

Pies and Percentages - Learning About Pie Graphs

Today, we're going to look at a different type of graph. A pie graph is shaped like a circle and is divided into pieces that look a little like slices of pie. Each slice shows what percent of the total amount it is. Therefore, for a pie graph to work properly all the slices should add up to 100%. The slices are usually in different colors with a key showing what each color stands for.

When you read a pie graph, the figures are usually given to you and it is quite easy to see how each piece of data compares with the next. For example, in this pie graph we can see that almost half of the vehicles counted are cars, that there are less motor cycles than any other vehicle and that there are almost as many buses as there are trucks.

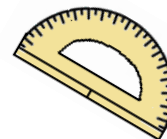


Green = buses
Red = motor cycles
Blue = trucks
Yellow = cars

Drawing our own pie graph is a bit more difficult. For this, we need to be able to use a protractor and a compass. We know that a circle is 360° so any percentage of a circle has to be a percentage of 360. Let's see how this works. First, use your compass to draw a circle. If the number of buses on the road is 20% of the total number of vehicles counted, to show this on the pie chart we need first to work out 20% of 360° . That is $\frac{20}{100} \times \frac{360}{1}$.

$$\text{or } \frac{20 \times 360}{100 \times 1} \text{ or } \frac{20 \times 360}{100}$$

$$\begin{aligned} \text{Multiply the numerators first -} & \quad 20 \times 360 = 7200 \\ \text{then divide by the denominator -} & \quad 7200 \div 100 = 72^\circ. \end{aligned}$$



Name _____

Date _____

Pies and Percentages - Learning About Pie Graphs (cont'd)

Can you find 72° using your protractor? Here's how. Put the center mark on the straight edge of the protractor on the middle of your circle. Mark the 0° on the **arc** or curve of your circle. You'll find it on the end of the straight edge. Then find 72° on the protractor and mark this on the circle as well. Now use your ruler to draw a straight line from the middle of the circle to the first mark and from the middle of the circle to the second mark. You will now have a 72° slice of the circle, or 20%. For your next slice, you will use one of the lines from the previous slice to line up your protractor before finding and marking the next angle.

Name _____

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Pies and Percentages - Learning About Pie Graphs Questions

A: How many zebras in the zoo?

The zookeeper was preparing a presentation for the mayor and the city council. He wanted to show them how the number of herbivores like zebra and hippos compared with the carnivores like lion and tigers. He decided that the best way to present the numbers would be to use a pie graph. First of all, he counted all the animals and wrote down the number of each species. Here are his figures

Zebras 20
Hippos 25
Buck 30
Lion 15
Tigers 10

This adds up to 100 animals altogether. Can you work out the percentage of the circle for each species? The first one has been done for you.

$$\text{Zebra: } \frac{20 \times 360}{100 \times 1} = 7200 \div 100 = 72^\circ$$

Hippos:

Buck:

Lion:

Tigers:

A: Draw your own pie graph.

Now use your compass and protractor to draw a pie graph for the zookeeper. Choose a color for each animal species and make a key to the graph.

Name _____

Date _____

Pies and Percentages - Learning About Pie Graphs Answers

Activity A

Zebra: 72°

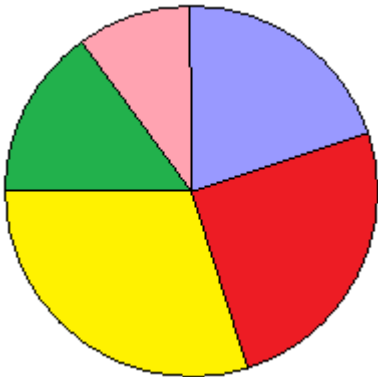
Hippos: 90°

Buck: 108°

Lion: 54°

Tigers: 36°

Activity B



Blue = Zebra

Red = Hippos

Yellow = Buck

Green = Lion

Pink = Tigers