Putting the Fun into Teaching the Circumference of Circles

This is a packet I made of hands-on learning activities, games, and worksheets to help students not just learn but understand pi, and the circumference. My intention is for it to be used as part of a "Math Journal" series, however it can stand alone as well. For a math journal, use the first page of each section as a "header page". The following is a list of items in the packet:

Math Journal section header page

Sir Cumference and the First Round Table explaination and worksheet

Sir Cumference and the Dragon of Pi explanation

"Dragons, and Medicine, and Pi, Oh My" hands on learning activity

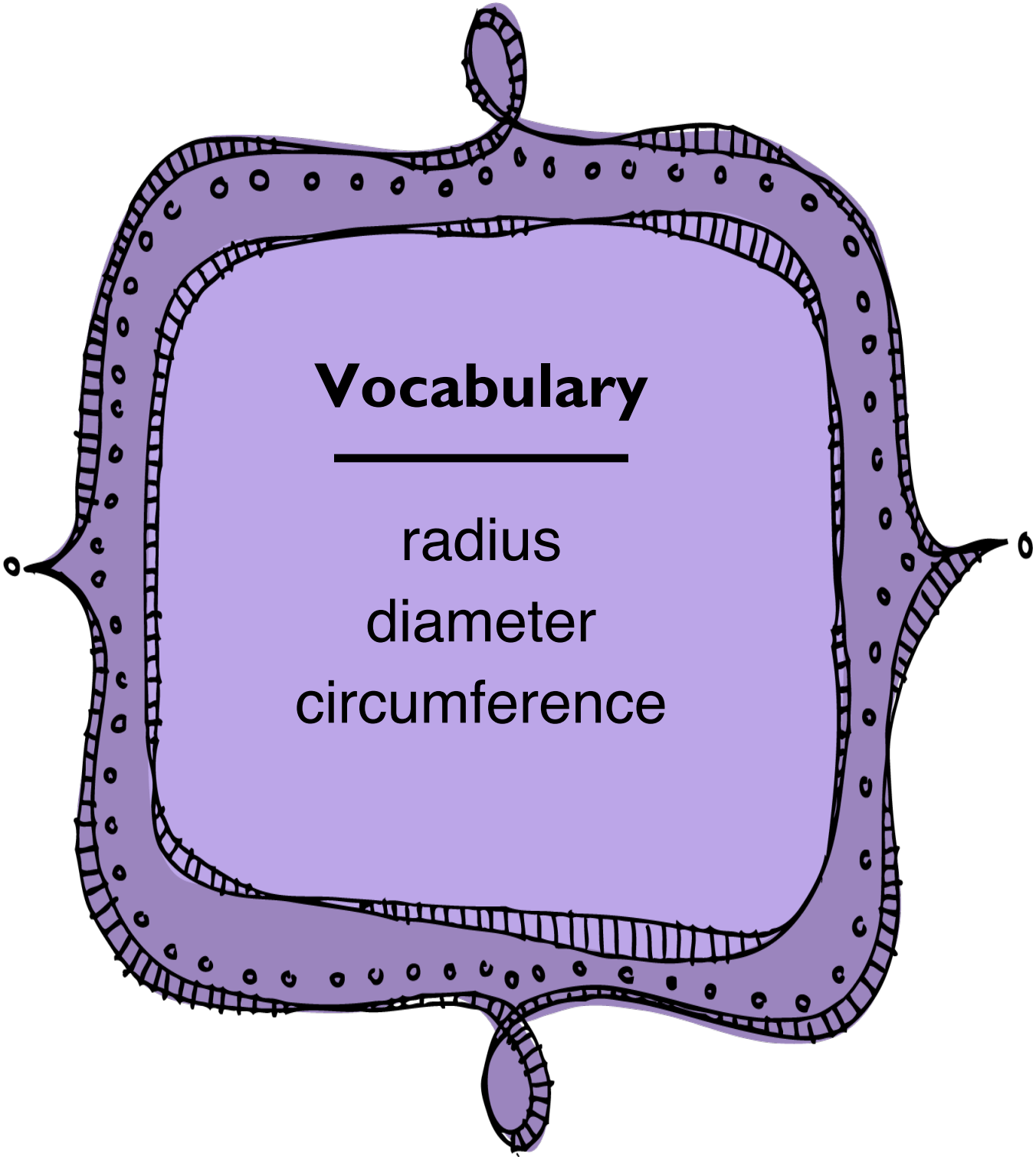
Two circumference fortune tellers and recording sheets

I Have / Who Has circumference cards and recording sheet

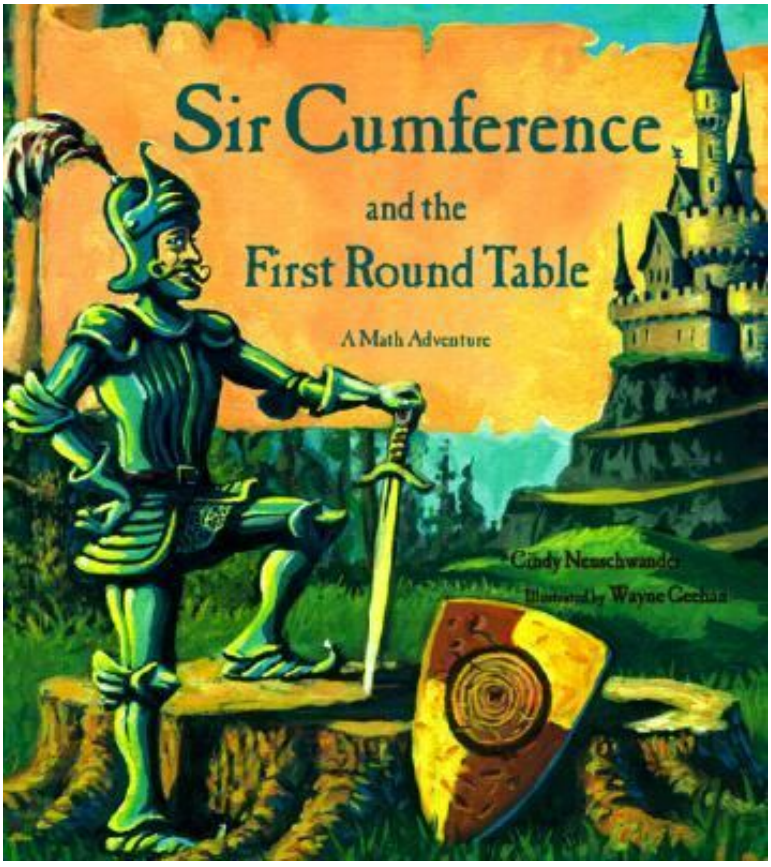
Bubble Circumference Booklet

Circumference practice worksheet

Circumference of a Circle



Sir Cumference and the First Round Table



This whole series of books by Cindy Neuschwander and Wayne Geehan is amazing!! Read this one to your students and then give them the following worksheet to keep in their math journal for reference. The book is great to help students remember vocuabulary.

Sir Cumference and the First Round Table

by: Cindy Neuschwander and Wayne Geehan

Name;_____

1. What is the name of the main character?_____

2. What is the name of the mother?_____

3. What is the name of the son?_____

4. What did they name the distance across the circle and why?_____

5. What did they name the distance from the center to the edge of the circle and why?_____

6. What did they name the distance around the circle and why?_____

Sir Cumference and the First Round Table

by: Cindy Neuschwander and Wayne Geehan

Name; Answer Key

1. What is the name of the main character? Sir Cumference

2. What is the name of the mother? Lady Di of Ameter

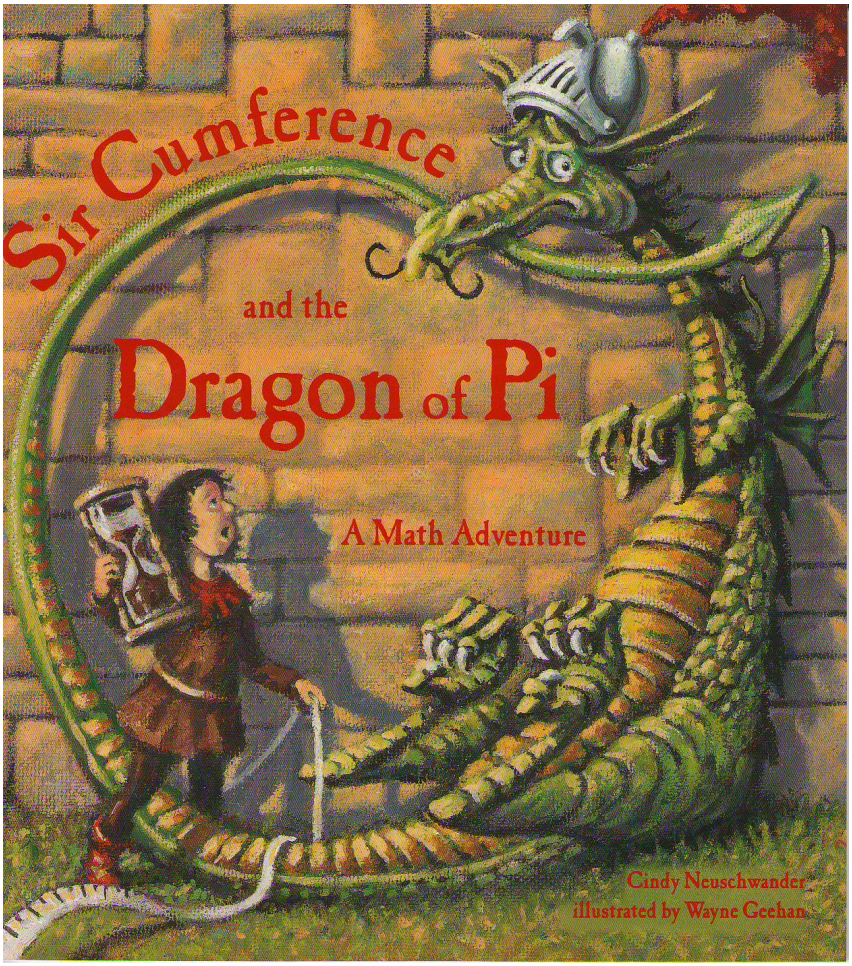
3. What is the name of the son? Radius

4. What did they name the distance across the circle and why? circumference, because Sir Cumference chose to keep the bark around the outside of the table.

5. What did they name the distance from the center to the edge of the circle and why? radius, because he may be small but he has tall ideas

6. What did they name the distance around the circle and why? diameter, because Lady Di of Ameter has a reach that is equal to the distance across the table.

Sir Cumference and the Dragon of Pi



This whole series of books by Cindy Neuschwander and Wayne Geehan is amazing!! This book is a great introduction to finding pi.

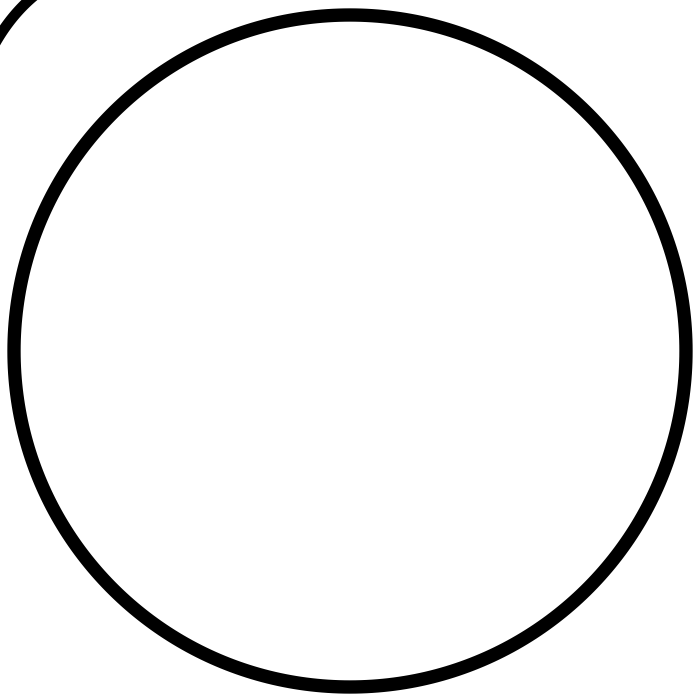
Dragons, and Medicine, and Pi, Oh My!

Materials Needed:

* *a piece of string for each group, long enough to go around each of the circles, but doesn't stretch*
* *1 calculator for each pair*
* *copy of circle worksheet*
* *copy of student handouts*
* *cm ruler*

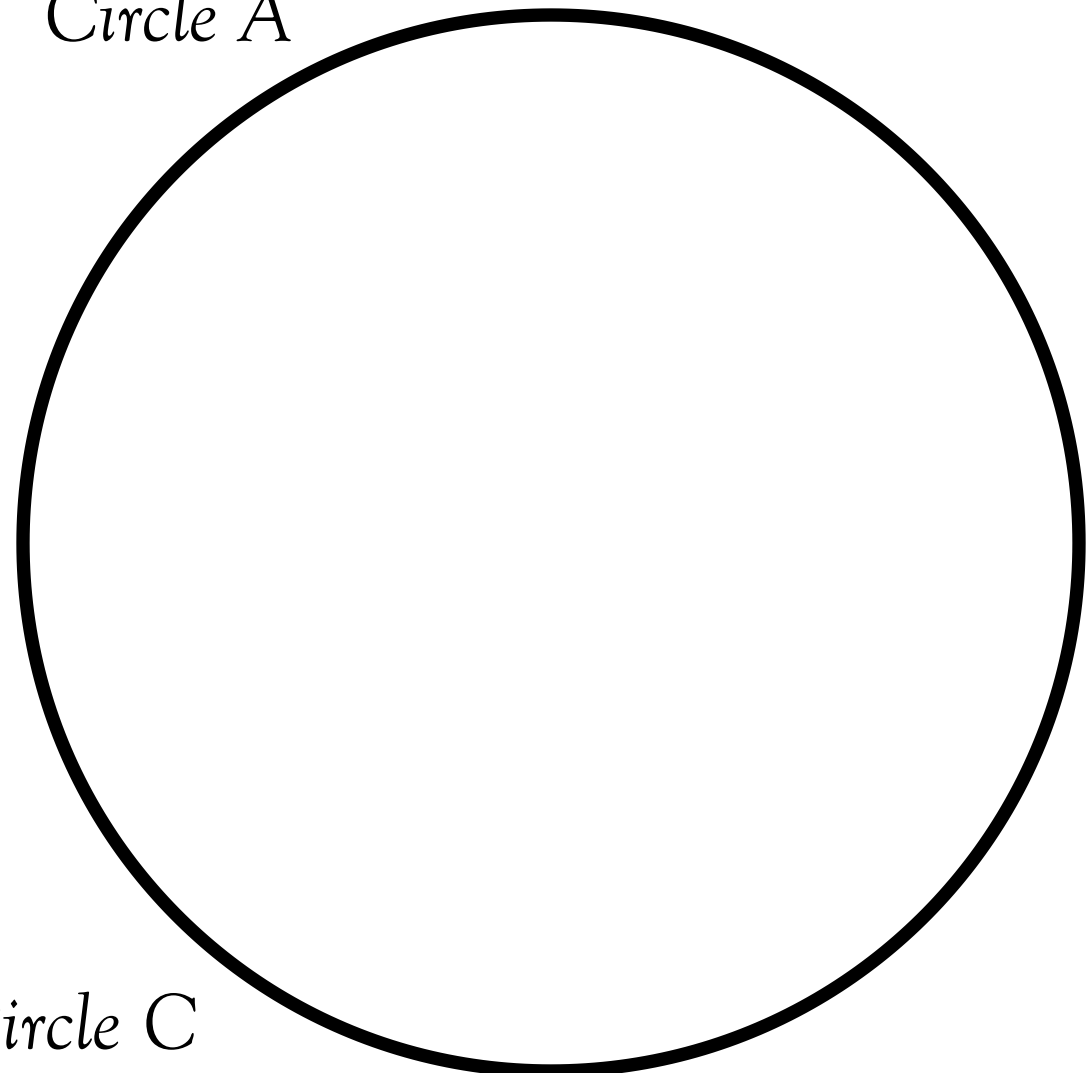
Instructions for Measuring the Circle

Place one end of the string on the outside edge of the circle and carefully run the rest of the string all the way along the outside edge of the circle. Mark the place on the string that meets the opposite end of the string by pinching it with your fingers. Lay the string out flat (still keeping your place on the string). Using a ruler, measure the part of the string that went around the outside of the circle to the nearest cm. Record your results on this page. Repeat these instructions for each circle.



Circle B

Circle A



Circle C

Dragons, and Medicine, and Pi, Oh My!

Circle A

1. Put one end of your string on the outside edge of the circle. Carefully place the string all the way around the circle. Pinch the part of the string the meets up with the other end of the string you first placed on the circle.

2. Now see how many times that part of the string will go from one edge of the circle to the other, making sure to go through the center of the circle. How many times did it go across?_____

3. Using the centimeter side of your ruler, measure the part of the string that went around the outside of the circle and place your answer here._____

4. Measure the distance across the circle making sure to go through the center._____

5. Divide the answer you got on #3 by the answer you got on #4._____

Circle B

1. Put one end of your string on the outside edge of the circle. Carefully place the string all the way around the circle. Pinch the part of the string the meets up with the other end of the string you first placed on the circle.

2. Now see how many times that part of the string will go from one edge of the circle to the other, making sure to go through the center of the circle. How many times did it go across?_____

3. Using the centimeter side of your ruler, measure the part of the string that went around the outside of the circle and place your answer here._____

4. Measure the distance across the circle making sure to go through the center._____

5. Divide the answer you got on #3 by the answer you got on #4._____

Circle C

1. Put one end of your string on the outside edge of the circle. Carefully place the string all the way around the circle. Pinch the part of the string the meets up with the other end of the string you first placed on the circle.

2. Now see how many times that part of the string will go from one edge of the circle to the other, making sure to go through the center of the circle. How many times did it go across?_____

3. Using the centimeter side of your ruler, measure the part of the string that went around the outside of the circle and place your answer here._____

4. Measure the distance across the circle making sure to go through the center._____

5. Divide the answer you got on #3 by the answer you got on #4._____

Dragons, and Medicine, and Pi, Oh My! Name:_____

1. What do you notice about all of the answers on #5 for each of your circles?_____

2. Are your answers similar to the number of times your string would go across the circle going through the center?_____

3. What statement could you make about the relationship between the distance around the outside of the circle and the distance across the circle going through the middle?_____

4. What term do we use to represent the oustide edge around a circle?_____

5. What term do we use to represent the distance from one edge of a circle to the other edge of a circle that goes through the center?_____

6. What term do we use to represent that relationship between the dsitance around the outside edge of the circle and the distance across the center of the circle?_____

7. Can you give a formula that would calculate this measurement?_____

Folding Instructions

1. Cut out the square along the dark outside lines.
2. Place the square with blank side up.
3. Fold each corner into the center.
4. Flip the new square so that the flaps are resting on the table.
5. Fold the corners to the center again.
6. Fold the new square in half, one way and then open that fold and fold it in half the other way. (This will make it bend easier)
7. Put your fingers into the openings and "fortune tell" away.
8. Students work in pairs.
9. One student holds the fortune teller while the other one calls a number from the corner.
10. The student holding the "teller" opens and closes the "teller" the selected number of times and then holds it open on the last opening.
11. The student not holding the "teller" chooses one of the problems to work.
12. After giving the answer, they open up the flap to check the answer.

"Fortune Teller"
Finding the "Sir Cumference"

"Fortune Teller"
Finding the "Sir Cumference" given diameter

Recording Sheet for Fortune Teller

Name:_____

1. _____ = _____
2. _____ = _____
3. _____ = _____
4. _____ = _____
5. _____ = _____
6. _____ = _____
7. _____ = _____
8. _____ = _____

I Have / Who Has for Circumference of a Circle

The first five pages of I Have / Who Has cards leave the answer in terms of pi and the last five pages of cards multiply it out. I did this so that it would work for whatever skill you were working on.

I have the first card

Who has the circumference of the circle who's diameter is 4 in?

I have 8π cm

Who has the circumference of the circle who's radius is 3 ft?

I have 4π in

Who has the circumference of the circle who's radius is 1 ft?

I have 6π ft

Who has the circumference of the circle who's diameter is 10 km?

I have 2π ft

Who has the circumference of the circle who's diameter is 12 cm?

I have 10π km

Who has the circumference of the circle who's diameter is 16 in?

I have 12π cm

Who has the circumference of the circle who's radius is 4 cm?

I have 16π in

Who has the circumference of the circle who's radius is 4.5 ft?

I have 9π ft

Who has the circumference of the circle who's radius is 9.5 in?

I have 12.2π cm

Who has the circumference of the circle who's radius is 7 ft?

I have 19π in

Who has the circumference of the circle who's radius is 8.2 yd?

I have 14π ft

Who has the circumference of the circle who's diameter is 90 km?

I have 16.4π yd

Who has the circumference of the circle who's diameter is 18 cm?

I have 90π km

Who has the circumference of the circle who's diameter is 17 in?

I have 18π cm

Who has the circumference of the circle who's radius is 6.1 cm?

I have 17π in

Who has the circumference of the circle who's radius is 21 ft?

I have 42π ft

Who has the circumference of the circle who's radius is 15 in?

I have 24π cm

Who has the circumference of the circle who's radius is 24 ft?

I have 30π in

Who has the circumference of the circle who's radius is 7.3 yd?

I have 48π ft

Who has the circumference of the circle who's diameter is 20 km?

I have 14.6π yd

Who has the circumference of the circle who's diameter is 8.4cm?

I have 20π km

Who has the circumference of the circle who's diameter is 15 in?

I have 8.4π cm

Who has the circumference of the circle who's radius is 12cm?

I have 15π in

Who has the circumference of the circle who's radius is 1.1 ft?

I have 2.2π ft

Who has the circumference of the circle who's radius is 31 in?

I have 22π cm

Who has the circumference of the circle who's radius is 12 ft?

I have 62π in

Who has the circumference of the circle who's radius is 13 yd?

I have 24π ft

Who has the circumference of the circle who's diameter is 246 km?

I have 26π yd

Who has the circumference of the circle who's diameter is 31 cm?

I have 246π km

Who has the circumference of the circle who's diameter is 3 in?

I have 31π cm

Who has the circumference of the circle who's radius is 11 cm?

I have 3π in

Who has the circumference of the circle who's radius is 20 ft?

I have 40π ft

Who has the circumference of the circle who's radius is 19 in?

I have 36π cm

Who has the circumference of the circle who's radius is 16 ft?

I have 38π in

Who has the circumference of the circle who's radius is 14 yd?

I have 32π ft

Who has the circumference of the circle who's diameter is 21 km?

I have 28π yd

Who has the circumference of the circle who's diameter is 7 cm?

I have 21π km

Who has the circumference of the circle who's diameter is 5 in?

I have 7π cm

Who has the circumference of the circle who's radius is 18 cm?

I have 5π in

Who has the first card?

I have the first card

Who has the circumference of the circle who's diameter is 4 in?

I have 25.12 cm

Who has the circumference of the circle who's radius is 3 ft?

I have 12.56 in

Who has the circumference of the circle who's radius is 1 ft?

I have 18.84 ft

Who has the circumference of the circle who's diameter is 10 km?

I have 6.28 ft

Who has the circumference of the circle who's diameter is 12 cm?

I have 31.4 km

Who has the circumference of the circle who's diameter is 16 in?

I have 37.68 cm

Who has the circumference of the circle who's radius is 4 cm?

I have 50.24 in

Who has the circumference of the circle who's radius is 4.5 ft?

I have 28.26 ft

Who has the circumference of the circle who's radius is 9.5 in?

I have 38.308 cm

Who has the circumference of the circle who's radius is 7 ft?

I have 59.66 in

Who has the circumference of the circle who's radius is 8.2 yd?

I have 43.96 ft

Who has the circumference of the circle who's diameter is 90 km?

I have 51.496 yd

Who has the circumference of the circle who's diameter is 18 cm?

I have 282.6 km

Who has the circumference of the circle who's diameter is 17 in?

I have 56.52 cm

Who has the circumference of the circle who's radius is 6.1 cm?

I have 53.38 in

Who has the circumference of the circle who's radius is 21 ft?

I have 131.88 ft

Who has the circumference of the circle who's radius is 15 in?

I have 75.36 cm

Who has the circumference of the circle who's radius is 24 ft?

I have 94.2 in

Who has the circumference of the circle who's radius is 7.3 yd?

I have 150.72 ft

Who has the circumference of the circle who's diameter is 20 km?

I have 45.844 yd

Who has the circumference of the circle who's diameter is 8.4cm?

I have 62.8 km

Who has the circumference of the circle who's diameter is 15 in?

I have 26.376 cm

Who has the circumference of the circle who's radius is 12cm?

I have 47.1 in

Who has the circumference of the circle who's radius is 1.1 ft?

I have 6.908 ft

Who has the circumference of the circle who's radius is 31 in?

I have 69.08 cm

Who has the circumference of the circle who's radius is 12 ft?

I have 194.68 in

Who has the circumference of the circle who's radius is 13 yd?

I have 75.36 ft

Who has the circumference of the circle who's diameter is 246 km?

I have 81.64 yd

Who has the circumference of the circle who's diameter is 31 cm?

I have 772.44 km

Who has the circumference of the circle who's diameter is 3 in?

I have 97.34 cm

Who has the circumference of the circle who's radius is 11 cm?

I have 9.42 in

Who has the circumference of the circle who's radius is 20 ft?

I have 125.6 ft

Who has the circumference of the circle who's radius is 19 in?

I have 113.04 cm

Who has the circumference of the circle who's radius is 16 ft?

I have 119.32 in

Who has the circumference of the circle who's radius is 14 yd?

I have 100.48 ft

Who has the circumference of the circle who's diameter is 21 km?

I have 87.92 yd

Who has the circumference of the circle who's diameter is 7 cm?

I have 65.94 km

Who has the circumference of the circle who's diameter is 5 in?

I have 21.98 cm

Who has the circumference of the circle who's radius is 18 cm?

I have 15.7 in

Who has the first card?

I Have / Who Has for Circumference of a Circle Recording Sheet

Name:_____

1._____
2._____
3._____
4._____
5._____
6._____
7._____
8._____
9._____
10._____
11._____
12._____
13._____
14._____
15._____
16._____
17._____
18._____
19._____
20._____

21._____
22._____
23._____
24._____
25._____
26._____
27._____
28._____
29._____
30._____
31._____
32._____
33._____
34._____
35._____
36._____
37._____
38._____
39._____
40._____

Bubble Circles Activity

For this activity you will need:

*bubbles

*construction paper

*ruler

*copy of the "bubble" booklet

Students will blow a bubble or bubbles. Make sure to explain to them they only need one. They need to catch one bubble on the construction paper. When the bubble bursts, it will leave a dark circle from the liquid. They will then fill out the booklet that follows this page.

The Circumference of _____'*s Bubbles*

The definition of
circumference is:

_____

_____

The circumference of a circle
is equal to:_____

Catch a bubble on a piece of
construction paper.

1. What is the measure of the
bubble's radius?_____

2. What is the measure of the
bubble's circumference?____

Blow bubble #2

3. What is the diameter of
your second bubble?_____

4. What is the radius of your
second bubble?_____

5. What is the circumference
of your second bubble?

Circumference of a Circle Worksheet

The following page is a worksheet with both guided practice and independent practice for finding the circumference of a circle. There are also three word problems on the bottom. The answer key is left in terms of pi, but the worksheet would work for either skill.

Circumference of a Circle

Name:_____

Guided Practice

Find the missing measurements.

1. d = 4 in
r = _____
C = ____

2. d = _____
r = 6 cm
C = ____

3. d = 8 ft
r = _____
C = ____

4. d = _____
r = 9 mm
C = ____

Independent Practice

Find the missing measurements.

5. d = 10 in
r = _____
C = ____

6. d = 70 in
r = _____
C = ____

7. d = _____
r = 21 cm
C = ____

8. d = 16 in
r = _____
C = ____

9. d = _____
r = 14 cm
C = ____

10. d = 122 in
r = _____
C = ____

11. d = _____
r = 20 cm
C = ____

12. d = _____
r = 99 cm
C = ____

13. Ana and her friends went to the carnival. While looking at the ferris wheel, they estimated the distance from one side of the ferris wheel to the other side to be about 40 feet. If their estimation is correct, what would the distance around the ferris wheel be?_____

14. Jon is getting new tires for his bicycle. Jon wandered what the distance around one tire was. He measured the radius, and found it to be 7 inces. What is the circumference of his tire?_____

15. Phillip found the stump of a perfectly round tree. If the diameter of that stump was 25 cm, what is the circumference of the stump?_____

Circumference of a Circle

Name: Answer Key

Guided Practice

Find the missing measurements.

1. d = 4 in
   r = 2 in
   C = 4π in

2. d = 12 cm
   r = 6 cm
   C = 12π cm

3. d = 8 ft
   r = 4 ft
   C = 8π ft

4. d = 18 mm
   r = 9 mm
   C = 18π mm

Independent Practice

Find the missing measurements.

5. d = 10 in
   r = 5 in
   C = 10π in

6. d = 70 in
   r = 35 in
   C = 70π in

7. d = 42 cm
   r = 21 cm
   C = 42π cm

8. d = 16 in
   r = 8 in
   C = 16π in

9. d = 28 cm
   r = 14 cm
   C = 28π cm

10. d = 122 in
    r = 61 in
    C = 122π in

11. d = 40 cm
    r = 20 cm
    C = 40π cm

12. d = 198 cm
    r = 99 cm
    C = 198π cm

13. Ana and her friends went to the carnival. While looking at the ferris wheel, they estimated the distance from one side of the ferris wheel to the other side to be about 40 feet. If their estimation is correct, what would the distance around the ferris wheel be? 40π ft

14. Jon is getting new tires for his bicycle. Jon wandered what the distance around one tire was. He measured the radius, and found it to be 7 inces. What is the circumference of his tire? 14π in

15. Phillip found the stump of a perfectly round tree. If the diameter of that stump was 25 cm, what is the circumference of the stump? 25π cm