DIVISION: DIVIDING INTO SMALLER PARTS

Division is used to split groups up into smaller sections. Suppose there are 24 pairs of gloves in the storage locker and you want to distribute them evenly among 8 crewpeople. How many pairs of gloves would each crewperson receive. Dividing 24 by 8 yields 3; each crewperson would receive 3 pairs of gloves. Some words and symbols often seen in division are *divided by*, *into*
, the symbol "÷",and the symbol "/". Just as multiplication is thought of as repeated addition, division can be thought of as repeated subtraction.

Some terms used in division include:
Divisor - the number by which a larger number is divided.
Dividend - the sum or amount to be divided and distributed.
Quotient - the number resulting from the division of one number by another .
Remainder - the number left after division that is smaller than the divisor.

In the equation b/a = c, b is the dividend, a is divisor, and c is the quotient.

Example 1- There are 20 nozzles for 5 engines. If the nozzles were to be divided evenly for the engines, how many nozzles would go on each engine?

20 - 5 = **15** - 5 = **10** - 5 = **5** - 5 =**0**. In this case, 5 was subtracted from 20 a total of 4 times. Th e answer to 20 divided by 5 is written as 20 ÷ 5 = 4

Example 2 - Divide 15 by 4.
15 - 4 = **11** - 4 = **7** - 4 = **3**
Because 4 cannot be subtracted from 3, the 3 is called the remainder and is noted by the symbol "R".

The remainder is never larger than the divisor. The divisor in this example is 4. So, 15 / 4 = 3 R 3

If these were fifteen nozzles for four engines on your district, four nozzles would go on three engines and only three nozzles would go on the last engine.

LONG DIVISION FOR LARGER NUMBERS

Long division can be used when working with larger numbers. Here the repeated subtraction is done in a different way. To divide, start from the digit of highest place value and finish with the digit in the lowest place value. At each step, ask if there are multiples of the number in the answer.

Example 3 - Divide 3654 by 5.

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5 )3654
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   7  |
5)3654
  3500
   154
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   730
5)3654
  3500
   154
   150
     4
```

Step 1. Start with the thousands digit in the number being divided. 5 is larger than 3, so move to the next step.

Step 2. Look at the hundreds place. Can 5 go into 36? Yes: 7 × 5 = 35. Fill in the ones and tens places with "0"s and subtract.

Step 4. Go to the tens place of the remainder (the number 154) that was subtracted in the previous step. Can 5 go into 15? Yes: 5 × 3 = 15. Fill in the "0" in the ones place and subtract

Step 5. Go to the ones place. Can 5 go into 4? No. 4 is smaller than 5. Put a "0" in the ones spot of the answer. There is a remainder of 4.

The answer to 3,654 ÷ 5 is written 730 R 4
To check the answer to this long division problem, multiply 730 × 5 to give 3,650. Adding the remainder of 4 gives 3654. The original dividend was 3654, so the answer is correct.

Dividing signed numbers

Dividing signed numbers follows the same general rules as multiplication. When dividing any two numbers having the same sign, the answer is positive, while that of two numbers of opposite sign is negative. When dividing numbers with like signs, the answer is positive.When dividing numbers with unlike signs, the answer is negative.

20 ÷ (-4) = -5
48 ÷ (-8) = -6
-100 ÷ (-10) = 10
-49 ÷ 11 = -4 R 5

PRACTICE

1. 481 / 35

13 R 26
13.74
64
26.2

Select the correct answer.

2. 1604 ÷ (-92)

-27 R 2
17 R 40
-17 R 40
17.4

Select the correct answer.