

Lesson 2: According to my calculations, how much is 20%?

Student worksheet



Percent is a way of expressing a number as part of 100

The symbol for percent is %

To find 20% of a number, multiply that number by .20

Example: What is 20% of 10 km?

$$10 \text{ km} \times .20 = 2 \text{ km}$$

If your parents usually drive 10 km each day, but they decided to reduce their driving by 20% (which is 2 km), they will now be driving 8 km a day. This would save 2 km worth of tailpipe pollution!

Complete the following problems to practice your skills:

| | Number | X .20 | = 20% of the first number |
|---|--|----------------------|---------------------------|
| 1 | What is 20% of \$20.00 ? | \$20.00 X .20 | = \$4.00 |
| 2 | What is 20% of 50 kilograms? | X .20 | = |
| 3 | What is 20% of 100 kilometers? | X .20 | = |
| 4 | What is 20% of 200 litres of gas? | X .20 | = |
| 5 | What is 20% of 250 kilograms of carbon dioxide? | X .20 | = |
| 6 | What is 20% of 300 trees? | X .20 | = |
| 7 | What is 20% of 15 pages? | X .20 | = |
| 8 | What is 20% of 30 students? | X .20 | = |

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Teacher instructions

Introducing the activity

- Poll students to determine how many of them believe there is a connection between vehicle use and air pollution.
- Ask students what happens to the level of air pollution when we drive more?
- Have students imagine 100 cars lined up on a road. (*You may wish to use some sort of manipulative to represent 100 cars on a road.*) All of these cars are burning gas and producing carbon dioxide and other pollutants which end up in the air we breathe. Next, ask them to imagine that 20 of these 100 cars were taken off the road. How many cars would be left?
- How many cars stopped producing air pollution?
- So 20 of 100 cars (or 20 per cent of the cars) have stopped contributing to air pollution. Write the expression 20 of 100 on the front board three ways: 20 of 100, 20/100 and 20 percent (or 20%). Explain that each of these three expressions means the same thing but they are just written differently.
- Challenge students to tell you how they would represent the following as a percent:
 - 50 cars of 100 are taken off the road
 - 70 of 100 cars are taken off the road
 - 100 cars are taken off the road
- Ask them what they think would happen to our air if 100% of the cars were taken off the road?

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Teacher instructions (continued)

Ideas for teaching the worksheet

- Once you are comfortable that students are prepared to complete some percent problems on their own, challenge them to explain the title 20/20 The Way to Clean Air. (*It is a program that encourages people to reduce home energy use by 20% and vehicle use by 20%*).
- Percent can be used to calculate the quantity of a variety of objects including money, weight, and distance. Ask students if they have ever been in a store where there are items for sale, such as 25% off of something? Do they think they would be getting a better deal if they were getting 25% or 35% off?
- Copy and distribute Lesson 2: According to my calculations, how much is 20%? Ask students to locate the percent formula for you and to explain to you how it works.
- Lead them through this worksheet according to their ability.