Math 2 Classwork 14

Test Review

1 Solve for x:

$x + 6 = 89$ $87 - x = 37$

2 Use the properties of addition to rewrite each addition fact (to make the calculation easier):

(66 + 48) + 34 = (36 + 81) + 19 =

82 + 36 – 12 = 77 – 18 + 23 =

3 a) One side of a triangle is 3m 4dm 8cm, the second side is 2 dm, and the third side is 4m 2cm. What is the perimeter of the triangle in centimeters?

P =_____

b) A rectangle is 1m 25cm long and 3dm 5cm wide. What is the perimeter of the rectangle in centimeters?

P =_____

4. Write down the expressions and find their values:

a) subtract 39 from the sum of 47 and 18 _____

b) add 29 to the difference between 80 and 27 _____

5. Open parentheses, simplify the expressions:

(a + b) – (c + a) =_____

b + (a – b + c) =_____

Homework Review

Solve the problem:

Winnie the Pooh and Piglet went to visit their friend Rabbit. While there, Piglet ate 48 spoons of honey, and Winnie the Pooh ate 254 spoons more than Piglet. If Winnie the Pooh eats 300 spoons of honey, he cannot pass through the Rabbit's hole.

How many spoons of honey did he eat? _____

How many fewer spoons of honey should he eat to be able to pass through the Rabbit's hole?

_____

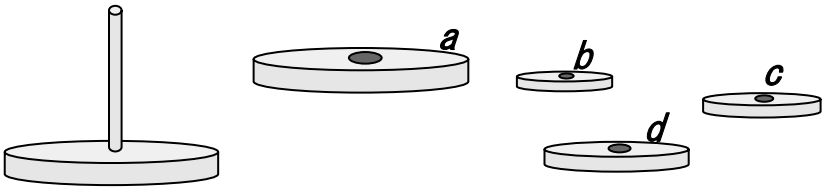
_____

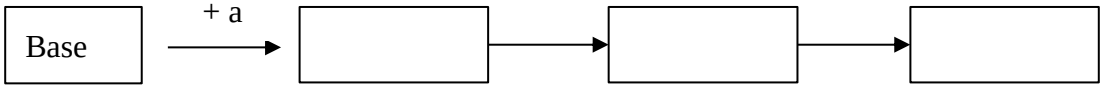
New Material I

An algorithm is a set of instructions designed to perform a specific task. This can be a simple process, such as multiplying two numbers, or a complex operation, such as playing a compressed video file.

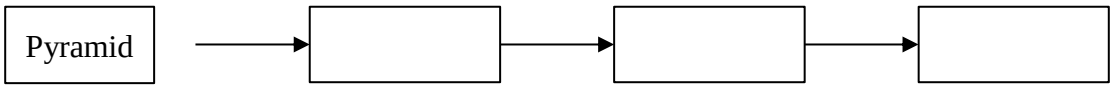
Examples: Any kind of instructions from how to build paper airplanes to how to plant flowers, from rules on how to add numbers to programming. The internet, your Wi-Fi, smartphone, phone, computer, router, satellites, almost everything that has a computer inside uses these algorithms in one way or another to function.

4 a) Write an algorithm for putting the toy together so the size of the pieces gets smaller towards the top.





b) Write the algorithm for taking the toy apart.



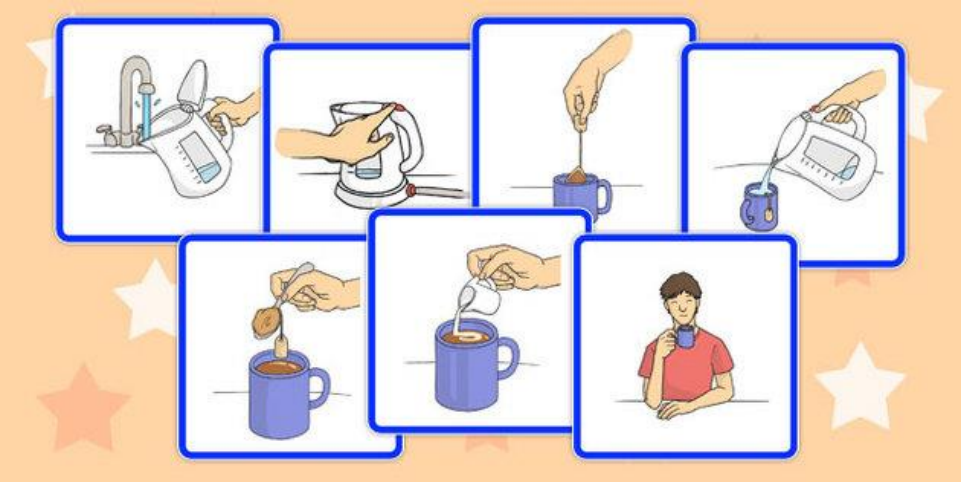
5 The following list represents the steps needed in order to mail a letter. Put the items on the list in the correct order.

- Put the letter in the mailbox _____
- Take a letter, an envelope and a stamp _____
- Stick the stamp _____
- Go outside to a mailbox _____
- Put a letter inside an envelope _____
- Write a letter _____
- Write address on the envelope _____
- Fold a letter _____

When the algorithm lists the operations from first to last, after performing the last one, we stop.
Such algorithms are called **linear**.
Some algorithms ask that when you reach the last instruction, you go back to the beginning. Such algorithms are called **cycling**.

Example: Algorithm for downhill skiing: every time you get down to the base, you go to a lift to get back up on the mountain. You repeat this cycle until it's time to go home.

6 Let's consider a tea making algorithm.
Write algorithms for making one cup of tea for one guest (**linear**) and for many guests (**cycling**).



a) Steps for making a cup of tea for one guest: _____

_____

b) Steps for making a cup of tea each of the 8 guests: _____

_____

7

Make a "Get Ready for the School" algorithm.

Make one for the in-person days and another one for a remote day.

Which steps of the algorithm could be switched?_____

Which steps could not be switched? _____

What steps can be removed? _____

What other steps can be added? _____

- ___ Eat breakfast
- _1_ Wake up
- __ Get dressed
- __ Comb hair
- __Brush teeth
- __ Prepare a backpack
- __ Make up a bed
- __ Do morning exercises
- __ Go to the bus stop

REVIEW

8

Solve the first row of problems. Using the answers and a mental math, solve the 2nd and 3rd rows.

328 + 70 – 95 = _____ 200 – 78 – 86 = _____ 689 – 314 + 180 = _____

328 + 72 – 95 = _____ 200 – 69 – 86 = _____ 690 – 314 + 179 = _____

328 + 73 – 96 = _____ 300 – 69 – 86 = _____ 690 – 313 + 179 = _____

9

Calculate:

a) 20 – 4 – 5 = _____ b) 20 – (4 + 5) =_____

c) 20 – (4 + 5 + 6) = _____ d) 20 – 4 – 5 – 6 = _____

Why did you get the same result for a and b?
Why did you get the same result for c and d?

10

Math puzzles:

a) Mike thought of a number. When he added 45 to the number, then subtract 80, he got 915.
Which number did Mike think of? _____

b) Sophie thought of a number. When she subtracted 615 from it and then added 65, she got 200.
What number did Sophie think of? _____

c) Boris thought of a number, subtracted it from 770 and got 330. Which number did he think of?

_____

New Material II

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.

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

2 + 2 = _____ 3 + 3 = _____ 100 + 100 = _____

Conclusion: Multiplication by 2 doubles any numbers.

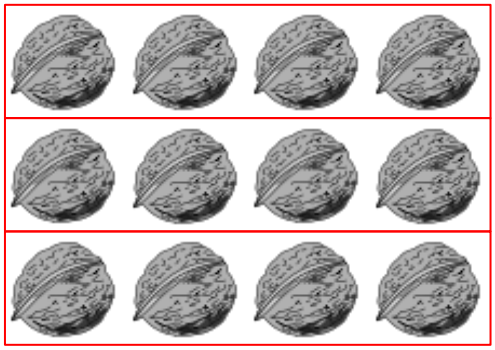
12 Each group of coins contains 4 coins and there are 5 groups.

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

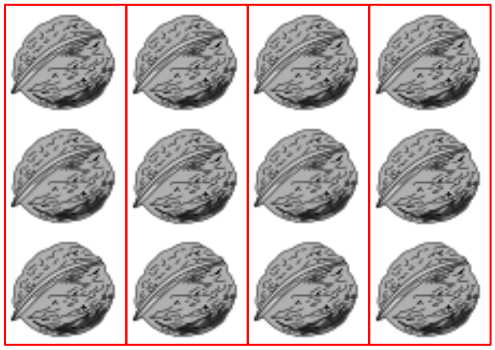
Counting the same coins by multiplication yields: **4 × 5 = 20**

13 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 x 3 = 12** walnuts

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

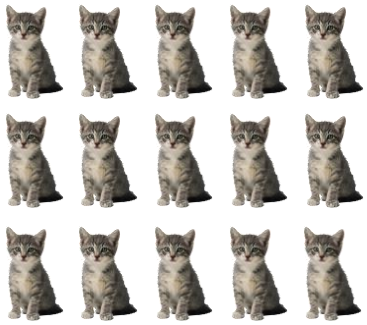
The answer will be the same, no matter which way we use.

4 x 3 = 3 x 4 = 12

14 Calculate the number of kittens using multiplication:

a) by row _____

b) by column: _____



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.