

**Qualification Name: NCFE Level 2 Certificate in Engineering Studies October 2019 P000772**

This mark scheme **MUST** be used by NCFE Examiners to support the reliable marking and accurate grading of learner evidence.

Task 1			
Assessment criteria:	Pass:	Merit:	Distinction:
<b>1.1 Distinguish between the common systems of measurement in engineering drawing</b>	Learners will <b>distinguish</b> between the common systems of measurement in engineering drawing	Learners will <b>clearly distinguish</b> between the common systems of measurement in engineering drawing in detail	Learners will <b>perceptively distinguish</b> between the common systems of measurement in engineering drawing in detail
<b>Range:</b>	<b>Systems:</b> pre- and post-decimalisation.		
	<p>Learners will identify <b>both</b> common systems of measurement <b>correctly</b>:</p> <p>Metric Imperial</p> <p>Learners will identify <b>2</b> common units of measurement for <b>each</b> system of which <b>most</b> will be correct for each system.</p> <p>Any units of measurement accepted.</p> <p>Learners will provide a <b>basic</b> explanation of the distinguishers between the 2 systems that is <b>partly</b> accurate.</p> <p>Explanation may be in bullet form.</p>	<p>Learners will identify <b>both</b> common systems of measurement <b>correctly</b>:</p> <p>Metric Imperial</p> <p>Learners will identify <b>2</b> common units of measurement for <b>each</b> system of which <b>most</b> will be correct for each system.</p> <p>Any units of measurement accepted.</p> <p>Learners will provide a <b>clear</b> explanation of the distinguishers between the 2 systems that is <b>mostly</b> accurate.</p>	<p>Learners will identify <b>both</b> common systems of measurement <b>correctly</b>:</p> <p>Metric Imperial</p> <p>Learners will identify <b>2</b> common units of measurement for <b>each</b> system of which <b>all</b> will be correct for each system.</p> <p>Any units of measurement accepted.</p> <p>Learners will provide a <b>clear perceptive</b> explanation of the distinguishers between the 2 systems that is <b>fully</b> accurate.</p>
<b>Glossary of Terms:</b>	<b>Distinguish:</b> Differentiate, tell apart.	<b>Clearly:</b> A statement that is set out logically and without possibility of misunderstanding	<b>Perceptively:</b> Showing insight and understanding

Task 1			
Assessment criteria:	Pass:	Merit:	Distinction:
<b>1.2 Describe how measuring devices are used in engineering drawing</b>	Learners will <b>describe</b> how measuring devices are used in engineering drawing	Learners will describe in <b>detail</b> how measuring devices are used in engineering drawing	Learners will <b>perceptively</b> describe how measuring devices are used in engineering drawing
<b>Range:</b>	<b>Measuring devices:</b> e.g. manual, semi-automatic and automatic.		
NB: Ruler – <b>not accepted</b> if used to draw a straight line	<p>Learners will describe <b>more than one</b> piece of measuring device <b>correctly</b>.</p> <p>Descriptions will be <b>basic</b> with <b>minimal</b> detail, describing the use for planning <b>and/or</b> preparing <b>and/or</b> producing of engineering drawings.</p>	<p>Learners will describe <b>three or more</b> measuring device <b>correctly</b>.</p> <p>Descriptions will be <b>detailed</b> and <b>mostly</b> accurate, describing the use for planning <b>and</b> preparing <b>and</b> producing of engineering drawings.</p> <p>Descriptions for each accurate device identified may not be fully formed to include <b>all</b> planning, preparing and producing for each but learners will explain 2 of the following: planning, preparing and producing.</p>	<p>Learners will describe <b>all</b> pieces of measuring devices <b>correctly</b>.</p> <p>Descriptions will be <b>detailed</b> and <b>perceptively</b> accurate, describing the use for planning <b>and</b> preparing <b>and</b> producing of engineering drawings for <b>all</b> pieces of drawing equipment.</p>
<b>Glossary of Terms:</b>	<b>Describe:</b> Define, explain	<b>Detailed:</b> Thorough and in depth	<b>Perceptively:</b> Showing <i>insight</i> and understanding

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
<b>1.3 Describe the purpose of scale and proportion in engineering drawing</b>	Learners will <b>describe</b> the purpose of scale and proportion in engineering drawing	Learners will <b>coherently</b> describe the purpose of scale and proportion in engineering drawing	Learners will describe the purpose of scale and proportion in engineering drawing showing <b>critical judgement</b>
Range:	<b>No range for this assessment criterion</b>		
	<p>The learner will provide a <b>basic</b> description.</p> <p>The learner will provide a <b>basic</b> description that is <b>partially accurate</b> of the difference in proportion of the two images.</p> <p>And/or</p> <p>The learner will provide a <b>basic</b> description that is <b>partially accurate</b> of the importance of proportion used in the image.</p> <p>The description may be in bullet form.</p>	<p>The learner will provide a <b>coherent</b> description.</p> <p>The learner will provide a <b>coherent</b> description that is <b>fully accurate</b> of the difference in proportion of the two images.</p> <p>And/or</p> <p>The learner will provide a <b>coherent</b> description that is <b>fully accurate</b> of the importance of proportion used in the image.</p>	<p>The learner will provide a <b>coherent</b> description.</p> <p>The learner will provide a <b>coherent</b> description that is <b>fully accurate</b> of the difference in proportion of the two images.</p> <p>And/or</p> <p>The learner will provide a <b>coherent</b> description that is <b>fully accurate</b> of the importance of proportion used in the image.</p> <p>And</p> <p>The learner will evidence <b>critical judgment and understanding</b> of how scale and proportion would inform engineering drawings by providing <b>some</b> analysis <b>and/or</b> evaluation <b>and/or</b> opinion, <b>and or</b> reasons.</p>
Glossary of Terms	<b>Describe:</b> Define, explain	<b>Coherent:</b> Logically connected	<p><b>Critical judgement:</b> Application of a <b>critical understanding</b> informing decisions</p> <p><b>Critical understanding:</b> Deconstruct, analyse and evaluate and express opinion.</p>

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
<b>2.1 Demonstrate the correct layout of a design sheet for 2D and 3D engineering drawings</b>	Learners will demonstrate the correct layout of a <b>basic</b> design sheet for 2D and 3D engineering drawings	Learners will demonstrate the correct layout of a <b>detailed</b> design sheet for 2D and 3D engineering drawings	Learners will <b>skilfully</b> demonstrate the correct layout of a sophisticated design sheet for 2D and 3D engineering drawings
<b>Range:</b>	<b>2.1 2D and 3D engineering drawings:</b> <ul style="list-style-type: none"> <li>2D: e.g. first angle projection, third angle projection, layout drawings, circuit diagrams, schematic diagrams, assembly drawings, plan views, freehand sketch</li> <li>3D: e.g. isometric, exploded isometric, oblique, Plano metric, perspective, assembly drawings, freehand sketch (this is not an exhaustive list)</li> </ul>		
	Learners will provide a <b>basic</b> and <b>mostly accurate</b> layout of a design sheet for <b>both</b> their 2D and 3D engineering drawings. <ul style="list-style-type: none"> <li>Correct layout to include: <ul style="list-style-type: none"> <li>a border</li> <li>title block.</li> </ul> </li> <li>Layout is <b>basic</b> and title block does not have to be completed in full.</li> </ul>	Learners will provide a <b>detailed</b> and <b>mostly correct</b> layout of a design sheet for <b>both</b> their 2D <b>and</b> 3D engineering drawings. <ul style="list-style-type: none"> <li>Correct layout to include: <ul style="list-style-type: none"> <li>a border</li> <li>title block.</li> </ul> </li> <li>Layout is <b>mostly</b> accurate and the title block does not have to be completed in full.</li> </ul>	Learners will provide a <b>fully correct</b> layout of a design sheet for <b>both</b> their 2D <b>and</b> 3D engineering drawings. <ul style="list-style-type: none"> <li>Correct layout to include: <ul style="list-style-type: none"> <li>a border</li> <li>title block</li> <li>method of projection.</li> </ul> </li> <li>Layout and title block is <b>fully</b> accurate <b>and</b> completed in full.</li> </ul>
<b>Glossary of Terms</b>		<b>Detailed:</b> <i>Thorough and in depth</i>	<b>Skilfully:</b> <i>A process or task underpinned by technical knowledge and a degree of mastery</i>

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
<b>2.2 Apply appropriate scales to all drawings</b>	Learners will apply <b>appropriate</b> scales to all drawings	Learners will apply <b>appropriate</b> and <b>realistic</b> scales to all drawings	Learners will <b>skilfully</b> apply appropriate and <b>realistic</b> scales to all drawings
Range:	No range for this assessment criteria.		
<b>Scale will be applied correctly but does not need to be stated correctly in the title block (This is assessed in 2.4)</b>	<p>Learners will use a scale in the production of their 2D and 3D drawings.</p> <p>The learner will have used a <b>simple</b> scale for the production of their drawings and will be <b>mostly</b> accurately applied.</p>	<p>Learners will use an <b>appropriate</b> scale in the production of <b>both</b> their 2D and 3D drawings.</p> <p>The scale used will be <b>realistic</b> which reflects the original size.</p> <p>The learners drawing may not fit correctly on the media used.</p>	<p>Learners will use an <b>appropriate</b> scale in the production of <b>both</b> their 2D and 3D drawings.</p> <p>The scale used will be <b>realistic</b> which reflects the original size.</p> <p>The learner will use a scale that demonstrates the effective use of space on the media that is been used to produce their drawing.</p> <p>The application of scale will be accurate and completed <b>fully</b> for <b>both</b> 2D and 3D drawings evidencing technical skill/knowledge (accepting conversion errors).</p>
<b>Glossary of Terms</b>	<b>Appropriate:</b> Relevant to the purpose/task	<b>Appropriate:</b> Relevant to the purpose/task <b>Realistic:</b> Relevant and in context	<b>Skilfully:</b> A process or task underpinned by technical knowledge and a degree of mastery <b>Appropriate:</b> Relevant to the purpose/task <b>Realistic:</b> Relevant and in context

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
<b>2.3 Demonstrate the accurate use of drawing tools and equipment</b>	<i>Learners will demonstrate the accurate use of drawing tools and equipment</i>	<i>Learners will demonstrate the accurate use of drawing tools and equipment showing <b>experimentation</b></i>	<i>Learners will <b>skilfully</b> demonstrate the accurate use of drawing tools and equipment showing <b>experimentation</b></i>
<b>Range:</b>	Reference to only one drawing		
<p>Learners understood the application of drawing equipment, which is implied in the production of assessment criterion 2.4.</p> <p>Experimentation:</p> <ul style="list-style-type: none"> <li>• Shading</li> <li>• Hidden Lines</li> <li>• Screw Holes</li> <li>• Rendering</li> </ul>	<p>The learners will have evidenced the use of <b>some</b> drawing tools and equipment.</p> <p>The drawing tools and equipment will be used with <b>minimal</b> technical skill and accuracy.</p>	<p>Learners will have evidenced the <b>accurate</b> use of drawing tools and equipment.</p> <p>The drawing tools and equipment will be used with <b>minimal</b> technical skill and accuracy.</p> <p>The learner's will evidence <b>some</b> experimentation of <b>basic</b> drawing tools and equipment in <b>either</b> their 2D <b>or</b> 3D drawing.</p>	<p>Learners will have evidenced the <b>skillfull</b> use of drawing tools and equipment.</p> <p>The drawing tools and equipment will be used with technical skill and accuracy.</p> <p>The learner's will evidence <b>some</b> experimentation of drawing tools and equipment.</p> <p>The learner's choice of experimentation will elicit technical knowledge of the tools and equipment used.</p> <p>Learners will evidence the application of technical skill and <b>some</b> mastery in use and application of the selected drawing tools and equipment in <b>both</b> the 2D <b>and</b> 3D drawing.</p> <p>The learner will <b>mostly</b> demonstrate <b>accuracy</b> of skills (<b>Skilfully apply</b>) whilst using less basic drawing tools and equipment.</p>
<b>Glossary of Terms</b>		<b>Experimentation:</b> <i>To try different methods and techniques</i>	<b>Skilfully:</b> <i>A process or task underpinned by technical knowledge and a degree of mastery</i> <b>Experimentation:</b> <i>To try different methods and techniques</i>

Task 2 and Task 3			
Assessment criteria	Pass	Merit	Distinction
<b>2.4 Present their final 2D and 3D engineering drawings showing evidence of the process involved in its production</b>	Learners will present their final 2D and 3D engineering drawings showing evidence of the process involved in its production	Learners will present their final 2D and 3D engineering drawings showing evidence of the process involved in its production, <b>justifying</b> their choices	Learners will present their final 2D and 3D engineering drawings showing evidence of the process involved in its production showing <b>critical judgement</b>
<b>Range:</b>	<b>2.1 2D and 3D engineering drawings:</b> <ul style="list-style-type: none"> <li>2D: e.g. first angle projection, third angle projection, layout drawings, circuit diagrams, schematic diagrams, assembly drawings, plan views, freehand sketch</li> <li>3D: e.g. isometric, exploded isometric, oblique, Plano metric, perspective, assembly drawings, freehand sketch (this is not an exhaustive list)</li> </ul>		
<b>Title Block</b> <ul style="list-style-type: none"> <li>Name</li> <li>Some additional info</li> <li>Border</li> <li>Material</li> <li>Finish</li> </ul> <b>Task 2, part A for justification</b>	<p>Learners will present their final 2D and 3D drawings in either manual or CAD formats.</p> <p>Learners will present <b>basic</b> drawings of <b>both 2D and 3D</b> engineering components, a title block and border will be present but may be incomplete or not fully accurate.</p> <p>The drawings will be set out <b>mostly</b> appropriately and on the correct paper size for at least <b>one</b> of the drawings.</p> <p>At least one drawing should be demonstrate <b>some</b> dimensioning that is <b>partially</b> accurate.</p> <p>The drawing must demonstrate the use of accurate scale and sizing against the sketch provided for at least <b>one</b> drawing.</p>	<p>Learners will present their final 2D and 3D drawings in either manual or CAD formats.</p> <p>Learners will present <b>mostly</b> accurate drawings of <b>both 2D and 3D</b> engineering components.</p> <p>Learners will present <b>basic</b> drawings of <b>both 2D and 3D</b> engineering components a title block and border will be present but may be incomplete or not fully accurate.</p> <p>Learner's drawings will contain <b>some</b> dimensions which are <b>mostly</b> accurate.</p> <p>Presentation in a hardcopy with the images set out appropriately on the correct paper size.</p>	<p>Learners will present their final 2D and 3D drawings in either manual or CAD formats.</p> <p>Learners will present fully accurate drawings of <b>both 2D and 3D</b> engineering components.</p> <p>Learners will complete drawings that are free from double lines, smudges and that are clean and clear. Learners will demonstrate the use of dimensions, scale and projection and correctly sized holes in the drawn product to demonstrate effective and realistic drawing standards.</p> <p>Learner's drawings will <b>both</b> be dimensioned. Dimensions will be <b>fully</b> accurate.</p> <p>Presentation in a hardcopy with the images set out appropriately on the correct paper size.</p>

		<p>The drawing must demonstrate the use of accurate scale and sizing against the sketch provided for <b>one</b> drawings.</p> <p>Learners will evidence justification of at least one process they used by providing <b>some</b> clear analysis <b>and/or</b> evaluation <b>and/or</b> opinion, <b>and or</b> reasons for their choice of processes/s.</p>	<p>The drawing must demonstrate the use of accurate scale and sizing against the sketch provided for <b>both</b> drawings.</p> <p>Learners will evidence critical understanding of the production process and provide <b>some</b> clear analysis <b>and/or</b> evaluation <b>and/or</b> opinion, <b>and or</b> reasons for their choices/processes.</p>
<b>Glossary of Terms</b>		<p><b>Justify:</b> Give reasons or evidence to support an opinion</p>	<p><b>Critical judgement:</b> Application of a <b>critical understanding</b> informing decisions</p> <p><b>Critical understanding:</b> Deconstruct, analyse and evaluate and express opinion</p>