|  |  |  |
| --- | --- | --- |
|  | Australian Curriculum Year 8 Science sample assessment ׀ Task-specific standards — matrix  Energy test | Name |

© The State of Queensland (Queensland Curriculum and Assessment Authority) and its licensors 2014. All web links correct at time of publication.

**Purpose of assessment:** To demonstrate understanding of different forms of energy and the changes they cause within systems.

|  | | | A | B | C | D | E |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Understanding dimension | Science Understanding | **Section A**  **Questions 1, 2, 5, 6, 7**  Analysis of data and information to identify types of energy, describe energy transfers, transformations, efficiency and develop explanations | Integration of analysis of diagrammatic or graphical data with science knowledge to develop justified explanations about:   * the quantitative comparison of energy efficiency of light bulbs and describe the safety advantages (Q6) * how the relationship between KE and GPE represents the position of a skateboard rider (Q7) | Linking analysis of diagrams or graphs with science knowledge to:   * explain why the identified point has the greatest GPE (Q5) * qualitatively compare energy efficiency of light bulbs and describe the safety advantages (Q6) * explain which KE and GPE graph represents the position of a skateboard rider (Q7) | Identification of different types of energy and description of energy transfers and transformations (Q1,2)  Identification of the:   * point where GPE is greatest (Q5) * energy transformation in light bulbs (Q6) * graph that represents the PE and GPE of a skateboard rider at particular positions (Q7) | Definition of different types of energy and recall of energy science knowledge | Recall of science facts about energy |
| **Section A**  **Questions 3, 4, 9, 10**  Application of science knowledge to generate solutions about:   * kinetic energy * gravitational potential   energy   * percentage efficiency | Accurate interpretation of text/diagrams to:   * compare KE and GPE (Q9) * convert units and substitute values into the appropriate equation to solve energy efficiency multistep, sequential problems (Q10) | Interpretation of text/diagrams to substitute values into the appropriate equation to:   * calculate KE and GPE (Q9) * solve multistep and sequential problems (Q10) | Substitution of values into the appropriate equation to solve simple word problems (Q3, 4) | Substitution of values into equations to partially solve word problems | Recall of energy equations |
| Science as a Human Endeavour | **Section B**  **Questions 11, 13**  Explanation of how evidence has improved understanding of science ideas and informed the collaboration of scientists to generate solutions to contemporary problems | Links to the background information and use of the data about total greenhouse gas emissions from  1990–2020 to explain why the initial development of the UltraBatteryTM targeted cars rather than trains (Q13) | Use of the data about total greenhouse gas emissions from  1990–2020 to explain why the initial development of the UltraBatteryTM targeted cars rather than trains (Q13) | * Explanation about total greenhouse gas emissions from  1990–2020 (Q11) * Description of why the UltraBatteryTM was developed (Q13) | Statements about greenhouse gas emissions and the development of the UltraBatteryTM to solve a problem | Statements about greenhouse gas emissions and the UltraBatteryTM |
| Skills dimension | Processing and analysing data and information | **Sections A and B**  **Questions 8, 12**   * Use of patterns and trends in graphs to explain relationships and justify conclusions * Construction of graphs to reveal patterns and trends about greenhouse gas emissions in cars vs. trains | * Use of data from the graph to compare the cooling rates of the different methods when drawing a justified decision about the accuracy of the claim (Q8) * Following of conventions to systematically construct accurate graphs to reveal patterns and trends about greenhouse gas emissions (Q12) | * Use of data from the graph to describe the cooling rates of the different methods and draw a justified decision about the accuracy of the claim (Q8) * Following of conventions to systematically construct graphs to reveal patterns and trends about greenhouse gas emissions (Q12) | * Use of data from the graph to draw justified decisions about gaining a food safety certificate (Q8) * Construction of graphs to reveal and analyse patterns and trends about greenhouse gas emissions (Q12) | * Partial development of conclusions about food safety and cooling methods (Q8) * Partial construction of graphs to reveal and analyse patterns and trends about greenhouse gas emissions (Q12) | * Restatement of data (Q8) * Partial construction of graphs (Q12) |