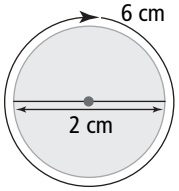
Get Ready

Name: _____ Date: _____

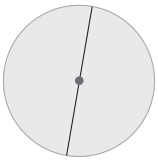
The Circle

Circles come in many different sizes.
The distance around the circle shown is about 6 cm.
The distance across is 2 cm.

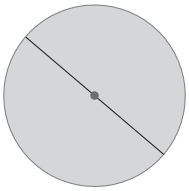


1. Use a ruler to measure the distance across each circle, to the nearest tenth of a centimetre. Write the measure beside the circle.

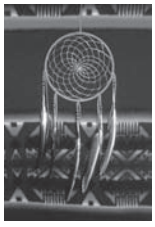
a)



b)



c)



d)

2. Estimate the distance around each circle in #1. Write the estimate below each circle.

3. Choose two circular objects from your classroom or from home that are different sizes.

a) Name and compare the two circles. Estimate how much farther it is around one circle than the other.

b) How did you make your estimate?

Repeated Multiplication

5^2 can be written as $\underbrace{5 \times 5}$.
repeated multiplication

$5^2 = 5 \times 5$
$= 25$

5^2 is read as "5 squared" or "5 to the power of 2."

4^3 can be written as $4 \times 4 \times 4$.
$4^3 = 4 \times 4 \times 4$
$= 16 \times 4$
$= 64$

4. Write as a repeated multiplication. Then, calculate each answer.

a) 2^5 **b)** 3^3

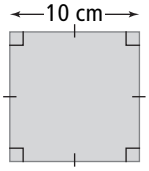
c) 5^4 **d)** 6^2

5. Does 2^5 equal 5^2? Use repeated multiplication to explain your answer.

Name: _____ Date: _____

Substitute Into Formulas

It can be helpful to use formulas to calculate the perimeter and area of basic geometric shapes. To evaluate a formula, you can substitute known values into the formula.



The formula for the perimeter of a square is $P = 4s$.
The formula for the area of a square is $A = s^2$.

$P = 4s$
$P = 4 \times 10$
$P = 40$

The perimeter of the square is 40 cm.

This is the same as adding the length of the sides together.
$P = 10 + 10 + 10 + 10$

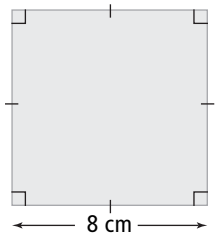
$A = s^2$
$A = 10^2$
$A = 10 \times 10$
$A = 100$

The area of the square is 100 cm^2.

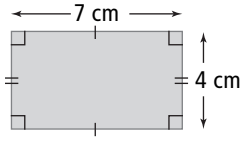
Area is expressed in square units. Remember to include the units in your final answer.

6. What is the perimeter and the area of each shape? Use a formula.

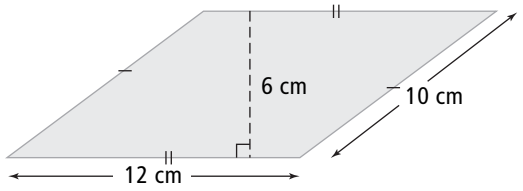
a)



b)

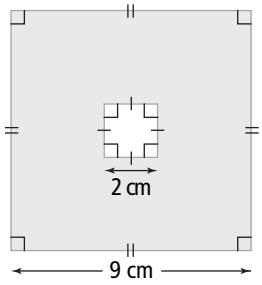


c)

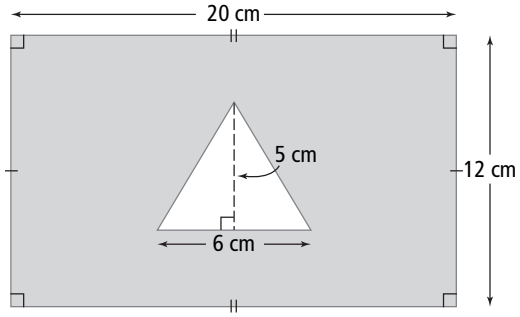


7. What is the area of the shaded region? Show your thinking.

a)



b)



Name: _____ Date: _____

8.1 Construct Circles

***MathLinks 7*, pages 268–272**

Key Ideas Review

Choose from the following terms to complete #1 and #2.

area	diameter	radius

1. Fill in the blanks on the diagram.

2. Use the diagram to help you complete each statement.

a) The _____ of a circle is twice the _____.

b) The _____ of a circle is half the _____.

3. Describe two different ways you can draw a circle.

Practise and Apply

4. Using string, draw a circle with each radius.

a) 2 cm

b) 1.5 cm

5. Use a compass to draw a circle with a radius of 3 cm.

Name: _____ **Date:** _____

6. a) What is the diameter of a circle with a radius of 3 cm?

Diameter: _____

b) Draw a circle using the radius from part a).

c) Draw a circle using the diameter from part a).

7. Consider the following statement.

If the radius of a circle is tripled, the diameter is also tripled.

Which of the following best describes the statement?

a) Always true

b) Sometimes true

c) Never true

8. a) What is the radius of a circle with a diameter of 4 cm?

Radius: _____

b) Draw a circle using the diameter from part a).

c) Draw a circle using the radius from part a).

9. Without drawing the circles, determine which circle is bigger.
Circle A with $d = 32$ cm
or
Circle B with $r = 18$ cm

How do you know?

Name: _____ Date: _____

8.2 Circumference of a Circle

***MathLinks 7*, pages 273–279**

Key Ideas Review

Write the word or letter from column B that matches each description in column A.

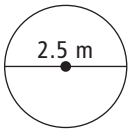
A	B
1. The _____ of a circle is approximately three times its _____.	**a)** circumference
2. Pi represents the ratio of the _____ of a circle to its _____.	**b)** pi
3. The value of _____ is approximately 3.14.	**c)** diameter
4. The formula often used to find the circumference of a circle is _____ times the _____.	**d)** radius
5. Another formula often used to find the circumference of a circle is two times _____ times the _____.	

Practise and Apply

Use 3.14 for π in the calculations in this section.
Round all answers to the nearest tenth of a unit.

6. Estimate the circumference of each circle.

a)



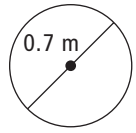
Estimate: _____

b)

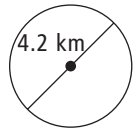
Estimate: _____

7. Calculate the circumference of each circle.

a)



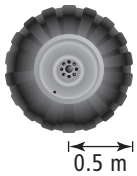
b)



Name: _____ **Date:** _____

8. Estimate and then calculate the circumference of each circle.

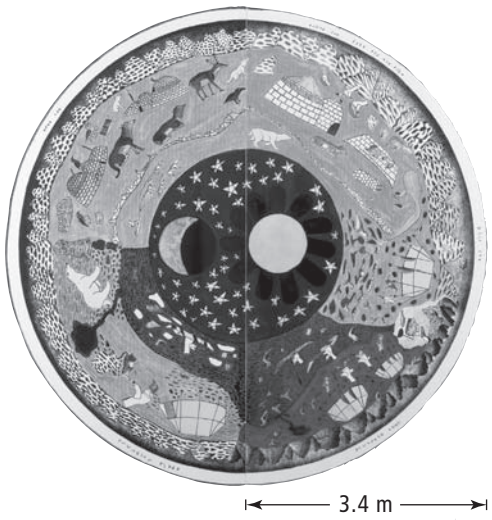
a)



Estimate: _____

Calculation:

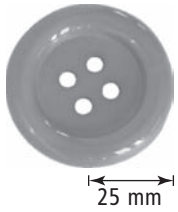
b)



Estimate: _____

Calculation:

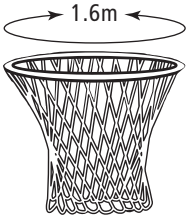
9. Calculate the circumference of the circle.



10. a) A circle has a circumference of 32.97 cm. What is the radius of the circle? Show your thinking.

b) If the radius of a circle is doubled, how does the circumference change? Use an example to show how you know.

11. a) A basketball hoop has a circumference of 1.6 m. What is the approximate diameter of the biggest basketball that can fit through the hoop? Show your thinking.



b) Max wants to fit three mini-basketballs through the hoop at the same time. If one mini-basketball has a diameter of 0.2 m, can three of them fit through the hoop at the same time? Show how you know.

Name: _____ Date: _____

8.3 Area of a Circle

***MathLinks 7*, pages 280–286**

Key Ideas Review

Choose from the following terms to complete #1.

area	diameter	radius

1. Complete each statement.

a) The area of a circle is approximately three times the square of its _____.

b) The formula often used to find the area of a circle is pi times the _____ squared.

c) _____ is measured in square units.

Practise and Apply

Use 3.14 for π in the calculations in this section.
Round all answers to the nearest tenth of a unit unless otherwise specified.

2. Estimate the area of each circle.

a)

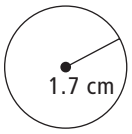
Estimate: _____

b)

Estimate: _____

3. Calculate the area of each circle.

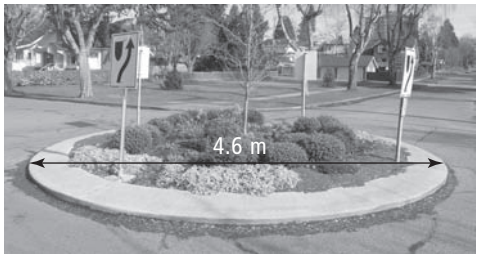
a)



b)

4. Estimate and then calculate the area of each circle.

a)

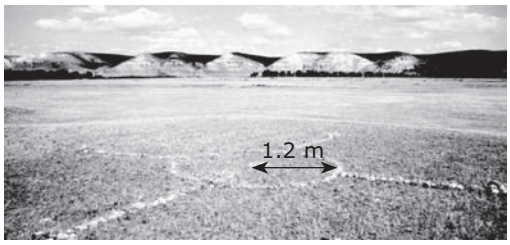


Estimate: _____

Calculation:

Name: _____ **Date:** _____

b)



Estimate: _____

Calculation:

Round all answers to the nearest hundredth of a unit for #5 to #9.

5. Calculate the area of each circle.

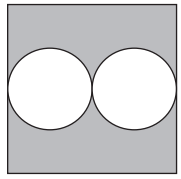
a)

b)

6. A face-off circle in a hockey rink has a diameter of 9.14 m. Calculate the area of the circle. Show your thinking.

7. A circular swimming pool has a diameter of 8 m. What is the minimum size of pool cover that you would need? Show how you know.

8. What is the area of both circles if the side of the square measures 12 m?



9. Which circle is smaller, a circle with a radius of 35 cm or a circle with a diameter of 60 cm? Show how you know.

Name: _____ Date: _____

8.4 Interpret Circle Graphs

***MathLinks 7*, pages 287–291**

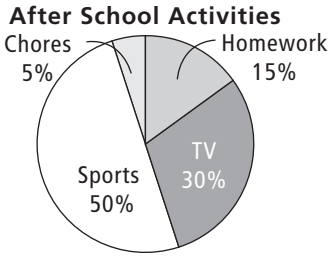
Key Ideas Review

Write the word or letter from column B that matches each description in column A.

A	B
1. The sum of all percents in a circle graph is _____.	**a)** category
2. Circle graphs are easier to interpret when there is a _____ number of categories.	**b)** percents
3. Circle graphs are easier to interpret when the _____ _____ are not too close together.	**c)** 100%
4. A circle graph shows how each _____ of data compares to the whole using _____.	**d)** small
	e) large
	f) percent values
	g) numerical values

Practise and Apply

5. The circle graph shows the different after-school activities of grade 7 students.



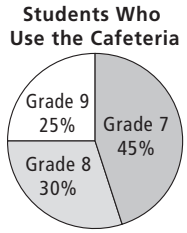
a) What activity do most of the students participate in after school?

b) If there are 200 grade 7 students, how many of them watch TV after school? Show your thinking.

c) How many more students prefer sports than TV?

Name: _____ **Date:** _____

6. The circle graph shows the grade levels of the students who use the cafeteria at Madison Junior High.

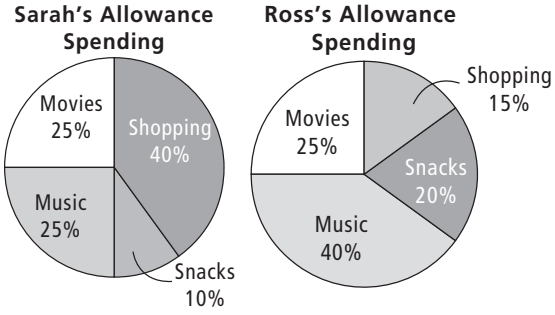


a) If 725 students at the school use the cafeteria, how many grade 7 students use it?

b) How many grade 8 and grade 9 students use the cafeteria?

c) Why do you think more grade 7 students than grade 8 or 9 students use the cafeteria?

7. Sarah and Ross each get $50.00 a month for allowance. The circle graphs show how each of them spent their allowance last month.



a) What do Sarah and Ross each spend most of their allowance on?

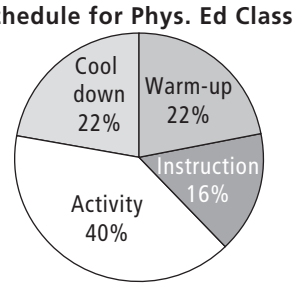
Sarah: _____

Ross: _____

b) Who spends more on shopping? How much more money does this person spend compared to the other person?

c) What does Sarah spend 50% of her allowance on? Give two possible answers.

8. The circle graph shows a typical schedule for a 45-min physical education class.



a) What takes up the most time in gym class? How much time is spent on it?

b) Which part(s) of the class take about 25 min?

c) How much time is not spent on instruction?

Name: _____ Date: _____

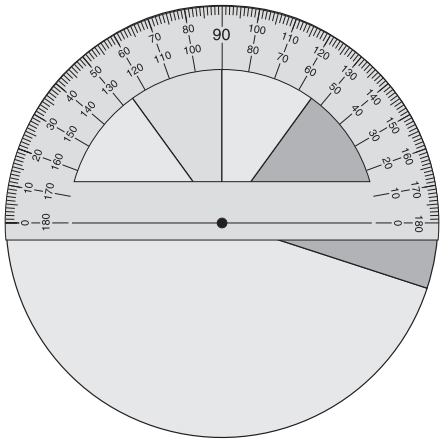
8.5 Create Circle Graphs

***MathLinks 7*, pages 292–297**

Key Ideas Review

1. Use the diagram to help answer the following question.

The sum of the central angles of a circle is _____.



2. Order from 1 to 4 the steps for drawing a circle graph using a protractor.

_____ Use a protractor to measure and draw each central angle.

_____ Calculate the measure of each central angle.

_____ Add sector labels and a title.

_____ Express each category as a percent of the total.

3. Order from 1 to 3 the steps for creating a circle graph using a spreadsheet.

_____ Use the **Chart Wizard** to make a pie chart.

_____ Enter a title and choose labels for the sectors.

_____ Enter the categories in one column and the amounts in the next column.

Practise and Apply

You may choose to do the graphs in this section by hand or using a spreadsheet program. If you use a spreadsheet program, print out the graph and glue it to the appropriate page.

4. The students in Jonnie's class were surveyed to see which healthy snack they would like to have added to the cafeteria menu.

Name: _____ **Date:** _____

a) Complete the table.

Type	Number of Students	Percent of Total	Decimal Value Equivalent	Central Angle
Carrot sticks	12			
Yogurt	5			
Fruit	10			
Granola bars	3			
Totals				

b) Draw a circle graph to display the data.

5. All the grade 7 students at a school were surveyed to determine their favourite types of movies. Make a circle graph displaying the information.

Types of Movies	Number of Students
Comedy	25
Drama	5
Action	20
Thriller	40
Other	10

6. Canadians won 17 medals in 2002 at the Salt Lake City Winter Olympics.

Medal Standings for Canada in 2002

Type of Medal	Number of Medals
Gold	7
Silver	3
Bronze	7

a) Create a circle graph to display the data.

b) Research data from the most recent Olympics to find the number of each type of medal that Canadians won. Make a circle graph using the information.

c) Compare your results with the data from 2002. What are the similarities and differences?

Name: _____ Date: _____

Link It Together

1. Find a circle that has the same circumference and area.

a) Draw the circle using a compass.

b) Calculate the circumference using the diameter.

c) Calculate the area using the radius.

2. How do you spend your time during a regular weekday?

a) Fill in the table with the number of hours you spend on each activity during a typical 24-h period.

Activity	Number of Hours	Activity	Number of Hours
Sleeping		Homework	
Eating		Activities	
School		Other: _____	

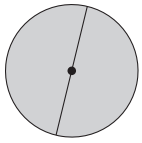
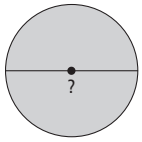
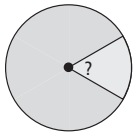
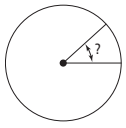
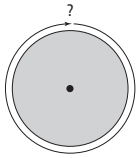
b) Draw a circle graph with a protractor to display the data.

c) Write two questions that could be answered using your circle graph.

Name: _____ Date: _____

Vocabulary Link

Use the visuals in column A to help you identify the word in column B. Unscramble the letters for each word.

A	B
1.  _____	RCECLI
2.  _____	RMEDEATI
3. **Native Arts Program Participation**  _____ _____	IAGCHECLRPR
4.  _____	STOECR
5. π or 3.14 _____	IP
6.  _____	IDURAS
7.  _____ _____	EGLRNLCEATNA
8.  _____	MERCIRCEUECFN