



Science - Grade 8 - 20 Weeks

NYS Performance Indicators	Objectives	Text Resources	Resources (Suggested Activities)	Cross-Curriculum Connections	Assessment Items
MST4.I.PS5A	5.1a The motion of an object is always judged with respect to some other object or point. The idea of absolute motion or rest is misleading.	<i>Motion and Forces</i> 11-14	Newton's Laws of Motion (Lab Generator) Interactive Physics Website	Math- Solving simple one step equations (Force and Acceleration) Math- Newton's Laws of Motion (Have students graph data table.) Math- Math Connections 24	21
MST4.I.PS5A	5.1b The motion of an object can be described by its position, direction of motion, and speed.	<i>Motion and Forces</i> 11-34	See above	See above	13
MST4.I.PS5A	5.1c An object's motion is the result of the combined effect of all forces acting on the object. A moving object that is not subjected to a force will continue to move at a constant speed in a straight line. An object at rest will remain at rest.	<i>Motion and Forces</i> 44-47, 60-63	See above	See above	12, 34
MST4.I.PS5A	5.1d Force is directly related to an object's mass and acceleration. The greater the force, the greater the change in motion.	<i>Motion and Forces</i> 49-55, 60-63	See above	See above	17, 35
MST4.I.PS5A	5.1e For every action there is an equal and opposite reaction.	<i>Motion and Forces</i> 57-69	See above	See above	55 Gr 8 Science Checklist
MST4.I.PS5B	5.2a Every object exerts gravitational force on every other object. Gravitational force depends on how much mass the objects have and on how far apart they are. Gravity is one of the forces acting on orbiting objects and projectiles.	<i>Motion and Forces</i> 77-83	Friction in Air (Lab Generator)	Math- Math Connections 90,120 ELA- Formal Essay Writing	5, 6, 33, 39
MST4.I.PS5B	5.2c Machines transfer mechanical energy from one object to another.	<i>Motion and Forces</i> 147-148	See above	See above	See above

MST4.I.PS5B	5.2d Friction is a force that opposes motion.	Motion and Forces 85-89, 151-152	See above	See above	14
MST4.I.PS5B	5.2e A machine can be made more efficient by reducing friction. Some common ways of reducing friction include lubricating or waxing surfaces.	Motion and Forces 150-152	See above	See above	15
MST4.I.PS5B	5.2f Machines can change the direction or amount of force, or the distance or speed of force required to do work.	Motion and Forces 145-172	See above	See above	20
MST4.I.PS5B	5.2g Simple machines include a lever, a pulley, a wheel and axle, and an inclined plane. A complex machine uses a combination of interacting simple machines, e.g., a bicycle.	Motion and Forces 154-175	See above	See above	19, 22, 23
MST4.I.LE4A	4.1a Some organisms reproduce asexually. Other organisms reproduce sexually. Some organisms can reproduce both sexually and asexually.	Cells and Heredity 88-92	Onion Root Tips-(Mitosis) Mitosis (Cell Cycle) www.cellsalive.com	Math & ELA- Compare and Contrast using Venn Diagrams Math- Math Connections 93,116	
MST4.I.LE4A	4.1b There are many methods of asexual reproduction, including division of a cell into two cells, or separation of part of an animal or plant from the parent, resulting in the growth of another individual.	See above	See above	See above	41, 50, 64
MST4.I.LE4A	4.1c Methods of sexual reproduction depend upon the species. All methods involve the merging of sex cells to begin the development of a new individual. In many species, including plants and humans, eggs and sperm are produced.	Cells and Heredity 92, 117-119	See above	See above	
MST4.I.LE4A	4.1d Fertilization and/or development in organisms may be internal or external.	See above	See above	See above	37
MST4.I.LE4B	4.2a The male sex cell is the sperm. The female sex cell is the egg. The fertilization of an egg by a sperm results in a fertilized egg.	Cells and Heredity 118-122			43
MST4.I.LE4B	4.2b In sexual reproduction, sperm and egg each carry one-half of the genetic information for the new individual. Therefore, the fertilized egg contains genetic information from each parent.	See above			42

MST4.I.LE4C	4.3a Multi-cellular organisms exhibit complex changes in development, which begin after fertilization. The fertilized egg undergoes numerous cellular divisions that will result in a multi-cellular organism, with each cell having identical genetic information.	Cells and Heredity 2-5, 76,77		ELA- Narrative Procedure	48
MST4.I.LE4C	4.3b In humans, the fertilized egg grows into tissue which develops into organs and organ systems before birth.	See above		See above	
MST4.I.LE4D	4.4a In multi-cellular organisms, cell division is responsible for growth, maintenance, and repair. In some one-celled organisms, cell division is a method of asexual reproduction.	Cells and Heredity 2-5, 73-78, 88-89 Diversity of Living Things 12, 48	Letter to a Friend- Cell Cycle Embedded Activity	ELA- Write a narrative procedure for the steps of Mitosis.	10
MST4.I.LE4D	4.4b In one type of cell division, chromosomes are duplicated and then separated into two identical and complete sets to be passed to each of the two resulting cells. In this type of cell division, the hereditary information is identical in all the cells that result.	Cells and Heredity 81-90	See above	See above	65
MST4.I.LE4D	4.4c Another type of cell division accounts for the production of egg and sperm cells in sexually reproducing organisms. The eggs and sperm resulting from this type of cell division contain one-half of the hereditary information.	Cells and Heredity 117-124 Diversity of Living Things 48	See above	See above	46
MST4.I.LE4D	4.4d Cancers are a result of abnormal cell division.	Cells and Heredity 148	See above	See above	44
MST4.I.LE2A	2.1a Hereditary information is contained in genes. Genes are composed of DNA that makes up the chromosomes of cells.	Cells and Heredity 2-5, 102-109, 128-139	Making a Poster- Cell Diagram		45, 65
MST4.I.LE2A	2.1b Each gene carries a single unit of information. A single inherited trait of an individual can be determined by one pair or by many pairs of genes. A human cell contains thousands of different genes.	Cells and Heredity 102-114	See above		
MST4.I.LE2A	2.1c Each human cell contains a copy of all the genes needed to produce a human being.	Cells and Heredity 77	See above		

MST4.I.LE2A	2.1d In asexual reproduction, all the genes come from a single parent. Asexually produced offspring are genetically identical to the parent.	Cells and Heredity 88-92	Click and Clone		41
MST4.I.LE2A	2.1e In sexual reproduction typically half of the genes come from each parent. Sexually produced offspring are not identical to either parent.	Cells and Heredity 117-122			46
MST4.I.LE2B	2.2a In all organisms, genetic traits are passed on from generation to generation.	Cells and Heredity 102-105, 110-115, 128-131, 150-151	Bikini Bottom Genetics I Bikini Bottom Genetics II	Math- Probability Math- Math Connections 149 ELA- Narrative Procedure	60
MST4.I.LE2B	2.2b Some genes are dominant and some are recessive. Some traits are inherited by mechanisms other than dominance and recessiveness.	Cells and Heredity 107-109, 110-114, 147	See above	See above	61
MST4.I.LE2B	2.2c The probability of traits being expressed can be determined using models of genetic inheritance. Some models of prediction are pedigree charts and Punnett squares. Gr 8 Science Report Card Objectives	Cells and Heredity 110-116, 124, 147	See above	See above	47, 49, 62, 63_ Gr 8 Inquiry Lab Format Standard 1-Analysis, Inquiry & Design

Vocabulary

Technology Links

Cell Division/ Genetics Reproduction	(Continued) Reproduction Shared Characteristics Asexual DNA Generation Genetic Traits Genetic Engineering Phenotype Homozygous Hybrid Heterozygous	(Continued) Genotype Alleles Sperm Egg Fertilization Species Parent Cancer Chromosomes Generation Inheritance Offspring Pedigree Chart Punnett Squares	Physical Setting	(Continued) Magnetism Mechanical Energy Position Pulley Action/ Reaction Simple machine Speed Wheel and Axle Mechanical Advantage					
Cell	Cell theory	Cellular level	Chloroplast	Cytoplasm	Genetic Material	Living Things	Offspring	Reproductive Structure	Reproduction
Absolute motion	Absolute rest	Acceleration	Complex machine	Electrical current	Electricity	Force	Friction	Gravity	

System	Mitosis	Recessive	Inclined Plane	Fulcrum
Sex Cells	Meiosis	Sexual	Lever	Work
Cell Membrane	Chromosomes	External	Lubrication	Inertia
Cell Wall	Dominant	Fertilization		Momentum
Development	Genes	Internal		
Life Activities	Genetically	Fertilization		
Nucleus	identical			
	Heredity			

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