

Kentucky Mathematics Coaching Pilot

KENTUCKY'S BIG IDEAS AND CORE CONTENT STRANDS

WITH

THE FUTURES CHANNEL CONTENT

BIG IDEA: NUMBER PROPERTIES AND OPERATIONS

*** NUMBER SENSE**

Understands the concept of "fraction" as "a part of a whole" or "a part of a set"

Solar Powered Cars, #1001	Movie Guide #2
An Engineer and Her Robot, #1005	Movie Guide #1

Understands the role of the decimal point in numbers with decimal fraction parts

Solar Powered Cars, #1001	Movie Guide #4
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Can read and write decimal numbers

Solar Powered Cars, #1001	Movie Guide #4
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Can use percents to describe real world situations

Solar Powered Cars, #1001	Movie Guide #3, 5
Solar Power Plants, #1018	Movie Guide #1

Understands the concept "percent"

Solar Powered Cars, #1001	Movie Guide #8
Searching for Water on Mars, #3001	Movie Guide #3

Can convert fractions to decimal form

Prototypes, #1014	Movie Guide #2, 3
First One in the Ballpark, #2009	Movie Guide #1
Sports Photography, #4003	Movie Guide #2

Can determine if one fraction is less than, equivalent to, or greater than another fraction

Solar Powered Cars, #1001	Movie Guide #2, 7
An Engineer and Her Robot, #1005	Movie Guide #1
The New York City Subway, #5005	Movie Guide #1
Water Tanks, #5006	Movie Guide #2
Popcorn, Peanuts, Hot Dogs, #5007	Movie Guide #1

Understands the concept "equivalent fractions"

Solar Powered Cars, #1001	Movie Guide #2
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Can reduce a fraction to lowest terms

Solar Powered Cars, #1001	Movie Guide #2
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Can express numbers in scientific notation

Designing Sunglasses, #4012	Movie Guide #17
Communication at the Speed of Light, #5003	Movie Guide #2
The New York City Subway, #5005	Movie Guide #3

Can do arithmetic operations with numbers that are expressed in scientific notation

The Bose Speaker, #1017	Movie Guide #4
Healing Injured Wild Animals, #2002	Movie Guide #3
Space Weather, #3004	Movie Guide #3, 6
Eyes on the Universe 1 & 2, #3005-3006	Movie Guide #1, 2

Communication at the Speed of Light, #5003	Movie Guide #2
The New York City Subway, #5005.....	Movie Guide #3

*** ESTIMATION**

Can mentally convert percents into commonly used fractions or whole numbers that express about the same amount (e.g., 52% = about 1/2)

The Tools of Graphic Design, #4015.....	Movie Guide #4
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*** NUMBER OPERATIONS**

Can choose the correct operations in solving a problem

Solar Powered Cars, #1001	Movie Guide #17
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Can add and subtract positive and negative integers

Searching for Water on Mars, #3001.....	Movie Guide #10
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Can multiply and divide integers

Float Designer, #4016.....	Movie Guide #2
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Can divide fractions

Flights of Imagination, #1003	Movie Guide #1
Movie Guide #2	

Can add and subtract fractions of different denominator

Solar Powered Cars, #1001	Movie Guide #1
Geometry and Structural Engineering, #1009.....	Movie Guide #1
Drumming in Fractions, #4001	Movie Guide #2

Can multiply fractions

Flights of Imagination, #1003	Movie Guide #2
Geometry and Structural Engineering, #1009.....	Movie Guide #3
Electricity from the Wind, #1010.....	Movie Guide #1
Bicycle Design, #1012.....	Movie Guide #2
The Bose Speaker, #1017.....	Movie Guide #1
Cheetahs, #2006	Movie Guide #1, 2
Searching for Water on Mars, #3001	Movie Guide #1
Creating an Advertising Campaign, #4007.....	Movie Guide #1, 3, 4
Designing Sunglasses, #4012	Movie Guide #1, 2
The Head Chef, #4014	Movie Guide #1, 4, 7
Float Designer, #4016.....	Movie Guide #1

Can add and subtract decimal numbers to two decimal places

Life Under the Ocean, #2004	The Movie
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Can add and subtract any two decimal numbers

Solar Powered Cars, #1001	Movie Guide #4
Flights of Imagination, #1003	Movie Guide #3
An Engineer and Her Robot, #1005	Movie Guide #3

Can multiply and divide decimal numbers

Solar Powered Cars, #1001	Movie Guide #3
Flights of Imagination, #1003	Movie Guide #10
Roller Coasters, #1008.....	Movie Guide #3
Geometry and Structural Engineering, #1009.....	Movie Guide #2
Bicycle Design, #1012.....	Movie Guide #8
Prototypes, #1014	Movie Guide #2, 3
Growing Bugs, #2003.....	Movie Guide #1
Life Under the Ocean, #2004	The Movie
The Lundberg Farms, #2005.....	Movie Guide #2
Bats, #2007.....	Movie Guide #1
First One in the Ballpark, #2009.....	Movie Guide #2
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #2
Searching for Water on Mars, #3001	Movie Guide #3
Sports Photography , #4003.....	Movie Guide #1

Models for Movies, #4005	Movie Guide #5
Creating an Advertising Campaign, #4007.....	Movie Guide #2
The ABC's of Architecture, #4010	Movie Guide #1
Designing Sunglasses, #4012	Movie Guide #3, 4
The Tools of Graphic Design, #4015.....	Movie Guide #1
Communication at the Speed of Light, #5003	Movie Guide #5
The New York City Subway, #5005.....	Movie Guide #5
Can solve problems of the form $x\%$ of $a = b$ when any two of the factors are known	
Solar Powered Cars, #1001	Movie Guide #3, 5, 7
The Pterodactyl Flies Again, #1002	Movie Guide #3
Testing the Robotic Hand, #1006.....	Movie Guide #1
Roller Coasters, #1008.....	Movie Guide #1, 4
Geometry and Structural Engineering, #1009.....	Movie Guide #4, 5, 6
Electricity from the Wind, #1010.....	Movie Guide #2
Concert Acoustics, #1013.....	Movie Guide #5
Prototypes, #1014	Movie Guide #4
Solar Power Plants, #1018.....	Movie Guide #1
Making Sparks, #1019-1021.....	Movie Guide #1, 4, 5, 7
Off the Grid, #1022-1024.....	Movie Guide #1, 2, 3
Healing Injured Wild Animals, #2002	Movie Guide #2, 3, 6
Growing Bugs, #2003	Movie Guide #2
Life Under the Ocean, #2004	Movie Guide #3
The Lundberg Farms, #2005	Movie Guide #3, 12
Cheetahs, #2006	Movie Guide #6, 7, 10
Bats, #2007.....	Movie Guide #5
First One in the Ballpark, #2009.....	Movie Guide #3, 4
Forest Rangers, #2010.....	Movie Guide #2
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #3, 6
Voyage of the Ventana 3, 4 and 5, #2013-2015.....	Movie Guide #3
Tornado Chase, #3002.....	Movie Guide #2, 5
Undersea Treasure, #3003.....	Movie Guide #2
Models for Movies, #4005	Movie Guide #4
Creating an Advertising Campaign, #4007.....	Movie Guide #5, 6, 7
Corporate Graphics, #4008	Movie Guide #2
Creating a Campground, #4009	Movie Guide #2, 5
Designing Dolls, #4011.....	Movie Guide #1, 2, 3
Designing Sunglasses, #4012	Movie Guide #5, 6, 7
The Head Chef, #4014	Movie Guide #3, 5
The Tools of Graphic Design, #4015.....	Movie Guide #4
Float Designer, #4016	Movie Guide #4
Water Supply, #5001	Movie Guide #8
Communication at the Speed of Light, #5003	Movie Guide #3
The New York City Subway, #5005.....	Movie Guide #2, 3
Water Tanks, #5006	Movie Guide #4
Popcorn, Peanuts, Hot Dogs, #5007	Movie Guide #3
Can quickly divide decimal numbers by powers of ten	
Designing Dolls, #4011.....	Movie Guide #2
Understands the concept "root"	
Roller Coasters, #1008.....	Movie Guide #8
Can simplify expressions using fractional exponents	
Percussion Instruments, #4002.....	Movie Guide #2
* RATIOS AND PROPORTIONAL REASONING	
Understands and can use three methods of expressing a ratio ("2 to 3", "2:3", "2/3")	
Bicycle Design, #1012.....	Movie Guide #3
Can describe a real world situation in terms of ratios	

The Pterodactyl Flies Again, #1002	Movie Guide #1
Flights of Imagination, #1003	Movie Guide #8
Windsails, #1011	Movie Guide #1
The Bose Speaker, #1017.....	Movie Guide #3
Bats, #2007.....	Movie Guide #4
Tornado Chase, #3002.....	Movie Guide #6
<i>Understands the concept "ratio"</i>	
Solar Powered Cars, #1001	Movie Guide #6, 7
The Pterodactyl Flies Again, #1002	Movie Guide #1, 5
Flights of Imagination, #1003	Movie Guide #8
Inventing with Polygons, #1007.....	Movie Guide #4
Windsails, #1011	Movie Guide #1
Bicycle Design, #1012.....	Movie Guide #3
Concert Acoustics, #1013.....	Movie Guide #3
The Bose Speaker, #1017.....	Movie Guide #3
Growing Bugs, #2003.....	Movie Guide #9
Life Under the Ocean, #2004	Movie Guide #4
The Lundberg Farms, #2005.....	Movie Guide #6
Cheetahs, #2006	Movie Guide #3
Forest Rangers, #2010.....	Movie Guide #1, 4
Space Weather, #3004.....	Movie Guide #1
Sports Photography , #4003.....	Movie Guide #6, 9
Creating a Campground, #4009.....	Movie Guide #9
Designing Dolls, #4011.....	Movie Guide #5
Water Supply, #5001	Movie Guide #1
Popcorn, Peanuts, Hot Dogs, #5007.....	Movie Guide #2
<i>Can solve a proportion for an unknown</i>	
Solar Powered Cars, #1001	Movie Guide #6, 9, 10
The Pterodactyl Flies Again, #1002	Movie Guide #6
Maglev Trains, #1004	Movie Guide #1, 4
Geometry and Structural Engineering, #1009.....	Movie Guide #11
Bicycle Design, #1012.....	Movie Guide #4, 5
Growing Bugs, #2003.....	Movie Guide #1, 3
The Lundberg Farms, #2005.....	Movie Guide #6
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #5
Searching for Water on Mars, #3001	Movie Guide #3
Eyes on the Universe 3 & 4, #3007-3008.....	Movie Guide #4
Drumming in Fractions, #4001	Movie Guide #1, 2
Sports Photography , #4003.....	Movie Guide #5, 6
The Art Director, #4004	Movie Guide #5
Models for Movies, #4005	Movie Guide #2, 7
Creating an Advertising Campaign, #4007.....	Movie Guide #9
<i>Can use proportional reasoning to solve problems</i>	
Bicycle Design, #1012.....	Movie Guide #4, 5
Concert Acoustics, #1013.....	Movie Guide #3
Prototypes, #1014	Movie Guide #3
Healing Injured Wild Animals, #2002	Movie Guide #1
Growing Bugs, #2003	Movie Guide #8
The Lundberg Farms, #2005.....	Movie Guide #4, 5
Forest Rangers, #2010.....	Movie Guide #1
Drumming in Fractions, #4001	Movie Guide #1
Creating a Campground, #4009.....	Movie Guide #9
The ABC's of Architecture, #4010	Movie Guide #1
Designing Toy Cars, #4013.....	Movie Guide #2, 3, 5
Float Designer, #4016.....	Movie Guide #1
Water Supply, #5001	Movie Guide #1, 6

Tunnel Number 3, #5002.....	Movie Guide #5
Water Tanks, #5006	Movie Guide #6
Popcorn, Peanuts, Hot Dogs, #5007.....	Movie Guide #5
Can determine whether or not two given ratios are equivalent	
Inventing with Polygons, #1007.....	Movie Guide #4
Can express ratios as fractions	
Inventing with Polygons, #1007.....	Movie Guide #4
Can compare ratios	
Windsails, #1011	Movie Guide #1
Bicycle Design, #1012.....	Movie Guide #3
Growing Bugs, #2003.....	Movie Guide #9, 10
Life Under the Ocean, #2004	Movie Guide #4
Cheetahs, #2006	Movie Guide #3
Bats, #2007.....	Movie Guide #3, 4
Forest Rangers, #2010.....	Movie Guide #4
Tornado Chase, #3002.....	Movie Guide #6
Creating a Campground, #4009	Movie Guide #6
Designing Dolls, #4011.....	Movie Guide #5
The New York City Subway, #5005.....	Movie Guide #5

*** Rate**

Understands the concept "speed"

Solar Powered Cars, #1001	Movie Guide #10
Maglev Trains, #1004	Movie Guide #1
Bicycle Design, #1012.....	Movie Guide #1

Understands the unit "miles/hour"

Flights of Imagination, #1003	Movie Guide #4
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Can solve problems involving speeds or rates

Solar Powered Cars, #1001	Movie Guide #10, 11
The Pterodactyl Flies Again, #1002	Movie Guide #2
Flights of Imagination, #1003	Movie Guide #4
Maglev Trains, #1004	Movie Guide #1
Electricity from the Wind, #1010.....	Movie Guide #3
Bicycle Design, #1012.....	Movie Guide #1
Concert Acoustics, #1013.....	Movie Guide #4
The Disappearing Call of the Wild, #2001	Movie Guide #1
Growing Bugs, #2003.....	Movie Guide #6
Life Under the Ocean, #2004	Movie Guide #6
Bats, #2007.....	Movie Guide #2
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #2
Voyage of the Ventana 3-5, #2013-2015	Movie Guide #1
Searching for Water on Mars, #3001	Movie Guide #2
Undersea Treasure, #3003.....	Movie Guide #3
Eyes on the Universe 1 & 2, #3005-3006.....	Movie Guide #2
Sports Photography , #4003.....	Movie Guide #3, 4
Water Supply, #5001	Movie Guide #3, 6, 7
Tunnel Number 3, #5002.....	Movie Guide #1, 4
Communications Satellites, #5004	Movie Guide #2, 3
The New York City Subway, #5005.....	Movie Guide #7
Water Tanks, #5006	Movie Guide #5, 8

Understands the unit "feet/second"

Flights of Imagination, #1003	Movie Guide #4
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Please give The Futures Channel feedback on the videos that you view and let them know how you're using them with your students! Thanks.

BIG IDEA: MEASUREMENT

*** MEASURING PHYSICAL ATTRIBUTES**

Length and Distance

Understands the concept "length"

- Creating an Advertising Campaign, #4007..... Movie Guide #3
- Corporate Graphics, #4008 Movie Guide #1
- The ABC's of Architecture, #4010 Movie Guide #1

Knows the names of common units for measurement of length and (roughly) their relative sizes

- Designing Sunglasses, #4012 Movie Guide #4

Can measure lengths

- Testing the Robotic Hand, #1006..... Movie Guide #1
- Geometry and Structural Engineering, #1009..... Movie Guide #8
- Bicycle Design, #1012..... Movie Guide #6
- Concert Acoustics, #1013..... Movie Guide #4
- Prototypes, #1014 Movie Guide #2, 3, 5
- Growing Bugs, #2003 Movie Guide #9
- Cheetahs, #2006 Movie Guide #3
- Models for Movies, #4005 Movie Guide #2, 7
- Creating an Advertising Campaign, #4007..... Movie Guide #5
- Creating a Campground, #4009 Movie Guide #3, 9
- Designing Dolls, #4011..... Movie Guide #5
- Designing Sunglasses, #4012 Movie Guide #2, 11, 14
- Designing Toy Cars, #4013..... Movie Guide #5
- Communication at the Speed of Light, #5003 Movie Guide #1

*** Lines, Polygons and Angles**

Can draw and identify parallel and perpendicular lines

- Solar Power Plants, #1018 Movie Guide #3

Understands the concept "angle"

- Solar Powered Cars, #1001 Movie Guide #15
- Flights of Imagination, #1003 Movie Guide #5
- Bicycle Design, #1012 Movie Guide #6

Can measure angles

- Flights of Imagination, #1003 Movie Guide #5
- An Engineer and Her Robot, #1005 Movie Guide #4
- Bicycle Design, #1012..... Movie Guide #6
- Solar Power Plants, #1018..... Movie Guide #2
- Healing Injured Wild Animals, #2002 Movie Guide #4
- Voyage of the Ventana 3-5, #2013-2015 Movie Guide #4

Understands the concept "perimeter"

- The Lundberg Farms, #2005..... Movie Guide #10
- The ABC's of Architecture, #4010 Movie Guide #4
- Water Tanks, #5006 Movie Guide #3

Understands the concept "polygon"

- Inventing with Polygons, #1007..... Movie Guide #6
- The ABC's of Architecture, #4010 Movie Guide #4

Understands the Pythagorean Theorem and can apply it to solving problems related to right triangles

- Inventing with Polygons, #1007..... Movie Guide #3
- Geometry and Structural Engineering, #1009..... Movie Guide #10
- Voyage of the Ventana 3, 4 and 5, #2013-2015..... Movie Guide #6
- Searching for Water on Mars, #3001 Movie Guide #7
- Sports Photography , #4003..... Movie Guide #7

*** Area**

Understands the concept "area"

- Solar Powered Cars, #1001 Movie Guide #12
- Making Sparks, #1019-1021..... Movie Guide #2
- Movie Guide #3
- Off the Grid, #1022-1024..... Movie Guide #4
- Creating a Campground, #4009..... Movie Guide #4
- Designing Sunglasses, #4012..... Movie Guide #8

Understands the concept "square unit"

- Making Sparks, #1019-1021..... Movie Guide #2
- Movie Guide #3
- Off the Grid, #1022-1024..... Movie Guide #4
- Float Designer, #4016..... Movie Guide #3

Can determine an area in square units by measurement

- Bats, #2007..... Movie Guide #6
- Designing Sunglasses, #4012..... Movie Guide #8
- Float Designer, #4016..... Movie Guide #3

Can convert between various area units (e.g., square feet to square inches)

- Making Sparks, #1019-1021..... Movie Guide #3
- Growing Bugs, #2003..... Movie Guide #5

Can determine the area of a rectangle by computation

- Solar Powered Cars, #1001 Movie Guide #12
- Making Sparks, #1019-1021..... Movie Guide #2
- Growing Bugs, #2003..... Movie Guide #1

Understands the concept "length"

- Creating an Advertising Campaign, #4007..... Movie Guide #3
- Corporate Graphics, #4008..... Movie Guide #1
- The ABC's of Architecture, #4010..... Movie Guide #1

Can compute the area of a trapezoid

- Solar Powered Cars, #1001 Movie Guide #14
- Flights of Imagination, #1003..... Movie Guide #6
- Electricity from the Wind, #1010..... Movie Guide #6
- Windsails, #1011..... Movie Guide #2
- Prototypes, #1014..... Movie Guide #1
- The Bose Speaker, #1017..... Movie Guide #2
- Creating a Campground, #4009..... Movie Guide #4

Can compute the area of a parallelogram

- The ABC's of Architecture, #4010..... Movie Guide #4

Can compute the area of a triangle

- Solar Powered Cars, #1001 Movie Guide #14, 18
- The Pterodactyl Flies Again, #1002..... Movie Guide #6
- Inventing with Polygons, #1007..... Movie Guide #2
- Windsails, #1011..... Movie Guide #2
- Growing Bugs, #2003..... Movie Guide #10
- Creating a Campground, #4009..... Movie Guide #4
- Designing Sunglasses, #4012..... Movie Guide #8

Can compute the area of a rectangle

- Solar Powered Cars, #1001 Movie Guide #3, 14
- Electricity from the Wind, #1010..... Movie Guide #6
- Windsails, #1011..... Movie Guide #2
- Prototypes, #1014..... Movie Guide #1
- Growing Bugs, #2003..... Movie Guide #10
- The Lundberg Farms, #2005..... Movie Guide #10
- Cheetahs, #2006..... Movie Guide #4

Tornado Chase, #3002.....	Movie Guide #1
Sports Photography , #4003.....	Movie Guide #7
The Art Director, #4004	Movie Guide #2, 3
Creating an Advertising Campaign, #4007.....	Movie Guide #5
Creating a Campground, #4009	Movie Guide #4
Designing Sunglasses, #4012	Movie Guide #8

* Volume

Can convert between common English volume units (ounce, cup, pint, quart, gallon)

Growing Bugs, #2003	Movie Guide #6
The Head Chef, #4014	Movie Guide #2
Popcorn, Peanuts, Hot Dogs, #5007	Movie Guide #2

Knows the names of common English and metric units for measurement of volume and (roughly) their relative sizes

The Lundberg Farms, #2005	Movie Guide #7
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Can convert between cubic feet and gallons

Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #6
Water Supply, #5001	Movie Guide #4
Water Tanks, #5006	Movie Guide #5

Can find the volume of a cylinder

Bats, #2007.....	Movie Guide #8
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #1
Eyes on the Universe 3 & 4, #3007-3008.....	Movie Guide #1
Percussion Instruments, #4002.....	Movie Guide #1

Understands the concepts "cubic inch", "cubic foot", and "cubic yard"

Water Supply, #5001	Movie Guide #4
Tunnel Number 3, #5002.....	Movie Guide #9

Understands the meaning of the volume unit "acre-foot" and can convert between it and other volume units

Water Supply, #5001	Movie Guide #1, 2
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Understands the meaning of the volume unit "acre-foot" and can convert between it and other volume units

The Lundberg Farms, #2005	Movie Guide #8
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Circles

Understands the concepts "radius" and "diameter"

Solar Powered Cars, #1001	Movie Guide #16
Bicycle Design, #1012	Movie Guide #4, 5
Solar Power Plants, #1018.....	Movie Guide #2
Space Weather, #3004.....	Movie Guide #1

Can determine the area of a sector of a circle (given its central angle and the length of the radius or diameter)

Growing Bugs, #2003	Movie Guide #10
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Understands and can apply the formulas "area= pi*radius (squared)" and "area = radius * circumference/2"

Solar Powered Cars, #1001	Movie Guide #14
Prototypes, #1014	Movie Guide #1
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #4
Voyage of the Ventana 3, 4 and 5, #2013-2015.....	Movie Guide #6
Searching for Water on Mars, #3001	Movie Guide #11
Sports Photography , #4003.....	Movie Guide #9
Designing Sunglasses, #4012	Movie Guide #9

Can use the unit "degree" to measure or describe a position on or sector of a circle

Voyage of the Ventana 3, 4 and 5, #2013-2015.....	Movie Guide #2
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Understands and can apply the formulas "circumference = pi*diameter" and "circumference = 2*pi*radius"

Solar Powered Cars, #1001	Movie Guide #17
Roller Coasters, #1008.....	Movie Guide #6
Electricity from the Wind, #1010.....	Movie Guide #3
Bicycle Design, #1012.....	Movie Guide #4, 5
Searching for Water on Mars, #3001	Movie Guide #11
Designing Sunglasses, #4012	Movie Guide #9
Communications Satellites, #5004	Movie Guide #3
<i>Understands and can apply the formula "area= pi*radius (squared)"</i>	
Electricity from the Wind, #1010.....	Movie Guide #3
Growing Bugs, #2003	Movie Guide #10
The Lundberg Farms, #2005	Movie Guide #12
<i>Understands the concept "circumference"</i>	
Electricity from the Wind, #1010.....	Movie Guide #3

*** Solids**

Can compute the volume of a cylinder

Flights of Imagination, #1003	Movie Guide #7
Bicycle Design, #1012.....	Movie Guide #8
The Bose Speaker, #1017.....	Movie Guide #2
The Lundberg Farms, #2005.....	Movie Guide #11
Models for Movies, #4005	Movie Guide #1
Tunnel Number 3, #5002.....	Movie Guide #2, 4, 9
The New York City Subway, #5005.....	Movie Guide #4
Water Tanks, #5006	Movie Guide #4, 5, 8, 10

Can compute the volume of a sphere

Models for Movies, #4005	Movie Guide #1, 5
The ABC's of Architecture, #4010	Movie Guide #5

Can compute the surface area of a sphere

Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #3
Searching for Water on Mars, #3001	Movie Guide #9
Space Weather, #3004.....	Movie Guide #3
Float Designer, #4016	Movie Guide #4

Can compute the surface area of a rectangular prism

Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #6
Searching for Water on Mars, #3001	Movie Guide #4

Can compute the volume of a rectangular prism

Inventing with Polygons, #1007.....	Movie Guide #1
Geometry and Structural Engineering, #1009.....	Movie Guide #2, 7
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #6
The ABC's of Architecture, #4010	Movie Guide #5
Designing Toy Cars, #4013.....	Movie Guide #1
Water Supply, #5001	Movie Guide #4, 7
Tunnel Number 3, #5002.....	Movie Guide #3
The New York City Subway, #5005.....	Movie Guide #4

Can compute the volume of a triangular prism

The ABC's of Architecture, #4010	Movie Guide #5
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*** SYSTEMS OF MEASUREMENTS**

Can convert between metric and English length units

Solar Powered Cars, #1001	Movie Guide #10
The Tools of Graphic Design, #4015.....	Movie Guide #1

Can convert weights from English to English and English to metric units

The Head Chef, #4014	Movie Guide #2, 3
Communications Satellites, #5004	Movie Guide #1

Can convert temperatures between Fahrenheit, Centigrade and Kelvin

Maglev Trains, #1004	Movie Guide #2
The Head Chef, #4014	Movie Guide #2

Please give The Futures Channel feedback on the videos that you view and let them know how you're using them with your students! Thanks.

BIG IDEA: GEOMETRY

*** SHAPES AND RELATIONSHIPS**

Understands the concept "similar"

Geometry and Structural Engineering, #1009 Movie Guide #11

Understands the concept "scale"

The Pterodactyl Flies Again, #1002 Movie Guide #6

Maglev Trains, #1004 Movie Guide #1

Geometry and Structural Engineering, #1009 Movie Guide #7

Bicycle Design, #1012 Movie Guide #6

Concert Acoustics, #1013 Movie Guide #4

Prototypes, #1014 Movie Guide #3

Movie Guide #5

Cheetahs, #2006 Movie Guide #4

Bats, #2007 Movie Guide #6

Voyage of the Ventana 3, 4 and 5, #2013-2015 Movie Guide #4

Undersea Treasure, #3003 Movie Guide #3

The Art Director, #4004 Movie Guide #1

Models for Movies, #4005 Movie Guide #2

Movie Guide #7

Corporate Graphics, #4008 Movie Guide #1

Creating a Campground, #4009 Movie Guide #1

Movie Guide #3

The ABC's of Architecture, #4010 Movie Guide #1

Designing Toy Cars, #4013 The Movie

Float Designer, #4016 Movie Guide #3

Communication at the Speed of Light, #5003 Movie Guide #1

Can create a scale drawing

Creating a Campground, #4009 Movie Guide #1

The ABC's of Architecture, #4010 Movie Guide #2

Designing Sunglasses, #4012 Movie Guide #10

Understands the concept of "similarity"

The Art Director, #4004 Movie Guide #5, 8

The ABC's of Architecture, #4010 Movie Guide #3

Can identify/describe common polygons

Inventing with Polygons, #1007 The Movie

Can specify defining characteristics of common polygons

Solar Powered Cars, #1001 Movie Guide #14

Inventing with Polygons, #1007 The Movie

Corporate Graphics, #4008 Movie Guide #3

The ABC's of Architecture, #4010 Movie Guide #3

Designing Sunglasses, #4012 Movie Guide #11

*** Solids**

Can identify and describe common solid figures (cube, sphere, prism, pyramid, cone, cylinder)

Inventing with Polygons, #1007 Movie Guide #1

Understands the concept "polyhedron"

Inventing with Polygons, #1007 Movie Guide #5, 6

Understands the concept "surface area"

Solar Powered Cars, #1001 Movie Guide #18

The Pterodactyl Flies Again, #1002 Movie Guide #6

Inventing with Polygons, #1007 Movie Guide #2

Geometry and Structural Engineering, #1009 Movie Guide #7

Prototypes, #1014 Movie Guide #1

Searching for Water on Mars, #3001	Movie Guide #4
Float Designer, #4016	Movie Guide #3, 4

*** Transformations of Shapes**

Understands the concept "symmetry" with respect to shapes

Life Under the Ocean, #2004	Movie Guide #2
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*** Coordinate Geometry**

Can plot a point in a two-dimensional coordinate system, given the coordinates, or determine the coordinates of a given point

Testing the Robotic Hand, #1006	Movie Guide #2
Electricity from the Wind, #1010	Movie Guide #5
Windsails, #1011	Movie Guide #3
Making Sparks, #1019-1021	Movie Guide #6
Forest Rangers, #2010	Movie Guide #3
Voyage of the Ventana 1 & 2, #2011-2012	Movie Guide #7
Searching for Water on Mars, #3001	Movie Guide #11
Tornado Chase, #3002	Movie Guide #7
Music for Movies, #4006	Movie Guide #1, 2, 5
The ABC's of Architecture, #4010	Movie Guide #6
Designing Dolls, #4011	Movie Guide #4
Designing Sunglasses, #4012	Movie Guide #20
Water Supply, #5001	Movie Guide #8
The New York City Subway, #5005	Movie Guide #6

Please give The Futures Channel feedback on the videos that you view and let them know how you're using them with your students! Thanks.

BIG IDEA: DATA ANALYSIS AND PROBABILITY

*** REPRESENTATIONS OF DATA SETS**

Can create a histogram

The Lundberg Farms, #2005 Movie Guide #13

Popcorn, Peanuts, Hot Dogs, #5007 Movie Guide #4

Can represent and interpret numerical data in chart and graph form

Life Under the Ocean, #2004 Movie Guide #3

The Lundberg Farms, #2005 Movie Guide #9

Cheetahs, #2006 Movie Guide #8

Tornado Chase, #3002 Movie Guide #4

Creating an Advertising Campaign, #4007 Movie Guide #8

Can do a scatter plot of data

Healing Injured Wild Animals, #2002 Movie Guide #5

Knows the purpose of the subject of statistics

Electricity from the Wind, #1010 Movie Guide #4

Cheetahs, #2006 Movie Guide #5

First One in the Ballpark, #2009 The Movie

*** CHARACTERISTICS OF DATA SETS**

Understands the concepts average (mean), range, mode, and median

Solar Powered Cars, #1001 Movie Guide #20

Roller Coasters, #1008 Movie Guide #5

Geometry and Structural Engineering, #1009 Movie Guide #6

First One in the Ballpark, #2009 Movie Guide #5

Designing Sunglasses, #4012 Movie Guide #13

Can find the mean, median, mode and range of a set of numbers

An Engineer and Her Robot, #1005 Movie Guide #5

Geometry and Structural Engineering, #1009 Movie Guide #6

Electricity from the Wind, #1010 Movie Guide #4

Prototypes, #1014 Movie Guide #5

Healing Injured Wild Animals, #2002 Movie Guide #2

Growing Bugs, #2003 Movie Guide #8

Life Under the Ocean, #2004 Movie Guide #1

Cheetahs, #2006 Movie Guide #5

Bats, #2007 Movie Guide #5

Designing Sunglasses, #4012 Movie Guide #14

Designing Toy Cars, #4013 Movie Guide #6

Popcorn, Peanuts, Hot Dogs, #5007 Movie Guide #5

Can decide which statistical measure is most appropriate in a given situation

Roller Coasters, #1008 Movie Guide #5

Geometry and Structural Engineering, #1009 Movie Guide #8

Growing Bugs, #2003 Movie Guide #8

Cheetahs, #2006 Movie Guide #5

Bats, #2007 Movie Guide #5

First One in the Ballpark, #2009 Movie Guide #5

Forest Rangers, #2010 Movie Guide #2

Designing Sunglasses, #4012 Movie Guide #13

Designing Toy Cars, #4013 Movie Guide #6

*** EXPERIMENTS AND SAMPLES**

Can plan and execute a survey with responses to a set of questions from a set of individuals, and summarize the results using appropriate statistical measures and graphical representations.

Creating an Advertising Campaign, #4007.....	Movie Guide #12
Designing Sunglasses, #4012.....	Movie Guide #12
<i>Understands the concept of sampling (as a way to analyze and estimate the characteristics of a population from a set of elements)</i>	
Prototypes, #1014	Movie Guide #5

*** PROBABILITY**

Can use the counting principle to find the number of possible combinations of elements

An Engineer and Her Robot, #1005	Movie Guide #2
Creating an Advertising Campaign, #4007.....	Movie Guide #10
Designing Sunglasses, #4012.....	Movie Guide #15

Understands the statistical concept of "sample"

Eyes on the Universe 3 & 4, #3007-3008.....	Movie Guide #4
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Understands the effect of sample size on the accuracy of measured probabilities

Geometry and Structural Engineering, #1009.....	Movie Guide #9
Creating an Advertising Campaign, #4007.....	Movie Guide #13
Designing Sunglasses, #4012.....	Movie Guide #16

Understands the concept "probability"

Solar Powered Cars, #1001	Movie Guide #19
Flights of Imagination, #1003	Movie Guide #10
Roller Coasters, #1008.....	Movie Guide #7
The Lundberg Farms, #2005.....	Movie Guide #13
Searching for Water on Mars, #3001	Movie Guide #5
Undersea Treasure, #3003.....	The Movie

Can find and express the experimental or observed probability of an event and use it to predict future events

The Lundberg Farms, #2005.....	Movie Guide #13
Creating a Campground, #4009	Movie Guide #7

Can find and express the theoretical probability of an outcome based on analysis of all possible outcomes

Designing Sunglasses, #4012.....	Movie Guide #16
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Can calculate probabilities of combinations of events where the probabilities of the single events are known

Solar Powered Cars, #1001	Movie Guide #19
Flights of Imagination, #1003	Movie Guide #10
Roller Coasters, #1008.....	Movie Guide #7
Geometry and Structural Engineering, #1009.....	Movie Guide #9
Cheetahs, #2006	Movie Guide #9
Searching for Water on Mars, #3001	Movie Guide #5
Tornado Chase, #3002.....	Movie Guide #3
Space Weather, #3004.....	Movie Guide #2

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BIG IDEA: ALGEBRAIC THINKING

*** PATTERNS, RELATIONS AND FUNCTIONS**

Understands the concept "pattern"

- The Disappearing Call of the Wild, #2001 Movie Guide #6
- Music for Movies, #4006..... Movie Guide #4

Understands the concept "function" eleven

- Solar Powered Cars, #1001 Movie Guide #22
- Maglev Trains, #1004 Movie Guide #6

Understands the concepts "independent variable" and "dependent variable"

- Testing the Robotic Hand, #1006 Movie Guide #2
- Forest Rangers, #2010 Movie Guide #3
- Designing Sunglasses, #4012 Movie Guide #20
- The New York City Subway, #5005 Movie Guide #6

Can use a functional relationship to predict the value of one variable when the other is known

- Maglev Trains, #1004 Movie Guide #6
- Testing the Robotic Hand, #1006 Movie Guide #2
- Making Sparks, #1019-1021 Movie Guide #6
- The Disappearing Call of the Wild, #2001 Movie Guide #2
- Searching for Water on Mars, #3001 Movie Guide #6
- Percussion Instruments, #4002 Movie Guide #3
- Tunnel Number 3, #5002 Movie Guide #8
- Communications Satellites, #5004 Movie Guide #4

Can identify and describe patterns in a collection of related numerical data.

- Windsails, #1011 Movie Guide #3
- Growing Bugs, #2003 Movie Guide #9
- Life Under the Ocean, #2004 Movie Guide #4, 5
- The Lundberg Farms, #2005 Movie Guide #14
- Cheetahs, #2006 Movie Guide #8
- First One in the Ballpark, #2009 Movie Guide #7
- Searching for Water on Mars, #3001 Movie Guide #6
- Space Weather, #3004 Movie Guide #5
- Percussion Instruments, #4002 Movie Guide #3
- Sports Photography, #4003 Movie Guide #10, 14
- The Art Director, #4004 Movie Guide #7

Can relate aspects of a graphical model to the real world situation which is being modeled

- Testing the Robotic Hand, #1006 Movie Guide #2
- Electricity from the Wind, #1010 Movie Guide #5
- Windsails, #1011 Movie Guide #3
- Bicycle Design, #1012 Movie Guide #9
- Concert Acoustics, #1013 Movie Guide #5
- Making Sparks, #1019-1021 Movie Guide #6
- The Disappearing Call of the Wild, #2001 Movie Guide #6
- Cheetahs, #2006 Movie Guide #8
- Voyage of the Ventana 1 & 2, #2011-2012 Movie Guide #7
- Tornado Chase, #3002 Movie Guide #7
- The ABC's of Architecture, #4010 Movie Guide #6
- Designing Sunglasses, #4012 Movie Guide #20
- Water Supply, #5001 Movie Guide #8
- Tunnel Number 3, #5002 Movie Guide #8
- The New York City Subway, #5005 Movie Guide #6

Can extrapolate and interpolate a graph when a pattern exists

- Testing the Robotic Hand, #1006 Movie Guide #2
- Electricity from the Wind, #1010 Movie Guide #5

Making Sparks, #1019-1021.....	Movie Guide #6
The Lundberg Farms, #2005.....	Movie Guide #14
Cheetahs, #2006.....	Movie Guide #8
First One in the Ballpark, #2009.....	Movie Guide #7
The Art Director, #4004.....	Movie Guide #7
The ABC's of Architecture, #4010.....	Movie Guide #6
Designing Sunglasses, #4012.....	Movie Guide #20
Water Supply, #5001.....	Movie Guide #8
The New York City Subway, #5005.....	Movie Guide #6
Popcorn, Peanuts, Hot Dogs, #5007.....	Movie Guide #5
Can identify and describe patterns of shapes	
Music for Movies, #4006.....	Movie Guide #3

*** VARIABLES, EXPRESSIONS AND OPERATIONS**

Understands the concept "variable"

Solar Powered Cars, #1001.....	Movie Guide #21
Life Under the Ocean, #2004.....	Movie Guide #5
Cheetahs, #2006.....	Movie Guide #11
Sports Photography, #4003.....	Movie Guide #12
The Art Director, #4004.....	Movie Guide #6
Creating a Campground, #4009.....	The Movie
Designing Sunglasses, #4012.....	Movie Guide #18, 20

Can evaluate expressions by substituting values for variables

The Pterodactyl Flies Again, #1002.....	Movie Guide #4
Maglev Trains, #1004.....	Movie Guide #5
Roller Coasters, #1008.....	Movie Guide #8
First One in the Ballpark, #2009.....	Movie Guide #6
Voyage of the Ventana 3, 4 and 5, #2013-2015.....	Movie Guide #5
Space Weather, #3004.....	Movie Guide #6
Eyes on the Universe 1 & 2, #3005-3006.....	Movie Guide #1
Music for Movies, #4006.....	Movie Guide #2
Designing Sunglasses, #4012.....	Movie Guide #19
The Tools of Graphic Design, #4015.....	Movie Guide #2
Float Designer, #4016.....	Movie Guide #2
Communication at the Speed of Light, #5003.....	Movie Guide #5
Communications Satellites, #5004.....	Movie Guide #9

Can simplify expressions using correct order of operations

The Pterodactyl Flies Again, #1002.....	Movie Guide #4
Flights of Imagination, #1003.....	Movie Guide #12
Float Designer, #4016.....	Movie Guide #2
Communication at the Speed of Light, #5003.....	Movie Guide #5

Understands the function of grouping symbols in an expression

Flights of Imagination, #1003.....	Movie Guide #12
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*** EQUATIONS AND INEQUALITIES**

Can translate a mathematical relationship described in words into an expression, equation or inequality

Cheetahs, #2006.....	Movie Guide #11
Creating an Advertising Campaign, #4007.....	Movie Guide #14
Designing Sunglasses, #4012.....	Movie Guide #19

Can do basic operations on both sides of an equation in such a way as to preserve the equality

Flights of Imagination, #1003.....	Movie Guide #12
Maglev Trains, #1004.....	Movie Guide #5
Roller Coasters, #1008.....	Movie Guide #8

Electricity from the Wind, #1010.....	Movie Guide #7
Concert Acoustics, #1013.....	Movie Guide #1
The Bose Speaker, #1017.....	Movie Guide #5
The Disappearing Call of the Wild, #2001.....	Movie Guide #3
Healing Injured Wild Animals, #2002.....	Movie Guide #6
First One in the Ballpark, #2009.....	Movie Guide #6
Space Weather, #3004.....	Movie Guide #6
Eyes on the Universe 1 & 2, #3005-3006.....	Movie Guide #1
The Art Director, #4004.....	Movie Guide #8
The Tools of Graphic Design, #4015.....	Movie Guide #2
Communications Satellites, #5004.....	Movie Guide #8
<i>Understands that linear functions are characterized by the fact that the ratio of change in independent variable to change in dependent variable is constant</i>	
Maglev Trains, #1004.....	Movie Guide #6
Forest Rangers, #2010.....	Movie Guide #3
Voyage of the Ventana 1 & 2, #2011-2012.....	Movie Guide #7
Designing Sunglasses, #4012.....	Movie Guide #20
Tunnel Number 3, #5002.....	Movie Guide #8
<i>Can quickly graph a linear function which is expressed in slope-intercept form</i>	
Undersea Treasure, #3003.....	Movie Guide #4
<i>Understands the concept "slope"</i>	
Tornado Chase, #3002.....	Movie Guide #7
Tunnel Number 3, #5002.....	Movie Guide #6
<i>Can graph a function which is expressed as an inequality (e.g., "$x + 2y > 5$")</i>	
Undersea Treasure, #3003.....	Movie Guide #4
<i>Can solve a system of two linear functions algebraically</i>	
Bicycle Design, #1012.....	Movie Guide #10
<i>Can determine the equation that represents a linear function, given two points of its graph</i>	
Tunnel Number 3, #5002.....	Movie Guide #6

Please give The Futures Channel feedback on the videos that you view and let them know how you're using them with your students! Thanks.

LISTED BELOW ARE TOPICS THAT ARE NOT SPECIFICALLY IN THE KENTUCKY CORE CONTENT VERSION 4.1, BUT ARE SKILLS EMBRACED BY OTHER KENTUCKY STANDARDS DOCUMENTS.

Problem Solving

Can solve complex, multi-step problems

- Solar Powered Cars, #1001 Movie Guide #5, 17
- Flights of Imagination, #1003 Movie Guide #1
- Maglev Trains, #1004 Movie Guide #1
- Electricity from the Wind, #1010..... Movie Guide #1
- Windsails, #1011 Movie Guide #2
- Bicycle Design, #1012 Movie Guide #2, 4
- Making Sparks, #1019-1021..... Movie Guide #1, 5
- Off the Grid, #1022-1024..... Movie Guide #1, 3, 4
- The Disappearing Call of the Wild, #2001 Movie Guide #2
- Growing Bugs, #2003 Movie Guide #1, 7
- The Lundberg Farms, #2005 Movie Guide #2, 10
- Cheetahs, #2006 Movie Guide #2
- Voyage of the Ventana 1 & 2, #2011-2012 Movie Guide #6
- Undersea Treasure, #3003..... Movie Guide #2
- The Art Director, #4004 Movie Guide #8
- The Head Chef, #4014 Movie Guide #5
- Float Designer, #4016 Movie Guide #1
- Tunnel Number 3, #5002..... Movie Guide #2, 4, 7
- Popcorn, Peanuts, Hot Dogs, #5007 Movie Guide #3

Can distinguish between relevant and irrelevant information

- Water Supply, #5001 Movie Guide #5

Can apply the strategy "use a chart or table"

- Maglev Trains, #1004 Movie Guide #3
- The Disappearing Call of the Wild, #2001 Movie Guide #2

Can apply the strategy "think backwards"

- Healing Injured Wild Animals, #2002 Movie Guide #3

Can apply the strategy "look for a pattern"

- The Disappearing Call of the Wild, #2001 Movie Guide #2

Can represent the elements of a problem with simple schematic drawings or objects

- Windsails, #1011 Movie Guide #2
- Bicycle Design, #1012 Movie Guide #7
- Prototypes, #1014 Movie Guide #5

Can break a problem up into simpler parts

- Windsails, #1011 Movie Guide #2

ADVANCED ALGEBRA

Understands the concept "logarithm"

- Concert Acoustics, #1013..... Movie Guide #2
- The Disappearing Call of the Wild, #2001 Movie Guide #5

Can simplify expressions involving logarithms

- Concert Acoustics, #1013..... Movie Guide #2
- The Disappearing Call of the Wild, #2001 Movie Guide #5

Quadratic Relations and Functions

Understands the concept "parabola"

Solar Power Plants, #1018	Movie Guide #3
Eyes on the Universe 3 & 4, #3007-3008.....	Movie Guide #5
Communications Satellites, #5004	Movie Guide #7
Can recognize a parabolic shape	
Communications Satellites, #5004	Movie Guide #7
Can relate the coefficients of a quadratic function to their influence on the shape and position of the parabolic graph of that function	
Eyes on the Universe 1 & 2, #3005-3006.....	Movie Guide #4
Communications Satellites, #5004	Movie Guide #7
Can determine the equation of a quadratic function that closely matches a set of points	
Windsails, #1011	Movie Guide #4
Solar Power Plants, #1018.....	Movie Guide #3
Forest Rangers, #2010.....	Movie Guide #3
Eyes on the Universe 1 & 2, #3005-3006.....	Movie Guide #4
Eyes on the Universe 3 & 4, #3007-3008.....	Movie Guide #5
The ABC's of Architecture, #4010	Movie Guide #6
The Head Chef, #4014	Movie Guide #6
Can solve a quadratic equation of the form "$x^2 = a$", where "a" is given	
Roller Coasters, #1008.....	Movie Guide #8
Can graph a quadratic function	
Windsails, #1011	Movie Guide #4
Solar Power Plants, #1018.....	Movie Guide #3
Can relate aspects of the conic section represented by a quadratic relation to the values of the coefficients and constants in the relation	
Windsails, #1011	Movie Guide #4
Solar Power Plants, #1018.....	Movie Guide #3
Given the equation of a specific quadratic relation, can rapidly sketch its graph	
Undersea Treasure, #3003.....	Movie Guide #4

Rational Expressions, Equations and Functions

Can solve equations involving rational expressions

Eyes on the Universe 3 & 4, #3007-3008.....	Movie Guide #3
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Exponential Functions

Can determine the equation of an exponential function that closely matches a set of points

Communication at the Speed of Light, #5003	Movie Guide #6
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Can represent a situation involving exponential growth or decay with a specific exponential function

Bats, #2007.....	Movie Guide #7
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TRIGONOMETRIC RATIOS

Can solve real world problems involving trigonometric ratios

Flights of Imagination, #1003	Movie Guide #11
Testing the Robotic Hand, #1006.....	Movie Guide #3
Geometry and Structural Engineering, #1009.....	Movie Guide #13
Prototypes, #1014	Movie Guide #6
Eyes on the Universe 1 & 2, #3005-3006.....	Movie Guide #3
Sports Photography , #4003.....	Movie Guide #8
The Art Director, #4004	Movie Guide #4
Models for Movies, #4005	Movie Guide #3
Creating an Advertising Campaign, #4007.....	Movie Guide #11
Creating a Campground, #4009	Movie Guide #8
Communication at the Speed of Light, #5003	Movie Guide #4
Communications Satellites, #5004.....	Movie Guide #5, 6

Can find the values of the ratios 'sine', 'cosine' and 'tangent' for each of the acute angles in a given right triangle

Flights of Imagination, #1003 Movie Guide #11

Testing the Robotic Hand, #1006 Movie Guide #3

Knows and can use the relationships among sine, cosine, and tangent ratios

Flights of Imagination, #1003 Movie Guide #11

Can use sine, cosine and tangent ratios to solve for unknown sides or angles in right triangles

Geometry and Structural Engineering, #1009 Movie Guide #13

Understands the concepts "wavelength" and "amplitude"

The Bose Speaker, #1017 Movie Guide #6

Space Weather, #3004 Movie Guide #4

DISCRETE MATHEMATICS

Networks

Can explore alternate connectivities in a network

Communication at the Speed of Light, #5003 Movie Guide #1

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