executive L56 ACOP
335024 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	What information should be provided to installations with a remote ECV from the primary gas meter	Health & Safety Executive L56 ACOP
335028 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	The type of persons allowed to work on gas fittings under the Gas Safety (Installation and Use) Regulations	Health & Safety Executive L56 ACOP
335032 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	When to employ gas soundness testing in relation to working on an existing gas installation	Health & Safety Executive L56 ACOP
335037 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	Under the gas safety regulations the definition of a 'relevant fitting'	Health & Safety Executive L56 ACOP
335045 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	Under the gas safety regulations the definition of when a landlord is deemed to be supplying gas	Health & Safety Executive L56 ACOP
335057 1.2	Element 34.1 Knowledge outcome 2	Safety legislation	Contraventions of the gas safety (installation and use) regulations in regard to bedrooms and bedsitting rooms	Health & Safety Executive L56 ACOP

335062 1.2	Element 34.1 Knowledge outcome 2	Component installation	The correct method of fixing pipework within a cavity to a live fuel effect gas fire	Selected plumbing text books / CORGI manuals
335064 1.2	Element 34.1 Knowledge outcome 2	Component installation	What advice should be given to the customer after primary meter installation	Selected plumbing text books / CORGI manuals
335066 1.2	Element 34.1 Knowledge outcome 2	Component installation	What precautions are required when installing a suspended warm air gas heater.	Health & Safety Executive L56 ACOP
335097 1.8	Element 34.1 Knowledge outcome 8	Component sizing	Calculations for ventilation for gas appliances	Selected plumbing text books / CORGI manuals
335100 1.8	Element 34.1 Knowledge outcome 8	Component sizing	The dividing factor for calculations of kW from BTU's	Selected plumbing text books / CORGI manuals
335109 2.1	Element 35.1 Knowledge outcome 1	Safety legislation	The Gas Safety (Installation and Use) Regulations do not regulate for safe usage of gas systems and appliances	Health & Safety Executive L56 ACOP
335121 2.2	Element 35.1 Knowledge outcome 5	Safety legislation	Ensuring that separately provided appliance flue systems are suitable for the purpose	Health & Safety Executive L56 ACOP
335124 2.2	Element 35.1 Knowledge outcome 5	Component recognition	Identifying locations of key parts of C13 room sealed appliances	Selected plumbing text books / CORGI manuals
335149 3.2	Element 35.2 Knowledge outcome 2	Component installation	The safe installation practices surrounding gas cookers	Selected plumbing text books / CORGI manuals
335158 3.2	Element 35.2 Knowledge outcome 2	Component installation	The function and reasoning for gas fire closure plates	Selected plumbing text books / CORGI manuals

335162 3.3	Element 35.2 Knowledge outcome 3	Component installation	The function and control measures to balanced compartments	Selected plumbing text books / CORGI manuals
335168 3.3	Element 35.2 Knowledge outcome 3	Component installation	The function and control measures to balanced compartments	Selected plumbing text books / CORGI manuals
335180 3.4	Element 35.2 Knowledge outcome 4	Component installation	Requirements when encountering vents and soot box doors	Selected plumbing text books / CORGI manuals
335182 3.4	Element 35.2 Knowledge outcome 4	Component installation	The effects of excessive flue size on gas appliances	Selected plumbing text books / CORGI manuals
335184 3.4	Element 35.2 Knowledge outcome 4	Component installation	The minimum flue size of precast chimneys	Selected plumbing text books / CORGI manuals
335190 3.5	Element 35.2 Knowledge outcome 8	Installation testing	The pressure for medium pressure fed installation testing	Selected plumbing text books / CORGI manuals
335197 3.5	Element 35.2 Knowledge outcome 8	Installation testing	Maximum volume of a system before multiple tests need to be performed	Selected plumbing text books / CORGI manuals
335198 3.5	Element 35.2 Knowledge outcome 8	Installation testing	Correctly reading a water filled manometer	Selected plumbing text books / CORGI manuals

Unit 345 – Gas supply systems part 2

Test Specification Objective No.	Scheme Standards Knowledge Outcome Reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
345008 1.1	Element 36.1 Knowledge outcome 1	Installation testing	The relationship between w.g. and mbar	CORGI manuals
345015 1.1	Element 36.1 Knowledge outcome 1	Installation testing	Working out estimated system volume for testing purposes	CORGI manuals
345020 1.2	Element 36.1 Knowledge outcome 2	Design methodology	Ventilation grill sizes for compartmentalised open flue gas appliances	CORGI manuals
345035 1.3	Element 36.1 Knowledge outcome 3	Design methodology	The British standard requirements for suitability of connection to existing flues	CORGI manuals
345049 1.5	Element 36.1 Knowledge outcome 5	Commissioning	RIDDOR Reportable faults on gas systems	CORGI manuals
345057 2.1	Element 36.2 Knowledge outcome 1	Installation testing	Acceptable CO level emitted from appliances	CORGI manuals
345058 2.1	Element 36.2 Knowledge outcome 1	Installation testing	Identification and differentiation of 'at risk' and 'immediately dangerous' situations	CORGI manuals
345060 2.1	Element 36.2 Knowledge outcome 1	Installation testing	Identification and differentiation of 'at risk' and 'immediately dangerous' situations	CORGI manuals
345071 2.2	Element 36.2 Knowledge outcome 2	Component recognition	Understanding the function of and identifying electrical thermostats	Selected plumbing text books / CORGI manuals
345090 2.6	Element 36.2 Knowledge outcome 6	Commissioning records	Completion of gas labels/ commissioning records	CORGI manuals

345100 2.8	Element 36.2 Knowledge outcome 8	Component installation	The effects of adjusting the aeration screw on a hotplate burner	Selected plumbing text books / CORGI manuals
345114 3.2	Element 36.3 Knowledge outcome 2	Safety legislation	Responsibility of marking pipework as carrying gas under the regulations	Health & Safety Executive L56 ACOP
345150 4.5	Element 37.1 Knowledge outcome 5	Component recognition	The function and reasoning for gas fire closure plates	CORGI manuals
345155 5.1	Element 37.2 Knowledge outcome 1	Component installation	Requirements for gas appliance installation in balanced compartments	CORGI manuals
345170 5.4	Element 37.2 Knowledge outcome 4	Fault recognition	The affect on flame picture of insufficient combustion air	CORGI manuals
345174 5.4	Element 37.2 Knowledge outcome 4	Fault recognition	The causes of explosive ignition within boiler with permanent pilots	Selected plumbing text books / CORGI manuals
345176	Element 37.2 Knowledge outcome 4	Fault recognition	Spillage testing methods for rooms containing open flued appliances and ceiling fans	CORGI manuals
345181 6.1	Element 37.3 Knowledge outcome 1	Component recognition	The design of flame port sizes to gas grill burners to allow even heating	Selected plumbing text books / CORGI manuals
345185 6.2	Element 37.3 Knowledge outcome 4	Component recognition	The similarities between a venturi and a water throttle on an instantaneous water heater	Selected plumbing text books / CORGI manuals
345186 6.2	Element 37.3 Knowledge outcome 4	Component recognition	The function of a venturi in an instantaneous water heater	Selected plumbing text books / CORGI manuals
345194 6.4	Element 37.3 Knowledge outcome 4	Fault recognition	The effects of burner blockages on the complete combustion of gas within an appliance	Selected plumbing text books / CORGI manuals

Unit 336 – Improvement of business products and services

Test Specification Objective No.	Scheme Standards Knowledge Outcome Reference	Learning Area	Question Point Feedback	Suggested Learning Ref.
336019 1.3.1	Element 4.1 Knowledge outcome 2	Industry bodies	Understanding the role of APHC within the plumbing industry	Selected plumbing text books / Association of Plumbing & Heating Contractors (APHC) website
336020 1.3.1	Element 4.1 Knowledge outcome 2	Industry bodies	Understanding the role of CIPHE within the plumbing industry	Selected plumbing text books / Chartered Institute of Plumbing & Heating Engineering (CIPHE) website
336029 1.4	Element 4.1 Knowledge outcome 4	Business promotion	The method behind registering internet domain names to retain a business's online identity	Business link website
336037 1.5	Element 4.1 Knowledge outcome 5	Key information	The need to include plumbing works compliance notices within home information packs	Department of Communities & Local Government website
336038 1.5	Element 4.1 Knowledge outcome 5	Key information	The mandatory inclusion of Energy Performance Certificates within a home information pack	Department of Communities & Local Government website (DFPNI in NI)
336050 2.2	Element 4.2 Knowledge outcome 2	Policy statements	Typical contents of a customer service policy statement	Selected plumbing text books