Math 2 Classwork 11

WARM UP

1 What number am I?

a) When I am taken from 26, the result is 12. _____

b) When I have 18 added to me, the result is 49. _____

c) When I am decreased by 60, the result is 17. _____

2 Insert the correct number:

a) 3,687 has a ____ in the ten's place

b) 3,687 has a ____ in the thousand's place

c) 3,687 has a ____ in the hundred's place

Homework Review

1. Find a perimeter:

a) The length of a rectangle is 37 cm, and its height is 14 cm. Calculate the perimeter of the rectangle. P = _____

b) The length of a rectangle is 37 cm, which is 14 cm more than its height. Calculate the perimeter of the rectangle. P = _____

2. A polygonal chain has 3 segments. The length of the first segment is 5 cm, the length of the second segment is 1cm shorter, than the length of the first one and the length of the 3rd segment equals the sum of the 1st and 2nd segments. Finds the total length of the polygonal chain. Draw this chain.

New Material I

Commutative and Associative properties of addition.

Commutative property: When two numbers are added, the sum is always the same regardless of the order of the addends. For example: 3 + 5 = 5 + 3

Associative property: When three or more numbers are added, the sum is always the same regardless of grouping of the addends. For example: (3 + 5) + 1 = 3 + (5 + 1)

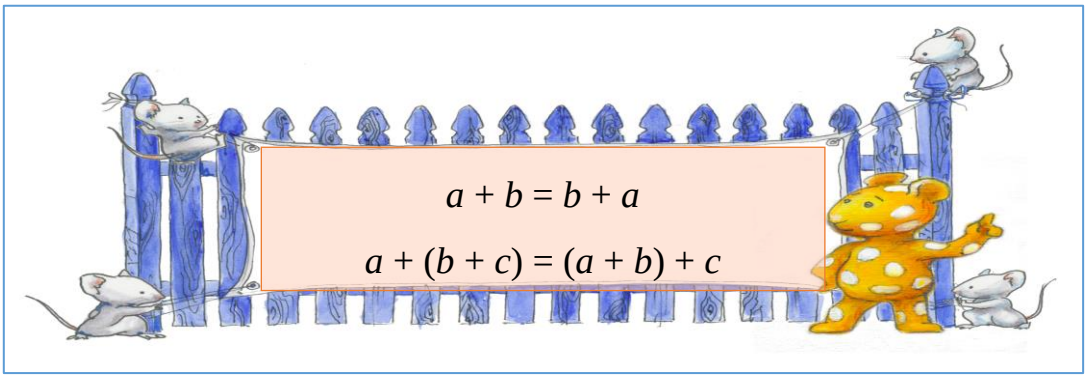
3 Calculate using the most convenient (simplest) way. Which properties of addition will you use?

Example: 18 + 64 + 12 + 6 = (18 + 12) + (64 + 6) = 30 + 70 = 100

22 + 13 + 78 + 17 = _____

137 + 40 + 113 + 60 =_____

236 + 83 + 17 + 44 + 20 = _____



4 a) Perform the actions in the following order:

- Subtract number 3 from the number 8
- To the result, add the number 4

_____

b) Perform the actions in this order:

- Increase number 3 by 4
- Subtract the result from the number

_____

What did you notice?

Why do we need parentheses?

When we have a math problem that involves more than one operation—for example, addition and subtraction, or subtraction and multiplication—which operation do you perform first?

Example: 8 – 4 + 1

If the operations are performed in the natural order:

1st - subtraction , then - addition, the answer will be 5.

In order to change the natural order, we use ***parentheses***. By inserting parentheses around the particular operation, we are saying that this particular operation should be performed first.

① ② ② ①

8 – 4 + 1 = 5 8 – (4 + 1) = 3

If there are several pairs of parentheses in the expression, we perform operations inside them from the left to right.

① ③ ④ ②

Example: *(5 + 1) – 4 + (8 –5)*

How do we work with parentheses?

The part between two parentheses is treated like a SINGLE number.

Removing parentheses.

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

$a + (b – c) = a + b – c$

$a – (b – c) = a – b + c$

5 Find the values of the expressions for **a** = 30; **b** = 12; **c = 3**. What did you notice?

(a – b) + c = _____

a – (b + c) = _____

6 Number the order of operations in the way that they should be performed.

② ①

a) 26 + (32 – 16)

b) (247 – 123) + (384 – 164)

c) 93 + (12 + 16) – 35

d) (72 + 13) – 47 – (94 – 76)

e) a + b – c + d

f) (a + b) – (c + d)

g) a + (b – c) + d

h) a + (b – c + d)

7 Place parentheses where necessary to make sure the order of operations is as shown:

$\overset{1}{(}a + b\overset{2}{)} + c$ $\quad$ $\overset{1}{(}a - b\overset{2}{)} + c$ $\quad$ $\overset{1}{(}a + b\overset{2}{)} - c$ $\quad$ $\overset{1}{(}a - b\overset{2}{)} - c$

$\overset{2}{(}a + b\overset{1}{)} + c$ $\quad$ $\overset{2}{(}a - b\overset{1}{)} + c$ $\quad$ $\overset{2}{(}a + b\overset{1}{)} - c$ $\quad$ $\overset{2}{(}a - b\overset{1}{)} - c$

REVIEW

8 Complete the tables:

a)

Brian's age	5	11	23	35		66
Olivia's age	13	19	31		52	

Q1: Brian is 16. How old is Olivia? _____ **Q2**: Olivia is 47. How old is Brian?_____

b)

Elli's pushups	3		10	15	40	
Elli's sit-up's	15	19	22	27		60

Q1: Elli does 27 pushups. How many sit-ups does he do? _____

Q2: Elli does 50 sit-ups. How many pushups does he do? _____

9 Compare, using <, > or =:

9dm – 2dm 3cm ___ 7dm 7cm

9dm + 10cm ___ 1m

1m – 4dm 3cm ___ 6dm 7cm

9m + 10cm ___ 9m+ 10dm

71cm – 10cm ____ 6dm 1cm

39dm + 61dm ____ 100cm

9m – 50cm ____ 8m + 50cm

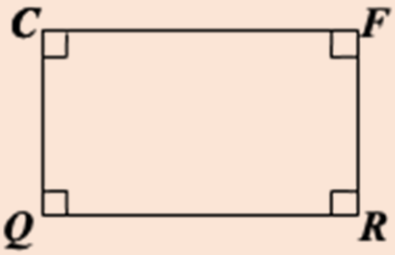
9dm + 6dm ____ 100cm +50cm

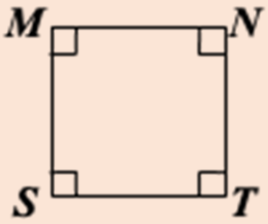
New Material II

Special quadrilaterals:

Rectangle: a quadrilateral in which all four angles are right angles.

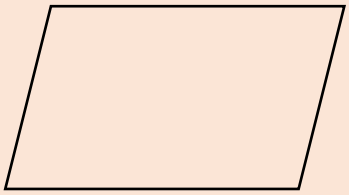
Square: a quadrilateral in which all 4 angles are right angles, and all 4 sides are of equal length.

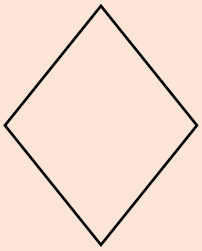




Parallelogram: A quadrilateral with 2 pairs of parallel sides.

Rhombus: A parallelogram with 4 sides of equal length.





10 Answer the questions and explain your answers:

a) Can square be a rectangle?

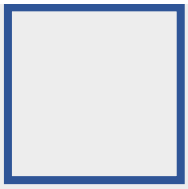
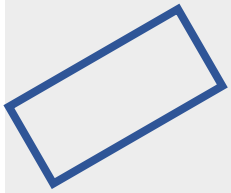
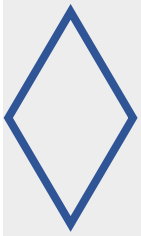
b) Can square be a parallelogram?

c) Can square be a rhombus?

11 Using a ruler, make a sketch of a parallelogram *ABCD*,
with a side AB = 5cm and side BC = 10cm. Find other two sides and a perimeter of the parallelogram.

CD = ____ cm DA = _____ cm P = _____ cm

12 Look at each figure. Place an X in the box if it appears to describe the figure pictured.

				
4 vertices				
Four sides				
Opposite sides parallel				
Perpendicular sides				
Opposite sides have equal length				
All sides have equal length				

Did you know …

Origins of Parentheses

The symbols themselves first showed up in the late 14th century, with scribes using *virgulae convexae* (also called *half-moons*) for a variety of purposes.

By the end of the 16th century, the *parentheses* (from the Latin "insert beside") had begun to assume their modern role. Early occurrence of parentheses in math are found in the manuscript edition of R. Bombelli's Algebra (about 1550).

Leonhard Euler
(1707-1783)

Leonard Euler contributed vastly toward accustoming mathematicians to use parentheses. Euler was one of the most eminent mathematicians of the 18th century and is held to be one of the greatest in history. He is also widely considered to be the most prolific mathematician of all time. He wrote more than 500 books and papers during his lifetime, more than anybody in the field. He spent most of his adult life in St. Petersburg, Russia, and in Berlin, then the capital of Prussia.