

The **FUTURES** Channel[®]



It's About the Future	1
A Quick-start Guide to The Library	2
Movie Descriptions	10
Contacting The Futures Channel	45
Terms of Use	46

It's About the Future

The Futures Channel Digital Video Resource Library is specifically designed to help teachers answer the age-old question from students, “Why do I need to learn this?”

We take your students behind the scenes—on location—at worksites all over the country, where professionals are using math and science skills in a wide variety of exciting careers.

The DVD features 67 Futures Channel Movies. These “micro-documentaries” are high quality presentations with original music. Each movie can be used to introduce or demonstrate a particular lesson or concept—or just to stimulate discussion and inquiry by putting a curriculum topic into a real world context.

But real world connections are just the start. This resource will truly engage your students. The inspiring men and women in these movies represent a diverse selection of fascinating jobs. Yet most students don't even know these careers exist—much less consider them as options for their own futures.

As unique as these professionals are, one common attribute prevails: They love their jobs. Our aim is that their enthusiasm resonates with students, and the question “Why do I need to learn this?” becomes, “If I learned *this*, I could have that job.”

Today's students will become tomorrow's professionals. And no one is more committed to actually making that happen than the teacher, one of our most important professionals of all. The Futures Channel Digital Video Resource Library is dedicated to teachers. We hope you find it useful in helping your students to imagine their own futures—and to acquire the skills to make those futures a reality.

Steve Heard
Founder and CEO
The Futures Channel

A Quick-start Guide to The Library

The Futures Channel Digital Video Resource Library consists of:

- The DVD
- The CD-ROM
- This User Guide and Movie Descriptions

You can get started right away by playing the DVD on a DVD player and selecting movies to watch. You can also load the CD-ROM on a computer to search and view the Movie Guides. The interfaces for both the DVD and CD-ROM are easy to navigate.

However, we recommend you first look through this brief orientation to get an overview of what this resource is all about.

The DVD

The DVD is formatted as a “DVD 9”—a high-capacity DVD which plays on standard DVD players, or on a computer equipped with DVD-Video playback. *(Requires a DVD-ROM drive and DVD-Video software.)*

The interface and menu on this DVD are designed to be very user-friendly. It is easily navigated using the remote control on your DVD player.

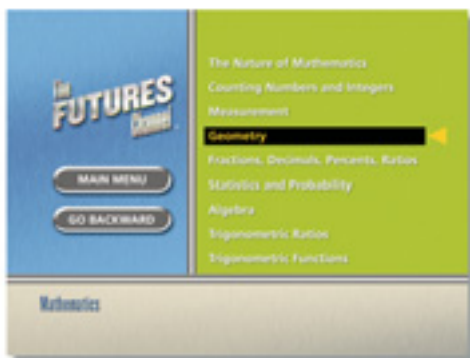
The opening screen of the DVD is the Main Menu which looks like this:

You can select either “**movies by title**” or “**movies by number**”.



Or you can select a movie by curriculum topic.

For example, if you selected “**Mathematics**” from the opening screen, a separate screen of math topics would appear.



Continuing this example, suppose you selected “**Geometry**” from the topic list. You would be presented with subtopics within “Geometry” as shown here.



Now let's say you selected **"Lines, Polygons and Angles."** You would be presented with a list of movies which feature professionals who apply these concepts.



You can select **"Go Backward"** to return to the previous step, and you can return to the Main Menu at any time.

(Note: the path you have been taking is always visible in the lower part of the screen, e.g. **"Mathematics > Geometry > Lines, Polygons and Angles."**)

Suppose you selected **"The Art Director"** from the movie list. You would be shown a Play Screen that looks like this.



The Play Screen contains the title, a brief description of the movie, and the movie number. This feature enables you to queue up a movie and have its Play Screen displayed on your TV monitor or projection screen during a pre-screening discussion. The movie will be ready to play when you choose.

When you select **Play** the movie starts instantly.

In this example, the movie takes students behind the scenes at Paramount Studios where an art director shows how he uses geometry skills to design sets for film and television.

When the movie ends, its Play Screen is displayed again.

The CD-ROM

The CD-ROM puts a complete collection of Movie Guides for the 67 movies at your fingertips. The Movie Guides provide over 200 pages of lesson resources that include:

- Background information on the movies
- Each movie's running time, e.g., "4:13" (4 minutes, 13 seconds)
- Examples of math and science applications inherent in the careers featured
- Suggested problems and activities
- Hands-on student projects.

You can search and view the Movie Guides on any computer which has a CD-ROM drive—PCs or Macs.

The Movie Guides appear on your computer screen as "pdf" files. You are permitted to print out a guide and make copies for your students. However, there are restrictions on copying them, so please read the section "Terms of Use" later in this user guide.

Here is what the Movie Guide looks like for the movie "Roller Coasters":

Roller Coasters

The Movie

Designing safe roller coasters requires an understanding of forces, so that engineers know exactly how the trains will move before anything is built.

Featured: Ron Toomey, president, Arrow Dynamics, Inc.; Dal Freeman, engineer, Arrow Dynamics, Inc.; Ed Dangler, engineer, Six Flags. (Movie length: 2:00)



Background

Just as most other aspects of life have speeded up in the past 50 years, so have roller coasters. Fueled by our ever-increasing thirst for thrills and intense competition amongst amusement parks in areas of large population, roller coaster design is one engineering discipline where bigger is always better—as long as bigger also means faster, higher, steeper, and scarier.

Fortunately, the laws of physics that govern the motion of a roller coaster train have been well understood for hundreds of years, and were clearly stated by Isaac Newton in the 17th century. And even before that, Galileo discovered the fact that all objects fall to earth with the same acceleration (if air resistance is ignored).

Still, the roller coaster of today would be impossible without the strong, light and durable alloys and plastics that have been the product of very modern chemical and metallurgical knowledge.

Put it all together and you have something unique: a product of old physics, new engineering and consumer demand, built solely for the purpose of fun.

Curriculum Connections

Decimals, Percents

An amusement park decides to build a roller coaster at a cost of \$3.5 million. They expect to sell 800 tickets a week at a cost of \$5.00 each, and plan to use 12% of the ticket sales to repay the loan. How long will it take to repay the loan? (Assume there is no interest on the loan, so that exactly \$3.5 million must be repaid.)



Measurement (energy, power)

In physics, work is the use of force to move something through a distance. For example, if you lifted 4 pounds straight up 10 feet, you would be doing 40 foot-pounds of work. If you did that in two seconds, you would be doing work at a rate of 40 foot-pounds in 2 seconds, or 20 foot-pounds per second. The rate of doing work is called power.

Suppose a roller coaster train weighing 4,000 pounds is pulled to a height of 200 feet in 15 seconds. How much power would that require, in foot-pounds per second? If 1 foot-pound per second is equal to 1.3 watts, what is the power required in kilowatts?

Measurement (force), Decimals

When a roller coaster moves quickly around a curve, passengers experience a force called a "G-force", as their seats push back against them to keep them from flying off the train. This G-force is measured as a multiple of the pull of gravity—thus a G-force of "2 G's" means a force which is 2 times the force of gravity.

Since the force of gravity on a person is equal to the person's weight, a G-force of 2 G's means that a person who weighs 150 lbs will experience a total force of 300 pounds.

If the G-force around a sharp turn is 2.34 G's, how much force would be felt by someone who weighs 142 pounds?



Percents

The safety bar that holds passengers in is designed with a safety margin, so that it is much stronger than any force that might be applied to it. Suppose a designer calculates that the safety bar on a car might have a maximum of 1,000 pounds of force applied to it (for example, if the car stopped abruptly and the passenger were thrown against the bar). If the safety margin is 275%, how much force should the safety bar be designed to withstand?

Statistics

Roller coaster engineers must be able to accurately estimate the total weight of a train, including passengers. Suppose a train can carry 24 passengers, and an engineer has collected the following data about passengers who had ridden other roller coasters at the same amusement park. How would he estimate the most likely total weight of 24 passengers on a train that had not yet been built?

Weights of 50 passengers, in pounds:

134	172	193	432	172
167	276	141	167	276
95	224	138	75	222
240	105	134	223	135
210	165	113	243	165
165	234	141	165	232
170	194	149	173	172
138	93	114	135	73
154	141	113	152	124
113	211	193	143	244

How would you estimate the absolute maximum weight of 24 passengers?

Geometry (circles), Measurement (conversion)

If a roller coaster car is traveling at 80 miles an hour on wheels with a 6" diameter, how many times do the wheels rotate per second? (Hint: Determine how far the car travels in one rotation of the wheel.)

Probability

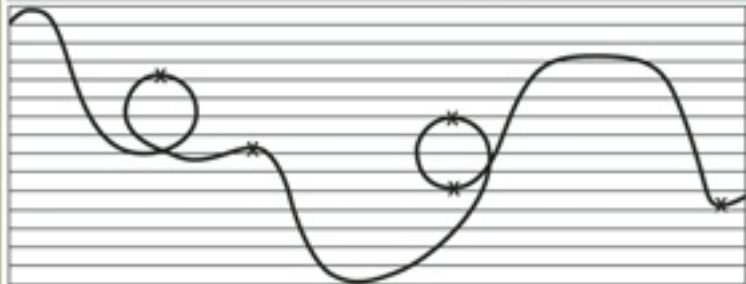
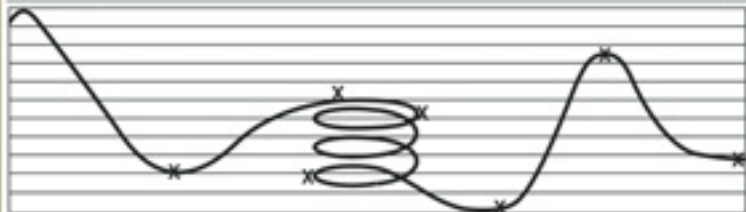
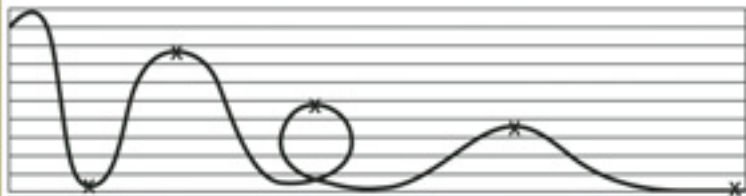
Suppose there are 2 backup safety systems to slow down a roller coaster which is starting to go too fast. One of the systems has a probability of failure of 1 in 100,000 (it is likely to fail once in 100,000 instances of being used). The other safety system has a probability of failure of 1 in 20,000. What is the probability that both would fail at the same time?

AIR COASTERS

Luis,

Here are a few ideas for our new frictionless coaster design. Could you have your team figure the car speeds at the points marked and write them in there? (As usual, figure that velocity is zero at the top of the first hill. The grid is marked at five-meter increments.)

Tina



Teaching Guidelines: Air Coasters
Math Topic: Algebra (equations)

This project should be done by students individually or in teams of two.

Distribute the handout and discuss it. Ensure that students understand the assignment.

The solution of this problem involves these two equations:

$$\text{Potential Energy} = mgh$$
$$\text{Kinetic Energy} = \frac{1}{2}mv^2$$

As the car moves on the roller coaster, its potential energy is converted to kinetic energy when the car moves downhill, and then back into potential energy as the car moves uphill. Since this is a frictionless roller coaster, there is no energy lost to heat. The total energy is therefore always constant, and its value is equal to the potential energy at the top of the first hill (since kinetic energy at that point is zero). Thus at any point "p":

$$\text{Energy} = mgh_p + \frac{1}{2}mv^2 = mgh_1, \text{ where } h_1 \text{ is the height at the top of the first hill and } h_p \text{ is the height at point "p".}$$

This equation can be solved for the velocity at any point:

$$v = \sqrt{2g(h_1 - h_p)}$$



If you enjoyed this Futures Channel Movie, you will probably also like these:

<i>Maglev Trains, #1004</i>	Gliding on a wave of electromagnetic force, a maglev (magnetic levitation) train could travel at 300 miles per hour or faster.
<i>Electricity from the Wind, #1010</i>	The natural force of the wind is harnessed by mathematics and physics to generate clean electricity.
<i>Solar Powered Cars, #1001</i>	Using the energy it takes to run a hair dryer, this solar-powered car travels 200 miles at speeds of 50 to 65 mph.

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The content of the Movie Guides is correlated to detailed curriculum objectives in mathematics, science, technology and the arts, allowing you to easily and instantly locate those Guides and movies that support your specific instructional goals.

The CD-ROM allows you to search the library of movies and Movie Guides by

- Specific curriculum topic
- Movie number or title
- Career zone

Movie Descriptions

The following pages provide a brief description for each of The Futures Channel Movies, along with a recommendation of curriculum areas for which each movie is especially applicable.

Please note that the descriptions and recommended curriculum uses in this section of your User Guide are not intended to replace the Movie Guides on the CD ROM. The descriptions on the CD-ROM are much more in-depth and the curriculum correlations are quite detailed.

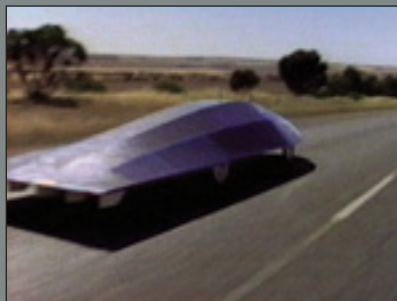
Solar Powered Cars

MOVIE NUMBER

1001

DESCRIPTION

Using the energy it takes to run a hair dryer, this solar-powered car travels 200 miles at speeds of 50 to 65 mph.



RECOMMENDED FOR

Measurement (*area, rate*), Percents (*efficiency*), Trigonometry (*trig. ratios*), Physical Science (*energy*)

The Pterodactyl Flies Again

MOVIE NUMBER

1002

DESCRIPTION

A young aeronautical designer creates a flying replica of a prehistoric dinosaur.



RECOMMENDED FOR

Measurement (*area, rate*), Ratios, Algebra (*expressions*), Physical Science (*force*)

Flights of Imagination

MOVIE NUMBER

1003

DESCRIPTION

Aeronautical inventor Paul MacCready describes how he built a human-powered airplane.



RECOMMENDED FOR

Measurement (*area, rate*), Ratios, Algebra (*expressions*), Physical Science (*force*)

Maglev Trains

MOVIE NUMBER

1004

DESCRIPTION

Gliding on a wave of electro-magnetic force, a maglev train could travel at 300 miles per hour or faster. Designer-engineers describe the mechanics and future benefits of such superconductor trains.



RECOMMENDED FOR

Measurement (*rate, acceleration, transportation*), Algebra (*equations, functions*), Physical Science (*electricity and magnetism*)

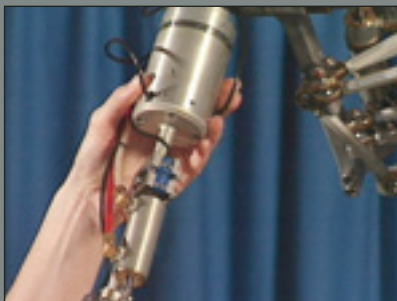
An Engineer and Her Robot

MOVIE NUMBER

1005

DESCRIPTION

To build an anthropomorphic (human-shaped) robot, an engineer has to know biology, electronics, computer programming, physics, math—and which music she wants to have it dance to.



RECOMMENDED FOR

Decimals (*tolerances*), Geometry (*angles*), Algebra (*functions*), Computer Science (*robotics*)

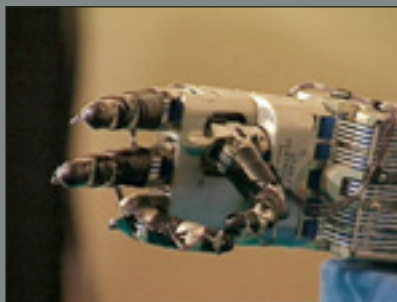
Testing the Robotic Hand

MOVIE NUMBER

1006

DESCRIPTION

NASA engineer Larry Li has built a robot's hand that can catch a baseball—or recover an essential tool in the vacuum of space.



RECOMMENDED FOR

Geometry (*angles*), Algebra (*coordinate systems, functions*), Trigonometry (*trig. ratios*), Computer Science (*robotics*)

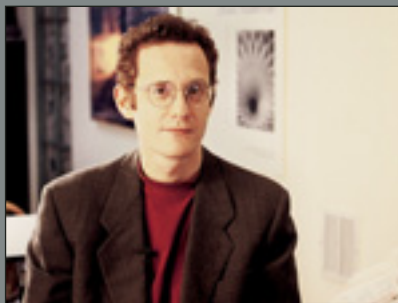
Inventing with Polygons

MOVIE NUMBER

1007

DESCRIPTION

This inventor uses polygons to build amazing expandable structures.



RECOMMENDED FOR

Measurement (*volume, area*), Ratios, Geometry (*polygons, polyhedrons*)

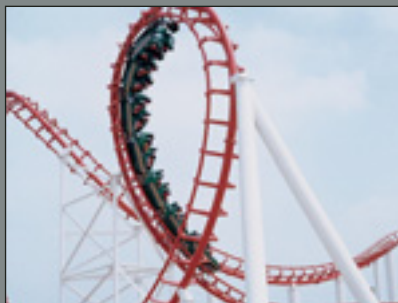
Roller Coasters

MOVIE NUMBER

1008

DESCRIPTION

Designing safe roller coasters requires an understanding of forces.



RECOMMENDED FOR

Measurement (*energy, power*), Algebra (*equations*), Physical Science (*motion*)

Geometry and Structural Engineering

MOVIE NUMBER

1009

DESCRIPTION

Structural engineers use shapes to design huge buildings and bridges.



RECOMMENDED FOR

Percents, Geometry (*polygons, polyhedrons*), Ratios

Electricity from the Wind

MOVIE NUMBER

1010

DESCRIPTION

The natural force of the wind is harnessed by mathematics and physics to generate clean electricity.



RECOMMENDED FOR

Percents, Geometry (*circles*), Algebra (*coordinate systems*), Physical Science (*energy and power*)

Windsails

MOVIE NUMBER

1011

DESCRIPTION

Windsail designer Trevor Baylis develops the shape of a sail on his computer, builds it in his shop, and tests it out on the waves.



RECOMMENDED FOR

Algebra (*coordinate systems, quadratic functions*)

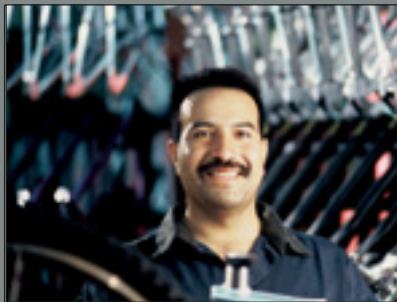
Bicycle Design

MOVIE NUMBER

1012

DESCRIPTION

Making bicycles that are strong enough for stunts requires the right combination of triangles and circles.



RECOMMENDED FOR

Measurement (*rate*), Geometry (*circles, triangles*), Ratios, Physical Science (*motion*)

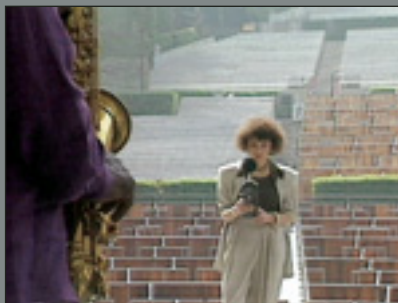
Concert Acoustics

MOVIE NUMBER

1013

DESCRIPTION

Elizabeth Cohen tests sound systems for concert halls and theatres.



RECOMMENDED FOR

Ratios, Algebra (*equations, logarithms*), Physical Science (*sound*)

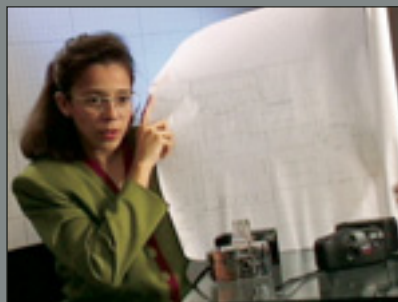
Prototypes

MOVIE NUMBER

1014

DESCRIPTION

Eastman Kodak senior industrial designer Carole Bilson explains how an idea goes from sketch to prototype to product.



RECOMMENDED FOR

Measurement (*distance*), Statistics, Ratios, Trigonometry (*trig. ratios*)

The Bose Speaker

MOVIE NUMBER

1017

DESCRIPTION

"You can never do anything better unless it is different," according to Dr. Amar Bose, who uses the rules of mathematics to achieve superior sound quality in his Bose radio and speakers.



RECOMMENDED FOR

Ratios, Algebra (*equations, logarithms*), Trigonometry (*trig. functions*), Physical Science (*sound*)

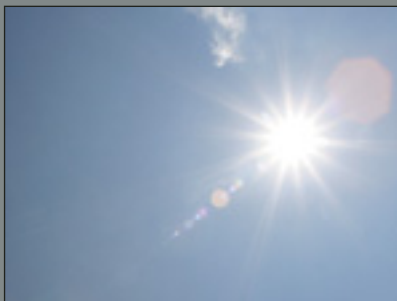
Solar Power Plants

MOVIE NUMBER

1018

DESCRIPTION

Concentrated solar energy creates heat that drives steam through a turbine to produce electricity cleanly and efficiently.



RECOMMENDED FOR

Measurement (*energy and power*), Percents, Algebra (*quadratic functions*), Physical Science (*energy and power*)

Making Sparks 1

MOVIE NUMBER

1019

DESCRIPTION

Where Energy Comes From—

When you turn on your lights, you are plugging into a power grid which is fed by fossil fuel, nuclear and hydroelectric power plants.



RECOMMENDED FOR

Measurement (*area, energy*), Percents, Trigonometry (*trig. ratios*), Physical Science (*energy and power*)

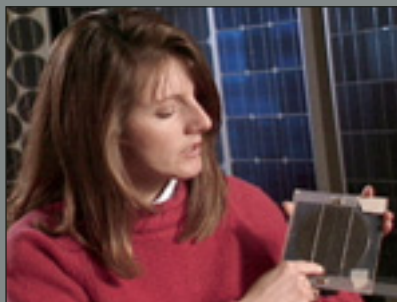
Making Sparks 2

MOVIE NUMBER

1020

DESCRIPTION

Photovoltaics—Sunlight can be converted directly into electricity with a device made of one of Earth's most plentiful elements.



RECOMMENDED FOR

Measurement (*area, energy*), Percents, Trigonometry (*trig. ratios*), Physical Science (*energy and power*)

Making Sparks 3

MOVIE NUMBER

1021

DESCRIPTION

How it Works—Solar panels are a practical source of electricity for an individual or a nation.



RECOMMENDED FOR

Measurement (*area, energy*), Percents, Trigonometry (*trig. ratios*), Physical Science (*energy and power*)

Off the Grid 1

MOVIE NUMBER

1022

DESCRIPTION

Culture Shock—Most people in the world don't have access to electricity.



RECOMMENDED FOR

Measurement (*area, energy*), Percents, Trigonometry (*trig. ratios*), Physical Science (*energy and power*)

Off the Grid 2

MOVIE NUMBER

1023

DESCRIPTION

The Solar Solution—For people in remote locations without access to a power grid, solar panels can provide a solution to their energy problems.



RECOMMENDED FOR

Measurement (*area, energy*), Percents, Trigonometry (*trig. ratios*), Physical Science (*energy and power*)

Off the Grid 3

MOVIE NUMBER

1024

DESCRIPTION

Delivering Energy—Engineers from Sandia Laboratories install a solar panel in a small roadside store in Honduras.



RECOMMENDED FOR

Measurement (*area, energy*), Percents, Trigonometry (*trig. ratios*), Physical Science (*energy and power*)

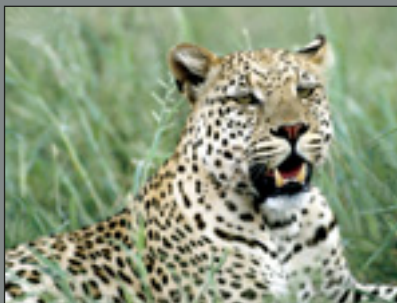
The Disappearing Call of the Wild

MOVIE NUMBER

2001

DESCRIPTION

Archiving and analyzing over 2,000 hours of rainforest sounds, bio-acoustician Bernie Krause measures the decline of species as habitats disappear.



RECOMMENDED FOR

Algebra (*equations, patterns, logarithms*), Physical Science (*sound*), Biology (*ecology*)

Healing Injured Wild Animals

MOVIE NUMBER

2002

DESCRIPTION

Veterinarian Mark Pokras assesses, treats and nurses injured wild animals on their road back to health.



RECOMMENDED FOR

Percents, Statistics, Biology (*zoology*)

Growing Bugs

MOVIE NUMBER

2003

DESCRIPTION

Most farmers know that good bugs will get rid of bad bugs, but where do you get the good bugs?



RECOMMENDED FOR

Statistics, Ratios, Biology (*entomology*), Agriculture

Life Under the Ocean

MOVIE NUMBER

2004

DESCRIPTION

A marine biologist studies the jellyfish-like animals living at 3,000 feet below the surface, where it is cold, dark and quiet.



RECOMMENDED FOR

Decimals, Statistics, Ratios, Biology (*marine*)

The Lundberg Farms

MOVIE NUMBER

2005

DESCRIPTION

Bryce Lundberg raises organic rice in central California. It's a satisfying job that requires an understanding of variables.



RECOMMENDED FOR

Measurement (*volume*), Probability, Algebra (*variables*), Agriculture

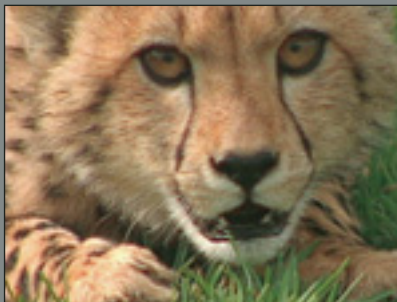
Cheetahs

MOVIE NUMBER

2006

DESCRIPTION

To help save an endangered species like the cheetah, you must start by understanding its behavior.



RECOMMENDED FOR

Fractions, Statistics, Probability, Biology (*zoology*)

Bats

MOVIE NUMBER

2007

DESCRIPTION

Bats are an essential and fascinating part of the ecology of many environments.



RECOMMENDED FOR

Decimals, Ratios, Statistics, Biology (*zoology, ecology*)

First One in the Ballpark

MOVIE NUMBER

2009

DESCRIPTION

Lisa Winston reports the facts on baseball players by arriving early and keeping a close watch on statistics.



RECOMMENDED FOR

Decimals, Percents, Statistics

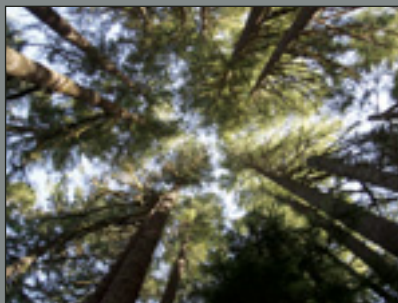
Forest Rangers

MOVIE NUMBER

2010

DESCRIPTION

Forest rangers describe some of the techniques used to keep hundreds of thousands of acres of trees healthy.



RECOMMENDED FOR

Ratios, Statistics, Biology (*ecology*)

Voyage of the Ventana 1

MOVIE NUMBER

2011

DESCRIPTION

Exploring the deep ocean canyons in Monterey Bay means going to depths no diver can tolerate. The solution is a high-tech underwater robot.



RECOMMENDED FOR

Decimals, Measurement (*length, volume*), Algebra (*linear functions*)

Voyage of the Ventana 2

MOVIE NUMBER

2012

DESCRIPTION

The Monterey Bay Aquarium Research Institute's "Ventana" robot has a multitude of capabilities.



RECOMMENDED FOR

Decimals, Measurement (*length, volume*), Algebra (*linear functions*)

Voyage of the Ventana 3

MOVIE NUMBER

2013

DESCRIPTION

It takes detailed planning and preparation to succeed in a mission of ocean research.



RECOMMENDED FOR

Geometry (*circles*), Algebra (*expressions*), Geometry (*right triangles*)

Voyage of the Ventana 4

MOVIE NUMBER

2014

DESCRIPTION

A highly skilled pilot and an oceanographer dive into the canyons of Monterey Bay without leaving the control room of their ship.



RECOMMENDED FOR

Geometry (*circles, right triangles*), Algebra (*expressions*)

Voyage of the Ventana 5

MOVIE NUMBER

2015

DESCRIPTION

The underwater research robot “Ventana” helps an oceanographer to investigate what happens to all of the carbon dioxide that is released into Earth’s atmosphere.



RECOMMENDED FOR

Geometry (*circles, right triangles*), Algebra (*expressions*)

Searching for Water on Mars

MOVIE NUMBER

3001

DESCRIPTION

If we can find water on Mars, then astronauts won't have to take it with them. But how do you find the water before you send a manned mission?



RECOMMENDED FOR

Probability, Geometry (*circles*), Space Science

Tornado Chase

MOVIE NUMBER

3002

DESCRIPTION

Tornado-chasing meteorologists do research in the path of the storm's edge as they strive to better understand tornados for more accurate, faster forecasting.



RECOMMENDED FOR

Probability, Algebra (*coordinate systems*), Earth Science (*meteorology*)

Undersea Treasure

MOVIE NUMBER

3003

DESCRIPTION

A probability map, constructed by a mathematician, locates a sunken U.S. ship with the largest sunken gold treasure in U.S. history, and reveals even greater wonders.



RECOMMENDED FOR

Measurement (*distance, rate*), Algebra (*coordinate systems*), Probability

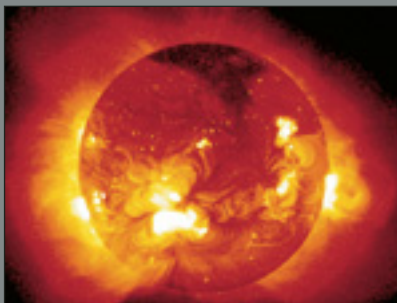
Space Weather

MOVIE NUMBER

3004

DESCRIPTION

With solar flares 200,000 miles across releasing the equivalent of all the energy ever produced on the Earth at one time, space weather forecasters will become an important feature on the future news.



RECOMMENDED FOR

Probability, Algebra (*coordinate systems*)

Eyes on the Universe 1

MOVIE NUMBER

3005

DESCRIPTION

Looking Into Time—

Astronomers think of telescopes as “bigger eyes” that allow them to look, not only deep into space, but back into time.



RECOMMENDED FOR

Scientific Notation, Algebra (*equations, quadratic functions*), Astronomy, Physical Science (*optics*)

Eyes on the Universe 2

MOVIE NUMBER

3006

DESCRIPTION

Planetary Systems—New telescopes will soon allow astronomers to study the planetary systems of other stars and compare them to our own Solar System.



RECOMMENDED FOR

Scientific Notation, Algebra (*equations, quadratic functions*), Astronomy, Physical Science (*optics*)

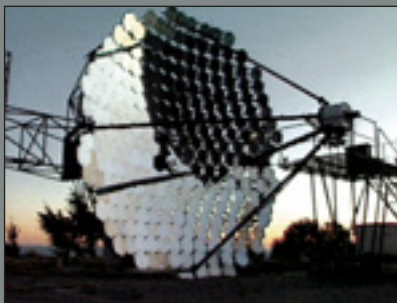
Eyes on the Universe 3

MOVIE NUMBER

3007

DESCRIPTION

Telescope Mirrors—Building a large telescope mirror is a complex engineering task.



RECOMMENDED FOR

Scientific Notation, Algebra (*equations, quadratic functions*), Astronomy, Physical Science (*optics*)

Eyes on the Universe 4

MOVIE NUMBER

3008

DESCRIPTION

What's Next—When observatories move from Earth's mountaintops to above its atmosphere, astronomers will be able to look for signs of life on planets orbiting other stars.



RECOMMENDED FOR

Scientific Notation, Algebra (*equations, quadratic functions*), Astronomy, Physical Science (*optics*)

Drumming in Fractions

MOVIE NUMBER

4001

DESCRIPTION

Understanding fractions is an essential skill for playing the drums.



RECOMMENDED FOR

Fractions, Ratios

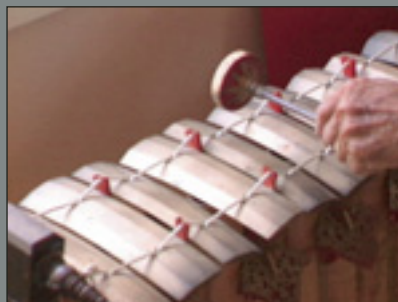
Percussion Instruments

MOVIE NUMBER

4002

DESCRIPTION

There's a lot more to percussion instruments than a set of drums.



RECOMMENDED FOR

Fractions, Ratios, Algebra (*patterns*)

Sports Photography

MOVIE NUMBER

4003

DESCRIPTION

Sports photography requires an expert's understanding of light, lenses and shutter speed.



RECOMMENDED FOR

Fractions, Decimals, Trigonometry (*trig. ratios*), Physical Science (*optics*)

The Art Director

MOVIE NUMBER

4004

DESCRIPTION

A set is a place where actors can be placed for filming. Creating a set where everything fits just right calls for an understanding of area.



RECOMMENDED FOR

Measurement (*area*), Geometry (*right triangles*)

Models for Movies

MOVIE NUMBER

4005

DESCRIPTION

Building miniature replicas with a full-scale imagination, Greg Jein reproduces every detail of the Star Trek space vessels.



RECOMMENDED FOR

Measurement (*distance*), Ratios

Music for Movies

MOVIE NUMBER

4006

DESCRIPTION

To write and play music, you need to know how to work with patterns.



RECOMMENDED FOR

Algebra (*coordinate systems, patterns*)

Creating an Advertising Campaign

MOVIE NUMBER

4007

DESCRIPTION

Creating an advertising campaign requires inspiration, design skills and computer know-how.



RECOMMENDED FOR

Fractions, Percents, Probability

Corporate Graphics

MOVIE NUMBER

4008

DESCRIPTION

To make one design fit on business cards, trucks and buildings, you need to be an expert on the concept of scale.



RECOMMENDED FOR

Measurement, Ratios, Computer Science (*graphics programs*)

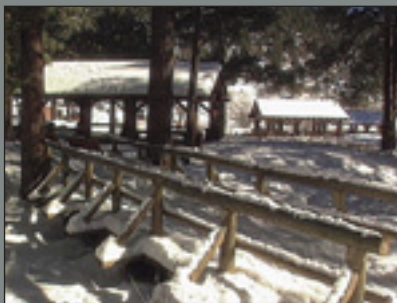
Creating a Campground

MOVIE NUMBER

4009

DESCRIPTION

Creating campsites in the New Mexico wilderness calls for a knowledge of ratios and proportions.



RECOMMENDED FOR

Ratios, Percents

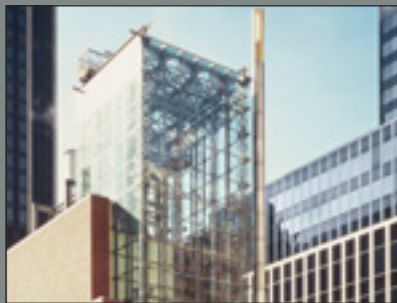
The ABC's of Architecture

MOVIE NUMBER

4010

DESCRIPTION

When Penn Station needed a new front entrance, they called upon architect Frances Halsband, and she called upon her knowledge of geometry.



RECOMMENDED FOR

Measurement (*area*), Geometry (*polygons*)

Designing Dolls

MOVIE NUMBER

4011

DESCRIPTION

Next year's Barbie dolls are the result of a great deal of planning and creative work by this year's designers.



RECOMMENDED FOR

Ratios, Statistics

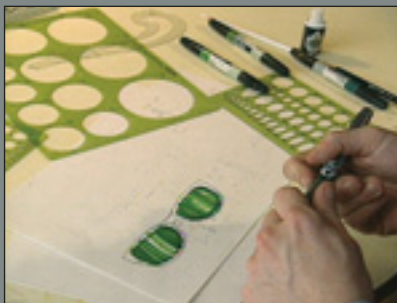
Designing Sunglasses

MOVIE NUMBER

4012

DESCRIPTION

Watch as a new model of sunglasses goes from design sketch to finished product.



RECOMMENDED FOR

Decimals, Percents

Designing Toy Cars

MOVIE NUMBER

4013

DESCRIPTION

These toy cars are near-exact replicas, and that requires an understanding of the concept of scale.



RECOMMENDED FOR

Measurement (*distance*), Fractions, Ratios

The Head Chef

MOVIE NUMBER

4014

DESCRIPTION

The head chef is responsible for everything that happens in the kitchen—and for everything that comes out of it.



RECOMMENDED FOR

Fractions, Measurement (*volume*)

The Tools of Graphic Design

MOVIE NUMBER

4015

DESCRIPTION

Graphic artists lay out images and type with tools like rulers, triangles, compasses and computers, so the printer can perfectly recreate the designer's work.



RECOMMENDED FOR

Measurement (*distance*), Percents

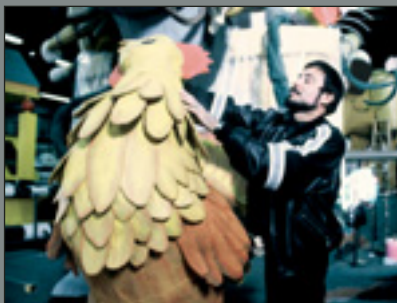
Float Designer

MOVIE NUMBER

4016

DESCRIPTION

To create a beautiful float for the Rose Parade, you have to think about what goes underneath all of those flowers.



RECOMMENDED FOR

Decimals, Geometry (*solid figures*), Ratios

Water Supply

MOVIE NUMBER

5001

DESCRIPTION

The water that comes out of your tap has traveled a long way to get there.



RECOMMENDED FOR

Measurement (*volume*), Percents

Tunnel Number 3

MOVIE NUMBER

5002

DESCRIPTION

Go deep underground with an engineer as she works to ensure a continuous water supply for millions of people.



RECOMMENDED FOR

Measurement (*volume*), Algebra (*functions*)

Communication at the Speed of Light

MOVIE NUMBER

5003

DESCRIPTION

Tiny glass filaments carry so much information that all the books ever written could be transmitted over a fiber optic cable in a few seconds.



RECOMMENDED FOR

Percents, Algebra (*expressions, exponential functions*), Physical Science (*optics*)

Communications Satellites

MOVIE NUMBER

5004

DESCRIPTION

A system of satellites that orbit the Earth at various distances make it possible to communicate from anywhere, to anywhere.



RECOMMENDED FOR

Measurement (*rate*), Trigonometry (*trig. ratios*), Algebra (*solving equations*), Space Science

The New York City Subway

MOVIE NUMBER

5005

DESCRIPTION

The New York City subway moves millions of people every day, thanks to the skills of a team of remarkable people.



RECOMMENDED FOR

Measurement (*rate*), Networks

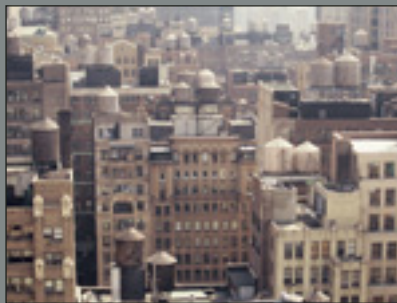
Water Tanks

MOVIE NUMBER

5006

DESCRIPTION

Almost every building in New York City is topped by a water tank.



RECOMMENDED FOR

Measurement (*volume*), Geometry (*cylinders*)

Popcorn, Peanuts, Hot Dogs

MOVIE NUMBER

5007

DESCRIPTION

If your job is to feed 20,000 hungry fans at Yankee Stadium, your motto had better be "Be Prepared".



RECOMMENDED FOR

Statistics

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