# Unit 1: Let’s Explore Matter and Motion

## Chapter 1: What Science Is

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| 1      | 1–9             | 1–9            | 1–4        | • Identify and locate the key text features  
• Infer from key text features the topics for Chapter 1  
• Identify that students and scientists can use their minds to solve problems and study God’s world  
• Explain, using biblical truth, the purposes for what scientists do (Genesis 1:28; Mark 12:30–31)  
• Explain what a worldview is and that all scientists have a worldview |
| 2      | 10–14           | 10–14          | 5–8        | • Demonstrate observing, classifying, measuring, inferring, predicting, and communicating as science inquiry skills  
• Explain from Genesis 1:28 why accurate measurement is important  
• Demonstrate proper use of a hand lens, ruler, meter stick, beaker, balance, and thermometer as science tools |
| 3      | 15–18           | 15–18          | 9–15       | **Investigation: Keeping Cool**  
• Demonstrate safety skills for Explorations and Investigations  
• Identify the purpose of investigations  
• Apply the steps of the scientific method to an investigation  
• Judge whether or not the design of an investigation presents a controlled investigation |
| 4      | 19–23           | 19–21          | 16–18      | • Recall what an engineer does  
• Relate the work of engineering to the command of Genesis 1:28  
• Identify the steps of the engineering design process  
**STEM: Bugged!**  
• Apply the engineering design process to solve a real-life problem  
• Communicate to others how the design solves the problem |
# Chapter 2: What Matter Is

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| 5      | 24–27          | 22–25          | 19–22      | • Define *matter*  
• Explain from Genesis 1 where matter came from BWS  
• Identify the mass of an object  
• Observe that matter takes up space |
| 6      | 28–32          | 26–30          | 20, 23–28  | • Identify seven properties of matter  
• Classify objects based on the properties of matter  
• Explain from Genesis 1:11–13 that God created plants with different properties of matter BWS |
| 7      | 33–35          | 31             | 29–31      | Exploration: Classifying by Property  
• Observe properties of common objects  
• Collaborate to choose two properties of matter for comparison  
• Compare and contrast common objects using two properties of matter  
• Classify objects by using two properties of matter |
| 8      | 36–38          | 32–34          | 33–38      | • Identify the states of matter  
• Classify objects as solid, liquid, or gas  
• Observe the shapes of solids, liquids, and gases  
• Compare and contrast states of matter |
| 9      | 39–41          | 35             | 39–40      | Investigation: How Slow Is the Flow?  
• Create a hypothesis to predict the rate at which thin and thick liquids flow  
• Record observations  
• Draw conclusions about the texture and flow of liquids |
| 10     | 42             | 22–35          | 19–40      | Review  
• Recall terms and concepts from Chapter 2 |
| 11     | 43             |                |            | Assessment  
• Apply terms and concepts from Chapter 2 |
# Chapter 3: How Matter Changes

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| 12     | 44–48          | 36–40          | 41–44      | • Explain the origin of matter by using Genesis 1  
• Recall the three states of matter  
• Explain what happens to the temperature of matter when it is heated and when it is cooled  
• Explain the changes to the solid state of matter when heat is added |
| 13     | 49–51          | 41             | 45–46      | **Investigation: Changing a Solid**  
• Create a hypothesis to predict which solid will change to a liquid the fastest when it is heated  
• Measure time using a timing device, such as a stopwatch  
• Observe and record the rates at which different solids melt  
• Draw conclusions from data collected |
| 14     | 52–56          | 42–46          | 42, 47–50  | • Identify changes to the state of water when it is heated  
• Explain why the water level in an open container drops  
• Identify the changes to water vapor when it is cooled  
• Identify the changes to the state of matter when heat is removed from a liquid  
• Identify the state of water in the water cycle using the terms evaporation, condensation, and precipitation  
• Develop a biblical response to a rainy day by using Psalm 147:7–8  |
| 15     | 57–61          | 47             | 51–55      | **Investigation: Reversible or Irreversible Changes?**  
• Identify the states of matter and properties of a crayon and an uncooked egg  
• Formulate a hypothesis to determine the effects of heating and cooling on the state and properties of a crayon  
• Formulate a hypothesis to determine the effects of heating and cooling on the state and properties of an egg  
• Record observations  
• Draw conclusions about reversible and irreversible changes caused by heating and cooling crayons and an egg |
| 16–17  | 62–68          | 48–54          | 57–58      | • Identify changes to matter  
• Identify changes to matter as either reversible or irreversible  
• Manipulate paper to illustrate reversible and irreversible changes  
• Identify the characteristics of a mixture  
• Observe that matter can be combined in different ways to make a new object |
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| 18     | 69–71          | 55             | 42, 59–60  | STEM: Built to Last  
* Design a structure that will stand up on its own by combining materials  
* Create a model of a structure that will stand on its own  
* Evaluate designs to determine which structures are best able to stand up on their own  
* Redesign models to make the structures better able to stand up on their own  
* Communicate to others how the redesign solves the problem  
* Explain by using biblical truth why it is important to build structures that will stand up on their own |
| 19     | 72             | 36–55          | 41–60      | Review  
* Recall terms and concepts from Chapter 3 |
| 20     | 73             |                |            | Assessment  
* Apply terms and concepts from Chapter 3 |
## Chapter 4: How Matter Moves

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| 21–22  | 74–83          | 56–65          | 61–66      | • Demonstrate an understanding of force  
• Determine that a stronger force makes an object go faster and farther  
• Determine what force is needed to move heavier objects  
• Illustrate ways objects can move in terms of direction  
• Determine what happens to objects when they touch or collide  
• Identify what speed is  
• Explain how we know that God made force |

### Investigation: Speed and Force
• Conduct an investigation using the science inquiry skills of measure, predict, and observe  
• Compare and contrast the effects of ramps on the speed of a ball  
• Determine the effect of force on an object  
• Determine that a ramp increases the speed of a ball

| 23     | 84–88         | 66             | 67–70      | STEM: Send Off!  
• Design and create a model of a ball launcher to increase the strength of force to move or knock over an object  
• Demonstrate that the greater the amount of force applied to an object, the greater the change in motion of the object  
• Analyze data from tests of the ball launcher to determine if it works as intended  
• Redesign the ball launcher to make it better able to solve the problem  
• Communicate to others how the design solves the problem  
• Explain why it is important to know how to change the strength of force |

| 24     | 89–91         | 67             | 62, 71–72 | |

| 25     | 92–94         | 68–70          | 62, 73–76 | • Identify what friction is  
• Describe the kinds of surfaces that have more or less friction  
• Explain that sometimes more friction is needed and other times less friction is needed  
• Explain that learning about friction can help us use it in better ways to help others |

| 26     | 95–99         | 71–73          | 73, 77–80 | • Identify what gravity is  
• Identify what weight is  
• Identify the tool used to measure weight  
**Exploration: All Fall Down**  
• Determine effects of gravity on various objects when dropped in an Exploration  
• Apply science inquiry skills to an Exploration |
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| 27     | 100–102        | 74             | 81–82      | **Investigation: Magnetic Attraction**  
  • Write a hypothesis predicting whether items will be attracted to a magnet  
  • Observe items that are attracted to a magnet  
  • Summarize why some objects are more attracted to a magnet than others are  
  • Classify the objects in the paper bag |
| 28     | 103–5          | 75–77          | 73, 83–85  | • Describe the kinds of things that are attracted to a magnet  
  • Identify the areas on a magnet that have the strongest magnetism  
  • Identify which poles of magnets attract each other and which ones repel each other  
  • Explain why we learn about force  
  • Write an explanation about what force causes a scooter to roll down a hill |
| 29     | 106            | 56–77          | 61–85      | **Review**  
  • Recall terms and concepts from Chapter 4 |
| 30     | 107            |                |            | **Assessment**  
  • Apply terms and concepts from Chapter 4 |
### Unit 2: Let’s Explore Earth and Space
#### Chapter 5: How the Earth Moves

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| 31     | 108–14          | 78–84          | 87–92      | • Identify the location of the sun in the solar system  
• Explain by using Genesis 1 that the solar system was created by God  
• Evaluate different worldviews of the origins of the solar system  
• Formulate a biblical worldview of origins  
• Identify how many planets are in the solar system  
• Identify the location of the earth in the solar system |
| 32     | 115–19          | 85–89          | 93–94      | • Describe the earth’s shape  
• Identify three ways a globe is a model of the earth  
• Identify that the earth tilts on its axis  
• Explain the importance of the rotation of the earth |
| 33     | 120–22          | 90             | 95–96      | Exploration: Day and Night Around the World  
• Observe how the earth’s rotation causes daytime and nighttime  
• Collaborate to model the rotation of the earth  
• Explain the cause of daytime and nighttime on the earth |
| 34     | 123–25          | 91–93          | 88, 97–99  | • Demonstrate the orbit of the earth around the sun  
• Identify the length of time the earth takes to orbit the sun  
• Explain how the earth’s revolution and tilt on its axis provide us with seasons  
• Explain by using Genesis 8:22 that God created the seasons |
| 35     | 126             | 80–93          | 87–99      | Review  
• Recall terms and concepts from Chapter 5 |
| 36     | 127             |                |            | Assessment  
• Apply terms and concepts from Chapter 5 |
## Chapter 6: What Makes Up the Earth

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| 37     | 128–35          | 94–101          | 101–4      | • Explain from Genesis 1 the origin of water on the earth  
• Identify that water, in liquid or solid state, covers most of the earth’s surface  
• Classify bodies of water as having either salt water or fresh water  
• Identify the seven continents and some of their characteristics  
• Identify various landforms and their characteristics |
| 38     | 136             | 102             | 105        | Exploration: Shape of the Land  
• Create a model depicting landforms and bodies of water on the earth’s surface  
• Classify bodies of water as having either fresh water or salt water  
• Explain how the model accurately represents landforms and water on the earth’s surface |
| 39     | 137–41          | 103–7           | 107–9      | • Identify ways that scientists learn about the earth’s crust  
• Explain how scientists can infer what layers are inside the earth  
• Explain why scientists can only infer what layers are inside the earth  
• Identify characteristics of each layer of the earth  
• Label a diagram showing the layers of the earth |
| 40     | 142–44          | 108             | 111–12     | Exploration: The Earth’s Layers  
• Create a model of the earth’s layers  
• Measure each layer of the model to represent what scientists believe about the thickness of the earth’s layers  
• Infer, using the model, information about the earth’s layers |
| 41     | 145–48          | 109–12          | 113–14     | • Identify four causes of weathering  
• Identify two causes of erosion  
• Compare and contrast weathering and erosion  
• Evaluate using biblical truth the statement that all weathering and erosion occur slowly  |
| 42     | 149–51          | 113             | 102, 115–16| STEM: Erosion Control  
• Design a solution to slow or prevent wind erosion by using the engineering design process  
• Construct a model to slow or prevent wind erosion  
• Test and compare models to improve the original design  
• Communicate how the design slows or prevents wind erosion  
• Explain from Genesis 1:27–28 and Matthew 22:37–39 why slowing or preventing erosion is important  |
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| 43     | 152–55          | 114–17          | 117–19     | • Compare and contrast volcanoes and earthquakes  
• Identify what lava is and where it comes from  
• Describe ways that volcanoes and earthquakes change the earth’s surface  
• Explain why learning about the movement of the earth’s surface helps people to live safely |
| 44     | 156             | 94–117          | 101–19     | **Review**  
• Recall terms and concepts from Chapter 6 |
| 45     | 157             |                 |            | **Assessment**  
• Apply terms and concepts from Chapter 6 |
# Chapter 7: What Natural Resources Are

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| 46–47  | 158–67         | 118–27         | 121–29     | • Identify what a natural resource is  \(BWS\)  
• Explain why people should conserve natural resources  \(BWS\)  
• Identify examples of natural resources  
• Describe how natural resources can be conserved  
• Explain how plants can help prevent erosion  
• Identify how fossil fuels are used as natural resources  
• Identify three kinds of fossil fuels  
• Evaluate the use of fossil fuels |
| 48     | 168–70         | 128–30         | 131–32     | • Identify what a product is  
• Identify common products that come from natural resources |
| 49     | 171–74         | 131–34         | 122, 133–35 | • Describe the three Rs of conservation  
• Formulate a statement explaining how conserving natural resources is obeying God  \(BWS\) |
| 50     | 175–77         | 135            | 137–38     | **Exploration: Recycled Paper**  
• Measure and record accurately  
• Recycle old newspapers to make new paper  
• Compare and contrast old newspaper to recycled paper  
• Infer what the new recycled paper can be used for  
• Formulate a statement from Matthew 22:37–39 to explain how recycling helps people obey God’s commands  \(BWS\) |
| 51     | 178            | 118–35         | 121–38     | **Review**  
• Recall terms and concepts from Chapter 7 |
| 52     | 179            |                |            | **Assessment**  
• Apply terms and concepts from Chapter 7 |
## Unit 3: Let’s Explore Living Things
### Chapter 8: How Plants Grow and Change

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| 53     | 180–89         | 136–45         | 139–45     | • Identify the characteristics of living and nonliving things  
• Classify items as living or nonliving  
• Identify the needs of plants to survive and grow  
• Explain from Genesis 3:17–18a how the Fall affected plants  
• Identify each part of a plant and its function  
• Create a model of a flower |
| 54     | 190–92         | 146–48         | 140, 147–48| • Explain that God created plants to reproduce “after their own kind”  
• Identify the parts of a seed  
• Describe what a seed needs to sprout  
• Identify the three stages of the life cycle of a plant  
• Explain why plants have seeds |
| 55     | 193–94         | 149–50         | 149–50     | • Identify ways that seeds travel  
• Describe how plants depend on animals to scatter seeds |
| 56     | 195–99         | 151            | 151–54     | **Investigation: Traveling Seeds**  
• Predict how seeds can be scattered  
• Observe how seeds are scattered  
• Classify seeds based on the way they travel |
| 57     | 200            | 138–51         | 139–54     | **Review**  
• Recall terms and concepts from Chapter 8 |
| 58     | 201            |                |            | **Assessment**  
• Apply terms and concepts from Chapter 8 |
# Chapter 9: How Animals Grow and Change

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| 59     | 202–8          | 152–58         | 155–56     | • Differentiate between living things and nonliving things  
• Identify needs of animals  
• Describe the relationship between what an animal needs to survive and where it lives  
• Describe how animals can change where they live to meet their needs  
• Formulate a biblical statement that God designed animals and where they live to work together so they can survive and grow |
| 60     | 209–14         | 159–64         | 157–62     | • Classify animals with backbones according to physical characteristics  
• Identify how animals with backbones use different external body parts |
| 61     | 215–19         | 165–69         | 163–66     | • Classify animals without backbones according to physical characteristics  
• Identify how animals without backbones use different external body parts |
| 62     | 220–23         | 170–73         | 167–68     | • Describe how animals grow and change  
• Identify that offspring resemble their parents  
• Describe how parents and offspring have body parts and behaviors that help them survive  
• Compare and contrast characteristics of offspring and their parents |
| 63     | 224–26         | 174–76         | 169–73     | • Sequence the steps of a life cycle for a butterfly and a frog  
• Identify body parts within the life cycle of animals |
| 64     | 227–28         | 177–78         | 175–78     | • Describe the transfer of energy from one organism to another  
• Read a food chain to understand how energy moves through where an animal lives  
• Identify the predators and prey in a food chain  
• Construct an explanation from Scripture of why there are predators and prey |
| 65     | 229–31         | 179            | 179–80     | STEM: Trapped!  
• Research the characteristics of an insect  
• Apply the engineering design process to trap an insect without harming it  
• Communicate to others how the design solves the problem |
| 66     | 232            | 152–79         | 155–80     | Review  
• Recall terms and concepts from Chapter 9 |
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## Chapter 10: Where Things Live

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| 68     | 234–39          | 180–85          | 181–84     | • Explain why it is important to learn and care about living things  
• Compare and contrast a population and a community of living things  
• Explain how living things depend on each other  
• Explain how a habitat provides for the needs of plants and animals  
• Infer whether plants and animals can survive in habitats that do not meet their needs |
| 69     | 240–44          | 186–90          | 185–88     | • Identify plants and animals living in a water habitat  
• Explain how water habitats meet the needs of living things |
| 70     | 245–51          | 191–97          | 189        | • Identify plants and animals living in a land habitat  
• Explain how land habitats meet the needs of living things  
• Compare and contrast water and land habitats |
| 71     | 252–56          | 198–202         | 182, 191–96| • Identify ways animals and plants change their habitats  
• Identify the impacts of a wildfire on a habitat  
• Evaluate how people impact habitats |
| 72     | 257–59          | 203             | 197–201    | **Exploration: Home Sweet Home**  
• Research a habitat  
• Build a model of a habitat  
• Communicate information about a habitat and the things living there  
• Evaluate the researched habitat to determine if it could meet human needs |
| 73     | 260             | 180–203         | 181–201    | **Review**  
• Recall terms and concepts from Chapter 10 |
| 74     | 261             |                 |            | **Assessment**  
• Apply terms and concepts from Chapter 10 |
## Chapter 11: What Fossils Show Us

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| 75     | 262–65          | 204–7           | 203–6      | • Identify prior knowledge of fossils by using a K-W-L chart  
• Compare and contrast the worldviews of Creation and evolution  
• Infer how a person’s worldview affects how he interprets his observations |
| 76     | 266–68          | 208             | 207–9      | **Exploration: Following Clues**  
• Observe clues like a scientist does  
• Infer facts about an animal from its footprint clues  
• Draw conclusions from data collected  
• Relate conclusions from the collected data to what science can and cannot do |
| 77     | 269–73          | 209–13          | 205, 211–12| • Explain how fossils form  
• Compare and contrast different views of how most fossils formed  
• Identify six different types of fossils  
• Differentiate between a mold fossil and a cast fossil |
| 78     | 274–75          | 214–15          | 213–14     | • Explain what plant and insect fossils tell us about life on Earth at the time of the Flood  
• Explain why some plants and insects are found only as fossils  
• Create a model of a leaf mold fossil |
| 79–80  | 276–82          | 216–22          | 203–4, 215–18| • Explain what dinosaur fossils can and cannot tell us  
• Identify characteristics of the *Stegosaurus* and the *Tyrannosaurus rex*  
• Defend with biblical truth the claim that Noah took dinosaurs on the ark  
• Name one possible reason that dinosaurs became extinct |
| 81     | 283–85          | 223             | 219–21     | **Exploration: Bag of Bones**  
• Conduct a keyword search of a specific dinosaur  
• Create a model of a dinosaur skeleton  
• Explain how scientists infer what dinosaurs looked like  
• Communicate facts about the researched and modeled dinosaur  
• Evaluate the conclusions some people draw from fossils |
| 82     | 286             | 204–23          | 203–21     | Review  
• Recall terms and concepts from Chapter 11 |
| 83     | 287             |                 |            | Assessment  
• Apply terms and concepts from Chapter 11 |
# Chapter 12: How the Human Body Works

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| 84     | 288–93          | 224–29         | 223–28     | - Defend the statement that humans are the most important part of God’s creation \( BWS \)  
- Explain what a body system is  
- Identify the parts of the skeletal system  
- Identify the parts of the muscular system  
- Demonstrate how the skeletal system and the muscular system work together according to God’s design \( BWS \) |
| 85     | 294–97          | 230–33         | 225, 229–31 | - Identify the parts of the circulatory and respiratory systems  
- Relate the size of the heart to the size of a person’s fist  
- Explain how the lungs work  
- Explain how the circulatory system and the respiratory system work together according to God’s design \( BWS \) |
| 86     | 298–301         | 234–37         | 225, 233–34 | - Identify the parts of the nervous system  
- Explain how the skeletal system protects parts of the nervous system according to God’s design \( BWS \)  
- Identify the parts of the digestive system  
- Sequence the path that food travels through the digestive system |
| 87     | 302–4           | 238–40         | 235–43     | - Identify foods needed to keep the body healthy  
- Classify healthy foods by food groups  
- Plan one day of healthy eating \( BWS \)  
- Explain why healthy eating and exercise are important \( BWS \)  
- Select ways for the body to get exercise every day \( BWS \)  
- Compose a prayer of praise to God for His design of the human body systems \( BWS \) |
| 88     | 305–7           | 241            | 245–51     | Exploration: Mapping My Body  
- Create a life-size model of the human body  
- Create a life-size model of the heart  
- Organize body parts in their correct locations on the model of the human body  
- Formulate a statement to explain how the body model illustrates the teaching of Psalm 139:14 \( BWS \) |
| 89     | 308             | 224–41         | 223–51     | Review  
- Recall terms and concepts from Chapter 12 |
| 90     | 309             |                |            | Assessment  
- Apply terms and concepts from Chapter 12 |