

Sir Cumference  
and the Dragon of Pi

Unit Study & Printables

# **Sir Cumference and the Dragon of Pi**

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## **Bible/Character**

Look up scriptures about being trustworthy, and character.  
Write one of the scriptures in your best handwriting.

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## **Social Studies**

Note: See more Social Studies Lessons under **General Lessons to be Used Throughout Unit**

### ***Greece –***

On page 26, it is mentioned that PI is the 16th letter of the Greek alphabet. You may want to take this opportunity to introduce the country of Greece to your child. Greece is a small country in the Mediterranean Sea, and part of Europe. The country is very mountainous, and within some of the mountains is found the finest marble in the world. With your youngest student, it may be enough to locate Greece on a world map, and discuss its capital, Athens. You may also wish to discuss Greece's major industries, shipping and tourism, and its major crops including currants, tobacco, and olives. The people of Greece speak Greek, and their currency is the Drachma. With older children, you may wish to discuss more thoroughly Ancient Greece, including its mythology, the Olympics, arts including plays and music, architecture, and the country's impact on civilization today.

### ***Getting Medical Attention-***

On page 3, Radius had to run for a doctor. If we need a doctor, what do we do? Do we have to run? Today, we have telephones, cell phones, cars, and 911-ambulance service. Think about the contrast of this. This might also be a good time to discuss with your young child emergency phone numbers and when to use them.

### ***History of Medicine –***

On page 4, anesthesia was used. It is interesting to research, how far we have come in this day and age, with pain medicine.

Do a small research project on the different types of pain medicine we have today. Years ago, people may not have been given pain medicine, or maybe used alcohol to numb the mind. Times of war would be a challenge for this also.

It is interesting to think about people's different tolerance levels to pain. Sometimes we see a "scale" in the doctor's office showing a happy face turning to a sad face. We use this to explain how much pain we are in. Certain parts of our bodies experience more pain than others. They are more sensitive than others. Our eyes for example, just a tiny speck of dust in the eye causes a lot of pain. Why do you think this is? These are all good discussion points.

You could make a picture of the human body, and label sensitive areas one color, and not so sensitive another.

### ***Royalty -***

The United Kingdom (England) still has an Imperial system in place today. Queen Elizabeth is in "power" on the throne, and her Son Prince Charles is her predecessor. If you remember, Prince Charles was married to Lady Diana, who sadly was in a fatal car accident in 1998. The Prime Minister in England is comparable to our president here in USA, and he heads a system called Parliament, who govern the country, the queen does not govern as such, like they do, but she has a position of great honor and high respect in the nation. Till this day in England, people still receive titles like Dame, for a woman, or Sir for a man. They are people who have achieved in different areas of life, and are called before the Queen Elizabeth of England, at Buckingham Palace to receive their title. The names of these people are made known through television and radio reports.

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## Science

### ***Wheels -***

Wheels reduce resistance, changing dragging to rolling. It is much easier to roll a load on wheels than it is to drag it. Can you find any wheels in the story? In the story, there are old wooden wheels lined up by the wall. A wheel is a simple machine that was invented thousands of years ago. Wooden and stone wheels are said to have originated in the ancient civilizations of Mesopotamia, Greece, Egypt, and China in c.4000-3500 B.C. Wheels were used on the earliest carts and wheelbarrows, as well as for pulleys and potters wheels. By the medieval times, the wheel was expanded into use for spinning wheels, and water wheels. Wheel designs changed too, moving from solid, heavy wheels, to lighter spoked wheels. Your child may enjoy researching this topic on his own, and answering questions such as: Why does a wheel need spokes? What are wheels made out of? Do the spokes need to be a certain distance apart? Etc.

If the weather is pleasant, do some experiments with wheels outdoors. If you have a wagon, demonstrate how it is easier to pull something on wheels than it is to push something on the ground. Do this experiment with your bicycle to see how much farther and faster you can travel with wheels: First, take two large steps on foot and measure the distance. Then, get on your bicycle, starting with one foot at the top, push your foot all the way down and then all the way up. Did you go farther taking two steps by foot, or two steps on your bicycle? This shows how much farther and faster we can go with the use of wheels.

### ***Dragons –***

Throughout history dragons have depicted all that is evil in the world. The slaying of a dragon was allegorical of slaying sin. They have also been symbols of power, sovereignty, and in China, good fortune. Have you wondered if dragons ever really existed? The Bible mentions dragons and/or dragon like creatures many times, sometimes metaphorically, and sometimes not. Read Job 41 to your child and compare that creature with the one in our story. There are animals today that are called dragons, such as the Komodo dragon, the bearded dragon, and the water dragon, but none of these resemble the dragons of long ago. When dragons did exist, what kind of animals were they? They would have been reptiles - cold-blooded, egg laying, hairless, vertebrates that breathe through lungs. Let's look at the anatomy of the dragon in our story further. Does it have wings? Sharp claws? A long tail with stings? What is special about the dragon's mouth? Draw a picture of a dragon and label all of its parts.

Go Alongs:

*My Father's Dragon* by Ruth Stiles Gannett

*How Many Dragons Are Behind the Door?* By Virginia Kahl (the story of the Duchess continues!)

*Beowulf* (choose any version)

[Saint George and the Dragon](#)

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## Language Arts

### ***Onomatopoeia –***

This term is used to describe words that imitate the sounds they describe. We have examples as follow:

Page 6 - kaboom

Page 28 - faroom

It is interesting to spot these words, as they bring the story alive. Try to spot any more of these words, and try to draw one. For example, the word slithering could be written in curved, winding letterform, to imitate a snake. Try to act out the words also!

### ***Use of Mnemonics for Names -***

In the General Lessons section we discussed plays on words and choosing names for characters. Sometimes an author will also use mnemonics when choosing names or words. Mnemonics are designed to help you remember something. As you read this book make a list of all the math terms that

have been used for names. Think about how this will help to remember these concepts. They also add a lot of clever humor.

Think of a subject and see if you can apply this idea. For example, write about a tree. The characters could be Mr. and Mrs. Trunk, their children, Leaf, Bud, and Flower, and their grand parents Grandpa Root, and Grandma Blossom.

Try to write a short adventure with your characters.

### ***Vocabulary -***

Choose 10 words from the story to your child may not be familiar with, suitable to age level (challenging enough). List the words, and look up meanings in a dictionary. Next, write each word in a short sentence. Use worksheet if desired.

Example:

Midst - (among us, in the middle, central part, during)

In the midst of the storm, I decided to sit and watch from the observation tower.

### ***Figures of Speech –***

A figure of speech is a literary device used to create a special meaning through the use of words. A simile is a figure of speech comparing two or more things using the words “like” or “as”. A metaphor is a figure of speech comparing two unlike things without using comparing words such as “like” or “as”.

On page 3, Sir Cumference says his belly “feels like fire!” Which figure of speech was used?

On page 5, the term “fire belly” is used. Which figure of speech was used this time?

Sir Cumference really did not have fire in his belly, but figures of speech make us understand his belly felt hot and burning.

### ***Adverbs -***

Adverbs are a part of speech that tell how, when, where, why, how often, and how much. Adverbs usually end with “ly”. On page 7, the dragon says, “I feel beastly!” The adverb “beastly” tells you how the dragon feels. What does feeling beastly make you think of?

### ***Poetry –***

On page 13 there is a short rhyming poem, with every second line rhyming.

Think of some “key” words from this story, and make a list of words that rhyme with them.

After you have compiled this list, make up a similar kind of poem.

Example:      Potion, lotion, motion, notion.

                  Book, hook, shook, took.

                  Pie, shy, fly, why, high.

                  Cure, sure, shore, lure, pure.

My Poem (example)

Barney was hungry for pie,  
He couldn't figure out why,  
He had a little notion,  
Which he decided to put to motion,  
In the library he decided to look,  
To find a shelf with his favorite recipe book.

### ***Literature Connection -***

Mother believed Radius. This was a far-fetched story that his father had turned into a dragon. She obviously trusted him. Read the story of the boy that cried wolf, and discuss building trust.

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## **Math**

### ***Pi -***

Pi is a number that is equal to 3.14159. It is the ratio of the circumference of any circle to its diameter. No matter what size circle you make the ratio of the circumference to the diameter will always be pi. Pi is used to find the circumference and area of a circle. Here are the formulas for finding the circumference and area of a circle using pi.

Circumference= $2\pi r$  (2 x 3.14 x the radius)

Area of a circle= $\pi r^2$  (3.14 x the radius squared)

For an older child, have him or her figure out the circumference and area of a circle if the radius of the circle is 2. (Answers: C=12.56 A=12.56) How about if the radius is 4? (Answers: C=25.12 A=50.24)

### ***Testing Pi-***

Have your child draw different sizes of circles with a compass. With a piece of string measure the circumference of a circle (measure it with a string and then put the string against a ruler to get the measurement) and the diameter of the same circle. Pi is actually the circumference of a circle divided by the diameter. Have them divide the circumference of the circle they just measured to the diameter...does your child get a number close to 3.14? Have him/her try to see if it works with some of the other circles that were drawn.

Here's another way to test pi. This activity might be easier for a younger student. You will need a plate or other round object. Wrap string around the circumference of your circular object. Cut the string when it is exactly the same length as the circumference. Now take your "string circumference" and stretch it across the diameter of your circular object. Cut as many "string diameters" from your "string circumference" as you can. How many diameters could you cut? You should end up with 3 full diameters and a little left over (the .14 or 1/7 part of pi).

### ***Pi Day-***

Pi Day is celebrated on March 14<sup>th</sup> (3/14.... just like the number for pi, 3.14). Celebrate on this day with a pizza or homemade pie.

### ***History of Pi-***

Pi is the 16<sup>th</sup> letter of the Greek alphabet. William Jones, a Welsh mathematician, first used pi as a number. Can your student find Wales on the map? But it was Leonhard Euler (see "The Sword in the Cone" lessons) who made the symbol popular. The  $\pi$  symbol replaced the letter "p" which stood for "periphery" (meaning the edge of an object). It may be fun for your child to learn the Greek alphabet this week. Use prepared printable so your child can try his hand at writing the Greek alphabet.

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## **Art**

### ***Textures -***

The artist, Wayne Geehan, uses a textured medium. The pages make you feel like you want to run your fingers over them and feel this texture! Try using textured paints, like thick acrylic, or oil paints to paint your own pictures.

### ***Shadows -***

On page 4, notice the shadows falling behind Radius. You can see very clearly where the light is coming from. Try to paint or draw a picture of a chosen object. Be aware of where the light is falling on it, and draw the shadow, or put a direct light, like a lamp on it, and draw what you see.

### ***Expressions -***

Look at pages 6 and 9. The artist has captured volumes of expression in Radius's eyes, the dragon's eyes and the guard's eye. Look through the rest of the book, taking note of the characters and their expressions. Take a little time to draw some faces, and try to draw in different expressions. Ask a friend or relative to guess the expressions of the people you have drawn, maybe they can tell just by the eyes!

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## **Cooking**

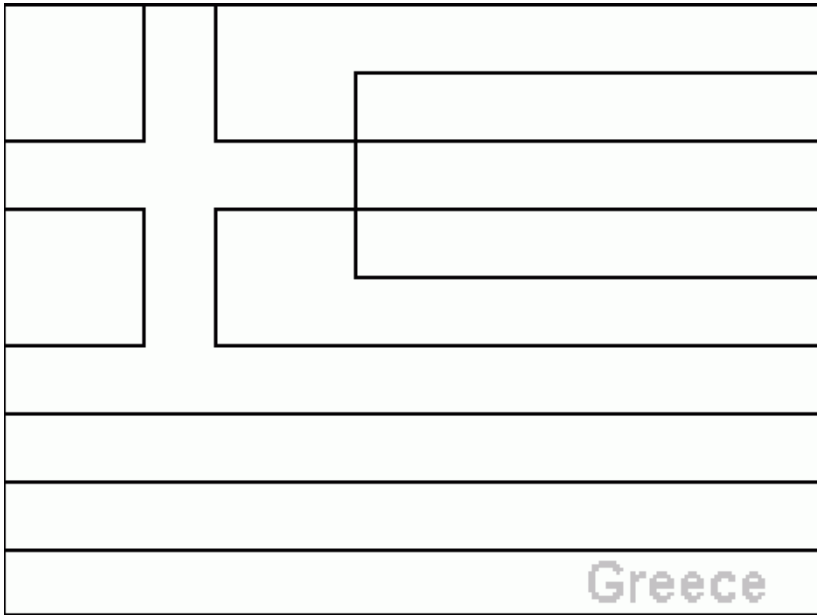
### ***Pies -***

For fun, cook a pie. Lady Fingers estimated the measurement of her pastry with the span of her fingers. Try to estimate your area of rolled out pasty, by holding the pie dish against it, or by using the span of your hands. Use hand spans like she did, to measure out strips for the top of your pie.

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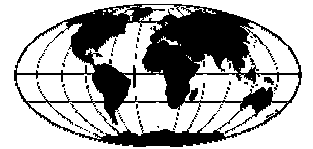
[www.homeschoolshare.com](http://www.homeschoolshare.com)



Cut "Flag of \_\_\_\_\_" book out as one piece. Fold in half. Cut out flag. Color. Paste inside book. Older students may want to write a few flag facts in the book as well.

Is  
Greece?

Where  
in  
the  
World. . .



What continent is Greece on?

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Find Greece on the map and color it in.

Cut out shutter book and map on solid lines.  
Fold shutter book on dotted lines so that words  
are on cover. Glue map into book under shutters.



# Vocabulary

Word: \_\_\_\_\_  
Definition: \_\_\_\_\_  
Sentence: \_\_\_\_\_

Word: \_\_\_\_\_  
Definition: \_\_\_\_\_  
Sentence: \_\_\_\_\_

Word: \_\_\_\_\_  
Definition: \_\_\_\_\_  
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Sentence: \_\_\_\_\_

# Greek Alphabet

<b>A</b> Alpha	<b>B</b> Beta	<b>Γ</b> Gamma	<b>Δ</b> Delta	<b>Ε</b> Epsilon	<b>Ζ</b> Zeta
<b>Η</b> Eta	<b>Θ</b> Theta	<b>Ι</b> Iota	<b>Κ</b> Kappa	<b>Λ</b> Lambda	<b>Μ</b> Mu
<b>Ν</b> Nu	<b>Ξ</b> Xi	<b>Ο</b> Omicron	<b>Π</b> Pi	<b>Ρ</b> Rho	<b>Σ</b> Sigma
<b>Τ</b> Tau	<b>Υ</b> Upsilon	<b>Φ</b> Phi	<b>Χ</b> Chi	<b>Ψ</b> Psi	<b>Ω</b> Omega