Lesson 7. Classwork

WARM-UP

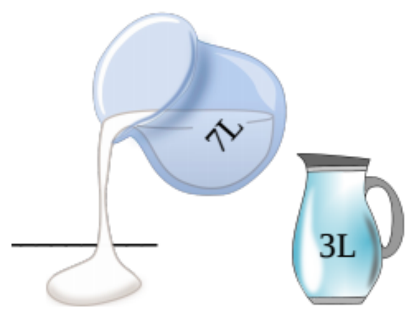
1. Compare without calculating:

57 + 29 □ 57 + 30	57 – 29 □ 57 – 30	58 + 30 □ 59 + 29
65 + 18 □ 65 + 20	65 + 18 □ 63 + 18	65 + 18 □ 64 + 19
47 + 18 □ 50 + 15	47 – 16 □ 47 – 19	80 – 19 □ 81 – 20

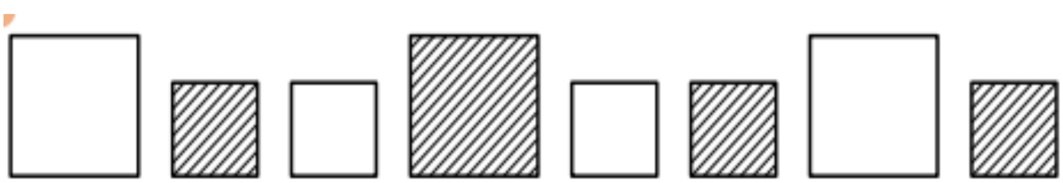
2. There are two jars: a 7-liter and a 3-liter. Explain the meaning of the following expressions:

7 + 3 ________________________________

7 – 3 ________________________________



3. Continue pattern – add 3 more rectangles.



4. Fill in the missing digits:

$$\begin{array}{r} 8\square \\ +\ \square 5 \\ \hline 97 \end{array} \qquad \begin{array}{r} \square 3 \\ +\ 3\square \\ \hline 42 \end{array} \qquad \begin{array}{r} 38 \\ +\ \square\square \\ \hline 98 \end{array} \qquad \begin{array}{r} \square\square \\ +\ 14 \\ \hline 70 \end{array}$$

REVIEW

5. **Solve:** Walter had 8 marbles. Then Lamont gave him some more marbles. Walter has 17 marbles now. How many marbles did Lamont give him?

Given: ____

Problem: ___________________________________

____

____

_______________ **Answer:** Lamont gave Walter

6.

Solve according to the example above:

a) There are twelve girls in a class of 25 students. How many boys are in the class?

Given:____

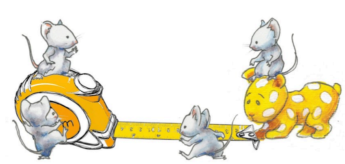
Problem:____________________________

____

____

_______________ Answer:____________________________________

7. Express in cm and calculate:



3 dm 7 cm + 5 dm 9 cm = ____________________________

4 dm 2 cm – 2 dm 5 cm = ____________________________________

2 dm 6 cm – 19 cm = _______________________________________

7m 1dm + 1m 5 cm = _____________________________

NEW MATERIAL

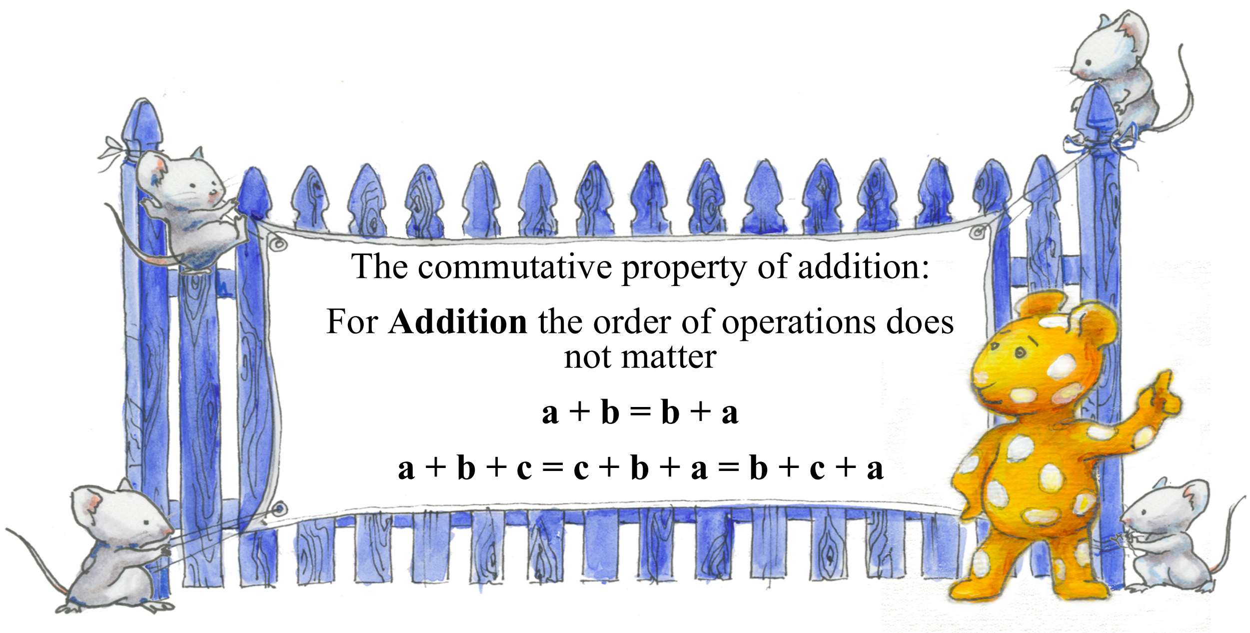
Commutative Property of Addition

Look at the equality: 30+10+5 =

1) First 30+10, than add 5 =_____

2) First 10+5 , than 30 + result =_______

Are the results the same?___________Which is the correct way?____________



8.

Calculate using commutative property of addition:

6 + 15+ 4 = _____________=_____ 17+7+13+3=_______________=_______

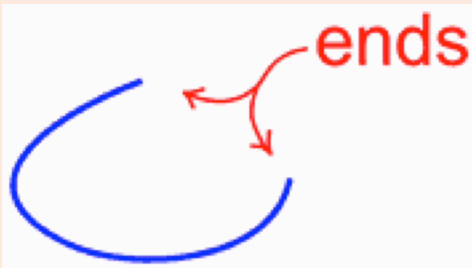
2+21+19+8 = __________=_______ 1+35+19+5=_______________=_______

17+41+3+19 = __________=_____ 28+13+12+7=______________=_______

Polygonal chain, shapes.

Curves can be "open" and "closed".

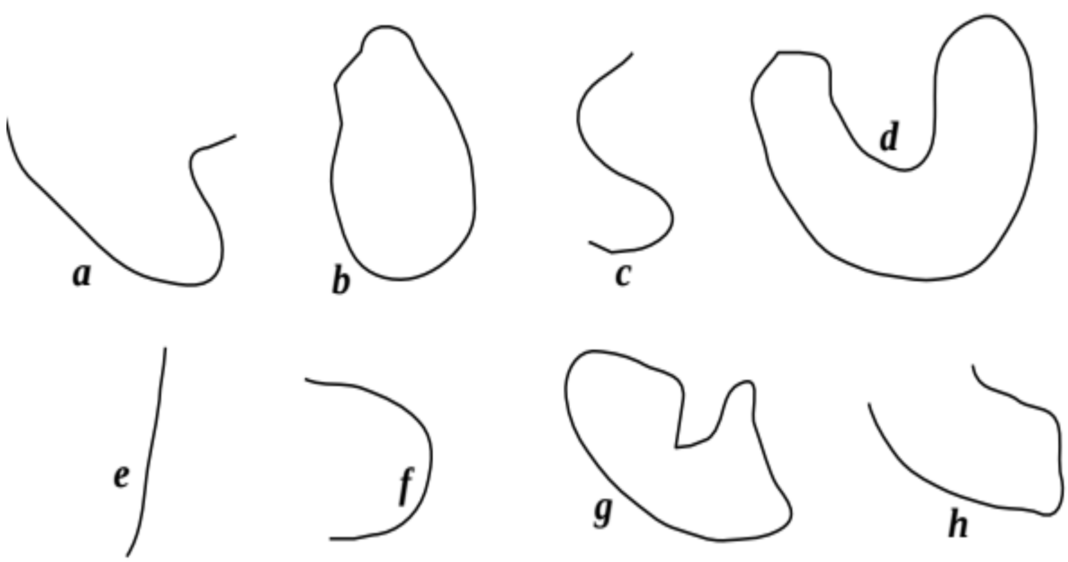
Open curve is a curve with end points (in other words, the ends don't join up).



Close curve has no end points.

8. Find all closed curves. List all closed curves you found here: _______________

List here all open curves: _________________ Using your pencil, make all "open" curves "closed".



Lesson 7

Polygonal chain, shapes.

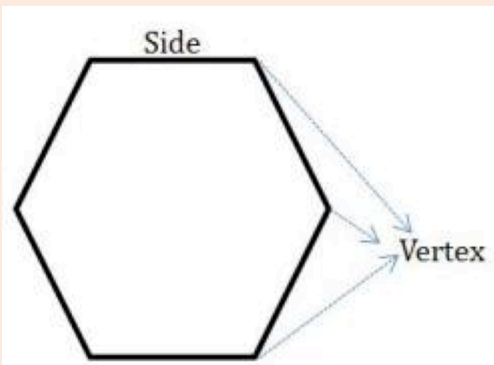
In geometry, a **polygonal chain** is a connected series of line segments.

Polygonal chain can be "open" or "closed".

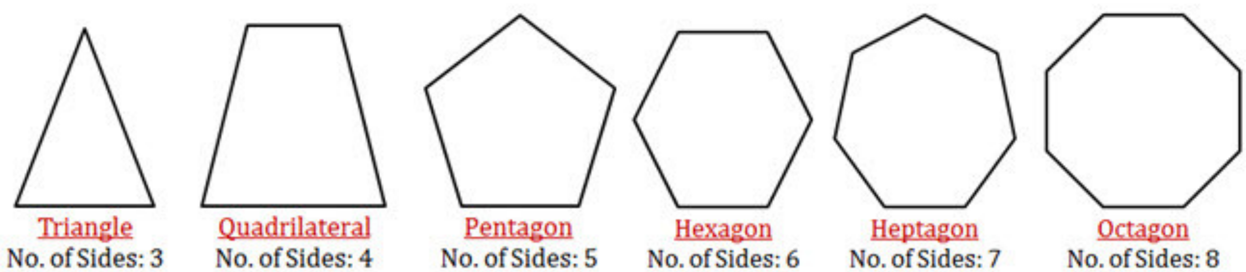
If three or more line segments form a closed loop it is called **Polygon.**

- The line segments forming the polygon are called sides.
- The point of junction of two line segments is called a vertex.

Number of vertices of a polygon is equal to the number of line segments or sides.



Different types of polygon:



Polygon

(straight sides)

NOT a Polygon

(has a curve)

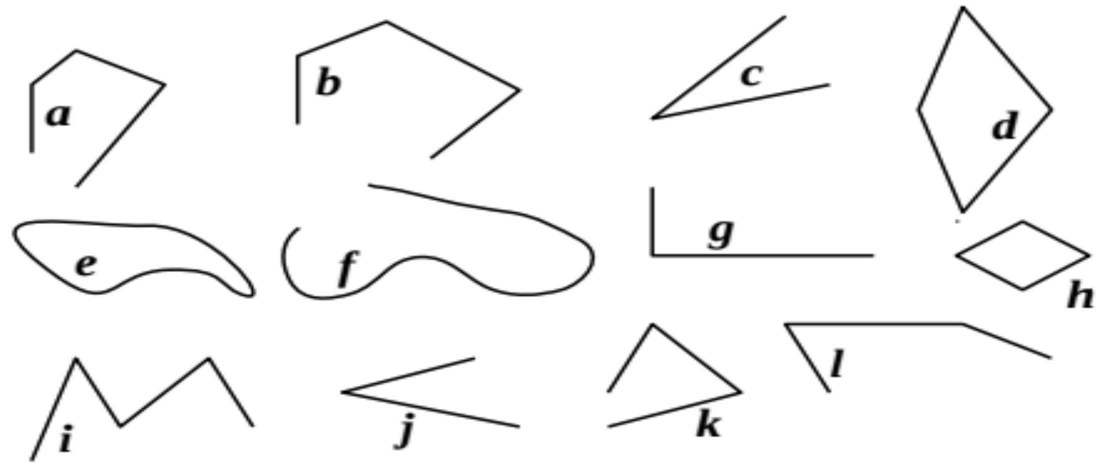
NOT a Polygon

(open, not closed)

9.

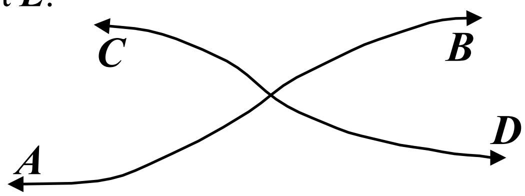
Find all curves and list them here: _______________

Find all open polygonal chains and list them here: _________________________



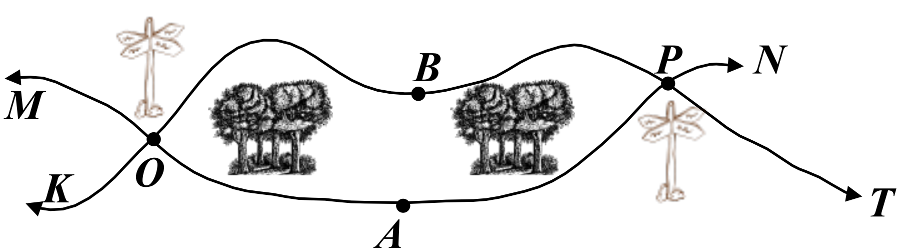
10.

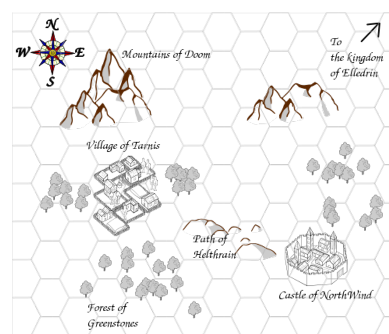
Find the intersection of curves ***AB*** and ***CD***. Mark the intersection with a point and label it ***E***.



11.

The routes ***KBT*** and ***MAN*** pass through forest.





a) Name the points in which those two routes intersect __________

b) Which intersection point should you pass to get from point ***K*** to point ***M***? ________

c) How many possible routes can you take to get from point ***K*** to point ***N***? _________

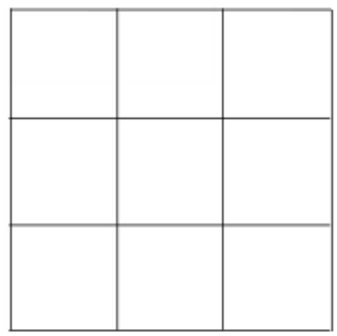
Challenge yourself

The Four Colors theorem.

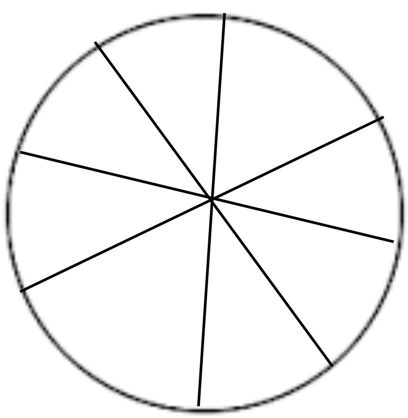
***There is only one rule**: Two regions that share a common edge cannot be colored the same. Having a common corner is OK.*

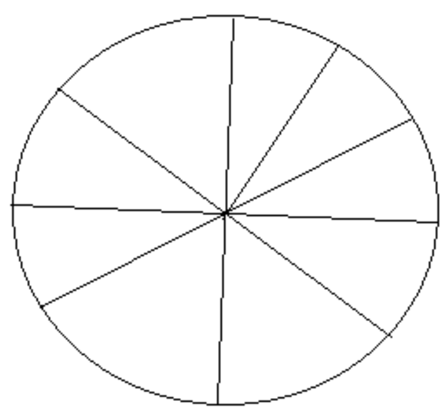
13.

a) How many colors do you need to color a pattern of nine squares? Can you color it using only **two colors**?

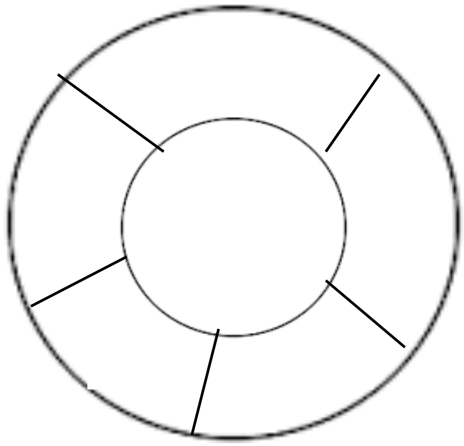


b) How many colors do you need to color a pie divided into eight pieces? Into nine pieces?





c) How many different colors do you need to color the picture below?



Did you know …

The four-color theorem is one of the simplest mathematical problems to state and understand; still it took mathematicians over 100 years to prove.

The theorem states that if you try to color in a map, you only need **four colors** to complete it so that no two areas touching each other have the same color.

A number of false proofs and false counterexamples have appeared since the first statement of the **four-color theorem** in 1852. ... The **four color theorem** was proved in 1976 by Kenneth Appel and Wolfgang Haken. It was the first major **theorem** to be proved using a computer.

The Four Colour Theorem was the first major theorem to be proved using a computer, having a proof that could not be verified directly by other mathematicians. Despite some worries about this initially, independent verification soon convinced everyone that the Four Colour Theorem had finally been proved. Details of the proof appeared in two articles in 1977.