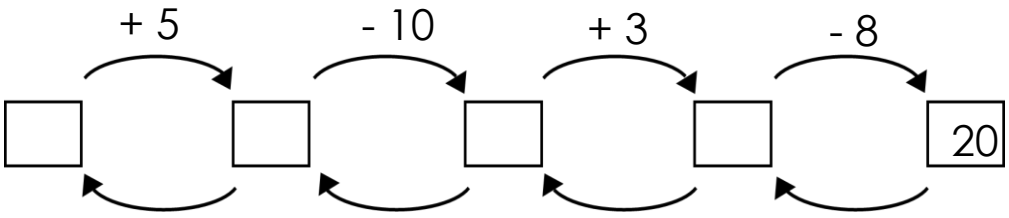
Lesson 6

Order of Operation. Polygonal Chain.

1 "I think of a number" game with Little Joe.

LJ thought of a number. He added 5, subtracted 10, added 3, subtracted 8, and got 20. What was the number LJ think of?



2 **In your notebook,** solve the equations and write you solutions similarly to the example. Copy your answers here. Make drawings if needed.

x + 23 = 32	27 – **y** = 19	**z** – 15 = 16
X =	y =	z =

3 Jake the Mouse thought of an animal. What animal is it?

37	58	37	91	83	88	17	15

64 +27	64 -27	73 +15	73 -15	49 +34	49 -34	55 +38	55 -38
P	E	A	L	H	T	K	N

Order of operations

Records showing that operations need to be done are called **expressions.** They **DO NOT** contain comparison signs >, < or =.

4 Write expressions.

a) There are 5 books in a box and 6 in another. How many books are in both boxes?

_____

b) There are 7 liters of milk in two jars. The smaller jar contains 2 liters. How many liters are in the larger jar?

_____

5 How many operations are in each of the expressions below?

8 – 3 + 1 ◯	9 – 3 ◯	12 + 4 + 7 ◯
9 – 7 ◯	13 + 19 – 21 + 7 ◯	34 – 19 + 9 + 42 ◯
52 – 49 + 7 – 24 ◯	21 + 14 ◯	15 + 17 – 22 ◯

Does the order of operations matter?

6 Try to evaluate expression "**8 – 1 + 2**" in two ways and compare the results:

Method 1:

1. Subtract 1 from 8: 8 – 1 = _____

2. To the result add 2: ___ + 2 = ___

Method 2:

1. Add 1 and 2: 1 + 2 = _____

2. Subtract the result from 8: 8 – ___ = ____

Is the result the same? ___

In some cases, changing the order of operations affects the result. By agreement, operations of addition and subtraction are performed from left to right in the order they are written.

7 Mark the order of operations and find the result.

① ②
12 – 4 + 3 =

22 – 4 – 4 + 1 =

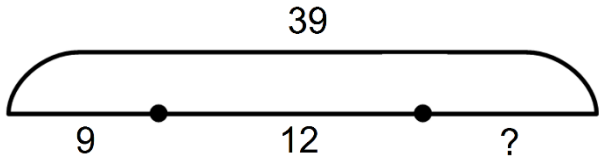
14 + 1 – 10 =

49 + 3 – 7 =

29 – 7 + 3 =

83 – 1 – 1 – 1 =

8 A big barrel contains 39 liters of water. If Little Joe takes away 9 liters of water and Jake the Mouse takes away 12 liters, how much water will be left in the barrel?



What do we know?

_____

What do we need to find?

_____

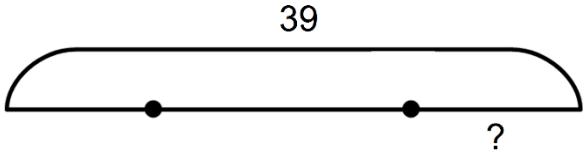
What operation do we need to use to find it?

_____

What is the answer?

_____

Next time Little Joe takes away 9 liters of water and Jake the Mouse takes away 12 liters more than Little Joe, now much water will be left now in the barrel?



What do we know?_____

What do we need to find?_____

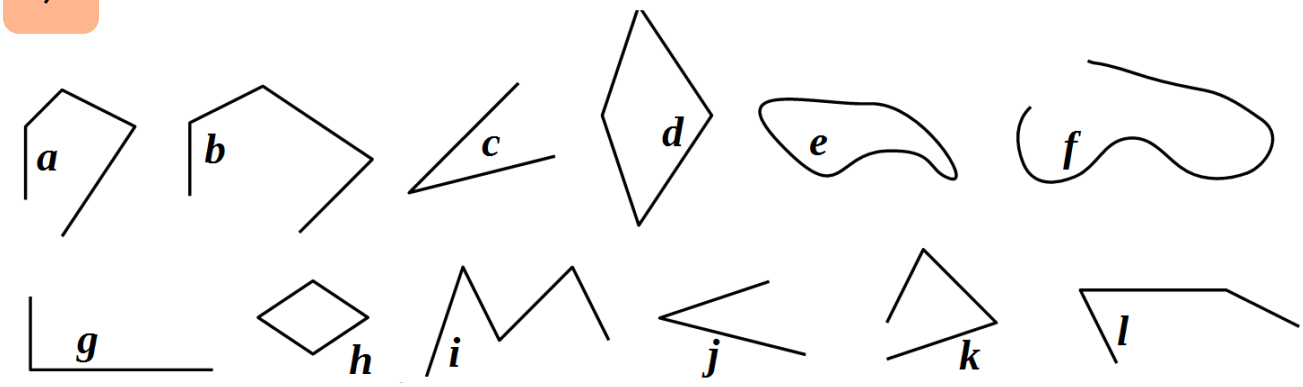
What operation do we need to use to find it?_____

What is the answer?_____

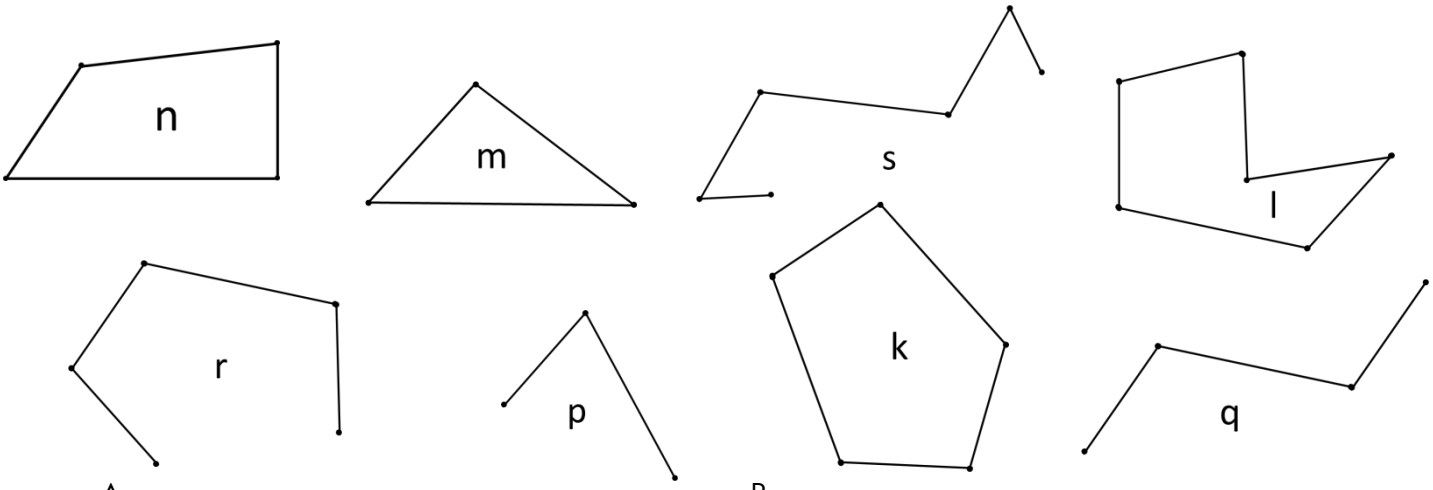
Polygonal Chain

What happened if we connect several line segments so each two of them will have one common endpoint? Such a figure called a **polygonal chain**. Any polygonal chain consists of **segments** and **vertices**.

9 Can you circle all figures made from segments?



10 Look at the polygonal chains on the drawing. How many segments and vertices do they have each? Fill the tables below and compare results for Table A and Table B.



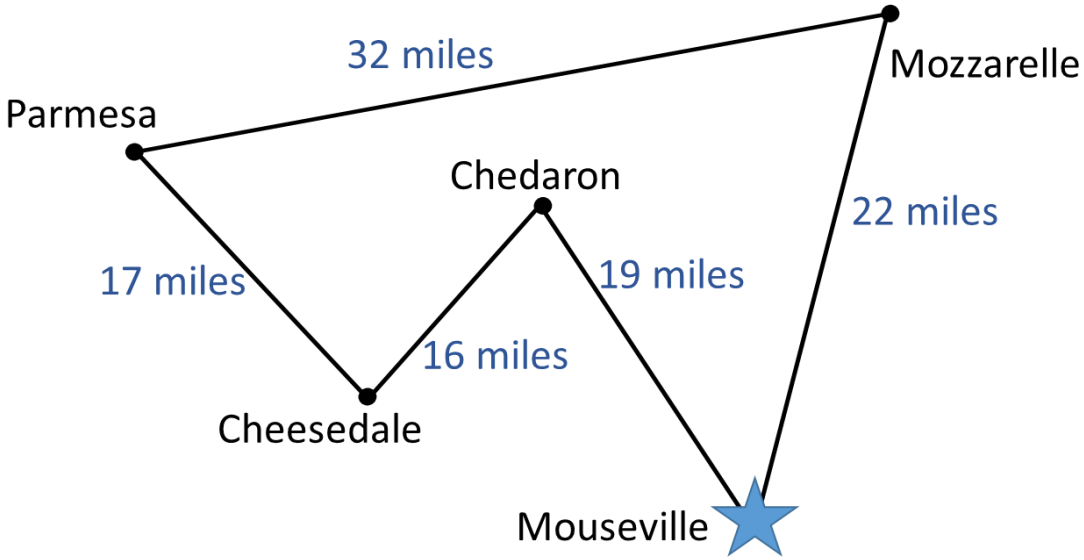
A.

Chain	Number of segments	Number of vertexes
s		
r		
p		
q		

B.

Chain A.	Number of segments	Number of vertexes
m		
n		
k		
l		

11 The mice brothers live in Mouseville.



1) Last Sunday, Pop Eye and Foxy Tail went to the Chedaron museum of Cheese and Little Joe went to Mozzarelle to see the famous "Cheese hole" sculpture. Whose trip was the shortest? How much shorter?

_____

2) If Jack the Mouse trip to the beautiful planes of Cheesedale will take place, will it be longer or shorter trip comparing to his brothers' trips? How long this trip will be?

_____

3) Four brothers plan a trip to Parmesa to see their grandmother. How can they get to Parmesa? What is the shortest way?

_____