

L4 Approximating quotients

4.1 Approximating quotients

Sometimes we do not need to find exact answers, approximate ones will do. In this lesson we will learn how to approximate quotients in division problems.

Consider the following examples:

Example 1: ABC Supermarket sells rice at Rs. 205 for 5 kg, and XYZ supermarket sells the same type of rice at Rs. 200 for 6 kg. Which is the better buy?

To find out the price per kg of rice at each store, we need to perform the following divisions:

$$205 \div 5, \text{ and } 200 \div 6$$

Comparing the second division to the first, the dividend is lower ($200 < 205$) and the divisor is higher ($6 > 5$). Therefore the quotient of the second division is lower. XYZ supermarket is offering a better price on rice.

Example 2: ABC Supermarket sells rice at Rs. 205 for 5 kg, and PQR wholesale sells the same type of rice at Rs. 800 for 20 kg. Which is the better buy per kg?

In this case, we cannot apply the same principle as in example 1. The dividend and divisor are greater in the second case.

Observe the second division $800 \div 20$. We can simplify by dividing both the dividend and divisor by 10. $800 \div 20 = 80 \div 2$

We know that $2 \times 4 = 8$. Hence $2 \times 40 = 80$. Price per kg of rice at PQR wholesale is Rs. 40.

Now observe the first division.

$205 \div 5$. Is the quotient more than 40 or less than 40?

We know that $5 \times 4 = 20$, and hence $5 \times 40 = 200$ i.e. $200 \div 5 = 40$

205 is greater than 200, so the result of $205 \div 5 > 200 \div 5$

So rice costs per kg more at ABC supermarket.

Example 3:

$$736 \div 20 = n.$$

20 times what is about 736?

$$20 \times 3 = 60$$

$$20 \times 30 = 600$$

$$20 \times 40 = 800$$

736 is closer to 800 so the approximate quotient of $736 \div 20$ is between 30 and 40, but is closer to 40.

Example 4: $2563 \div 50$

50 times what is about 2563?

$$5 \times 5 = 25$$

$$50 \times 5 = 250$$

$$50 \times 50 = 2500$$

$$50 \times 60 = 3000$$

The quotient of $2563 \div 50$ is between 50 and 60, and is closer to 50 because 2563 is closer to 2500 than 3000.

4.1.1 Find or approximate the quotients. Show your working.

a. $417 \div 60$

b. $326 \div 40$

c. $3260 \div 40$

d. $3261 \div 40$

e. $544 \div 90$

f. $5440 \div 90$

g. $5447 \div 90$

h. $54,470 \div 90$

i. $622 \div 7$

j. $622 \div 70$

k. $6225 \div 70$

l. $139 \div 50$

m. $13,967 \div 50$

n. $714 \div 30$

o. $7149 \div 30$

p. $7149 \div 60$

q. $80 \div 19$

r. $800 \div 19$

s. $816 \div 19$

t. $8164 \div 19$

u. $352 \div 60$

v. $352 \div 58$

w. $3528 \div 58$

x. $3572 \div 61$

End of L4