Math 2 Classwork 15

Warm Up

1

a) Put all weights in order from the lightest to heaviest:

2kg 100g, 1kg 900g, 550g, 55kg, 5,500g, 5kg 50g

____

b) Put all lengths in order from the largest to smallest:

5m 5dm, 550dm, 555cm, 5dm 5cm, 505cm

____

2

Enter in a missed number to make an equation correct:

23 + 24 + ___ = 80 23 + ___ + 32 = 80 23 + ____ + 15 = 80

3

Calculate smartly (the most convenient way):

158 + 217 + 42 = 228 +118 + 82 = 294 + 106 – 94 =

Homework Review

4

What types of angles are formed by the hour hand and the minute hand on the clock face at the following times (right, obtuse, acute, straight) ?

a) 3 o'clock - angle ________ b) 4 o'clock - angle ________

c) half past 9 - angle ________ d) 11 o'clock - angle ________

5

What is the greatest number you can write in the box?

☐ + 8 < 12   11 – ☐ > 6   14 + ☐ < 20

100 > ☐9   ☐3 < 32   51 > 5☐

New Material I

Multiplication

Question: if we have 4 cars, and there are 3 persons in each car, how many people do we have altogether?

The answer can be obtained either by adding four times 3: 3 + 3 + 3 + 3 =12
or by using operation of multiplication:
Instead of writing 3 + 3 + 3 + 3 (4 times), we write **3 × 4**
The simple multiplication can be understood intuitively as a repeated addition.

6

Express the sum as a multiplication (do not calculate):

2 + 2 = ________   3 + 3 = ________   100 + 100 = _________

Conclusion: Multiplication by 2 doubles any numbers.

7

Each group of coins contains 4 coins and there are 5 groups.

Altogether there are $\underbrace{4 + 4 + 4 + 4 + 4}_{\text{5 times}} = 20$ coins

Counting the same coins by multiplication yields: **4 × 5 = 20**

8

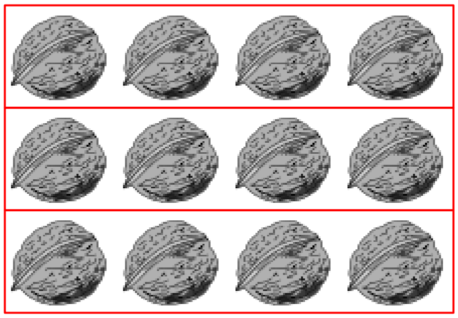
Compare without calculating the values:

2 + 2 + 2 + 2 ___ 2 × 5   3 × 4 ____ 4 + 4 + 4   3 × 4 ____ 3+ 3 + 3

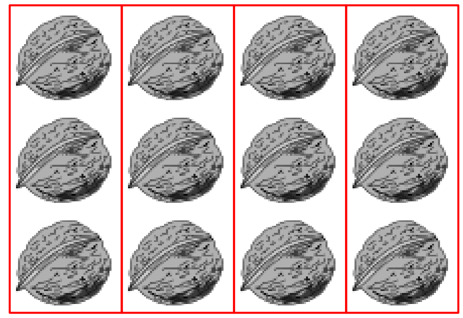
3 × 4 + 4 ____ 4 + 4 + 4   5 × 3 ___ 5 + 5 × 2   4 × 5 ____ 2 × 5 + 2 × 5

9 How many walnuts? Is the number of walnuts the same on both pictures?

A



B



Objects in rectangular arrays:

If we have walnuts arranged in 3 rows and 4 columns, we can get the total number of walnuts in two ways:

a) By rows: (4 walnuts in each row) x (3 rows) = **4 × 3 = 12** walnuts

b) By columns: (3 walnuts in each column) x (4 columns) = **3 × 4 = 12** walnuts

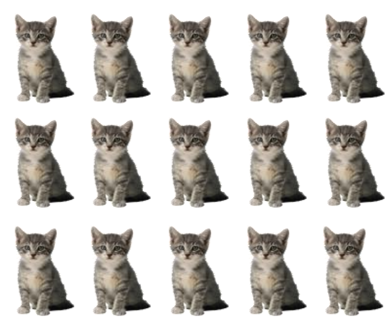
The answer will be the same, no matter which way we use.

4 × 3 = **3 × 4** = **12**

10 Calculate the number of kittens using multiplication:

a) by row _________________

b) by column: _____________



Multiplying two whole numbers gives a ***product***. The numbers that we multiply are ***the factors of the product.***

Example: 3 × 4 = 12 therefore, 3 and 4 are the factors of 12.

Also 2 × 6 = 12, so 2 and 6 are also factors of 12,

And 1 × 12 = 12, so 1 and 12 are factors of 12 as well.

11 a) In each equation, underline the factors of the products and circle the products.

$1 \times 5 = 5$ $2 \times 5 = 10$ $1 \times 5 = 5$ $4 \times 5 = 20$

b) Express each multiplication is a repetitive sum.

Example: $2 \times 5 = 5 + 5 = 2 + 2 + 2 + 2 + 2$

$1 \times 5 =$ ___________________________

$3 \times 5 =$ ___________________________

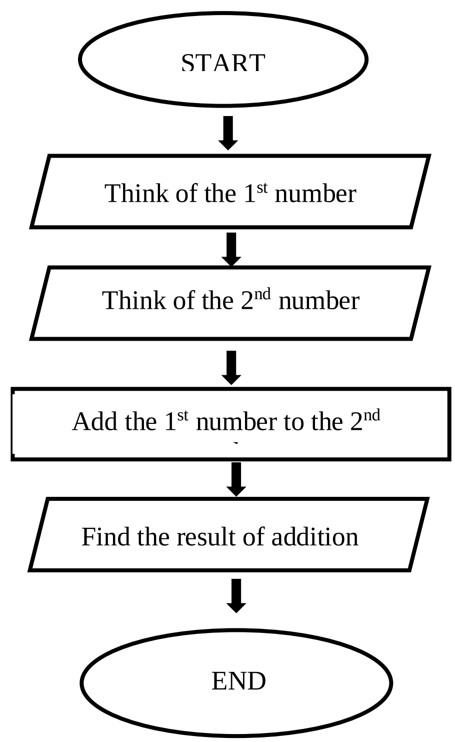
$2 \times 6 =$ ___________________________

REVIEW I

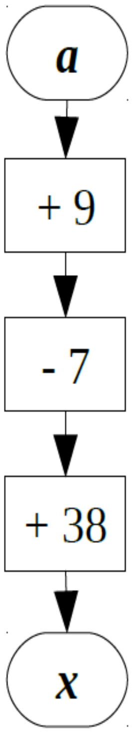
A linear algorithm is a step-by-step instruction, and the order of those instructions is essential.

A Cycling algorithm: In some programs, certain steps are performed again and again based upon the conditional test, i.e., performed more than one time. Those steps are called a loop.

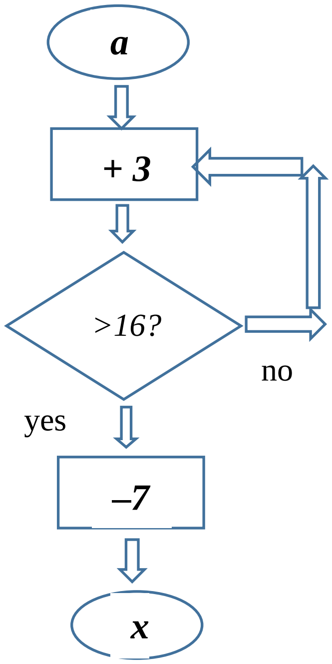
12 Example of the Linear algorithm.



13 Perform the actions according to the algorithms in the drawing below.
Which of these algorithms is linear and which one is cycling? Explain.



a	5	14	20
x			



a	5	14	20
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REVIEW II

1. Adding number to a sum *(33 + 74) + 26 = 33 + (74 + 26) = 33 +100 = 133*
2. Subtracting number from a sum *(137 + 92) – 37 = (137 – 37) + 92 = 100 + 92 = 192*
3. Subtracting a sum from a number *128 – (28 + 14) = (128 – 28) - 14 = 100 - 14 = 86*

14 Calculate smartly (the most convenient way):

75 – (34 + 25) =

91 – (71 + 15) =

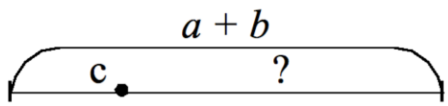
(29 + 36) – 19 =

(13 + 57) – 47 =

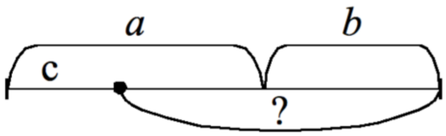
2 + (36 + 98) =

15 There were ***a*** liters of water in the 1st bucket and ***b*** liters of water in the 2nd bucket. A gardener used ***c*** liters of water to water his garden. How many liters of water remained in both buckets total?

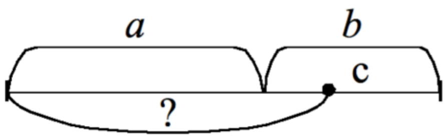
There are three different methods to solve this problem. Let's consider each of them.



Method I : $(a + b) - c$



Method II : $(a - c) + b$



Method III : $a + (b - c)$

$$(a + b) - c = (a - c) + b = (b - c) + a = a + b - c$$

Did you know …

Algorithms have a long history. The word can be traced back to the 9th century.

At this time, the Persian scientist, astronomer, and mathematician Abdullah Muhammad bin Musa al-Khwarizmi, often cited as "The father of Algebra," was indirectly responsible for creating the term "Algorithm." In the 12th century, one of his books was translated into Latin, where his name was rendered in Latin as "Algorithm." But this was not the beginning of algorithms.

In 1600 BC - Babylonians develop the earliest known algorithms. The concept of the algorithm was formalized in 1936 through Alan Turing's Turing machines, which in turn formed the foundation of computer science.