

## Grade 10 Annually-Assessed Benchmarks for the Science FCAT

The following lists the fifteen Annually-Assessed Benchmarks that will be tested each year of the Grade 10 Science FCAT. It should be noted that within specific benchmarks other benchmarks are embedded and could be tested annually.

- ✚ SC.A.1.4.4- Experiments and determines that the rates of reaction among atoms and molecules depend on the concentration, pressure, and temperature of the reactants and the presence or absence of catalysts.
- ✚ SC.A.2.4.5- Knows that elements are arranged into groups and families based on similarities in electron structure and that their physical and chemical properties can be predicted.
- ✚ SC.B.1.4.1- Understands how knowledge of energy is fundamental to all the scientific disciplines (e.g., the energy required for biological processes in living organisms and the energy required for the building, erosion, and rebuilding of the Earth).
- ✚ SC.C.2.4.1- Knows that acceleration due to gravitational force is proportional to mass and inversely proportional to the square of the distance between the objects.
- ✚ SC.D.1.4.1- Knows how climatic patterns on Earth result from an interplay of many factors (Earth's topography, its rotation on its axis, solar radiation, the transfer of heat energy where the atmosphere interfaces with lands and oceans, and wind and ocean currents).
- ✚ SC.D.1.4.2- Knows that the solid crust of Earth consists of slow-moving, separate plates that float on a denser, molten layer of Earth and that these plates interact with each other, changing the Earth's surface in many ways (e.g., forming mountain ranges and rift valleys, causing earthquake and volcanic activity, and forming undersea mountains that can become ocean islands).
- ✚ SC.D.2.4.1- Understands the interconnectedness of the systems on Earth and the quality of life. **(Also Assesses SC.G.2.4.4)**

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- ✚ SC.E.1.4.1- Understands the relationships between events on Earth and the movements of the Earth, its moon, the other planets, and the sun. **(Also Assesses SC.E.1.4.2; SC.E.1.4.3)**
- ✚ SC.F.1.4.1- Knows that the body processes involve specific biochemical reactions governed by biochemical principles. **(Also Assesses SC.F.1.4.3; SC.F.1.4.5)**
- ✚ SC.F.2.4.3- Understands the mechanisms of change (e.g., mutation and natural selection) that lead to adaptations in a species and their ability to survive naturally in changing conditions and to increase species diversity. **(Also Assesses SC.D.1.4.4; SC.F.1.4.2)**
- ✚ SC.G.1.4.1- Knows of the great diversity and interdependence of living things. **(Also Assesses SC.G.1.4.2)**
- ✚ SC.G.2.4.2- Knows that changes in a component of an ecosystem will have unpredictable effects on the entire system but that the components of the system tend to react in a way that will restore the ecosystem to its original condition. **(Also Assesses SC.B.1.4.5; SC.G.2.4.5)**
- ✚ SC.H.1.4.1- Knows that investigations are conducted to explore new phenomena, to check on previous results, to test how well a theory predicts, and to compare different theories. **(Also Assesses SC.H.1.2.1; SC.H.1.2.2; SC.H.2.4.2; SC.E.2.4.6; SC.E.2.4.7)**
- ✚ SC.H.2.4.1- Knows that scientists control conditions in order to obtain evidence, but when that is not possible for practical or ethical reasons, they try to observe a wide range of natural occurrences to discern patterns.
- ✚ SC.H.3.4.2- Knows that technological problems often create a demand for new scientific knowledge and that new technologies make it possible for scientists to extend their research in a way that advances science. **(Also Assesses SC.H.3.4.5; SC.H.3.4.6)**