

Finding the whole from a part

Review

So far in the percent unit we have

- Expressed fractions and decimals as percents
- Found the percent of a number

Today we will try to solve problems where we know the part, but not the whole.

Problem 1: Election Results

Danielle is doing a social studies project on politics. The electoral district around McNair is called Delta – Richmond East. A table shows that in this electoral district in the last federal election, 47 000 people voted. This represents a **voter turnout** of 60%, meaning that only 60% of the people who were **allowed** to vote actually **did** vote. How many people were **allowed** to vote? Hint: Start by using proportional reasoning to write the ratio that is 60%.

Problem 2: Original Price

Jeevan is buying a new phone. He pays \$200, including 5% GST. What was the original price of the phone? When you think you have an answer, check it by adding on 5% GST to the price to see if it equals \$200.

Problem 3: VAT in England

In some parts of the world, prices must always be shown **including** all taxes. For example, in the United Kingdom (which includes England), there is a tax called V.A.T. which is 15%, but it is always included in the price. If you were in England and you paid £12 for a new book, how much of this was VAT and what was the actual price of the book?

Problem 4: Recommended Daily Intake

On the side of Mr. McLellan's granola bars, it says that there are 21 grams of sugar per bar and that this represents 7% of the recommended daily intake of sugar. What is the recommended daily intake of sugar? If you choose a different item from home, does your calculation give the same result?

Problem 5: Airline Tickets

When buying an airline ticket, the price includes a lot of taxes and surcharges. If an airline ticket costs \$400, including 5% GST, 7% PST, \$50 insurance, \$10 security tax, and \$25 airport improvement fee, how much is the actual ticket price? Assume the taxes are calculated after all additional charges are added.

Enrichment Problem 6:

When money is put into a bank account, a certain percentage of the money is added to the bank account each year. This percentage is called the "interest rate". For example, if the interest rate of a bank account is 5%, then if you put in \$100 at the beginning of the year, at the end of the year the bank will put in \$5 (basically to thank you for letting them use your money).

- a) If you put in \$100 into this bank account, how much money will be in it in ten years?
- b) In a different account (but still with 5% interest) some money is put in. After three years there is \$173 left in the bank account. How much was in this bank account to begin with?

Enrichment Problem 7:

If you know the final price of an item subject to tax at a rate of $x\%$, what number can you always **divide** by to find the original price?