

1) BEDMAS: $15 - 15 \times 2$ $15 - 30 = -15$ $(+ 15) = (430)$

2) 10% of 32

$0.1 \times 32 = 3.2$

3) 50% of 80 = 40

4) Estimate the area of the circle if the diameter is 10 m:

$3 \times (5 \times 5) \pi r^2$

5) $1/3$ of 12 = 4

75

6) 20% of 50 = 10

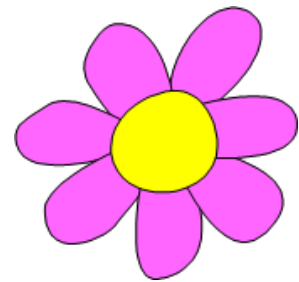
7) Estimate the Circumference of the circle if the radius is 3cm:

$3 \times 6 = 18$

8) $12 \times 20 = 240$

9) $602 \div 2 = 301$

10) What is the LCD for 9 and 3? 9



Connect

Recall that a circle graph shows how parts of a set of data compare with the whole set.

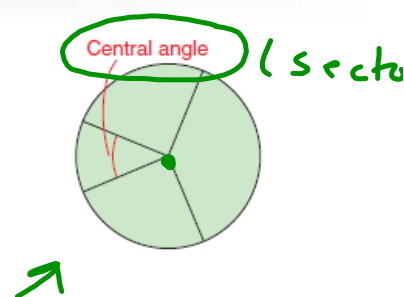
Each piece of data is written as a fraction of the whole.

Each fraction is then written as a percent.

Sectors of a percent circle are coloured to represent these percents.

The sum of the **central angles** is 360° .

A central angle is also called a sector angle.



4.7

Drawing Circle Graphs

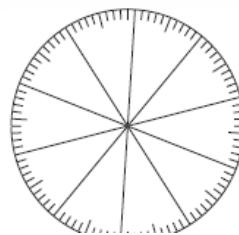
Focus | Construct circle graphs to display data.

This is a **percent circle**.

The circle is divided into 100 congruent parts.

Each part is 1% of the whole circle.

You can draw a circle graph on a percent circle.



Explore



Your teacher will give you a percent circle.
 Students in a Grade 7 class were asked
 how many siblings they have.
 Here are the results.

0 Siblings	1 Sibling	2 Siblings	More than 2 Siblings
3	13	8	1

- * Write each number of students as a fraction of the total number.
 Then write the fraction as a percent.

_____ den.

Use the percent circle.

Draw a circle graph to display the data.

Write 2 questions you can answer by looking at the graph.

$$0 - \frac{3}{25} = 0.12 \times 100 = 12\%$$

$$1 - \frac{13}{25} = 0.52 \times 100 = 52\%$$

$$2 - \frac{8}{25} = 0.32 \times 100 = 32\%$$

$$\uparrow 2 - \frac{1}{25} = 0.04 \times 100 = 4\%$$

Example

All the students in two Grade 7 classes were asked how they get to school each day. Here are the results: 9 rode their bikes, 11 walked, 17 rode the bus, and 13 were driven by car. Construct a circle graph to illustrate these data.

A Solution

- For each type of transport:
Write the number of students as a fraction of 50, the total number of students.
Then write each fraction as a decimal and as a percent.

$$\text{Bike: } \frac{9}{50} = \frac{18}{100} = 0.18 = 18\% \qquad \text{Walk: } \frac{11}{50} = \frac{22}{100} = 0.22 = 22\%$$

$$\text{Bus: } \frac{17}{50} = \frac{34}{100} = 0.34 = 34\% \qquad \text{Car: } \frac{13}{50} = \frac{26}{100} = 0.26 = 26\%$$

The circle represents all the types of transport.

To check, add the percents.

The sum should be 100%.

$$18\% + 22\% + 34\% + 26\% = 100\%$$

**Another Strategy**

We could use a percent circle to graph these data.

- To find the sector angle for each type of transport, multiply each decimal by 360° .

Write each angle to the nearest degree, when necessary.

Bike 18%: $0.18 \times 360^\circ = 64.8^\circ \approx 65^\circ$

Walk 22%: $0.22 \times 360^\circ = 79.2^\circ \approx 79^\circ$

Bus 34%: $0.34 \times 360^\circ = 122.4^\circ \approx 122^\circ$

Car 26%: $0.26 \times 360^\circ = 93.6^\circ \approx 94^\circ$

Check:

$64.8^\circ + 79.2^\circ + 122.4^\circ + 93.6^\circ = 360^\circ$

- Construct a circle.

Use a protractor to construct each sector angle.

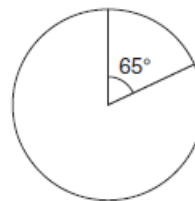
Start with the smallest angle.

Draw a radius. Measure 65° .

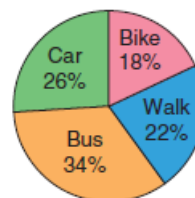
Start the next sector where the previous sector finished.

Label each sector with its name and percent.

Write a title for the graph.



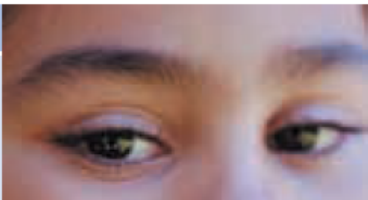
How Students Get to School



Practice

1. The table shows the number of Grade 7 students with each eye colour at Northern Public School.

Eye Colour	Number of Students
Blue	12
Brown	24
Green	8
Grey	6



- a) Find the total number of students.
- b) Write the number of students with each eye colour as a fraction of the total number of students.
- c) Write each fraction as a percent.
- d) Draw a circle graph to represent these data.
2. In a telephone survey, 400 people voted for their favourite radio station.
- a) How many people chose EASY2?
- b) Write the number of people who voted for each station as a fraction of the total number who voted. Then write each fraction as a percent.

Radio Station	Votes
MAJIC99	88
EASY2	?
ROCK1	120
HITS2	100

3. **Assessment Focus** This table shows the method of transport used by U.S. residents entering Canada in one year.

- a) How many U.S. residents visited Canada that year? *+ all # up*
- b) What fraction of U.S. residents entered Canada by boat?
- c) What percent of U.S. residents entered Canada by plane?
- d) Display the data in a circle graph.
- e) What else do you know from the table or circle graph?
Write as much as you can.

United States Residents Entering Canada

Method of Transport	Number
Automobile	32 000 000
Plane	4 000 000
Train	400 000
Bus	1 600 000
Boat	1 200 000
Other	800 000

40 000 000

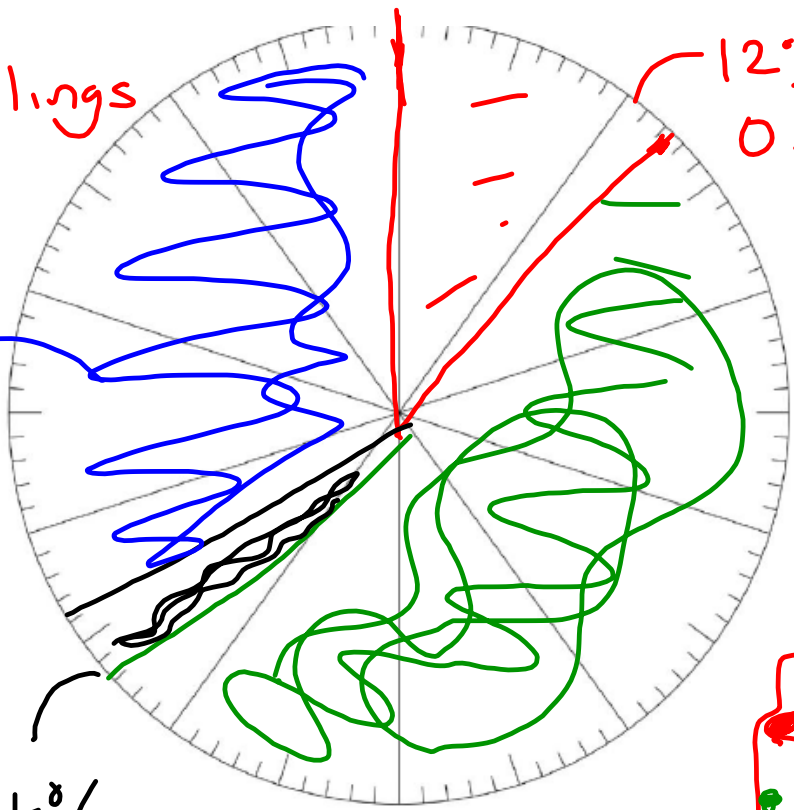
$$\begin{array}{r}
 \text{b) } 1\,200\,000 \\
 \hline
 40\,000\,000
 \end{array}$$

$$\begin{array}{r}
 \text{c) } 4\,000\,000 \\
 \hline
 40\,000\,000
 \end{array}
 = 0.1 \times 100 = 10\%$$

of Siblings

12%

32%
2 sib



12%
0 sibs

52

- - 0 sibs
- - 1 sib
- - 2 sib
- - ~~2 sibs~~

4%

↑ 2 sibs

52%
1 sib

4%

3)

