



Problem of the Week

Problem B and Solution

That's a Lot of Water

Problem

When you buy items, you “use” water from wherever those items were grown and/or produced. This water is called “virtual” water, but the water is in fact very real. According to data from The World Counts, the amount of virtual water you use on average when you buy four different items is shown in the table.

Item	Amount of Virtual Water (L)
one cotton t-shirt	2500
one sheet of printer paper	10
one bag of chocolate chips	7200
one hamburger	1800



- Juan bought 6 cotton t-shirts, 500 sheets of printer paper, 5 bags of chocolate chips, and 15 hamburgers last year. Draw a bar graph to compare the amount of virtual water he used last year for each of the four items.
- Calculate the total amount of virtual water used for all the items in your graph from (a). On average, a 10 minute shower uses 200 L of water. How many 10 minute showers would it take to use that much water?
- In this activity we looked at the amount of virtual water used to produce four different items, but we use virtual water when we buy anything. What are some ways you can reduce the amount of virtual water you use?

Solution

- First we calculate the total amount of virtual water Juan used for each of the items.

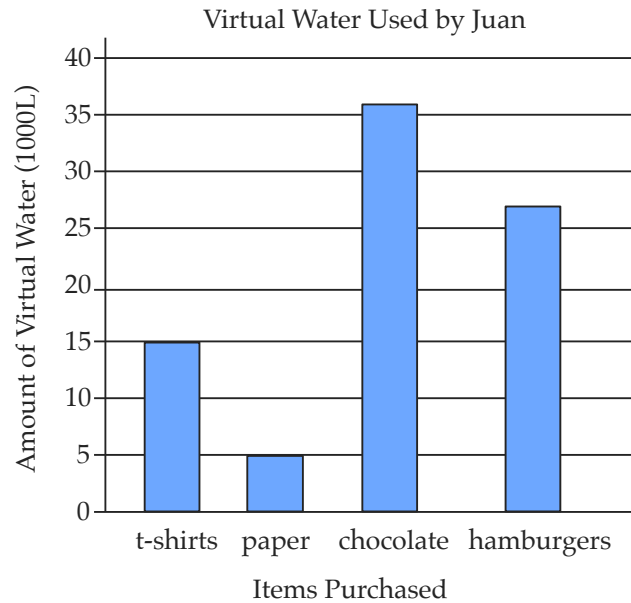
$$\text{t-shirts: } 2500 \times 6 = 15\,000 \text{ L}$$

$$\text{paper: } 10 \times 500 = 5000 \text{ L}$$

$$\text{chocolate chips: } 7200 \times 5 = 36\,000 \text{ L}$$

$$\text{hamburgers: } 1800 \times 15 = 27\,000 \text{ L}$$

The graph is shown below.



- (b) To get the total amount of virtual water, add the four amounts we calculated in part (a).

$$15\,000 + 5\,000 + 36\,000 + 27\,000 = 83\,000$$

So 83 000 L of virtual water was used in total. To calculate the number of showers, we will divide this number by 200.

$$83\,000 \div 200 = 415$$

So it would take 415 showers to use that much water, on average.

- (c) There are many ways we can reduce the amount of virtual water we use. Some of the ways are listed below.

- Take care of clothing so it lasts longer
- Buy secondhand items whenever possible
- Use paper only when necessary, and use both sides of the paper whenever you can
- Start a garden to grow your own fruits and vegetables
- Repair broken items instead of buying new ones