Essential Skills Wales

Essential Application of Number Skills (EAoNS)

Level 2 Controlled Task

Assessor Pack

Solar Panels

Version **2.3**

Sample (Set B)

Produced jointly by the four Essential Skills awarding bodies:

- Agored Cymru
- City & Guilds
- Pearson
- WJEC

Assessment requirements

The following is a summary of the Essential Skills Wales (ESW) Controlled Task Conditions. These requirements should be read in conjunction with the relevant **Controlled Task Candidate Pack**. General assessment guidelines applicable to all ESW assessments can be found in the **Essential Skills Wales Suite *Qualification Handbook***.

Controlled task assessment

Controlled tasks are **summative assessments** measuring subject-specific skills. Candidates will need to show they can utilise these skills in a holistic manner, relevant to real-life circumstances. The assessment outcome is **pass/fail**.

Controlled tasks must be:

- internally assessed, by appropriately qualified staff, using the Marking Schemes provided. Please see 2.2 of the ***Qualification Handbook*** for details of staff qualifications
- internally quality assured, by appropriately qualified staff
- externally quality assured/moderated by City & Guilds
- compliant with **Controlled task conditions**.

Controlled task conditions

This controlled task must be completed under the conditions set out below. 'Controlled' relates to all aspects of how the task is administered and assessed.

Candidates should only attempt this controlled task when they have been registered for this qualification and have developed the necessary skills at the required level. Learning development input should be completed before the candidate attempts this controlled task. This controlled task must normally be completed before the confirmatory test is attempted.

Working period

The candidate must complete this controlled task within an 8 week 'working period'. The working period commences on the date the candidate starts working on the task. The working period may be extended only in specific extenuating circumstances or if the academic term does not extend to 8 weeks. Please see 4.6 of the ***Qualification Handbook*** for further information.

Working time

The candidate has up to **5 hours in total** to complete this controlled task. This task 'working time' allowance will formally start at the point when a task is first provided to the candidate. The task working time may be extended only in specific extenuating circumstances. Please see 4.6 of the ***Qualification Handbook*** for further information.

Supervised conditions

This controlled task must be completed under the following supervised conditions:

- This task is an 'open book' assessment. Candidates may have access to routine resources that might be available in a 'real life' situation, for example: PCs/laptops, tablets, dictionaries, calculators, reference books, relevant class notes and source material approved by their tutor/assessor so long as they are not designed *specifically* to assist with this assessment and do not compromise independent achievement of the standard. Mobile phones or other transmitting/receiving devices are not permitted. The candidate can access the Internet using supervised facilities.

- The environment within which tasks are completed must be supervised. This supervision must be **continuous** and ensure no interruption and/or undue influence is possible whilst candidates are working on the task. Suitable locations might include a classroom, a library or a workplace as long as an appropriate environment and supervision are maintained. For the avoidance of doubt, this environment does not require formal 'examination' conditions.
- The supervisor must be a reliable, responsible person who is accountable for ensuring adequate supervision and control of the environment are maintained. The supervisor must be present throughout the working time and be able to confirm that each candidate produced all work independently. The supervisor can be the candidate's tutor and/or assessor or another suitable person.
- This controlled task may be completed in one session or split over several sessions, as long as no learning or preparation is provided in between. If not completed in one sitting, the candidate's papers and all materials produced by the candidate must be collected in and stored securely until the next working time session begins. On no account may candidates take any of their work away with them between sessions, for example to work on a task at home.
- The working period and working time taken to complete this controlled task must be monitored and recorded as indicated on the front page of the ***Candidate Pack***. The candidate, supervisor, assessor and centre details must be completed and the declarations must be signed and dated before completed tasks are submitted for assessment.

Assistance and access arrangements
Assessors may provide candidates with the opportunity to clarify task requirements during the working period; however, this must not extend to any form of formative feedback. For example, recommending that a candidate should review their calculations would be inappropriate, whereas recommending the candidate re-read a particular section of the task requirements would be acceptable. Please see 4.6 of the ***Qualification Handbook*** for further information on access arrangements.

Second and subsequent attempts
A specific controlled task can be attempted only once. However, a candidate may undertake a different controlled task, (either another title from the City & Guilds pre-approved bank or a centre devised assessment that has been approved by City & Guilds) at another time if they do not pass. Wherever the candidate is unsuccessful, they **must** undergo further development in the relevant skill(s) before re-attempting at a later date.

Collaboration
This controlled task requires the candidate to work individually.

Mark Scheme

Essential Application of Number Skills at Level 2
Task title: Solar Panels

Part 1 (maximum 3 marks)	**At least 1 mark** for row A required to pass	
The candidate has shown evidence of:	**Mark scheme**	**Row**
planning and describing how to tackle a task (N2.1.1a)	**2 marks:** candidate produces a complete plan The plan must include: the information to be used from the source materials AND the calculations to be done AND how results for Part 2 and Part 3 will be presented The structure must be in the form of: e.g. a list, table or flow chart e.g. a spider diagram with arrows or numbers to show a logical sequence Accept a narrative plan with a clear structure to show a logical sequence. OR **1 mark:** candidate shows clear evidence of planning but with **up to two** errors or omissions e.g. a flow chart with one or two action points missing e.g. a complete spider diagram with no indication of the order in which action points are to be carried out e.g. a list of action points in order, with no indication of a specific method of presentation for one or both parts of the task Accept a complete narrative plan with limited structure or a well-structured plan with **up to two** errors or omissions. See an example of a suitable plan at the end of the mark scheme. **Award 0 marks for a plan that is substantially copied from the Candidate Pack.**	**A**

<table>
<tr><td>explaining choice of methods (N2.1.1c)</td><td>1 mark: candidate shows evidence of explaining choice of at least one method
e.g. The solar panels are a fixed size, so to work out how many panels fit on the available space, I will divide the side length of the roof by the side length of a panel, then multiply the number of whole panels that fit along the length by the number along the width.</td><td>B</td></tr>
</table>

<table>
<tr><th colspan="3">Part 2 (maximum 9 marks)</th></tr>
<tr><th>The candidate has shown evidence of:</th><th>Mark scheme</th><th>Row</th></tr>
<tr><td>reading, understanding and interpreting information from tables, charts, graphs and diagrams (N2.1.2a)</td><td>1 mark: at least six correct values from the chart in Source 1
i.e.
<table>
<tr><th></th><th>Friends</th><th>Average UK consumer</th></tr>
<tr><td>Jan-Mar</td><td>1120</td><td>980</td></tr>
<tr><td>Apr-Jun</td><td>480</td><td>620</td></tr>
<tr><td>Jul-Sep</td><td>720</td><td>760</td></tr>
<tr><td>Oct-Dec</td><td>1040</td><td>820</td></tr>
</table></td><td>C</td></tr>
<tr><td>calculating efficiently using whole numbers, fractions, decimals and percentages (N2.2m)</td><td>1 mark: candidate shows a correct process to calculate a total annual electricity usage
e.g. 1120 + 480 + 720 + 1040 (= 3360 kWh for your friends)
e.g. 980 + 620 + 760 + 820 (= 3180 kWh for the average UK consumer)

Accept correct use of their answers from row C.</td><td>D</td></tr>
</table>

calculating efficiently using whole numbers, fractions, decimals and percentages (N2.2m) calculating with sums of money and converting between currencies (N2.2e)	**1 mark**: candidate shows a correct process to calculate an annual cost of electricity e.g. 3360 × 16.37 ÷ 100 (= £550.032 for your friends, without VAT) e.g. 3360 × 17.1885 ÷ 100 (= £577.5336 for your friends, including VAT) **1 mark**: candidate shows a correct process to calculate VAT e.g. 1.05 × 550.032 (= £577.5336) e.g. 550.032 + (550.032 × 5 ÷ 100) (= £577.5336) e.g. 16.37 × 1.05 (= 17.1885p) **1 mark:** correct total cost for your friends AND the average UK consumer e.g. £577.53 OR £577.54 (for your friends) AND £546.59 OR £546.60 (for the average UK consumer) Correct units and money format required. **Accept correct use of their answers from row D.**	**E**
identifying and describing appropriate ways to present findings to different audiences including numerical, graphical and written formats (N2.3.1a) constructing complex tables, charts, graphs and diagrams and labelling with titles, scales, axes and keys appropriate to purpose and audience (N2.3.1b) using two different ways to present findings effectively (N2.3.1c)	**1 mark:** candidate uses an appropriate method of presentation for their results e.g. complex table, diagram, line graph, comparative/component bar chart Award this mark if **at least one** appropriate complex method of presentation is used in either Part 2 OR Part 3. **1 mark:** candidate uses suitable title AND labels AND units **1 mark:** candidate populates table, chart, graph or diagram with correct data (± 2mm tolerance on hand drawn graph or chart)	**F**
identifying main points of findings, drawing conclusions, making comparisons and giving valid explanations. (N2.3.2c)	**1 mark:** candidate makes **at least one** valid comment to compare the amount OR cost of electricity usage e.g. Last year, my friends used nearly 200 kWh more electricity than the average UK consumer. e.g. The cost of electricity for my friends was over £30 more than the cost for the average UK consumer last year.	**G**

Part 3 (maximum 15 marks)		
The candidate has shown evidence of:	**Mark scheme**	**Row**
reading, understanding and interpreting information from tables, charts, graphs and diagrams (N2.1.2a)	**1 mark:** candidate extracts correct values from the diagrams in Sources 2 and 3 i.e. 24 (ft) and 11 (ft) 6 (inches) (for the space available) AND 860 (mm) and 1620 (mm) (for the solar panel)	**H**
calculating within a system and between systems using conversion tables and scales (N2.2f)	**1 mark**: correct shows a correct process to convert between units e.g. 24 × 30 ÷ 100 (= 7.2 m) e.g. [11 × 30 + 6 × 2.5] ÷ 100 (= 3.45 m) e.g. 860 ÷ 1000 (= 0.86 m) or 1620 ÷ 1000 (= 1.62 m) **1 mark:** correct dimensions of space available and solar panel in consistent units e.g. 7.2 (m) AND 3.45 (m) for the space available AND 0.86 (m) AND 1.62 (m) for the solar panel Accept equivalents in other units.	**J**
solving problems involving 2-D shapes and parallel lines (N2.2g)	**1 mark:** candidate shows a correct process to find the maximum number of solar panels that will fit along **at least one** side of the available space e.g. 7.2 ÷ 0.86 (= 8.372…) or 3.45 ÷ 1.62 (= 2.129…) e.g. 7.2 ÷ 1.62 (= 4.444…) or 3.45 ÷ 0.86 (= 4.011…) Accept a correct process using trial and improvement with **at least two** trials e.g. 0.86 × 8 (= 6.88 m) AND 0.86 × 9 (= 7.74 m) Do not accept a method using the area of available space or area of a panel. **1 mark**: correct answer for total number of panels e.g. 8 × 2 = 16 (panels) e.g. 4 × 4 = 16 (panels) NB. must come from correct process and rounding down. **Accept correct use of their answers from row J.**	**K**

understanding compound measures (N2.1.2h) using proportions and calculating using ratios (N2.2h)	**1 mark**: candidate shows a correct process to find the total annual output of the solar panels (output per panel × number of panels × rating at peak performance) e.g. 850 × 16 × 0.25 (= 3400 kWh) **1 mark:** correct answer e.g. 3400 (kWh) **Accept correct use of their answers from row K.**	**L**
understanding and using relevant formulae (N2.2l)	**1 mark:** candidate shows a correct process to calculate the annual savings and income from their solar panels e.g. [3400 ÷ 100] × [2.5 + 16.37 ÷ 2] (= £363.29) **1 mark:** correct answer e.g. (£)363.29 **Accept correct use of their answer from row L.**	**M**
identifying and describing appropriate ways to present findings to different audiences, including numerical, graphical and written formats; (N2.3.1a) constructing complex tables, charts, graphs and diagrams and labelling, with titles, scales, axes and keys appropriate to purpose and audience (N2.3.1b) using two different ways to present findings effectively (N2.3.1c)	**1 mark:** candidate uses an appropriate method of presentation for their results, using a different presentation method to the one used in Part 2 e.g. table, diagram, line graph, bar chart or pie chart **1 mark:** candidate uses suitable title AND labels AND units **1 mark:** candidate populates table, chart, graph or diagram with correct data (± 2 mm tolerance on hand drawn graph or chart)	**N**
identifying main points of findings, drawing conclusions, making comparisons and giving valid explanations (N2.3.2c)	**1 mark:** candidate makes **at least one** valid comment to compare the income from the solar panels with the total cost of electricity used last year e.g. The total savings and income from the solar panels will be just over £360 per year, which is more than half the total cost of the electricity my friends used last year.	**P**

estimating amounts and proportions (N2.1.2g)	**1 mark**: candidate provides an estimate for the cost of their solar panels (Source 5) e.g. [8000 – 6500] ÷ 2 + 6500 =] (£)7250 (for a 4 kWp system) Accept a value between (£)7000 and (£)7500	**Q**
identifying main points of findings, drawing conclusions, making comparisons and giving valid explanations (N2.3.2c)	**1 mark:** candidate recommends whether the friends should buy the solar panels or not, and gives **at least one** valid reason e.g. My friends should not buy the solar panels because they will cost approximately £7000, which is nearly 20 times more than the money they will make every year. e.g. The solar panels will cost about £7000, but my friends should buy them because they will reduce their spending on electricity and save over a tonne of carbon dioxide every year.	**R**

Example of a plan for rows A and B

Solar Panels Task Plan
Part 2

1. Calculate total electricity used by friends and average UK customer last year (Source 1).
2. Calculate total cost of electricity for friends and average customer (Source 1).
3. Add VAT to total cost. To add 5%, I will convert 5% to 0.05, and multiply the cost by (1 + 0.05)
4. Show results on a bar chart.
5. Make a comment to compare results.

Part 3

1. Find sizes of space (Source 2) and solar panels (Source 3) and convert to metres.
2. Calculate how many panels fit in the space.
3. Calculate how much electricity the panels can generate in a year.
4. Calculate how much the friends can make in savings and income.
5. Present results in a table.
6. Compare cost of electricity used with savings and income and make a comment.
7. Estimate cost of panels.
8. Recommend whether friends should buy panels or not and give a reason.