

Kidney Filtering Activity – Filtering Worksheet

How Much Does the Kidney Filter?

The kidneys are almost as busy as the heart! They process 45 liters of blood per day and remove about 1.5 liters of waste per day. Over a lifetime that can really start to add up.

- 1) What if you wanted to find out how many liters of blood the kidneys processed in one year?

You need to multiply the number of liters of blood the kidneys process in a day 45 and the number of days in one year 365 to get the number of liters of blood processed in one year.

$$\underline{45} \times \underline{365} = \underline{16425} \text{ liters of blood}$$

- 2) What if you wanted to find out how many liters of waste the kidneys removed in one year?

You need to multiply the number of liters of waste the kidneys removed in a day 1.5 and the number of days in one year 365 to get the number of liters of waste the kidneys remove in one year.

$$\underline{1.5} \times \underline{365} = \underline{547.5} \text{ liters of waste}$$

- 3) What if you lived to be one hundred years old? How many liters of blood will your kidneys have processed?

$$\underline{16425} \times \underline{100} = \underline{1,642,500} \text{ liters of blood}$$

- 4) What if you lived to be one hundred years old? How many liters of waste will your kidneys have removed?

$$\underline{547.5} \times \underline{100} = \underline{54,750} \text{ liters of waste}$$

Math Challenge

- 5) 45 liters is about 12 gallons. Can you figure out how many gallons of blood the kidneys process in a day? In one year? 100 years?

$$\underline{45} = \underline{12} \text{ gallons in one day}$$

$$\underline{12} \times \underline{365} = \underline{4,380} \text{ gallons in one year}$$

$$\underline{4,380} \times \underline{100} = \underline{438,000} \text{ gallons in 100 years}$$

- 6) 1.5 liters is about 0.4 gallons. Can you figure out how many gallons of waste the kidneys remove in a day? In one year? 100 years?

$$\underline{1.5} = \underline{0.4} \text{ gallons in one day}$$

$$\underline{0.4} \times \underline{365} = \underline{146} \text{ gallons in one year}$$

$$\underline{146} \times \underline{100} = \underline{14,600} \text{ gallons in 100 years}$$